EST. 1979

NAVAJO TECHNICAL UNIVERSITY

NITSÁHÁKEES NÁHATÁ IINÁ SIIH HASIN

2022-2023

UNDERGRADUATE CATALOG

NAVAJO TECHNICAL UNIVERSITY

CROWNPOINT, NM ZUNI, NM KIRTLAND, NM CHINLE, AZ TEEC NOS POS, AZ

- IT BEGINS FROM WITHIN -

www.NAVAJOTECH.edu

Navajo Technical University honors Diné culture and language, while educating for the future.

505.387.7401 | www.navajotech.edu | Lowerpoint Rd State Hwy 371 | P.O. Box 849, Crownpoint, NM 87313

TABLE OF CONTENTS

Catalog Effective: August 01, 2022

All changes, following effective date of Catalog, will be added as an addendum.

Next review date: January 2023

WELCOME FROM THE PRESIDENT

Welcome to Navajo Technical University (NTU)! I am writing this welcome during a difficult time for the university and the Navajo and Zuni people. I expect with the release of our next catalog the pandemic we are in the midst of at the moment will have been brought under control, and our Navajo campus at Crownpoint and instructional sites at Chinle, Teec Nos Pos, Kirtland, and on the Zuni Nation will be back to more normal operations. However, our faculty and e-learning department have transformed many courses to be provided online.

Difficult times are not new the Navajo people. The Long Walk and return to our ancestral lands where we live today threatened the very existence of a tribe that had existed for thousands of years. Still, our ancestors found the resiliency in themselves to again see the beauty of *Tsoodzil* (Mount Taylor today) as they came home from imprisonment and start building their lives and our tribal life anew.

NTU is one of the special places in this current time. It is the largest tribal university in the United States. It offers graduate programs, baccalaureate degrees, associate degrees, and certificates in an extraordinarily broad range of fields, ranging from our engineering and medically related programs to construction technology. Students can earn a degree in Chemical Engineering in two years and find a job that pays very well. You can develop the skills to be a creative writer, a filmmaker, or an auto mechanic that understands how to use electronic tools to diagnose and fix automobile and truck problems. Once things are back to normal you can also participate in state, regional, and national competitions with students from other college and universities and add to the proud tradition of winning that NTU has long had.

This *General Catalog* will be one of the most important resources for you. It provides descriptions of courses and programs that will guide you toward earning the certificate or degree you want to earn. I also urge you to take advantage of advisors, counselors, and faculty available to help you.

There is so much I would like to share with you: state of the art classroom equipment, our superior online learning tools, our outstanding residential facilities for families and single students, our cafeteria, and a world-class faculty and staff. All of us at NTU are determined to provide the best programs and learning experience possible.

So, welcome to Navajo Technical University. This is a place where education is an experience and where endless possibility will help you prepare for a future that is possible if you are willing to work toward your dreams.

Dr. Elmer J. S

President

NAVAJO TECHNICAL UNIVERSITY

Mission

Navajo Technical University honors Diné culture and language, while educating for the future.

Vision

Navajo Technical University provides an excellent educational experience in a supportive, culturally diverse environment enabling all community members to grow intellectually, culturally, and economically.

Philosophy

Through the teachings of *Nitsáhákees* (thinking), *Nahátá* (planning), *Iiná* (implementing), and *Sihasin* (reflection), students acquire quality education in diverse fields, while preserving cultural values and gaining economic opportunities.

Non-Discrimination

Navajo Technical University maintains an open admissions policy. Navajo Technical University does not discriminate on the basis of race, color, religion, national origin, sex, gender, age or disability. The university complies with applicable provisions of the Civil Rights Act of 1964; Sections 503 and 504 of the Rehabilitation Act of 1973; Section 402 of the Vietnam Era Veterans Readjust Act of 1975; the Age Discrimination in Employment Act of 1967, as amended; the Higher Education Opportunity Act, as amended; and the Navajo Preference in Employment Act. Equal opportunity for employment and admission is extended to all persons in accordance with Navajo Nation and applicable federal law.

Disclaimer

The Navajo Technical University catalog is not a contract but rather a guide for the convenience of students. The University reserves the right to change or withdraw courses, to change the fees, rules and calendar for admissions, registration, instruction, and graduation, and to change other regulations affecting the student body, at any time. The University reserves the right to change policies or revise curricula as necessary.

If the University decides to terminate a degree program, students enrolled in that program will be provided timely written notice. Students will be afforded a set time for program completion, determined through a "teach out" plan established by the University and the academic department which offered the degree program.

Student Responsibility for Catalog

Each student is responsible for knowing the information printed in this catalog. Failure to read these regulations will not be considered an excuse for noncompliance. The University places full responsibility on the student for registering for appropriate courses and for fulfilling all requirements for a certificate or degree set forth in this catalog, as amended from time to time. No agent or employee of the University has the authority to warrant graduation, the attainment of any type of license, or career goal.

The University does not accept any responsibility for delays in graduation or attainment of career goals resulting from errors in registration, cancelled courses, schedule adjustments, changes in degree requirements or similar related changes, or errors resulting from consultation with any college employee and reliance upon information acquired from said employee.

Bitsé Siléí (Core Values)

The NTU core values are in addition to its mission, vision, and philosophy statements, and help guide the university's day-to-day operations. They apply to students, faculty, staff, and the board of regents, and help us achieve our intended goals.

1. **Íhoo'aah: Learning** - We are passionate about knowledge and continue to learn throughout our lives. We pursue new experiences and ways of thinking. We appreciate that much of our learning will occur by interacting with others, inside and outside of the classroom.

2. **Éédééhtį: Innovation -** We encourage and support our faculty, staff, and students in all forms of scholarship, including the discovery of knowledge in teaching and learning, and in developing innovative products and processes.

3. **Ałk'izhdiitį: Communication -** We strive to practice honest and open exchanges of ideas in an environment where encouragement serves as the basis for our communication.

4. **Ahiłna'anish**: **Collaboration** - We work together towards the common goals of the university and our larger communities, while valuing teamwork, participation, and a wealth of ideas.

5. **'Adiłjidlį́**: **Integrity** - We seek to reflect integrity by upholding the highest ethical standards in personal and professional behavior, and in our commitment to transparency and accountability.

6. **Ałhidilzin**: **Respect** - We strive to be a community that appreciates the gifts and unique contributions of each person. We honor the Navajo way of life while also welcoming diverse perspectives.

7. **Na'alkaah: Research -** We create new knowledge that benefits the Navajo people and all human beings through ethical research practices.

Academic Excellence Committee: 2/26/2021

Navajo Technical University
Board of Regents

Tom Platero
Fort Defiance Agency

Gloria Grant
Chinle Agency

Dr. Delores Greyeyes
Western Navajo Agency

Roselyn John
Eastern Navajo Agency

Dr. Carolyn Thomas Morris
Northern Agency

NTU Student Senate President

The NTU Student Senate President is a voting member of the Board of Regents during his/her one-year term of presidency. The remaining Board members serve on a four-year staggered term.

ACCREDITATION AND CERTIFICATION

Navajo Technical University is fully accredited by
Higher Learning Commission
2005 – Present

National Culinary Federation Accreditation

AVMA Veterinary Accreditation

ABET Accreditation: Industrial Engineering and Electrical Engineering programs

2022-2023 Academic Calendar

Fall Semester 2022

Pre-Registration Begins	Apr 25
Faculty Return	Aug 8
Navajo Nation Code Talkers Day	Aug 15
New Student Orientation	Aug 18
On-Site Registration	Aug 12
Instruction Begins	Aug 22
Late Registration w/fee	Aug 23-24
Last Day to Add/Drop Classes w/out W	Aug 26
HOLIDAY - Labor Day	Sep 5
Fall Graduation Petition due	Sep 30
Mid Term Exams	Oct 10-14
Fall Break	Oct 20-21
Last Day to Withdraw With a W	Oct 31
HOLIDAY - Veterans Day observed	Nov 11
HOLIDAY – Thanksgiving Day/ NN Family Day	Nov 24-25
Final Exams	Dec 12-15
Grades due to Registrar	Dec 16
FALL GRADUATION	Dec 16
HOLIDAY – Christmas	Dec 26

Spring Semester 2023

Pre-Registration Begins	Oct 24
HOLIDAY - New Year's Day	Jan 2
Faculty Return	Jan 9
New Student Orientation	Jan 12
On-Site Registration	Jan 13
HOLIDAY - Martin Luther King Day	Jan 16
Instruction Begins	Jan 17
Late Registration w/ fee	Jan 18-19
Last Day Add/ Drop Classes w/out W	Jan 20
HOLIDAY - President's Day	Feb 20
Spring Graduation Petitions due	Feb 24
Mid Term Exams	Mar 6-10
Spring Break	Mar 13-17
Last Day to Withdraw With a W	Mar 30
Final Exams	May 8-10
Final Grades due	May 11
SPRING GRADUATION	May 12
Memorial Day	May 29

2022 Winter Intersession

Pre-Registration	Oct 24
Instruction Begins	Dec 19
Late Registration w/fees	Dec 19
Last Day Add/Drop Classes w/out W	Dec 20
Holiday - Christmas Day	Dec 26
Midterm	Dec 30
Last Day to Withdraw	Dec 30
Last Day of Class/Grades Due	Jan 6

2023 Spring Intersession

Pre-Registration	Mar 27
Instruction Begins	May 15
Late Registration w/fees	May 15
Last Day Add/Drop Classes w/out W	May 16
Midterm progress grade due	May 26
Last Day to Withdraw	May 26
Holiday Navajo Nation Memorial Day	Jun 1
Last Day of Class/Grades Due	Jun 2

2023 Summer Semester

Pre-Registration Begins	Mar 27
Navajo Nation Memorial Day	Jun 1
Instruction Begins	Jun 5
Late Registration w/ fee	Jun 6
Last Day Add/ Drop Classes w/out W	Jun 7
HOLIDAY - Juneteenth	Jun 19
Midterm progress grades due	Jun 23
Last Day to Withdraw	Jun 28
HOLIDAY - Independence Day	Jul 4
Last Day of Class/Grades Due	Jul 14

History

Navajo Technical University (NTU) was born out of the determination of the tribal college movement, in which tribal nations from throughout the region of North America exercised their sovereignty in taking ownership of their education. At the heart of the movement was the idea that Navajos and other American Indian people had a right to be free and equal to determine their own future through schools that taught from the strength of language and culture, providing a conceptual bridge to contemporary knowledge, skills, values, and attributes.

The movement was launched in 1966 out of the experiments in Indian education that started with the founding of the Rough Rock Demonstration School, and extended into higher education with the founding of Navajo Community College in 1969. The movement was progressive and noted for the bravery it took in challenging the effectiveness of mainstream colleges and universities in their effectiveness with serving Native American students. What started with Navajo Community College, or Diné College, spread to other tribal nations and included the founding of NTU's early beginnings as the Navajo Skills Center (NSC).

NSC opened in 1979 as part of the Navajo Division of Labor. The intent was to provide vocational training to the local communities by offering five-full time programs in job skills in the areas of business/office occupations, culinary arts, computer science, and construction trades. In 1982 the Advisory Committee of the Navajo Tribal Council established the Center as a tribally-chartered entity and in 1984 was accredited by the North Central Association of Colleges and Schools.
The Center operated effectively, but it soon became clear that students wanted more than knowledge in a trade or vocational program and the Board of Directors changed the name to Crownpoint Institute of Technology (CIT) in 1985. As CIT expanded its educational offerings to include associate level degrees, and it improved its infrastructure and facilities as well as its increasing influence in the academic community. Much of these improvements occurred after 1994 when Executive Mandate by the United States designed CIT as a Land Grant college.

The mandate was a turn from the historical practice of higher education to focus on an abstract liberal arts curriculum and emphasized the teaching of practical agriculture, science, military science and engineering as a response to the industrial revolution and changing social class. The switch in practice helped shape NTU's identity and mission moving forward, and called for another name change in order to address an expanding mission.

In 2006, the Navajo Nation Council approved changing the name of CIT to Navajo Technical College under Navajo Nation Council Resolution CN-58-06. By 2007, NTC had formed a partnership with Workforce Development for educational space in Chinle and a year later had received site accreditation with the Higher Learning Commission for a new instructional site and a year later, in 2012, NTC would develop another instructional site in Teec Nos Pos Arizona to service the Four Corners region of Arizona, New Mexico, Utah, and Colorado. With the approval of a Master of Arts degree in Diné Culture, Language & Leadership in 2013, the university would change its name once more to Navajo Technical University, where it stands as one the premier technical vocational universities in the southwest. Bond/Wilson Technical Center located in Kirtland, NM and NTU-Pueblo of Zuni-instructional site, located in Zuni, NM were established 2018.

NAVAJO TECHNICAL UNIVERSITY

This Navajo Technical University catalog serves as a guide to undergraduate programs, academic regulations, fees, and policies and services that governs undergraduate students attending Navajo Technical University. Navajo Technical University reserves the right to change the content of this catalog at any time without notification. It is the sole responsibility of the student to know and understand the catalog for completion of a certificate or degree.

Navajo Technical University is a non-profit institution of higher learning and is chartered by the Navajo Nation.

http://www.navajotech.edu

Main Campus
P.O. Box 849
Crownpoint, New Mexico 87313
Telephone: (505) 387-7401
Fax: (505) 786-5644

Chinle Instructional Site
P.O. Box 849
Chinle, Arizona 86503
Telephone: (928) 882-3133
Fax: (928) 882-3162

The Chinle Instructional Site is a growing site located in Chinle, Arizona near Canyon De Chelly. The Chinle site offers certificate, associate and bachelor programs and holds classes at Chinle High School by agreement with the school district however, new classroom buildings are being constructed for instruction west of Chinle near the hospital.

The programs at the Chinle Instructional Site are designed to serve students from the rural communities surrounding Chinle, Arizona, to provide a non-residential opportunity to attend higher education near home.

Information and enrollment procedures can be acquired by visiting the Chinle Instructional Site at East Navajo Route 7.

Teec Nos Pos Instructional Site
PO Box 1203, Teec Nos Pos, AZ 86514
Telephone: (928) 882-3164
Fax: (928) 882-3169

Four Corners Regional NTU site, located in Teec Nos Pos, Arizona is currently offering courses to students in the four-corner region in northeastern Arizona. The site facilities are located south of Teec Nos Pos Chapter compound, Highway 160 BIE Road N5114.

Kirtland Instructional Site
40 Road 6580
Kirtland, NM 87417
(505) 609-5020

Navajo Technical University partnered with Central Consolidated School District (CCSD) at the Bond Wilson Technical Center (BWTC), the first early college high school academy in the state of New Mexico, located in Kirtland, NM. BWTC offers dual-credit courses at the instructional site to Shiprock, Newcomb, Career Preparatory, and Kirtland high school students to earn college credits through NTU. NTU BWTC offers courses and creates pathways and opportunities for future students. NTU and CCSD developed a partnership with local industries to offer courses at the new instructional site.

Zuni Instructional Site
PO Box 1109
Zuni, NM 87327
(505)782-6010

The Zuni Instructional site is located in Zuni, NM. A:shiwi College and Career Readiness Center partnered with NTU to offers courses for the community and dual credit.

ADMISSIONS

Navajo Technical University has an Open Admission Policy. Admission is available to any student, not currently under suspension from any post-secondary institution, who meets the following criteria:

1. Is a high school graduate*, or
2. Has passed the GED test.
3. Is a U.S. citizen or eligible non-citizen.

**Note: High school students are an exception and must meet Early Admission or Dual Credit criteria.*

Admission to NTU does not necessarily mean acceptance into specific certificate or degree programs. For information on admission to specific degree programs, contact the department for more information. For all categories, the University requires full academic disclosure on the application forms. Any student found guilty of non-disclosure or misrepresentation on an application is subject to disciplinary action, including possible dismissal from the University. Transcripts and test scores submitted to NTU for admission become the property of the University and will not be sent elsewhere or returned to the student.

USE OF SOCIAL SECURITY NUMBERS: Your Social Security Number (SSN) will not be your primary University identification number. It will not appear on your NTU identification card. NTU is required to collect your SSN in order to provide full access to services such as financial aid, to ensure an accurate academic record, and for record-keeping purposes. The University will protect the confidentiality of your SSN as required by law.

The Enrollment Services directs all functions of the Admissions and Registration Office. The Office of Admissions is located in the Skyhawk Central building on the main campus in Crownpoint, NM and all instructional sites have identified locations as introduced on the prior page of this catalog.

Access to online admission application is available on the NTU website: Online Application | Future Student | Welcome to NTU (navajotech.edu)

All correspondence regarding admissions should be directed to:

NTU Office of Admissions,
P.O. Box 849
Crownpoint, NM 87313

APPLICATION PROCESS

1. General Admissions

The following documents must be received in the Admission's Office through online process or in person. There are additional requirements for all Bachelor Degree Programs and the following programs: Commercial Driver License (CDL), and Veterinary Technology. International Students have their own admissions requirements.

a. A completed and signed NTU Admissions Application.
b. Copy of Certificate of Indian Blood (CIB) or an official record of enrollment that indicates membership with a federally recognized Indian Tribe for all Native American students.
c. An ***Official*** high school transcript or an ***official*** General Education Development (GED):

- Official high school transcripts should indicate graduation date and a "passing" result from the state competency exam. Students, who do not have an official high school transcript to indicate completion, will be required to submit a notarized

Verification of Completion from the school district attended.

Note: Students who do not have high school documentation are not eligible for federal student aid. These students are responsible for payments of tuition and fees.

- GED results require a passing score of 45 or higher in all subject areas from the state GED office
- High School Transcripts will be waived for transfer students that have accumulated 24 credit hours or at least an associate degree. Admissions will still attempt to collect the transcript.

d. Copy of Social Security Card – verification of legal name and SSN number.

e. For Transfer students – An Official college transcript from each college/university attended.

- Official transcripts must be in a sealed envelope and preferably mailed directly from the institution to the NTU Registrar's Office. Institutions that send Electronic Transcripts are to be emailed directly to the Registrar only for it to be official. *Note: Transfer courses are not included in calculating the student's NTU cumulative Grade Point Average (GPA).*
- A Transfer Student who does not have a cumulative grade point average of 2.00 or on academic suspension will be referred to the Academic Counselor to be placed on an academic contract or education plan

f. Copy of DD214 if a Military Veteran to verify status.

g. Copy of COVID Vaccination Card.

2. Home School Admissions

Students enrolled in a home school program may be accepted to NTU if they meet regular or provisional admissions requirements. In addition, the home school educator must submit a transcript or document that lists the courses completed and grades earned by the student and the date the student completed or graduated from the home school program.

Home school students who are New Mexico residents and wish to participate in the Lottery Success Scholarship program are required to submit official New Mexico GED or HI SET test results in English.

Note: Students who do not have high school documentation are not eligible for federal student aid. These students are responsible for payments of tuition and fees.

3. Early Admission for High School Students

Outstanding high school students can be admitted to NTU prior to high school graduation as a concurrent enrollment. Early admissions must be made directly to the Registrar unless otherwise articulated through an agreement with a local high school or school district.

The requirements for high school admission are outlined below:

- Written recommendation from the high school principal/counselor
- Current High school transcript with cumulative GPA as follows:
  Junior – 3.5 minimum GPA required (or top ¼ of class)
  Senior – 3.0 minimum GPA required (or top ¼ of class)
- A completed NTU admissions application
- Accuplacer test result
- Certificate of Indian Blood (CIB) or an official record of enrollment that indicates membership with a federally recognized Indian Tribe
- Copy of Social Security Card
- Copy of COVID Vaccination Card
- Signed NTU Alcohol and Drug Free Policy affidavit
- A signed parental permission form if applicant is under the age of 18.

4. Dual Credit/Dual Enrollment

Dual Credit/Enrollment is for high school students who wish to earn both high school credit and college credit at the same time. The dual credit option is available for all high school students. School districts in New Mexico and Arizona have a signed Dual Credit Agreement with Navajo Technical University stipulating the waiver of tuition and fees. This educational opportunity is available to home school students, students who may attend high schools outside of the Navajo Nation, and outside of

Arizona and New Mexico using the following instructional methods:

- Through the students' high school with high schools teachers who meet NTU's qualifications to teach college-level classes. High school teachers will meet the rigor requirement to teach the course at a college-level, by using the required syllabus for the course.
- Online classes with on-campus faculty, or
- Face-to-Face on-campus.

Requirements for dual credit admissions:

- Meet with their high school counselor to determine eligibility and available courses.
- Submit an NTU Dual Credit Application packet which includes:
  - Copy of Certificate of Indian Blood (CIB) or an official record of enrollment that indicates membership with a federally recognized Indian Tribe for all Native American students.
  - Current High School Transcript
  - For New Mexico students: Submit a completed New Mexico Statewide Dual Credit Request Form.
  - For Students under 18 years of age, must have parent's signatures on all forms requiring Parents Signatures.

Transfer Credit Evaluation

Credits earned at regionally accredited institutions of higher learning are accepted. Pre-college credits are not transferable. Transfer credit will not be given without an official transcript.

- Transfer credit will be awarded for each college course level in which the student received a grade of "C" or higher.
- A limit of 30 credit hours may be transferred toward an associate degree and a limit of 15 credit hours may be transferred toward a certificate program. Students in the bachelor degree program who request to have their courses transferred will have a limit of 60 credit hours eligible for transfer.
- The courses must be taken within the ten-year time limit of admission into the University. Credits over ten (10) years of age are subject to review prior to acceptance toward prerequisites and/or degree requirements in some program areas.
- Science courses in the Registered Nursing Program must be taken within eight (8) years from admission or they must be retaken.
- Courses must be at least 3 semester credits or equivalent semester credit for the transferred course

Military Credit Evaluation

Military service credit is granted based on recommendation of the American Council of Education's "Guide to the Evaluation of Educational Experiences in the Armed Service" and institutional policies. No credit is granted for Military Occupational Specialty (MOS). Submit all military transcript to the Registrar's Office for evaluation. The Veteran's certifying official is located in the Financial Aid Office, (505) 786-4183.

4. Non-Degree Admissions

Applicants who seek to enroll in a course or courses, but do not seek a degree or certificate shall submit a NTU enrollment application and a CIB (Certificate of Indian Blood), copy of Social Security Card, and copy of COVID Vaccination Card. For those younger than 18 years of age, approval of parent or guardian will be required. Students on non-major status are not eligible to receive financial student aid or student employment, nor are they eligible to participate in student government or intercollegiate athletics, or to receive benefits from any veteran's program.

5. Admission Requirements for International Students

- A completed NTU International Student Application
- Official High School Transcripts – Translated into English if in different language
- Official Test of English as a Foreign Language (TOEFL) scores
  - TOEFL scores must be less than 2 years old from date of Admissions.
  - Acceptable Scores: 500 paper, 173 computer base, 61 internet base.
- Financial Support Form
- Official College Transcript – Translated into English if in different language
- Proof of COVID-19 Vaccination

Navajo Technical University complies with the Department of Homeland Security and Student and

Exchange Visitor Program within the U.S. Immigration and Customs Enforcement (ICE). Upon NTU's issuance of an I-20 form to the student, each International student must comply with the following:

1. Must be enrolled as a full-time student -
   a. May only take one – three credit course online.
   b. Must have current I-20, attend the school stated on I-20.
2. Must be enrolled in a program of study that results in a degree, diploma or certificate
3. Must be proficient in English
4. May not work off-campus during the first year academic year.
5. Students are responsible for locating suitable housing.
6. Students are responsible for providing transportation to and from the college.
7. Health Insurance.
8. Keep local address updated. Student has 10 days to report a new address if local address is changed.

Accuplacer Testing and ACT placement

New incoming students are required to take the Accuplacer placement test to place students in the appropriate Math and English courses. Students can use ACT scores to determine if they meet a certain score for placement. Transfer students who have successfully completed a college level English and Math with a C or better at another institution (as recorded on an official transcript) will not have to take the test if the course was completed within 10 years of the admission date on the application. The advisor and academic counselor provide Accuplacer placement test interpretation for appropriate placement in Math and English courses. ACT score placements are available at the admissions office. Contact numbers: Crownpoint (505)387-7377, Chinle (928) 882-3133.

***NOTE*:** *Students who placed lower on the Accuplacer placement test will be required to take additional English or Math courses. EXAMPLE: a student whose Accuplacer score places them in ENG098 will have to satisfactorily complete ENG098 (a grade of C or better) before they can take the higher level required English course(s) for their certificate or degree*.

8. **Re-admission**

   Students who have not attended Navajo Technical University for two consecutive semesters must reapply for admission. The student is responsible for providing all the admissions documents and may be required to retake the placement test if the Math and English requirement have not been met.

   Students who were previously dismissed from NTU due to unsatisfactory academic performance (Academic Suspension), policy violations, or unacceptable behavior must submit a written request for readmission to the Registrar's Office. All requests will be reviewed on a case-by-case basis.

   - Students with a previous history of substance abuse will be referred automatically to the Counseling Department.
   - Students on academic suspension must submit a request for readmission to the Registrar's Office and upon approval will be referred to the academic counselor and placed on an academic contract.
   - All outstanding debts to the college have to be satisfied in order for a former student to be re-admitted. Students who have an outstanding account will be referred to the Business Office (student billing) to resolve their outstanding debt.
   - No official college transcript(s) will be released to all requesting parties, for a student who has an outstanding debt to the college.

Denial or Cancellation of Admission

NTU reserves the right to deny or cancel the admission and/or registration of any student who has an outstanding debt at NTU. Any person found to have knowingly and willfully made false statements, furnished any false information, and/or concealed any material information will be subject to expulsion. NTU will not tolerate any such activity and will conduct a thorough internal investigation.

Appeal Procedure

Any student denied admission may submit a written appeal letter to the Registrar within 15 days of issuance of the notice of admission denial. The appeal letter shall detail the circumstances justifying reconsideration for admission. The

student shall also submit supporting documentation that substantiates the appeal. The Registrar will then schedule a meeting with the applicant and the Director of Enrollment within 5 business days of receiving the appeal. The applicant will be notified of the appeals decision by mail within 10 business days of the meeting.

Accommodations for Students with Disabilities

NTU complies with the *Americans with Disabilities Act of 1990(ADA*) and *Section 504 of the Rehabilitation Act of 1973* and is committed to make reasonable accommodations to meet the needs of self-identified students with disabilities. Qualified students with disabilities should discuss their needs with the Disability Accommodations Specialist in order to receive reasonable accommodations. The Specialist may be contacted at (505) 387-7473. All accommodations for employees should contact the Human Resource Office.

PROGRAM ADMISSION EQUIREMENTS

1. **Admission Requirements for Commercial Driver License Program**

   The Commercial Motor Vehicle Safety Act of 1986 (CMVSA/86) requires all the individual states to comply with certain standards in regards to the licensing of commercial motor vehicle (CMV) drivers. A Commercial Driver's License (CDL) is required when driving applicable trucks and buses. A CDL license can only be issued in the driver's state of legal residence, and you have to surrender your driver's license from any other state you many have. The Commercial Driver License (CDL) program is offered at the main campus in Crownpoint, New Mexico and the Instructional site in Chinle, AZ.

   The CDL Program requires additional documents along with general admissions, requirements vary from each state and students test in their perspective resident state, requirements listed below are for NM:

   - A valid New Mexico Driver's license (If applicant is between the ages of 18 – 24, applicant must show proof of completing a DUI Awareness class)
   - Department of Transportation's physical exam form completed.
   - A copy of driving record from the New Mexico Department of Motor Vehicles Division
   - A copy of birth certificate
   - 2 documents that show proof of physical residence in New Mexico.

   When all of the required documents are received and accepted by the Admission's Office, the applicant will receive a letter of acceptance to NTU.

2. **Admission Requirements for Veterinary Technician Program**

   Veterinary program has additional requirements for admissions. The admissions office will admit students into the university once all general admissions requirements are met but official admissions into the Veterinary Program is determined by the program's admissions process.

   Official admission is granted during the spring semester immediately preceding the fall semester student plans to begin. Veterinary Technology program core courses begin in the fall semester. Students must meet several requirements:

   The requirements for admission into the program beginning the fall semester include the following:

   a. Students meet with the Program Director prior to obtaining the application and evaluation forms for official admission.
   b. Students must complete all general education courses on the degree checklist.
   c. Maintain a cumulative G.P.A. of 2.50 or higher in all required general education courses (BIO120, CHEM1217C, ENGL1110 or ENGL1120 or ENGL112, and MATH1220) with a C or higher not C-. Any required science course must be taken within 8 years.
   d. Pass VET 090 - Introduction to Veterinary Technology course (1 credit hour) with a grade of C or higher.
   e. Maintain a cumulative science and math G.P.A. of 2.50 or higher. The last grade received will be used in the GPA calculation for repeated courses for VET program calculation for admissions. The university calculates GPA differently for repeats.

f. Submit official college transcripts showing completed general education courses. General education courses must be taken in the last8 years.
g. Submit three (3) official letters of recommendation covering education and relevant veterinary experience from the last 12 months.

- Two letters must be submitted by high school teachers that taught the student in their required general education courses (including math, science and English) and/or college instructors that taught student in their required general education courses (including math, science, and English).
- At least one letter from a veterinarian who served as student's supervisor in a veterinary clinic or zoo where student performed veterinary-related assistance.

Note: Letters must be signed, sealed in envelopes and sent directly to the Veterinary Program Advisor by the individual making the recommendation. Letters from family members will not be accepted.

h. Students must complete a minimum of 40 hours of volunteer work prior to the application deadline.
Hours should not be completed in a one-week period but spread out over several weeks to ensure exposure to a variety of tasks and services in the veterinary practice, exotic animal facility, research, or laboratory animal facilities. Up to 16 hours may be completed in any single week. Mixed animal practice volunteer experience is strongly recommended to expose students to small, large, and exotic animal veterinary services. Lacking experience may require more hours to complete volunteer work in identified areas. Student will be required to learn and perform small, large, exotic, avian, and lab animal veterinary technician tasks and skills in the program. Failure to do so, will result in dismissal from the program.
i. Students must submit an official, signed, and completed supervisor (Veterinarian at site) evaluation form. Evaluation form is required in addition to the recommendation letter. Forms must be signed, sealed in envelopes and sent directly to the Veterinary Teaching Hospital address listed on the form by the individual making the recommendation.
j. Submit a current resume, immunization record documenting tetanus vaccination status is current (within the last 10 years), and proof of health insurance coverage or Crownpoint Indian Health Service chart number. Rabies vaccination will be required at the end of the first semester to continue in the program.
k. Submit a 500-word max on why they are pursuing an Associate of Applied Science degree in Veterinary Technology.
l. Students whom have submitted an application and all required documents by the deadline will be notified for an interview date and time if they semi-qualify for admissions. Qualified students will be interviewed by the Admissions Committee of faculty, Dean, and Program Advisor to determine admission into the Veterinary Program.

- Submission of an application and required documents by the deadline does not guarantee official admission into the program.
- Students denied official admission may reapply for the next application deadline. Students are strongly encouraged to strengthen their application and continue volunteer work to increase experience.

3. **Admissions Requirements for Bachelor Programs**
   a. Complete all prerequisite in the degree program.
   b. Complete all General Education requirements and the 100-200 level courses within the first five semesters of the Bachelor Program.

Declaration of a Major

All students shall identify a major in a certificate or degree program, unless they are identified as Non-Major. Those who plan to earn a certificate or degree from NTU will have met the program placement requirements and officially have declared their major (program of study).

Certificate Programs

Upon successful completion of a specific career program listed in the catalog, students will receive a certificate if they have passed all the required coursework, including general education requirements, earned the required credits, maintained a cumulative GPA of 2.00 or better, and have satisfied any outstanding debt to the college.

Degree Programs

Students enrolled as degree candidates in one of the Associate or Bachelor degree programs will receive their degree if they pass all of the required coursework, including general education requirements, earned the required credits, maintain a cumulative GPA of 2.00 or better, and have satisfied any outstanding debt to the college.

- **Associate Degree**

  Associate of Applied Science (AAS) Degree: An AAS degree program prepares students to enter either skilled or paraprofessional occupations or to upgrade workplace skills and knowledge. An AAS program is not intended to transfer to a bachelor's degree, although certain courses may be accepted at some institutions. The exception to this rule is when an AAS is used to enter a BAS program.

  Associate of Arts (AA) Degree: An AA degree provides a foundation in general education including courses in mathematics, humanities and social sciences, communication, and natural sciences. Students may transfer their degree credits to a four-year institution to pursue a bachelor's degree in the arts or sciences.

  Degree Types Definitions

  Associate of Science (AS) Degree: An AS degree is an associate degree in the areas of science, technology, engineering, mathematics (STEM) or in Early Childhood Education Development (ECED).

- **Baccalaureate Degree**

Bachelor of Arts (BA): Graduate and professional schools typically require a four-year BA or BS for admission. The curriculum of a traditional BA degree is centered on providing a well-rounded, liberal arts education. Students pursuing a BA are not required to have an associate's degree.

Bachelor of Science (BS): BS programs normally require a student to take the majority of their courses (usually 1/2 or 3/4) in the sciences, namely life sciences, physical sciences, engineering, or the mathematical sciences. Graduate and professional schools typically require a four-year BS or BA for admission. Students pursuing a BS are building on an Associate Science degree.

Bachelor of Applied Science (BAS): An undergraduate degree that focuses studies on an applied science with hands-on projects or fieldwork. A BAS degree is designed for students that work immediately after graduation; they are more focused on vocational subjects. Students pursuing a BAS degree normally build on an Associate of Applied Science degree.

Bachelor of Fine Arts (BFA): A standard undergraduate degree for students seeking a professional education in the visual or performing arts that will often require an area of specialty. A BFA requires approximately 2/3 of the course work focus on the creation and study of visual arts, and 1/3 of the course work focus on liberal arts (history, literature, psychology, etc.)

Master Degrees

See Graduate Program Catalog.

Change of Major

Any student who wishes to change his/her major will need to submit a Change of Major form to the Registrar. The student will be required to meet with the Academic Advisor or Counselor and the Financial Aid Manager for approval. No changes shall be allowed after the deadline for the last day to register for that semester. Changing a major could affect eligibility for student federal aid, for more info see the financial aid section of this catalog.

Enrollment Status Definitions

1. *First-time Enrolled Student:* A student who is enrolled for the first time in higher education. Only after a student graduates from high school or receives a GED can s/he be considered first-time enrolled student, even if s/he was formerly a Dual Credit Enrolled student.
2. *Continuing:* A student who was enrolled in this institution's main or site campuses the most previous sessions (e.g., Spring or Summer for Fall students and Fall for Spring students). Students newly admitted to graduate school are excluded.
3. *Returning:* A student who was previously enrolled in this institution's main or site campuses, but was not enrolled the most previous session (not counting Summer or Fall students). Students newly admitted to graduate school are excluded.
4. *Transfer Student*: Any transfer student seeking admission to NTU who intends to work toward a degree or certificate from NTU should apply for admission. Applicants are required to submit official transcripts from all regionally accredited colleges or universities. NTU accepts transfer credit for courses that have a grade of "C" or better and if an equivalent course is offered at NTU. No special topic classes will be accepted for transfer. A limit of 30 credit hours may be transferred toward an associate degree and a limit of 15 credit hours may be transferred toward a certificate program. Students in the bachelor degree program that request to have their courses transferred will have a limit of 60 credit hours eligible for transfer. The courses must be taken within the ten-year time limit of admission into the college.
5. *Non-Major Status:* A student who does not want to earn a degree or certificate is classified as a non-degree/major student. Non-degree/major students may request to change to certificate/degree status and apply credits earned while in non-degree status by declaring a major. *Note*: *Non-majors will not satisfy eligibility requirements for federal student aid, veteran's educational benefits or other financial aid assistance.*
6. *Concurrent Enrollment:* A student who is enrolled at NTU and also at another institute of higher learning should understand that federal student aid will be disbursed by only one Institution, but charged by each institution. Students should go to the Financial Aid Office to obtain more information about concurrent enrollment and financial aid.
7. *Dual Credit Enrollment:* A student currently enrolled in high school and enrolled in one or more courses at NTU is considered to have dual enrollment. NTU has an agreement with various Secondary School Districts. Students need to obtain more information from their high school counselor. Otherwise students may opt to make payment for NTU courses at the Business Office.
8. *Continuing Education (CEU*): A student who is participating in non-credit continuing education and professional activities.

REGISTRATION INFORMATION

Registration Procedures

Registration is the process of selecting courses, receiving a class schedule, and completing enrollment at Navajo Technical University.

- Students must obtain approved signatures from both Financial Aid office and Academic Advisor on the registration form prior to registering;
- Pre-Registration is open to students, with the exception of students placed on a "hold" status
- Students who register for classes late will be assessed a late registration fee.

Pre-Registration/Online Registration

Continuing students are allowed to pre-register for classes via the web portal (NTU website link). Dual Credit and students who have a Hold on their account will not be allowed to register using the web portal. Students will need to meet with their academic advisor to complete pre-registration/registration.

Schedule of Classes

The Schedule of Classes is an official publication of courses offered and distributed each semester/ session. The schedule lists the semester's course offerings, dates, times, place, and instructor.

Schedules are available on-line on the NTU website during Pre-Registration and Registration. Online registration for courses is completed after consulting with each student's academic advisor.

Add/Drop Procedures

Students wishing to add/or drop individual classes must do so by the official add/drop deadline to avoid any penalties. Any requests to add individual courses after the deadline date will not be granted. After the add/drop date, students are responsible for initiating a course withdrawal form unless the instructor submits one based on the attendance policy stated in the course syllabus. Deadline to complete this is until the last day of withdrawal and will be given a grade of a "W". Changes in credit hours could affect a student's financial aid, scholarship, and/or refunds. Students who officially drop classes after the drop/add date are responsible for payment of tuition and any other fees.

All drop/add changes must be completed through the Registrar's Office.

Course Withdrawal Procedures

Students may voluntarily withdraw from one or more courses or the university, before the withdrawal deadline, without a penalty. A final course grade of "W" will be recorded on the student's transcript for each course from which the student withdraws. (See academic calendars for dates.) Withdrawal forms are available in the Registrar's Office. Students who withdraw are responsible for any outstanding financial accounts. Withdrawing past the Official Withdrawal date requires the assignment of an "F" grade and is included on the transcript and calculated in the grade point average. Students who do not properly withdraw are responsible for University fees that are non-refundable.

To withdraw from a course requires submittal for a *Student Initiated Course Withdrawal* form or an *Instructor Initiated Course Withdrawal* form.

Withdrawing from NTU

Students who withdraw from NTU for any reason must follow the procedures below. Failure to do so may result in failing grade(s). It is the student's responsibility to ensure that all necessary signatures are collected.

- Complete a Student Withdrawal Form (available from the Admissions and Records Office).
- Obtain required signatures.
- Return completed Student Withdrawal Form to Registrar's Office for final processing.

Cancelled Classes and Schedule Changes

NTU retains the right to cancel, reschedule, or combine courses, and to change instructors for any NTU course(s). Courses will be cancelled or combined after the last day of registration if they do not attain minimum enrollment. The procedure to cancel courses are as follows:

- The Registrar shall identify courses, to include those courses that may impact students' ability to graduate for that semester. Upon review, consideration for the course(s) will be made to continue and not be cancelled.
- The Registrar shall provide the list of courses to the Academic Deans.
- The Academic Deans will meet with and get input from the Department Chairs.
- The Registrar shall then coordinate with the Deans and Provost to determine which courses will be cancelled.
- The Registrar with the assistance of the Academic Advisors shall notify the students of the cancellation and make every effort to register them into another course section or course according to the student's checklist.

Note: Classes cancelled because of inclement weather will not be automatically rescheduled. The instructor will make arrangements to make-up the class.

Final Examinations

Final examinations are given at the end of each semester. Final exam schedule is posted on our website for days and times of exams. Students must take their final examinations during the scheduled time period. Students who fail to take final examinations may receive a failing grade and jeopardize their academic status.

Transcripts

The Registrar's office issues both official and unofficial copies of NTU student academic records. A fee is charged for all official transcripts.

The Family Educational Rights and Privacy Act of 1974, as amended, prohibit the release of student transcript record or disclosure of its contents to any third party without the written consent of the student. Contact the Registrar's office for more information.

Students who fail to meet their obligations to NTU, financial or otherwise, will have their academic records placed on hold until the obligation is resolved. No official transcript will be released to the student or to any other person or institution until all of the student's outstanding obligations to the university have been paid.

STUDENT RECORDS AND CONFIDENTIALITY

Student records are maintained confidentially in accordance with the Federal Family Educational Rights and Privacy Act (FERPA) of 1974. This law protects the privacy of a student's educational records by establishing the right of students to inspect their records and providing guidelines for the correction of inaccurate or misleading records. FERPA applies to all schools that receive funds under U.S. Department of Education programs.

1. No document in a student's record or transcript will be released without the student's written authorization unless it is for NTU faculty and/or staff who have a need to know, in order to comply with a judicial order, or for emergency health and/or safety purposes.
2. Before NTU can release information to employers or other institutions, the student must have a signed Release of Information form on file.
3. The following information, categorized by the law as "directory information," may be released without the student's consent unless the student requests the information be withheld:
    - Name, address, email address, telephone listing, date and place of birth;
    - Dates of attendance and graduation, degrees and awards received, grade level or year (such as freshman or junior), and enrollment status (undergraduate or graduate; full-time or part-time);
    - participation in officially recognized activities and sports, weight and height of members of athletic teams; and
    - Videotapes or photos of students participating in NTU activities

FERPA allows schools to disclose those records, without consent, to the following parties or under the following conditions (34 CFR § 99.31):

- School officials with legitimate educational interest;
- Other schools to which a student is transferring;
- Specified officials for audit or evaluation purposes;
- Appropriate parties in connection with financial aid to a student;
- Organizations conducting certain studies for or on behalf of the school;
- Accrediting organizations;
- To comply with a judicial order or lawfully issued subpoena;
- Appropriate officials in cases of health and safety emergencies; and
- State and local authorities, within a juvenile justice system, pursuant to specific State law.

If a student does not wish to have this information released, a request for non-disclosure of directory information must be submitted to the Registrar within the first two weeks of the first semester and is valid until the student withdraws the request for non-disclosure by providing written authorization for the release of that information.

4. Students have the right to examine their official file. Requests to examine student records should be scheduled in advance with, and performed under, the supervision of the Registrar. The student must submit a written request to the Registrar requesting the documents to be reviewed and indicating which documents are to be reviewed.
5. Students may submit a written request to the Registrar to amend a record that is believed to be inaccurate or misleading.
6. Students have the right to file complaints with the Family Policy Compliance Office of the U.S. Department of Education concerning any alleged failures by NTU to comply with FERPA.

U.S. Department of Education
Student Privacy Policy Office
400 Maryland Ave, SW
Washington, DC 20202-8520

ACADEMIC REGULATIONS

Academic Integrity

The integrity of an academic program rests on the principle that the grades awarded to students reflect only their own individual effort and achievement. Students are required to perform the work specified by the instructor and are responsible for the content of work submitted such as papers, reports, and examinations. The use of another person's ideas or work claimed as your own without acknowledging the original source is known as plagiarism and is prohibited. A student reported for plagiarism or cheating will be referred to the Dean of Undergraduate Studies and will be subject to disciplinary action, including possible expulsion from NTU.

Plagiarism

According to the fifth edition of the MLA Handbook for Writers of Research Papers, "to use another person's ideas or expressions in your writing without acknowledging the source is to plagiarize. A writer who fails to give appropriate acknowledgment when repeating another's wording or particularly apt term, paraphrasing another's argument, or presenting another's line of thinking is guilty of plagiarism."
Different disciplines use different documentation methods; therefore, students should consult with instructors about the correct use of the appropriate documentation style. Additional resources and guidance in the correct use of sources can be obtained from the English faculty at NTU.

Course Load

The normal load for a full-time college student is 12-15 credit hours. An overload is 16 or more credit hours per semester. Part-time enrollment is up to 11 credit hours per semester. Students are allowed to register for a maximum of 21 credit hours per semester in the fall and spring. The normal load for a full-time student during the summer session is 6 or more credits. *(Full Financial Aid requires 12 credit hours.)*

Credit Overload

An overload is 16 or more credit hours per semester or 7 or more credit hours for Summer session. Students in good academic standing must obtain permission from the Dean of Undergraduate Studies if they want to attempt a credit overload. An *Overload* form signed by the Dean of Undergraduate Studies must be submitted prior to registering for the course.

- First semester students (not including transfer students) or students on academic probation or provisional admission will not be allowed to register for more than the allowed credit hours recommended by their Academic Advisor/Counselor.
- A student should be in good standing (maintain a cumulative of 2.50 or better.) The Dean of Undergraduate Studies will require a copy of the student's transcript to verify academic standing and also the registration form of courses already registered for in order to verify credit hours.

Credits Granted for Hours Completed

A completed semester hour represents a minimum of eight hundred (800) minutes per credit per semester. One lab semester hour represents a minimum of one thousand sixteen hundred (1600) minutes per credit per semester. One credit hour is awarded for 150 minutes of contact in a shop session per week. For every credit hour spent in class, a student is expected to spend two hours outside of class studying the course materials. For a hybrid or blended course of one (1) credit hour, a student is expected to spend three (3) hours per week studying the course materials. For an online course of one (1) credit hour, a student is expected to spend four (4) hours per week studying the course materials.

Student Academic Classification:

- *Freshman:* A student who has completed 30 or less credits.
- *Sophomore:* A student who has completed 31 – 59 credits.
- *Junior:* A student who has completed 60 – 90 credits.
- *Senior:* A student who has completed 91 or more credits.

English/Math Placement

All new incoming students are required to take the Accuplacer placement test to help assess the student's Math and English skills in order to place students in the appropriate course level, according to their abilities. If students would like to use their ACT scores, they need to bring in official copies of

their ACT to replace placement testing. Students with low scores may be required to complete remedial studies coursework prior to entering their chosen major. Transfer students who have successfully completed English and Math courses comparable to those required by their certificate/degree programs with a "C" or better at another institution (as recorded on an official transcript) should complete a Course Transfer form and submit to the Registrar for review.

Attendance Policy

Students are expected to regularly attend all classes for which they are registered. A percentage of the student's grade will be based on class attendance and participation. In certain courses, the weight placed on attendance may be considerably more due to the nature of the course work and required assignments. Absence from class, regardless of the reason, does not relieve the student of his/her responsibility to complete all course work by the required deadlines. Furthermore, it is the student's responsibility to obtain notes, handouts, and any other information covered when absent from class and to arrange to make up any in-class assignments or tests if permitted by the instructor. Incomplete or missing assignments will affect the student's grades. Some instructors may drop students from the class after three (3) absences unless prior arrangements are made with the instructor to make up work and the instructor deems any excuse acceptable.

Leave of Absence

Academic leave of absence refers and is limited to students in a degree program requiring continuous enrollment and have completed a minimum of one academic term of program coursework, and who, while in good academic standing, are forced to withdraw temporarily from academic work due to reasons beyond their control, such as illness, military service, financial exigency, or pressing personal reasons justifying an interruption of the degree program. No academic activities may be conducted during leave and this leave may not be used to avoid payment of tuition.

The decision to take time off can be made before the start of a new semester or once a semester is underway. Since the reasons for requesting a leave of absence can have important implications for academic planning, including financial aid, students are encouraged to discuss their options with an advisor and their financial aid counselor before making a final decision.

A Leave of Absence is a temporary interruption in a student's program of study. A LOA cannot exceed 180 days in any 12-month period and may have a serious impact on a student's financial aid.
According to federal regulations, 34 CFR 668.22 (d), the following criteria outlines the requirements to process an approved LOA:

- The student must request the leave of absence in writing to the Academic Dean for approval. The letter should state the reason(s) for the request.
- A LOA cannot be granted for academic reasons (i.e. to keep a student from failing).
- There must be reasonable expectation that the student will return from LOA.
- A student returning from a LOA must resume training at the same point in the academic program that he or she began the LOA.
- Upon return from LOA, the institution may not assess the student any additional institutional charges. Therefore, the student is not eligible for any additional federal student aid (Title IV funds).
- If a student is a Title IV recipient, the institution must explain the requirements and regulations of his/her financial aid status (grace period, repayment, etc.) prior to granting the LOA. The information that will be provided will include the financial aid consequences if the student fails to return from LOA.

A student granted a LOA is not to be considered withdrawn and no return of Title IV calculation is required. If a student does not meet the LOA criteria, the student is considered to have ceased attendance from the institution and a Title IV return of funds calculation is required if the student received federal aid. For more information contact the Registrar's Office at Skyhawk Central Main Campus (505) 387-7426.

Skyhawk for Success

The Skyhawk for Success has been developed to focus on students who are experiencing difficulties such as excessive absences and/or tardiness, low test/quiz and assignment scores, incomplete homework or risk of being dropped from class. Navajo Technical University will provide appropriate early intervention and reasonable accommodation to help their student.

1. Skyhawk for Success Mission Statement: The Skyhawk for Success is developed for faculty, staff and academic advisors to work together as a team in an involved, proactive and supportive manner to increase student retention and success. It is designed to be used when additional resources are needed after faculty intervention.
2. Skyhawk for Success Goal: Our goal is to identify and effectively intervene with students who are exhibiting at risk behaviors and to establish a referral process, thus increasing retention and reducing the number of students in academic probation and/or suspension.
3. Skyhawk for Success Objectives: To improve communication between students, faculty, and academic advisors; to encourage students to use available student support services; more importantly, to improve student academic success.
    a. Graduation Rates
    b. Retention Rates
    c. Job Placements
    d. Student Satisfaction

Forms may be found at http://www.navajotech.edu/skyhawk-for-success on the Navajo Technical University website.

Contact Information:
First Year Experience Career & Academic Advisor, Office Number: (505)387-7470.

For further detailed information, please refer to the NTU Student Handbook.

Student Academic Standing

The academic progress of all enrolled students will be reviewed at the end of each semester. Students must maintain a cumulative Grade Point Average (GPA) of 2.00 or greater to remain in satisfactory academic standing and progress toward a certificate or degree, and/or to be eligible to graduate.

Academic Probation

Academic probation is a condition of student academic standing for students who fail to maintain a cumulative grade point average (CGPA) of a 2.00 by the end of the current semester. If a student's CGPA is 1.99 or below at the end of the semester, that student will be placed on academic probation. The Registrar will notify the student in writing that he/she is placed on academic probation and will refer the student to the Academic Advisor/Counselor. A student placed on academic probation will not be allowed to pre-register for the next semester, unless approved by the Academic Advisor/Counselor. A probationary contract will be developed to include mandatory counseling and tutoring. The student will be given two semesters (summer session is considered as a semester) to bring his/her cumulative grade point average to a 2.00 or better. If the student raises his/her CGPA to a 2.00 or better within the allotted time, he/she will be removed from academic probation status the following semester or summer session.

NOTE: Transfer students who were on academic probation at another institution will be placed on probationary status therefore requiring mandatory counseling and tutoring.

Academic Suspension

If the student does not meet the minimum cumulative GPA of 2.00 by the end of the second consecutive semester (or summer session) while on academic probation, he/she will be placed on academic suspension the following semester and will not be allowed readmission for one semester. The Registrar will notify the student in writing that he or she is placed on academic suspension. The student can reapply and request in writing for re-admission to the Registrar but will remain on suspension until he/she raises his/her CGPA to 2.00 or better and are ineligible for any federal student aid. If allowed readmission, the student will be referred to the Academic Advisor/Counselor and placed on an Academic Contract to include mandatory tutoring and counseling.

Right to Appeal

Students wishing to appeal academic probation or suspension must do so in writing to the Dean of Undergraduate Studies within ten (10) working days of the postmark of the letter.

The Dean of Undergraduate Studies will review the documents and reply with a decision within ten (10) working days of receiving the appeal. The Dean's decision is the final decision.

NOTE: Student Financial Aid Probation and Suspension Appeal procedure is explained in the Financial Aid Policy section of this catalog.

All students including Veterans follow the Student Academic Standing and also meet the Satisfactory Academic Progress under Financial Aid.

Grading Standards

The letter grade of A, B, C, and D indicate passing grades. A grade of D, however, is not transferable to another higher education institution, nor does it allow the student to progress to the next level course in that subject area at NTU.

A grade of incomplete (I) is considered none passing grade and does not result in earned credits.

Grading System

The following letter grades and grade points are used at NTU:

Letter Grade	Percentages	Description	Grade Points
A	90 - 100%	Excellent	4
B	80 – 89.9 %	Above Average	3
C	70 – 79.9 %	Average	2
D	60 – 69.9 %	Below Average	1
F	Less than 60%	Failure	0
I		Incomplete	None
C/NC		Credit/No Credit	None
W		Withdrawal	None
AU		Audit	None
CR		Credit by Examination	None
P/F		Pass/Fail	None

Incomplete

An "I" may be issued when unforeseeable circumstances beyond the student's control prevent the student from completing course requirements. Incomplete grades will not be authorized when the student has failed to complete course requirements or has earned a failing grade due to personal negligence. An incomplete grade must be converted to a credit grade by satisfactorily completing the required assignments within the adjusted deadline (arranged between the instructor and student) of the following semester. A student does not have to reregister for the course if completed within the stated deadline. The Incomplete grade must be converted by the next semester otherwise the "I" will automatically convert to an "F". The instructor must complete and submit an *Incomplete Form* to the Registrar's office.

Audit

An Audit (AU) is awarded for class participation and does not indicate proficiency in the subject matter. Course credit is not included in the GPA or cumulative GPA. Forms are available at the Registrar's Office. Audit courses accumulate charges as a regular course. Audit courses are counted towards attempted hours but not eligible for federal student aid.

Advanced Placement (AP) Credit

Students who have taken an Advanced Placement Exam and earned composite scores of 3, or higher may be granted credit. Credit will be designated as a grade of CR for credit but will count toward graduation, and may be used in fulfilling specific curriculum requirements. The Program Department Chair in which the course is offered will determine the amount of the credit and the equivalent university courses for which credit will be granted. See Registrar's Office for specific courses and approved scores.

Continuing Education Units (CEU)

Continuing Education Unit (CEU) is designed and awarded to individual participation in non-credit continuing education and professional activities. One CEU unit is equivalent to ten (10) classroom hours in a lecture or laboratory format. An instructional contact hour is defined as sixty (60) minutes, excluding breaks. Student will receive a grade of P (pass) or F (fail).

Course Withdrawal

Used for student, instructor and/or administrative withdrawals from a course before the withdrawal deadline date.

Credit/No Credit

A Credit or No Credit (NC) grade will be issued for a course that did not have credits or Pass/Fail grade. This grade is not factored into the student's GPA.

Pass/Fail

Some courses are graded on a pass/fail basis and will not be included in the computation of the GPA.

Course Repeat

NTU's Course Repeat Policy permits a student to repeat a course and to have the grade for the repeated

course computed in his/her GPA in place of the original grade. Normally, course repeat only applies to a specific course that a student chooses to repeat. The repeated course must be taken under the standard grading system (A-F) and the latest grade must be "C" or higher. Grades of "W" are not permitted. All grades shall remain on the student's transcript. The original course grade will be annotated with "R" to indicate that the course has subsequently been repeated.

This applies to courses with identical course abbreviations and numbers except for the following: topics or cooperative educational courses, and when course abbreviations and numbers change as a result of new programs and/or program revisions. Students who are repeating courses that had a grade of "D" or "F" for the third time will not be eligible for financial aid assistance and have to pay for the course(s) on their own.

NOTE: The NTU Course Repeat applies only to courses originally taken at NTU and repeated at NTU.

Grade Changes

All discussions regarding grade changes should be directed to the instructor of the course in question. Any change in grade must be submitted within (6) months after the original grade was issued and prior to graduation. If there is a grading error, the instructor must submit a grade change to the Dean of Undergraduate Studies for approval. The Dean of Undergraduate Studies will forward the approved Grade Change form to the Registrar who will record the grade and update the student's transcript.

Grade Appeal

Students who believe they have received a grade in error should informally meet with the instructor to determine if a clerical error has occurred. If the instructor has erred in submitting the grade, the instructor will submit a grade change form with the Registrar's office. If the error occurred due to a clerical error in the Registrar's office, the instructor should request that the grade be corrected. If discussions with the instructor do not resolve the issue, and the student believes he/she has a justifiable grade appeal, he/she should submit a Grade Appeal form. Any appeal of a grade by a student must be initiated no later than the end of the semester following the semester in which the grade was awarded. Summer session grades must be appealed before the end of the fall semester following the summer class. Forms are available in the Registrar's Office.

The grade appeal process:

1. The student must submit a Grade Appeal form with supporting documents to the Dean of Undergraduate Studies and a copy to the Registrar's Office for record keeping.
2. The Dean of Undergraduate Studies will review the appeal and assign a committee to investigate.
3. The committee will request a copy of the syllabus and documentation pertaining to attendance and grades, and a copy of the student's Grade Appeal form.
4. After investigation, the committee will submit a report to the Dean of Undergraduate Studies of the findings.
5. The Dean of Undergraduate Studies will make a final decision. A report of the final decision will be placed in the student's master file located in the Registrar's office.
6. The student will be notified of the decision.

Petition for Course Substitution

All students are expected to satisfy all NTU certificate and degree requirements. However, under certain circumstances, substitutions for required courses may be necessary and appropriate. To initiate a course substitution, students should complete the "Course Substitution" form with approval from his/her advisor and the Dean of Undergraduate Studies, which must then be submitted to the Registrar's office. This form can be obtained from the Registrar's Office.

Independent Study

Under unusual or special circumstances, a student and instructor of a regular University course may adapt the course to an Independent Study. The arrangement is subject to approval of the Department Chair and the Dean of Undergraduate Studies. Registration for an independent study course must be completed and approved no later than the last day of Drop/Add. Department Chairs will determine which courses are eligible for Independent Study. Forms are available at the Registrar's office.

A full-time faculty member may supervise and offer an independent study courses during a semester or summer session and is restricted to no more than two

graduating students. No more than six credit hours may be taken in any one semester.

- The student must agree in writing to a syllabus that outlines the learning objectives, texts, course requirements, evaluation criteria, meeting dates and examination dates for the course. A final assessment or examination is required for independent study courses. However, the role of final examinations for independent study courses may vary based on the intended outcomes for the course. Department Chairs can approve a nontraditional final examination in such cases *(e.g., a portfolio of the student's work, a thesis or substantial paper, a take-home examination)*.
- Students should devote a minimum of three hours each week for each credit hour of independent study, or at least nine hours per week for a three-credit independent study course.
- The student has a term grade point average of at least 2.50 from previous term.
- The student should not be on academic and financial aid probation status during the semester that the student would take the program course through independent study.

Honors and Awards

At the end of every term, students who have maintained a cumulative GPA of 3.50 or above are recognized for their achievement.

The Honors List recognizes academic excellence on a semester to semester basis. The student must be enrolled full time in a certificate or degree program, have completed 12 or more credit hours, received no grades of "I", have no violations of any NTU policies, have maintained good class attendance, and be in good academic standing. Honors List will be determined by the Registrar's office and confirmed by the Dean of Undergraduate Studies.

Presidential Honor List: Students must achieve a cumulative grade point average of 4.00.
Dean's Honor List: Students must achieve a cumulative grade point average of 3.50 to 3.99.

Graduation Honors: At the graduation ceremony, students who have achieved a cumulative GPA of 4.00 will be recognized with a blue honor cord and students who have achieved a GPA of 3.50 to 3.99 will be recognized with a gold honor cord.

Graduation with Honors for Baccalaureate Degrees:

Summa Cum Laude: Graduates with a cumulative GPA of 3.90-4.00
Magna Cum Laude: Graduates with a cumulative GPA of 3.70-3.89
Cum Laude: Graduates with a cumulative GPA of 3.50-3.69

American Indian Higher Education Consortium Student Congress Outstanding Student of the Year

A student is nominated based on his/her academic and personal achievements within the guidelines provided by the American Indian Higher Education Consortium (AIHEC). This student represents NTU at the national level and is eligible to receive a monetary award. The recipient is also recognized at and participates in the NTU graduation ceremony. The Financial Aid Office is responsible to receive all nomination packets and submit to the President for review and final selection.

Catalog under Which a Student May Graduate

Students who have been admitted are to follow the catalog program requirements in effect at the time of their initial enrollment unless they have withdrawn (i.e., "stopped out") and returned after two semesters or changes are required for certification requirements or licensures. In such cases, the current year catalog applies and students are expected to follow the requirements for completion of their certificate or degree. To maintain the catalog program requirements in effect at the time of their initial enrollment, students must remain in continuous attendance. Continuous attendance is defined as attendance in at least one course at NTU for one semester in any one calendar year. Students may choose to qualify for graduation under the requirements in effect either: at the initial enrollment or during subsequent terms of continuous enrollment.

Note: Students who have been academically disqualified may lose continuous attendance rights.

Graduation Requirements

To be eligible for graduation and participation in commencement exercise, students must meet the requirements for a degree or certificate.

- Meet with an advisor to complete the certificate/degree checklist and graduation petition.
- Submit the completed graduation petition and

certificate/degree checklist with the Registrar's Office prior to the deadline (according to the NTU calendar). The Registrar will audit the graduating candidate's course/grades and recommend eligibility for graduation according to curriculum requirements as stated in the catalog.

- Pay in full all outstanding accounts to the University. All financial obligations must be cleared before being issued a certificate or degree.

- Return all Library books and checked out materials.
- Return any other equipment (i.e. laptops, tablets, etc.) and materials that are the property of NTU.
- Complete the university exit survey and the student career graduate survey.

It is the responsibility of the student to complete all graduation requirements and submit a petition to graduate to begin the auditing process. Participation in the commencement exercises does not mean that a student is considered a graduate.
Note: The official graduate list of candidates is presented to the NTU Board of Regents for approval.

Issue of Degree or Certificate

Certification of final approval for a degree or certificate will be placed on the student's official record at the end of the semester when all requirements have been completed and final grades certified. Degree and certificate documents are mailed to students after the semester concludes when all final grades are certified and all financial records are cleared. Students must have a cumulative grade point average of 2.00 or above and must meet all minimum course grade requirements as set forth in this catalog for the specific degree or certificate sought. For further information, contact the Registrar at (505)387-7365.

Note: Students with outstanding accounts will not be awarded their official transcript, certificate or degree until payment is complete.

Graduation Attire

Appropriate university cap and gown are required for the commencement exercise. Traditional attire may be worn under the gown and is encouraged. The cap and gown signify the completion of a college degree or certificate program. In respect to the earned degree the following was adopted by the university.

- *Certificate Program*: Students wear the traditional caps and gowns in red.
- *Associate Degree*: Students wear the traditional caps and gowns in Black
- *Bachelor Degree*: Students wear the traditional caps and gowns in White *Master Degree*: Students wear the Master cap and gown in Black with Master Hoods in school colors.

FINANCIAL AID

Financial aid is provided to eligible students in the form of grants, part-time work, and scholarships to help pay the cost of attending college. Students enrolled in an eligible certificate, associate, or bachelor degree programs are encouraged to apply for financial aid to offset their cost of attendance. NTU administers federal, state, tribal, institutional grants and scholarship programs to assist students based on their financial need and/or academic merit. NTU provides equal opportunity for financial assistance to eligible students through federal, tribal, state, institutional, and private sources regardless of sex, color, age, or other circumstance.

Student must have a high school diploma or equivalent, and must be a U.S. citizen or eligible non-citizen. Male students must comply with Selective Service registration requirements. All students must complete the following as early as possible:

- Free Application for Federal Student Aid (FAFSA) online at www.fafsa.gov. The FAFSA/ISIR response will determine a student's Expected Family Contribution (EFC).
- Additional financial aid information is available at NTU's Financial Aid Office and online at http://www.navajotech.edu.

To speak with a financial aid officer on campus, please call the Financial Aid Office at (505) 387 - 7442 or (505) 387-7417. The Financial Aid Office in Chinle is (928) 882-3137.

Cost of Attendance (COA)

Navajo Technical University has established a cost of attendance (COA) for Dependent and Independent students as well as for students living in Residence Life on main campus. The Pell Grant award is based on the COA and student/parent's EFC – expected family contribution; therefore, no two student's awards are exact. An estimated cost of attendance (COA) for an On-Campus student living in the dorm/Residence Life for one semester:

Estimated COA	
Tuition and Fees	$1,180
Books and Supplies	$1,300
Room and Board $1,140 + $1,680	$2,820
Transportation	$ 800
Personal	$1,250
Total Estimated COA:	**$7,350**

- Direct costs for student in dorm: Tuition & Fees, Books & Supplies, including learning device (laptop) and Room & Board.
- Indirect costs: Transportation and Personal expenses.

Estimated Award: On Campus student, enrolled Full-time and EFC = 0

Estimated Award			
Pell Grant	$3,248	COA	$7,350
Navajo Nation	$2,500	Less Total Aid	$5,748
Total Aid	**$5,748**	**Unmet Need**	**$1,602**

Award Amounts vary based on several factors:

- Enrollment Status
- Expected Family Contribution (EFC)
- Satisfactory Academic Progress (SAP)
- Program of Study – Degree Program
- Dependent or Independent
- Child care expenses

Undergraduate	
Enrollment Status	**Credit Hours**
Fulltime	12+
Three Quarter	9 to 11
Halftime	6 to 8
Less than Halftime	1 to 5

Satisfactory Academic Progress Policy (SAP)

Federal regulations require NTU to establish satisfactory academic progress standards for students who are receiving Title IV financial assistance and Veteran's Benefits. NTU's Financial Aid Office reviews grades at the end of each semester for certificate program and the end of each semester for all programs. Measures in satisfactory academic progress are in the following areas: grade point average (GPA), completion rate or pace, maximum timeframe and Pell Lifetime Eligibility.

Students receiving financial aid and Veteran's Benefits must make satisfactory academic progress toward the completion of a certificate or degree program. NTU has both a qualitative and quantitative measure of academic progress:

Qualitative Standard:

- Minimum grade point average (GPA)

Quantitative Standards (Pace):

- The maximum timeframe a student has to complete a degree,

- A minimum percentage of courses attempted must be passed, and
- A maximum number of courses from which a student is allowed to withdraw or drop.

Semester Hour Load	67% Minimum Completion Rate per Semester
Full-Time (12 Credits or more)	Must satisfactorily Complete 8 credits
Three-Quarter Time (9-11 Credits)	Must satisfactorily Complete 6 credits
Part-Time (6-8 Credits)	Must satisfactorily Complete 4 credits
Less than Half-Time (1-5 Credits)	Must satisfactorily complete the number of hours funded

NOTE: Grades of F, I, W, or IP are not accepted as passing and could affect eligibility for future financial aid. (See "Student Academic Standing" in this Catalog).

Financial Aid Warning

Recipients of financial aid will receive a financial aid warning notice after any semester in which their semester/term grade point average falls below the **Completion Rate/Pace"** and/or they fail to satisfactorily complete 67% of the credit hours in which they are enrolled.

The financial aid warning letter serves as a **WARNING** to the student that he/she did not maintain satisfactory academic progress during the most recent semester of attendance at Navajo Technical University. Failure to meet one of the academic progress standards for one semester results in financial aid warning. **Students on financial aid warning are eligible for Title IV Funds.** Students will be removed from warning status after completing the following semester in good academic standing.

Financial Aid Suspension

Recipients of financial aid will be suspended from aid if they fail to meet the semester grade point average and/or to complete 67% of their enrollment for TWO (2) semesters of academic coursework. Failure to meet one of the academic progress standards for two consecutive semesters may result in financial aid suspension. Students on financial aid suspension are not eligible for Title IV Funds.

Reinstatement of Financial Aid Eligibility

A student may lose federal and institutional aid eligibility because he/she is not meeting the SAP GPA or Pace standards.

A student may regain eligibility in one of the following ways:

1. Submit a Satisfactory Academic Progress (SAP) Appeal Form with supporting documentation. A student must be advancing toward a degree and show progress within the SAP Academic plan for graduation.

   Financial Aid Probation: If student's FA Suspension appeal is approved, the student will be awarded on a Financial Aid Probation Status and must complete all credits with a 2.0 grade point average, otherwise, he/she will go on FA Suspension and cannot submit another SAP Appeal.
2. Complete one semester using his or her own resources. Courses taken must be chosen in consultation with an Academic Advisor. A student must advance toward attaining a degree and adhere to the Degree Checklist.

Once eligibility is restored, a student will be awarded aid for the following terms, subject to availability of funds.

SAP Impact of Course Repetition, Withdrawals, Incompletes, Transfer Credits, or Changes in Major

Course Repetition

Repeat credits are applied when a student repeats a course in order to improve a grade. Students are allowed to repeat any previously passed course and have it count toward enrollment for financial aid eligibility only once. Each attempt at the course, however, will count toward a student's pace and maximum timeframe.

Official Withdrawal

A school's SAP policy cannot exclude "W" grades in SAP reviews. Withdrawal hours are assigned when a student withdraws from a class after the drop period. Withdrawal hours count as credit hours attempted toward both pace and maximum timeframe.

Unofficial Withdrawal

An unofficial withdrawal occurs when a student does not successfully complete any courses (receives all "F" grades), stops attending classes, or did not complete any coursework. A student with an unofficial withdrawal may be required to repay up to 50% of his/her financial aid received for the term. Students who never attended any of their classes and

did not complete any course work are required to repay 100% of the financial aid received for the semester or summer term. Non-attendance does not relieve students of the financial responsibility for tuition charges once they are registered for a class.

Incompletes
Incomplete (I) is a temporary grade that is assigned only in exceptional circumstances. It will be given only to students who cannot complete the work of a course on schedule because of illness or other circumstances beyond their control. Once an official grade is received, students should notify the Financial Aid Office.

Transfer Credits
Coursework taken at another institution that is accepted and officially transfers as transfer credit by NTU will count as both attempted and completed credit hours toward pace and maximum timeframe. Students who exceed the maximum timeframe can submit a SAP Appeal to determine if their aid can be reinstated.

Change in Major
Students who have changed majors or are pursuing a second degree may reach their maximum timeframe before their program of study is complete. All credits attempted are treated in the quantitative, qualitative, and maximum timeframe standards for SAP.

Additional Degree(s)
A student who already has an equivalent of an AA or AS degree (or higher) does not qualify for additional Pell Grant funds unless he or she is seeking a Bachelor's degree.

An example: A student earns an AA degree from UNM-Gallup and transfers to NTU. The transfer student must be seeking a Bachelor's degree to qualify for additional Pell Grant (see Maximum Timeframe).

Repeat
Students may repeat courses previously taken at NTU to better their understanding or to improve their grade. A transcript shows that the course was repeated, but only the higher grade is used to compute the student's Cumulative Grade Average.

Retake
Courses may be retaken, but only one retake of a course counts towards a student's eligibility for financial aid purposes.

Changes That May Impact Eligibility (Consolidated Appropriations Act of 2012: Effective July 1, 2012)

Federal Pell Grant Duration of Eligibility
Beginning award year 2012–2013, the duration of a student's eligibility to receive a Federal Pell Grant is reduced from 18 semesters or its equivalent to 12 semesters or its equivalent. The calculation of the duration of a student's eligibility will include all years of the student's receipt of Federal Pell Grant funding.

Pell Grant Lifetime Limit
Beginning Fall 2012, students are now limited to receiving 12 semesters of Pell Grant eligibility during their lifetime. This change affects all students regardless of when or where they received their first Pell Grant. Students may view their percentage of Pell Grant used by logging into www.NSLDS.ed.gov. Your 'Lifetime Eligibility Used' percentage will be displayed in the 'Grants' section.

Completion Rate/Pace & Maximum Timeframe

(Effective: Fall 2015)		
Classification	**Credit Hours**	**GPA**
Freshman	0-32	2.0
Sophomore	33-64	2.0
Junior	65-96	2.000
Senior	97-128	2.000

Maximum Timeframe/Pace
The US Department of Education places a credit hour limit on funding for all financial aid students. Funding is available until a student has reached 150% of the credit hours required to complete their program. This includes all double majors, additional degrees, repeat credits, and transfer credits (example: AS in Early Childhood Multicultural Program = 70 credits × 150% = 105 credit hour maximum timeframe)

Paying Prior-Year Charges
In general, FSA funds may only be used to pay for the student's costs for the period for which the funds are provided. However, a school may use current-year funds to satisfy prior award year charges for tuition and fees, room, or board (and with permission, educationally related charges) for a total of not more than $200. A school may not pay prior year charges in excess of $200.

FAFSA Help or Questions

For general information about the Free Application for Student Financial Aid (FASFA), or to obtain Federal Student Aid publications, call this toll-free number**: 1-800-4-FED-AID (1-800-433-3243)**

To check on the processing of your federal student financial aid application, or to request a copy of your Student Aid Report (SAR) call: 1-800-433-3243 TYY for Deaf or Hearing-Impaired call 1-800-730-8913.

The FAFSA school code for Navajo Technical University is **016119**.

VA Educational Benefits

Navajo Technical University supports our Veterans who served by providing certificate and degree programs. Veterans considering applying for GI Bill® benefits should go online: www.benefits.va.gov to access the e-Benefits: https://www.va.gov/education/how-to-apply/ to complete their VA form 22-1990. The NTU Financial Aid Officer will then certify those courses that are on the certificate or degree plan. Any questions regarding education benefits should be addressed to the call center at 1-888-442-4551 Monday-Friday from 7am – 6pm CST (Central Standard Time). The Navajo Technical University Veteran School Certifying official is located at the Skyhawk Central One-Stop Shop, 505-387-7428.

Financial Aid Websites:

Student Guide	**http://studentaid.ed.gov/students/publications/student_guide/index.html**
FASFA	**http://www.fafsa.ed.gov/**
Federal Student Aid	**http://studentaid.edu.gov/PORTALSWebApp/students/english/index.jsp**
American Indian College Fund	**http://collegefund.org**

Return to Title IV (Refund & Repayment Policy)
If students receiving federal financial aid withdraw from the University, the amount of the financial aid to be repaid or refunded is calculated using a formula supplied by the U.S. Department of Education. The last day of attendance is used to calculate the total amount to be repaid. A refund is the difference between the amounts paid toward institutional cost (including financial aid and/or cash paid) and the amount the school may retain under the appropriate refund policy. See the Financial Aid Student Handbook for detailed information on the Title IV Refund/Repayment policy.
The order of refund of Title IV funds to the programs from which the student received aid during the payment period or period of enrollment is in the following, up to the net amount disbursed from each source:

1. Unsubsidized Federal Stafford loans*
2. Subsidized Federal Stafford loans*
3. Unsubsidized Direct Stafford loans (other than PLUS loans)
4. Subsidized Direct Stafford loans
5. Federal Perkins loans
6. Federal PLUS loans
7. Direct PLUS loans
8. Federal Pell Grants **for which a return of funds is required**
9. Federal Supplemental Educational Opportunity Grant (FSEOG) **for which a return of funds is required**
10. Federal TEACH Grants **for which a return is required.**

NOTE: *Navajo Technical University does not participate in the Federal Student Loan Program and will not certify enrollment or share information with potential lenders.

Federal Work Study Program (FWS)

FWS is a federally-funded program and a part of the Title IV student aid funds. It provides jobs for students with financial need, allowing them to earn money to help pay for their education expenses.

Student Consumer Information

NTU provides current information through annual publications on students' rights and responsibilities concerning financial aid. Students may request copies of the Financial Aid Student Handbook and the Student Guide at the Financial Aid Office in person, by mail, by telephone, or online at www.navajotech.edu.

Financial Aid Appeal Process
Students who fail to maintain satisfactory academic progress and are notified of financial aid suspension may appeal to be eligible for federal funds. The Financial Aid Officer or the FA Committee will review the appeal(s). An appeal should be based on

extenuating circumstances and documented by the student; i.e. hospitalization, accident, death in the family, etc. The results of the appeal will be sent to the student following consideration and decision. Information and forms are available at the Financial Aid Office or online at www.navajotech.edu.
NOTE: Students are encouraged to seek other available resources.

Financial Aid Office Location/Contact

The Financial Aid Office is located in the Skyhawk Central Building at the Main Campus and at the Chinle NTU Site. For More Information, Call:

Grants and Scholarships

Students applying for these scholarships must complete a FAFSA. These scholarships are established by public sources and private donors. Support is based on the availability of funds.

Navajo Nation Scholarship and Financial Assistance (ONNSFA)

For ONNSFA requirements, see ONNSFA Policies and Procedures online at www.onnsfa.org. All applicants must apply at their respective agency.

Crownpoint Agency
Email: onnsfacrownpoint@navajo-nsn.gov
PO Box 1080
Crownpoint, NM 87313
Toll Free: (866) 254-9913
Fax Number: (505) 786-2178

Ft. Defiance Agency
Email: onnsfacentral@navajo-nsn.gov
PO Box 1870
Window Rock, AZ 86515
Toll Free: (800) 243-2956
Fax Number: (928) 871-6561

Shiprock Agency
Email: onnsfashiprock@navajo-nsn.gov
PO Box 1349
Shiprock, NM 87420
Toll Free: (866) 223-6457
Fax Number: (505) 368-1338

Tuba City Agency
Email: onnsfatubacity@navajo-nsn.gov
PO Box 370
Tuba City, AZ 86045
Toll Free: (866) 839-8151
Fax Number: (928) 283-3215

Chinle Agency
Email: onnsfachinle@navajo-nsn.gov
Office of Navajo Nation Scholarship &
Financial Assistance - Chinle Agency
P.O. Box 2358 Chinle, Arizona 86503
Toll free: 1-800-919-9269, Fax: (928) 674-2331
Website: www.onnsfa.org

Navajo Nation Chapter Scholarships

Navajo Nation Chapter Assistance is available at each chapter throughout the Navajo Nation. Check with your local chapter for requirements.

Utah Navajo Royalties Holding Fund

Crownpoint Campus	Chinle Site
Phone: 505-387-7442 or 387-7417 Fax: 505-786-5644	Phone:928-882-3137 Fax: 928-882-3162

The Utah Navajo Trust Fund makes financial aid available to Navajo residents of Utah. The office is located in Blanding, Utah. Applications are available at the Financial Aid and Scholarship Office.

Other Scholarships

Many organizations such as churches, businesses, and civic groups offer scholarships each semester. Others receive assistance from employers, credit unions, corporations, foundations, or professional associations.

The Financial Aid and Scholarship Office have information about the following:

1. American Indian College Fund (online application only)
2. American Indian Education Foundation / National Relief Charities
3. American Indian Services
4. Cobell Scholarship
5. American Indian Graduate Center
6. Indian Health Services Scholarships
7. Tom Davis Scholarship
8. PNM Scholarship
9. AMP Scholarship
10. Other Tribal Scholarships
11. New Mexico Lottery Success Program

TUITION AND FEES:

Navajo Technical University (NTU) tuition and mandatory student fees are approved annually by the Board of Regents. A student registering for courses at NTU will be charged tuition and mandatory fees, and may also be charged other fees such as an online fee or lab fee.

Part time students incur a technology fee, library fee and tuition.
Full time students incur a technology fee, library fee, athletic fee, activity fee and tuition.

Cost	One Semester w/CIB	One Semester non-CIB	Two Semesters w/CIB	Two Semester non-CIB
Tuition Full time (up to 15 Credit Hrs)	$876	$1,752	$1,752	$3,504
Overload (16+ Credit Hrs) and Part-Time (Up to 11 Credit Hrs)	$73.00/Credit Hour	$146.00/Credit Hour	$73.00/Credit Hour	$146.00/Credit Hour
Activity Fee	$ 50	$50	$ 100	$100
Technology Fee	$ 50	$ 50	$ 100	$ 100
Library Fee	$ 50	$ 50	$ 100	$ 100
Athletic Fee	$ 50	$ 50	$ 100	$ 100
Online course Fee	$ 35	$ 35	$ 35	$ 35
Total	$1,076	$1,952	$2,152	$3,904

Tuition
The Tuition Fee is a charge for instruction at NTU for students enrolled in a credit program.

Activity Fee
The Activity Fee assessed funds students for non-academic student services within each campus – Crownpoint, Chinle, Kirtland, and Teec Nos Pos sites. The activity fee covers the cost of social, recreational activities including events held throughout the year. These funds are held as fiduciary funds.

Technology Fee
The Technology Fee assessed funds technology initiatives including 1) to acquire, install and maintain up-to-date and emerging technologies for the purpose of enhancing student-learning outcomes; 2) to provide equitable access to technology resources, and 3) increasing the number of technology-enabled classrooms, reducing dependence on computing labs and expanding and improving online self-service environment.

Library Fee
The Library Fee assessed funds the cost of operating and maintaining the library, and electronic resources on NTU campuses.

Athletic Fee
The Athletic Fee assessed to students supports the maintenance and upkeep of facilities that are regularly available to all students either participating as individuals or in University activities; NTU is a recognized member of intercollegiate athletic associations.

Online Course Fee
The Online Course Fee assessed funds on-line courses that covers cost of technology, academic and student services related to online instruction.

Program Fee
The Program Fee assessed to students who are taking courses which require additional program fees (special equipment, key, special technology) associated with a course.

Lab Fee
The Lab Fee assessed to students who are taking courses which require lab work.

Out of state tuition does not apply since tuition at NTU is based on whether or not a student is an enrolled member of a federally recognized tribe.

Enrolled Members with a census number or enrollment number (CIB) of a federally recognized tribe.
Non-enrolled members or no enrollment number (NON-CIB)

Since books and supply costs vary from program to program and year to year, costs for books and supplies are calculated separately from tuition rates but still apply as part of the total cost of attendance.

Commercial Driver's License (CDL) Fees:

Course Tuition Cost (18 credit hours)	$1,155.00[1]
	$2,310.00[2]
NM State Driver's Exam Fee	$ 160.00
CDL License Transfer Fee	$ 16.00
Examination Fee	$ 5.00

Program Fees:
All Students will be charged a $125.00 Program Fee per semester.

Lab Fees: $125.00 per applicable course unless stated in course description (students should check college catalog course description to determine which courses require lab fees).

Efficiency Apartment Fees:
Administrative Operation Fee
$1,300 per semester
$ 81.25/week summer session

Student Family Housing:
Administrative Operation Fee
$ 500.00 per month (Fall/Spring/Summer)

Meals:
Breakfast, Lunch and Dinner cost are as follows:

Meal Plan	$9.00 per meal
No Meal Plan	$10.00 per meal

Note: Students may sign-up for a meal plan with the Cafeteria during orientation week.

NTU Childcare Services:

	FULL TIME (4 hours or more)	**PART TIME (3 hours or less)**	**Employees/ Community Rates**
Infants (6-12 Months)	$800.00 Per child Per Fall/Spring Semester	$400.00 Per child Per Fall/Spring/ Summer Semester	$ 20.00 Per Child (4 hours or more) $ 4.00 Per Hour (3 hours or less)
Young Toddlers (13-24 months)	$750.00 Per child Per Fall/Spring Semester	$375.00 Per child Per Fall/Spring/ Summer Semester	$ 20.00 Per Child (4 hours or more) $ 4.00 Per Hour (3 hours or less)
Older Toddlers (24-36 months)	$700.00 Per child Per Fall/Spring Semester	$350.00 Per child Per Fall/Spring/ Summer Semester	$ 20.00 Per Child (4 hours or more) $ 4.00 Per Hour (3 hours or less)
Preschool (3-5 years old)	$650.00 Per child Per Fall/Spring Semester	$325.00 Per child Per Fall/Spring/ Summer Semester	$ 20.00 Per Child (4 hours or more) $ 4.00 Per Hour (3 hours or less)
Afterschool (6-9 years old)	$300.00 Per child Per Fall/Spring Semester	$150.00 Per child Per Fall/Spring/ Summer Semester	$ 20.00 Per Child (4 hours or more) $ 4.00 Per Hour (3 hours or less)

Additional Fees:

Sibling Discount**:** (brother or sister in same household).

- 10% - Full Time per semester
- 5% - Part Time per semester

Discount applies to all NTU full time, part time students, NTU faculty, staff, and community members. Does not apply to Navajo Nation Child Care Fund Program (CCDFP) clients.

Administrative Fee:

$25.00 per child. Due at Registration

Note: Child Care Tuition and Fees, and Administrative Fee are non-refundable and subject to change without notice.

MISCELLANEOUS UNIVERSITY FEES:

Key Replacement	$ 25.00
I.D. Card Replacement	$ 25.00
Official Transcripts (Each)	$10.00
Reprint of Diploma through *Parchment*	$ 10.00
Accuplacer Retesting Fee	$ 50.00
Accuplacer Remote Voucher Fee	$ 25.00
Transportation Fee (Semester)	$425.00
Late Registration Fee	$ 50.00
VET and Nursing Examination Fee (estimate)	$100.00-300.00

Note: *Fees are subject to change. Other lab fees not listed will vary per course if required.*

REFUND POLICY

Students who officially withdraw or drop courses are entitled to a partial tuition refund depending on date of withdrawal. All additional fees are non-refundable. Any refunds due to the student will be processed by the NTU Business Office and approved by the Registrar and Finance Director. Refund checks will be mailed to the student once processed. Refunds amounts are calculated according to the following guidelines:

Tuition and Course Fee and Residential Fee Refunds/Credits

Tuition will be refunded or credited to a student's account according to the following schedule which is based upon the regular semester schedule:

- 100% refund – before instruction begins
- 80% refund – 1 – 14 calendar days
- 60% refund – 15 – 21 calendar days
- 40% refund – 22 – 28 calendar days
- 20% refund – 29 – 35 calendar days
- 0% refund – after the 35th calendar day

Summer school refund will be determined according to the number of weeks in the summer session.

Meal plan refunds/credits

The meal plan charge will be prorated per week.
A meal plan refund form must be approved by the Culinary Arts/Food Services Coordinator and Finance Director.

Book store refunds or credits

Books and accompanying disks or workbooks may be returned if items are returned in good or original condition in order to receive any refund.

STUDENT BILLING POLICY

It is the sole responsibility of the student for paying or fulfilling all financial obligations to the college prior to graduation. In absence of meeting this financial obligation, official college transcripts will not be provided to the student, potential employers, and/or other institutions of higher learning and student will not be able to receive his/her certificate or degree until the financial obligation is met.

SERVICES PROVIDED TO STUDENTS

NTU offers a variety of services to assist and support students in attaining their educational goals. These student-centered services supplement NTU's academic offerings, help facilitate learning, and empower students to succeed personally as well as academically. For an in-depth description of services, please refer to the NTU Student Handbook.

Change of Address/Name

It is very important that the student keep the Registrar's office informed of any changes made, including name, mailing and home address. To make the address/name change, forms are available at the Registrar/Admissions office. Name changes require a copy of the Social Security Card indicating the new name.

Student Identification Number

The NTU Admission Office assigns a Student ID number upon admission to the university. Student ID is required when purchasing books, meals, library and for transportation and must be available at all times for security purposes. To obtain an NTU ID, contact the Admission Office at Skyhawk Central.

Student Orientation

Student orientation is conducted at the beginning of each semester. Students are informed of NTU Policies and Procedures in order to help them become acquainted with campus life. All new and transfer students are expected to attend student orientation. It is the sole responsibility of the student to become familiar with all information regarding their status as a student at NTU.

Academic Counseling and Advisement

The Academic Counselor and Advisors coordinate with the First Year Advisor to assist in evaluating student's abilities and interests to develop realistic academic and career goals. Advisement includes academic planning, choosing a major, planning for a certificate, an associate or a baccalaureate degree, and planning strategies for academic success.

The counselor works with students placed on academic probation and a student readmitted on academic suspension and places them on contracts to work toward raising their cumulative grade point averages to include support services such as tutoring. The counselor monitors and meets with faculty to assess the progress of the student. The counselor also conducts academic support workshops. For more information, call Crownpoint campus at (505) 387-387-7462, 7365, or 387-7514 or Chinle campus at (928) 882-3139.

First Year Experience

The First Year Experience Program has been developed to strengthen the retention rate, improve operational efficiencies, communication effectiveness and long-term success of First Year students at Navajo Technical University.

- Strengthen retention rates at all campuses.
  - Work with student on Academic goals
  - Work with student on Career goals
- Help underprepared high school students for NTU
  - Advisement in Educational planning
    - Assist student in choosing a major
    - Assist student with academic planning for academic success at NTU
    - Assist student to adjusting/adapting to NTU student life
- Improve communication and effectiveness for services for First Year Students
  - work with faculty, staff and administration
    - Academic soft skills and tutoring needs
- Improve enrollment and graduation success
  - Advisement for continuing education
  - Participation in Academic Resources on campus
  - Participation in Non-Academic Counseling Resources on campus

Contact: First Year Experience Career & Academic Advisor. Phone Number: 505-387-7470

Substance Abuse and Prevention Program

The Student Substance Abuse & Counseling office is located on the second floor of the Student Wellness Center; the counselor is a professional trained to assist students in a variety of concerns, chemical dependency, interpersonal relationships, mental health, family, trauma and crisis situations. Services are completely confidential and are for NTU students only.

Services included, but are not limited to:
1. One-to-one counseling
2. Screening for a variety of mental health issues
3. Chemical Dependency Services
4 Workshops, events, and activities
5. Referrals to outside agencies (traditional provider)

Students may schedule appointments or stop at the Counseling Center Monday-Friday 8:30am to 4:00pm. Student Wellness Center, Room 214
24-hour number (505) 387-7473

Career Services

Career advisement is offered to provide guidance to students in selecting a career path which is consistent to the student's academic program at NTU. The career advisor uses a computer-based pre-assessment to evaluate the student's, interests, skills, and aptitude to identify his/her career competencies.

Internship Program

Some programs require an internship where students have the opportunity to apply practical, job- specific skills in an actual work situation in cooperation with businesses in the private and public sector. Students enrolled in these programs must complete their internship to qualify for graduation. The student must meet with the advisor and assigned faculty advisor to begin the process of sub- mitting documents and officially registering for the course with the Registrar's Office. More in-depth information can be found in the NTU Internship Policy.

The career development program aspires to provide students with an advantage in the job market by giving them an opportunity to enrich their skills in an on-the-job learning environment. The career development program can:

- Provide students with the opportunity to develop knowledge and skills necessary for success in a career or continued education opportunities
- Offer students the opportunity to prepare for a career through on-the-job experience or a research-based learning environment
- Provide students with guidance in selecting a specific career path and/or in choosing a college to complete educational goals
- Strengthen students' employability in today's job market.

The Career/Internship Advisor may be contacted by phone at (505) 387-7372. The Career Services Coordinator's contact number is (505) 387-7372. Career Services is located on the 2nd floor of the SUB.

Accommodation Services

NTU is committed to meeting the specific needs of students with disabilities and complies with the provisions of the *Americans with Disabilities Act (ADA) of 1990* (42 U.S.C.12102) and *Section 504 of the Rehabilitation Act of 1973*. In general, the term "individual with a disability" means an individual with any disability (as defined in Sec. 3 of the *Americans with Disabilities Act of 1990* (42 *U.S.C.* 12102). Students are responsible to self- identify and discuss their disability and special needs in order to receive reasonable accommodations. To request accommodations, contact the special needs counselor at (505) 387-7396or visit Room # 225 in the Student Union Building. Employees are to visit the Human Resources Office.

Child Care Services

The NTU Child Care Services provide child care services for NTU Students. Upon availability, Child Care Services provide a nurturing environment, employs a curriculum that promote social-emotional, physical, language and cognitive development, and encourages positive parent and child interactions. Contact Child Care Services for more information. Child Care Services is located northeast of the cafeteria or call (505) 387-7466

Cafeteria and Food Services

The cafeteria provides meals for the staff, students, and the surrounding community at a reasonable cost of $10.00 per meal. The cafeteria hours are posted and open year-round with the exception of the holidays. All students are required to complete the meal plan form indicating which meals they will be eating during the semester. Meal plans must be submitted to the Food Services office during registration but prior to the last day to drop deadline. Contact number is (505) 387-7385. *Only available at Crownpoint Campus.*

Student Residential Services

NTU provides residential housing for both single students and students with families at the main campus. Students who live beyond a 50-mile radius from NTU, who are enrolled full time at NTU, and have submitted all required documents are eligible to apply, if the dorm or family housing is not filled after the second week, those full time students who applied will be considered. Security deposits are required prior to occupancy of any NTU housing facility. First preference is given to Native American students as the facilities are funded by the Native

American Housing Assistant and Self Determination Act of 1996. NTU offers efficiency apartments for single students and family housing for married students and their children. See student residential housing handbook for more information or by calling (505)387-7372, ext. 1006. Only available at Crownpoint Campus.

Parking and Transportation Services

Transportation to and from NTU campus is available to commuter NTU students at various locations which include Gallup, Farmington, Pueblo Pintado, and Chinle site. If you are requesting a specific route or additional information, please contact the Fleet Management office during registration in order to set the route schedule for the current semester. No new route or van stops will be added after the drop/add deadline. Fleet management services are subject to availability. There is a Transportation fee per Fall and Spring Semester. NTU does not provide student transportation for the summer session.

Parking is readily available and close to all classrooms. Parking Permits are available for all NTU students. Registration for a parking permit will be provided at the Fleet Management office. Navajo Technical University is not responsible for problem that arise as a result of missed rides or accidents, and or loss/theft/ or damage to personal property. Contact the Fleet Management office at (505) 387-7498 or 387-7495for information. Information is also available under the NTU website – Regional Transit with information regarding routes and deadline for enrollment for student transportation

Security

The university contracts a third party company for campus security. The officer on duty may be contacted at (505) 387-7480. Preventing a crime and protecting one another is a responsibility shared by all personnel and students on campus. Please promptly report a crime, suspicious activity, or emergencies that occur on campus. Contact Chinle Campus at (928) 882-3133.

Bookstore

The NTU Bookstore maintains a complete inventory of university textbooks and school supplies including notebooks, pens, pencils, folders, and NTU apparel. The bookstore hours are Monday – Friday, 8:00 a.m. – 12:00 p.m. and 1:00 p.m. – 5:00 p.m. Location of Bookstore is first floor of Student Union Building. Contact number is (505) 387-7497.

Nitsáhákees Bee'anooséél Student Success

Tutoring is available to all students in the Nitsáhákees Bee'anooséél Student Success Center. The center offers tutoring services and general use of computers. In lieu of structured tutoring, the facilities may be used simply as a quiet place to work on homework assignments. Hours of operation vary from semester to semester, but include some afternoons and evenings. Specific hours are posted on the entrance door and on posting boards throughout the campus. Tutorial Services is also a source of employment for students qualified for the work-study program. The NSSC is located in the Student Union Building. Contact number is (505) 387-7383.

Computer Services

Students using computers at NTU are expected to follow the Information Technology policy and procedures. Students using NTU e-mail, Internet Services, or any University software or hardware, should have an understanding that this technology is provided by NTU and is the property of NTU. The University reserves the right to review and monitor the use of hardware and software belonging to the school or personal equipment utilized on school premises. Such rights include the auditing of documents sent, received, or viewed through the Internet and e- mail. Students have no right to privacy regarding materials stored, kept, sent, or received on NTU hardware or software or personal equipment maintained on school premises. Students are not to print, display, download, or send any sexually explicit images, messages, or jokes or to visit chat rooms, message boards, or other forums where sexually explicit, offensive, or illegal issues are discussed. Violators will be subject to disciplinary action up to and including dismissal from NTU. For the protection/privacy of individual students and that of NTU, students are advised not to share passwords or provide computer access to unauthorized individuals. Students are subject to the NTU Computer and Network Usage Policy.

NOTE: *Students who vandalize, misuse, or steal any NTU property and/or equipment will be subject to disciplinary action up to or including dismissal from NTU and possibly be subject to prosecution through the Navajo Nation Courts, to include restitution to NTU.*

Library Services

The NTU Library is located on the main campus. There are tables for study and laptop use. Library users have access to research computers in the library with printing capabilities. Wireless connectivity is available for most devices throughout the building.

Library Resources

The library collections contain over 7,000+ print & non-print volumes, arranged according to the Library of Congress Classification System. The library subscribes to over forty research databases including: Academic Search Premier, Articles First, CINALH, Credo Reference, ERIC, Literature Resource Center, Newsbank, Computers & Applied Sciences, FirstSearch, Environmental Complete, Wilson Science Full-text, Wilson General Science and WorldCat. The library research databases can be accessed off-campus via NTU Library website with user id and password. Contact the Librarian for access. Students may borrow books or obtain copies of articles via the library's InterLibrary Loan (ILL) service when the requested items are not owned by the library (note: the process may take up to two weeks or less to receive materials from other libraries in our network). For more information on the services and resources available at the library, please call the circulation desk at 505-387-7469.

Distance Learning (E-Learning)

NTU's goal is to expand access to higher education opportunities for individual and community members of the Navajo Nation and others through electronically offered classes. Distance learning and online teaching technology will be used to provide relevant and timely coursework, information, and training to enhance the learning experience by removing the barriers of both time and place. Students can enroll at NTU from off-campus computer labs or at home. NTU is approved by New Mexico Higher Education Department (NMHED) to participate in the National Council for State Authorization Reciprocity Agreements (NC-SARA) and also partnered with SUN PATH and WICHE ICE. The partnership offers NTU access to the many Higher Learning online courses within the State of New Mexico and the region. Vice-versa, other Universities and Colleges would be able to enroll in our online courses. This helps with articulation and course sharing, which helps in cost savings, and ensures our students to graduate on time. All SUN ONLINE courses are Quality Matters (QM) certified. The E-Learning office contact number is (505) 387-7366.

Adult Education Program

The Navajo Technical University Adult Education Program, formerly known as GED/ABE, offers academic courses regarding learning and preparing to challenge either the office state GED or Hi-SET exams. Our goals are to provide guidance to our adult learners with a variety of innovative learning experience which will aide in transforming into a higher learning environment. We encourage, and strengthen their academic skills that will support their educational endeavors and be successful in it. In addition, they are provided the skills that adhere to our cultural teachings in the Dine Philosophy of Education that will enable them to become self-sufficient, and provide a productive lifestyle to their families, children, and community.

The Program complies with the State of New Mexico GED requirements including:

- Must be 16 or 17 years of age if you meet the following exceptions:
- Obtain and submit a permission form with consent from local school District as well as from parents or guardian. One does not need to live in New Mexico to take the GED test with the Program.
- Must complete the pre-post-tests and practice test after spending a certain amount of prescribed time required by the Program.
- The Program does not require that a student takes a GED Practice Test prior to taking an Official GED Test, however; it is recommended that a Practice Test be taken to ensure preparedness and readiness to take the Official Test.

The New GED testing is administered on computers call Computer Based Testing (CBT). The new generation of testing will be harder to pass and will include four components and will require all candidates to improve or develop their basic computer literacy skills. Four (4) subjects in the New GED Test are:

1. Reading Language Arts (RLA) - (150 minutes). Writing and Reading are combined as RLA.
2. Mathematical Reasoning - (120 minutes).
3. Science - (90 minutes)
4. Social Studies - (95 minutes)

Students must register to schedule to test which will require a mandatory GED Orientation scheduled by the Program Instructors. Students will schedule testing when referred by the Instructor.

All prior AE Program testing scores and records were erased during November 2013, and cannot be used as credit toward your diploma. The AE office contact number is (505) 387-7420.

Land Grant Program

The mission of Navajo Technical University Land Grant Program is to assist individuals and communities in making informed decisions through research and experience-based educational programs, to improve agriculture and natural resources, to improve capabilities of individuals and families, to aid communities in developing and adapting to changing conditions, and to provide developmental opportunities for youth. Land Grant staff is employed to plan, conduct, and evaluate these programs.

This community-based Extension Services program at Navajo Technical University maintains close coordination and cooperation with other area Extension Programs to provide clientele with educational programs in the program areas of Agriculture and Natural Resources, Family Health and Well Being, Community Resource Development, and 4-H Youth Development.

Land Grant programs and activities in the region of Navajo Technical University are based on identified needs of clientele. Needs assessment involves working with advisory committees, key leaders, and partnering organizations, analyzing socio-economic data, consulting with tribal and county government, collaborative planning with 1994 land-grant colleges located in Northern New Mexico, and other appropriate assessment procedures.

The Land Grant office is located on the South Campus near the corner of State Highway 371and Navajo Route 9. For more information, please call (505) 387-7418.

Student Life and Activity Office

The Student Activity Office oversees the majority of the student extracurricular activities on campus and participates in all Student Senate meetings and planned activities. The NTU Student Senate is involved in the establishment and support of student clubs as well as implementation of student activities during the semester. The office helps with arrangements for off-site activities and is responsible for all recreational equipment. The office coordinates most of the activities with the Student Senate members. Participation in campus activities require students to be in good standing status.

Other Student Organizations

- American Indian Higher Education Consortium (AIHEC) - Basketball
- American Indian Science and Engineering Society (AISES)
- National Technical Honor Society of NTU
- Skills USA

Some other activities planned for each semester include (but are not limited to) softball games, dances, cookouts, volleyball games, archery, family fun nights, and holiday-related activities. Contact the Student Activity Office coordinator by phone at (505) 786-4172. Chinle Campus: (928) 882-3133.

Athletics

NTU teams have goals to place in their conference, regional, and national championships in a variety of sports. Winning teams have become a tradition at NTU in both men's and women's sports. Community support for intercollegiate athletics at NTU has been outstanding. The caliber of coaching, the quality of uniforms and equipment, the training and medical facilities, and the opportunity to play against good competition are superior. NTU Athletic Programs aspire to the highest level of intercollegiate competition, sportsmanship and academic excellence through the University mission.

Intercollegiate Athletics for Men and Women

NTU Intercollegiate teams for men and women include Archery, Cross-country, Rodeo and Track. Winning is the goals as teams participate in United States Collegiate Archery Association (USCA), United States Collegiate Athletic Association (USCAA) and National Intercollegiate Rodeo Association (NIRA). These teams excel in their respective national associations. NTU Athletes must first follow Navajo Technical University rules and policies. Secondly, NTU Athletes must follow the applicable rules and policies of the U.S. Collegiate Athletic Association (USCAA), the USA Archery, and the National Intercollegiate Rodeo Association (NIRA). Tryout information for the men's and women's team and student athlete forms can be found on the university website under athletics.

For further information contact the Athletic Director at 505.387.7477 or the Student Life & Activities Coordinator at 505.387.7444.

Non-Competitive Wellness Programs

Walking for You (W4U)

This cardio program is for individuals to walk, jog, run, or cycle at their own pace. To complete this program an individual need to complete 30 hours of cardio exercise. When the program is complete the individual will get a certificate of completion.

Strength Training for You (ST4U)

The strength program is intended for an individual who work out and lift weights at their own pace. To complete this program an individual need to complete 30 hours of work outs. When the program is completed the individual will get a certificate of completion.

For more information, please contact the Athletic Director:

Main Campus Wellness Center
P. O. Box 849
Crownpoint, New Mexico 87313
Telephone: (505) 387-7477
Fax: (505) 786-5644

PROCEDURES, RULES, AND REGULATIONS

Visitors

Visitors are welcome at NTU. All visitors must comply with University procedures, rules and regulations.

COVID 19 Safety Protocols

Navajo Technical University strives to promote and maintain a safe, healthy learning and working environment for all of our students, faculty, staff and visitors. NTU is closely monitoring the emerging global public health concern related to the novel coronavirus (COVID-19) through trusted authorities including the Center for Disease Control and Prevention (CDC), U.S. Department of State, World Health Organization, and the New Mexico Department of Health. This webpage provides updates relevant to the NTU community along with links to various resources available to students, faculty and staff. The content will be continually updated as new information becomes available. The link to the information on the NTU website is:

http://www.navajotech.edu/coronavirus

Student Handbook

NTU has a student handbook that provides more in-depth information of services provided to students, NTU Policies, Code of Conduct, and other student related information. Students are responsible to adhere to the policies, procedures and guidelines explained in the handbook in order to demonstrate appropriate student behavior and maintain good academic standing. Failure to abide by the policies in the handbook may result in consequences which may include dismissal.

Student Complaints

Students have the right to file grievance in writing to the Dean of Student Services and/or Dean of Undergraduate Studies. The nature of the complaint must be described thoroughly, witness provided and any evidence supporting the complaint. Issues and complaints on employees are addressed directly to the immediate supervisor. Refer to the Student Handbook for procedures on reporting and/or filing complaints. An online complaint form is under the current student tab on the website.

Federal Campus Security Act (The Clery Act)

Crime Prevention: Crime prevention information is provided during student orientation and is published with the campus crime statistic information. Please report any suspicious activities or persons to the campus security. Be prepared to give locations and descriptions.

Restraining (Protection) Orders

Persons needing police assistance with the enforcement of restraining orders should provide a copy to the campus security and a copy kept on file with student records.

Insurance, Medical Emergencies, Healthcare

NTU is not responsible for property loss, damage, or personal injuries. Students are urged to obtain their own property and medical insurance coverage. The U.S. Public Health Services' Indian Health Service (PHS/IHS) is available to all Native Americans for medical services and non-Native Americans for emergency medical services. For general healthcare (non-emergency), non-Native Americans should seek a private physician.

- Crownpoint Health Care Facility is available for emergency ambulance service by calling (505)786-5291,
- NTU Campus Security (929) 507-1339, or the Navajo Police Department at (505)786-2050 or 911.
- Chinle Comprehensive Health Care Facility (928)674-7090 or 7001
- Shiprock Navajo Nation Medical Center (505) 368-6001
- Zuni Comprehensive Community Health Center (505) 782-4431

Lost and Found

Lost and found items are turned in to the Administrative Assistant's Office to the closest building item is found. Unclaimed items are disposed of 14 days after the end of each academic semester.

Phone Calls

NTU students will not be called from class to receive telephone calls or visitors except in Emergencies. Messages may be left for students by contacting the receptionist or the house monitors at the residential complex.

Student Dress Code

Students are asked to attend class dressed appropriately for the program in which they are

enrolled. Students or visitors must wear shirt and shoes to enter a NTU building.

Children

Students are not permitted to bring children to classroom or laboratory sessions. Children left unattended on campus will be brought to the attention of the appropriate enforcement agency.

Animals

Students are not allowed to have pets (except those assisting sensory impaired persons) in any campus building.

Fire and Fire Alarms

Fire alarms and smoke detectors are installed in all buildings and training facilities. Fire drills will be scheduled periodically. All students and staff are required to participate in fire drills and abide by fire alarm regulations. Evacuation routes are posted in all buildings, and students are responsible for knowing their planned evacuation route. At the beginning of the semester, students should study the route for each room in which they have class. If an alarm sounds, you will not know if it is a real fire; therefore, *all alarms must be treated as an actual fire.* **In the case of an actual fire, call 911.**

- **Crownpoint Police Station at (505) 786-2050/2051 or (505)786-7385.**
- **Chinle Police Department at (928)674-2113.**
- **Kirtland (Sheriff sub-office) at (505) 334-6107 or**
- **Shiprock Police Station at(505) 368-1350 or Shiprock Fire & Rescue at (505) 368-5719.**
- **Zuni Police Department at (505) 782-4493 or Zuni Fire Department at (505) 782-4833.**

Title IX Policy

Navajo Technical University will address all incidents of sex discrimination and sexual harassment reported to the NTU Title IX Coordinator in compliance with the Higher Education Opportunity Act, the Clery Act, and Title IX of the Education Amendments of 1972, as amended. This Title IX policy supersedes the current Title IX policy upon enactment.

NTU follows the non-tolerance guidelines for sexual harassment according to P.L. 92-318. Sexual harassment is defined as unwelcome sexual advances, requests for sexual favors, and/or verbal or physical conduct of a sexual nature which intimidates or causes fear. It is the policy of Navajo Technical University that sexual harassment is reprehensible and will not be tolerated. No student, employee, or job applicant should be discriminated against on the basis of sex. Such discrimination subverts the mission of NTU and threatens the careers of students, faculty, and staff. Sexual harassment of any type is a violation of Title VII of the Civil Rights Act of 1964 and Title IX of the Educational Amendments of 1972.

NTU is committed to creating and maintaining a community in which students, faculty, administration, and staff can work together in a humane atmosphere free from all forms of disrespectful conduct, harassment, exploitation, or intimidation. It is the intention of NTU to take corrective action needed to prevent, correct, and if necessary, to discipline behavior that violates this policy.

Any person may report sex discrimination, including sexual harassment (whether or not the person reporting is the person alleged to be the victim of conduct that could constitute sex discrimination or sexual harassment), in person, by mail, by telephone, or by e-mail, using the contact information listed for the Title IX Coordinator, or by any other means that results in the Title IX Coordinator receiving the person's verbal or written report. Such a report may be made at any time, including during non-business hours, by using the telephone number or e-mail address, or by mail to the office address, listed for the Title IX Coordinator.

The Title IX Coordinator is the Sponsored Program Manager. Contact number is (505) 387-7415. Deputy Title IX Officers have the secondary responsibility and assist in the duties of the Title IX Coordinator. Deputy Title IX Officers include the Dean of Student Services located in the NTU Student Union Building, Lower Point road, State Hwy 371, P.O. Box 849, Crownpoint, NM 87313, phone: (505) 387-1006, the Director of Chinle Site, located on the Chinle Campus, phone number (505) 387-3003 and Financial Aid Officer, Skyhawk Building, Main Campus Crownpoint, phone number is (505) 387-1070.

The Title IX policy is located on the NTU website:
http://www.navajotech.edu/title-ix

NTU Drug-Free Campus

The NTU Drug-Free Campus Policy prohibits the unlawful and unauthorized use, possession, sale, production, and/or delivery of any illicit drug, alcoholic beverage, and/or drug paraphernalia on school premises or other school locations. School premises or other school locations include any school building on or off the main campus, any school-owned vehicle used to transport students to and from school activities, any off-campus school sponsored or approved activities, events or functions, and/or during any period of time school employees are supervising students on behalf of the school or are otherwise engaged in school business. This also includes being "under the influence" or "intoxicated;" therefore, any student who is found on campus while "under the influence" or "intoxicated," will be reported to the Navajo Police.

This policy complies with the Drug-Free Schools and Campuses Act; commonly known as Part 86 of EDGAR and the American Indian Religious Freedom Act of 1978. Drug and alcohol abuse on campus poses a serious threat to the health and welfare of faculty, staff, and students, impairs work and academic performance, jeopardizes the safety and well-being of other students and members of the general public, and conflicts with the responsibility of NTU to foster a healthy environment for the pursuit of education and service.

As a condition of enrollment, any student of NTU shall abide by the terms of the Drug Free Campus Policy by signing the affidavit included in the Admission Packet. Should a student violate the Drug-Free Policy, appropriate disciplinary actions will be enforced according to the school handbook. For more information, contact the Substance Abuse Prevention office at (505) 387-7473.

Tobacco Free Campus

The NTU Board of Trustees Resolution Number NTU-DEC-1080-11 prohibits the use of any and all tobacco products (smoke or smokeless) throughout the campus and in all vehicles, or buildings owned or occupied by NTU. Navajo Technical University has been a tobacco-free campus effective January 1, 2012. The use of tobacco is prohibited within college buildings, walkways, in college vehicles, and on college owned property. This policy applies to all faculty, staff, students, contractors, vendors, and visitors at all college campuses and locations. This policy is in compliance with the American Indian Religious Freedom Act of 1978 and Navajo Nation Resolution #: CJY-29-11.

DEGREES AND CERTIFICATES

MASTER DEGREE (Main Campus Only)
Refer to the NTU Graduate Catalog

Diné Culture, Language and Leadership, Master of Arts
Management in Information Systems, Master of Science (ONLINE)

BACHELOR DEGREE PROGRAMS

Bachelor of Applied Science
Advanced Manufacturing Engineering Technology
Hotel and Restaurant Administration
Information Technology
Information Technology- New Media

Bachelor of Arts
Business Administration (ONLINE or Traditional)
Diné Culture, Language, and Leadership

Bachelor of Fine Arts
Creative Writing and New Media

Bachelor of Science
Animal Science
Biology
Chemistry (Addendum)
Computer Science (Addendum)
Early Childhood Multicultural Education
Electrical Engineering
Environmental Science and Natural Resources
Industrial Engineering
Environmental Engineering
Mechanical Engineering

ASSOCIATE DEGREES PROGRAMS

Associate of Applied Science
Accounting (ONLINE or Traditional)
Administrative Office Specialist
Automotive Technology
Building Information Modeling
Chemical Engineering Technology
Construction Technology
Culinary Arts
Energy Systems
Engineering Technology
Environmental Science & Natural Resources
Geographical Information Technology
Information Technology Technician
Law Advocate
Professional Baking
Public Administration (ONLINE or Traditional)
Veterinary Technician

Associate of Arts Degree
Counseling
General Studies (ONLINE or Traditional)

Associate of Science Degree
Computer Science
Early Childhood Multicultural Education
Mathematics (ONLINE or Traditional)

CERTIFICATES PROGRAMS

Vocational Certificates
Administrative Office Specialist
Automotive Technology
Computer Science
Construction Technology
Counseling
Culinary Arts
Electrical Trades
Engineering Technician
Environmental Science & Natural Resources
Geographical Information Technology
Industrial Maintenance and Operations
Information Technology Assistant
Law Enforcement
Legal Assistant
Mathematics
Navajo Court Transcription Interpretation
Nursing Assistant
Plumbing
Professional Baking
Welding

Technical Certificate
CDL/Heavy Equipment Operator
CDL

GENERAL EDUCATION

General Education Philosophy

General Education is the foundation for all degree and certificate programs at Navajo Technical University. It provides students with knowledge, skills, attributes, and values needed to learn actively, communicate clearly, think critically, creatively, and reflectively, and interact effectively in diverse environments. Through the Diné Philosophy of Education, the program helps students become independent, critical thinkers – competent in their chosen professions by possessing solid foundations in Diné Studies, English, mathematics, laboratory sciences, social and behavioral sciences, communication, and information technology.

General Education Learning Goals

By the time they graduate, students should be able to:

1. Communicate Clearly: The ability and willingness to exchange ideas and information is essential to personal development, career, success, and social responsibility.
2. Think Critically, Creatively, and Reflectively: Reason, creativity, and reflection are fundamental to problem solving and personal growth.
3. Interact Effectively in Diverse Environments: Success in a global society requires cultural understanding of self that is sufficient for interaction with other physical and social environments.
4. Learn Actively: Learning is a lifelong activity essential to personal growth and the ability to adapt to the challenges of an ever-increasing complex and competitive world.

General Education Assessment

Assessment of the General Education program takes place one goal/semester. Data summaries of direct and indirect measures are compiled on an annual basis by the University's Offices of Assessment and Institutional Research. An annual summary that includes recommendations for General Education improvement is prepared by the Student Learning Committee and included in the University's Annual Student Learning Report. Curriculum revisions as needed are designed by the Student Learning Committee and reviewed and approved by the Faculty Congress.

General Education Requirements

Certificates

Each student in a Certificate program at Navajo Technical University must complete a minimum of 12 credit hours of General Education.

Required courses:

ENGL-1210 or ENGL 1110	3 crs
MTH-113* or higher	3 crs
NAVAXXX	3 crs
SSC 100 College Success	1 crs
BCIS-1115 or higher	3 crs
Total General Education courses	13 crs

Note: Certificate students are required to take BCIS-1115 in their first semester, preferably before but at least concurrently with their English course. General Education English courses incorporate the use of computer technology in the classroom and rely heavily upon computer-generated assignments.

Associate Degrees

Any student seeking an Associate of Applied Science degree must complete a minimum of 15 credit hours of General Education, with 12 fixed credit hours from four of the six content areas and 3 flexible hours:

Required courses:

English*/Communication**	3 crs
Mathematics**	4 crs
Physical and/or Natural Sciences**	4 crs
Computer/Programming **	3 crs
SSC 100 College Success	1 crs
Diné Studies (Humanities)**	3-4 crs
Total General Education courses	18-19 crs

Any student seeking an Associate of Science, Associate of Art or a Bachelor's degree in STEM must complete a minimum of 34-35 credit hours of General Education, with 22 fixed credit hours from the 6 content areas and 9 flexible credit hours:

Required courses:

English*/Communication**	6 crs
Mathematics**	4 or (8) crs
Physical and/or Natural Sciences**	4 or (8) crs
Humanities	3 crs
Behavioral/Social Sciences**	3 crs
Creative and Fine Arts	3 crs
Computer/Programming**	3 crs

SSC 100 College Success	1 crs
Diné Studies**	3-4 crs
Total General Education courses	34-35 crs

Note: Associate degree students are advised to take BCIS-1115 in their first semester: subsequent courses in many programs, and especially in General Education English courses, rely on the use of computer technology and/or require computer-generated assignments.

******Some programs require additional credits and/or specific credit hours or courses in General Education; check program requirements. Some courses may qualify in more than one category of General Education, (e.g., Diné Studies and Humanities).

General Education Courses

Diné Studies: 3 or 4 credits
(Check individual program requirements)

NAVA-1110 Navajo I	4 crs
NAVA-1120 Navajo II	4 crs
NAVA-1996 Topics in Diné Studies	3 crs
NAVA-2210 Navajo Culture	3 crs
NAVA-2220 Navajo History	3 crs
NAVA-2230 Navajo Government	3 crs
NAVA-2240 Navajo Philosophy	3 crs
NAVA-2996 Topics in Diné Studies	3 crs
ZUNI-1110 Introduction to Zuni	3 crs

English/Communication Courses: 6 Credits
(Check individual program requirements)

*COMM-1130 Public Speaking	3 crs
*COMM-2120 Interpersonal Communications	3 crs
*ENGL-1110 Composition I	3 crs
*ENGL-1120 Composition II	3 crs
**ENGL-1210 Technical Communications	3 crs
**ENGL-2120 Intermediate Composition	3 crs
HUMN-1180 History of American Indians in Media	3 crs

**Certificate students must take one freshman level English course (ENGL-1110 or 1210) to earn their certificate. Associate degree students must take one freshman level English course (ENGL-1110 or 1210) as advised by their program advisor and as required on their program checklist. Students must pass ENGL-1110 or 1210 with a grade of "C" or higher to be eligible to move to the next level.*

***Bachelor Degree students must take one research writing course (ENGL-1120 or 2120) after completing a freshman level English course (ENGL-1110 or 1210, as advised by their program advisor/program checklist) or equivalent course with a grade of C or higher. Certificate students are not required to take a research writing course, but are encouraged to take one if they intend to continue to a higher degree or transfer to another institution to continue their education.*

Note: Not all of the English/Communication courses listed are on the New Mexico Articulation Matrix of transferable courses (within the New Mexico higher education system).

Mathematics: 4 Credits
(Check individual program requirements)

*MTH-113 Technical Mathematics II	3 crs
**MATH-1220 College Algebra	4 crs
MATH-1230 Trigonometry	4 crs
MATH-1240 Pre-Calculus	4 crs
MTH-161 Calculus with Applications	3 crs
MATH-1350 Introduction to Statistics	3 crs
MATH-1510 Calculus I	4 crs
MATH-1520 Calculus II	4 crs

**Certificate students are required to successfully (with a grade of C or higher) pass MTH-113 (or higher) to earn their certificate. Check with the program advisor for additional mathematics courses required by individual programs as some programs require higher levels of mathematics.*

***All degree students are strongly encouraged to take the College Algebra course; however, other college level mathematics courses are listed as alternative/additional options. Check with program advisors for additional mathematics courses that may be required in some programs.*

Note: Not all of the mathematics courses listed are on the New Mexico Articulation Matrix of transferable courses.

Physical and Natural Sciences: 4 Credits
(Check individual program requirements)

ASTR-1010C Intro to Solar System Astronomy	4 crs
ASTR-1110C Intro to Stellar & Galactic Astro	4 crs
BIOL-1110C General Biology	4 crs
BIOL-1310C Intro to Hum Anatomy & Physio I	4 crs
BIOL-1320C Intro to Hum Anatomy & Physio II	4 crs
BIOL 2110C Princ of Biology: Cell & Molecular	4 crs
BIOL-2120C Cellular & Molecular Biology	4 crs
BIOL-2310C Microbiology	4 crs

BIOL-2630C General Botany	4 crs
CHEM-1120 Introduction to Chemistry	4 crs
CHEM-1217C Principles of Chemistry I	4 crs
CHEM-1225C Gen Chem II for STEM Majors	4 crs
ENVS-1110C Environmental Science I	4 crs
ENVS-1120C Environmental Science II	4 crs
GEOL-1110C Physical Geology	4 crs
GEOL-1120C Environmental Geology	4 crs
PHYS-1115C Survey of Physics	4 crs
PHYS-1230C Algebra-based Phys I Lec & Lab	4 crs
PHYS-1240C Algebra-based Phys II Lec & Lab	4crs
PHYS-1310C Calculus-based Physics I	4 crs
PHYS-1320C Calculus-based Physics II	4 crs

Note: Not all of the science courses listed are included on the New Mexico Articulation Matrix as transferable courses.

Humanities and Social & Behavioral Sciences: 3 Credits (Check individual program requirements)

Humanities:

ARTS-1110 Arts & Design Survey	3 crs
ARTS-2996 Topics in Art	1-3 crs
COMM-1996 Topics in Communication	1-3 crs
COMM-2996 Topics in Communication	1-3 crs
COMM-2120 Interpersonal Communication	3 crs
ENGL-1310 Introduction to Journalism	3 crs
ENGL-1410 Introduction to Literature	3 crs
ENGL-1996 Topics in English	1-3 crs
ENGL-2560 Intro to Native American Literature	3 crs
ENGL-2650 World Literature I	3 crs
ENGL-2567 Contemporary Navajo Literature	3 crs
ENGL-2996 Topics in English	1-3 crs
FDMA-2175 International Cinema	3 crs
HIST-1110 United States History I	3 crs
HIST-1120 United States History II	3 crs
HIST-2150 History of the American Southwest	3 crs
HUMN-1180 History of American Indians in Media	3 crs
HUMN-1996 Topics in Humanities	1-3 crs
HUMN-2996 Topics in Humanities	1-3 crs
NAVA-1110 Navajo I	4 crs
NAVA-1996 Topics in Diné Studies	1-3 crs
NAVA-2210 Navajo Culture	3 crs
NAVA-2220 Navajo History	3 crs
NAVA-2996 Topics in Diné Studies	1-3 crs
PED-101 Physical Education	1 cr
PHED-1620 Fitness	1 cr
PHED-1830 Running	1 cr

Social Sciences Courses:

BUSA-2420 Tribal Law	3 crs
CJUS-1110 Introduction to Criminal Justice	3 crs
ECON-1110 Survey of Economics	3 crs
ECON-2110 Macroeconomics Principles	3 crs
ECON-2120 Microeconomics Principles	3 crs
NAVA-2230 Navajo Government	3 crs
PSYC-1110 Intro to Psychology	3 crs
PSYC-1996 Topics in Psychology	1-3 crs
PSYC-2120 Developmental Psychology	3 crs
PSYC-2996 Topics in Psychology	1-3 crs
SOCI-1110 Intro to Sociology	3 crs
SOCI-2310 Contemporary Social Problems	3 crs
SSC-100 College Success Skills	1 cr
SOSC-1996 Topics in Behav & Soc Sciences	1-3 crs
SOSC-2996 Topics in Behav & Soc Sciences	1-3 crs

Note: Cross-listed courses may only be used to fulfill requirements in one, not all, of the areas in which they are listed. Example: NAVA-2210 may not be used to fulfill requirements in both Diné Studies and Humanities; the course will only satisfy the requirement in one of those areas.

Creative and Fine Arts: 3 Credits (Check individual program requirements)

ARTS-1110 Arts & Design Survey	3 crs
ARTS-2996 Topics in Art	1-3 crs
ENGL-2310 Intro to Creative Writing	3 crs
ENGL-2320 Intro to Fiction Writing	3 crs
ENGL-2330 Intro to Poetry Writing	3 crs
ENGL-2340 Intro to Creative Nonfiction Writing	3 crs
NAVA-1210 Native Cultural Arts	3 crs
NAVA-1310 Navajo Weaving I	3 crs
NAVA-1320 Navajo Weaving II	3 crs
NAVA-1330 Navajo Weaving III	3 crs

Computer Technology: 3 Credits (Check individual program requirements)

**BCIS-1115 Introduction to Computers	3 crs

***Certificate and Associate degree students must complete BCIS-1115 or higher as specified by individual program requirements. Some programs may require additional credits in computer technology; students should check with their program advisor to determine if they are required to take other computer technology courses.*

Baccalaureate Degrees

Any student seeking a Baccalaureate degree must complete a minimum of 36 credit hours of General Education and 43 credit hours of core courses. Students in the Baccalaureate degree programs are required to complete a minimum of 48 credit hours in the upper division courses, i.e., 300 and 400 level courses before they can graduate.

Total General Education Requirement: 36 credits

BCIS-1115 Introduction to Computers	3 crs
ENGL-1110 Composition I	3 crs
ENGL-1120 Composition II or	3 crs
ENGL 2120 Intermediate Composition or	3 crs
ENGL-1210 Technical Communication or	3 crs
ENGL-2210 Prof and Tech. or Communication	3 crs
MATH-1220 College Algebra	4 crs
NAVA-XXXX Dine Studies	3 crs
XXXX-XXXX Physical Science	8 crs
XXXX-XXXX Social & Behavioral Science/ Humanities	12 crs

Degree students are advised to take BCIS-1115 in their first semester as subsequent courses in many programs, and especially in general education English courses, will rely on the use of computer technology and/or will require computer-generated assignments

Physical and/or Natural Sciences: 8 Credits (Choose any two courses)

ASRT-1010C Intro to Solar System Astro.	4 crs
ASTR-1110C Intro to Stellar & Galactic Astro.	4 crs
BIOL-1110C General Biology	4 crs
BIOL-1310C Intro to Hum Anatomy & Physiology I	4 crs
BIOL-1320C Intro to Hum Anatomy & Physiology II	4 crs
BIOL-2110C Principles of Biology I: Cellular & Molecular Biology	4 crs
BIOL-2120C Cellular & Molecular Biology	4 crs
BIOL-2130C Introduction to Biochemistry	4 crs
BIOL-2310C Microbiology	4 crs
BIOL-2630C General Botany	4 crs
CHEM-1120C Introduction to Chemistry	4 crs
CHEM-1217C Principles of Chemistry I	4 crs
CHEM-1225C General Chemistry II for STEM Majors	4 crs
CHEM-2130C Organic Chemistry I	4 crs
CHEM-2315C Organic Chemistry II	4 crs
CHEM-2325C Environmental Chemistry	4 crs
CHEM-286 Inorganic Chemistry with Lab	4 crs
ENVS-1110C Environmental Science I	4 crs
ENVS-1120C Environmental Science II	4 crs
GEOL-1110C Physical Geology	4 crs
GEOL-1120C Environmental Geology	4 crs
PHYS-1115C Survey of Physics	4 crs
PHYS-1230C Algebra-based Physiology I Lecture & Lab	4 crs
PHYS-1240C Algebra-based Physiology II Lecture & Lab	4 crs
PHYS-1310C Calculus-based Physics I	4 crs
PHYS-1320C Calculus-based Physics II	4 crs

Humanities and Social & Behavioral Sciences: 12 Credits

Humanities Courses:

ARTS-1110 Arts and Design Survey	3 crs
ARTS-2996 Special Topics	1-3 crs
COMM-1130 Public Speaking	3 crs
COMM-2120 Interpersonal Communication	3 crs
COMM-1996 Topics in Communication	1-3 crs
COMM-2996 Topics in Communication	1-3 crs
ENGL-1310 Journalism	3 crs
ENGL-1410 Introduction to Literature	3 crs
ENGL-2310 Introduction to Creative Writing	3 crs
ENGL-2560 Intro to Native American Lit.	3 crs
ENGL-2650 World Literature I	3 crs
ENGl-1996 Topics in English	1-3 crs
ENGL-2996 Topics in English	1-3 crs
FDMA-2175 International Cinema	3 crs
HIST-1110 United States History I	3 crs
HIST-1120 United States History II	3 crs
HIST-1996 Topics in History	1-3 crs
HIST-2996 Topics in History	1-3 crs
HIST-2150 History of the American Southwest	3 crs
HUMN-1180 History of American Indians in Media	3 crs
HUMN-1996 Topics in Humanities	1-3 crs
HUMN 2996 Topics in Humanities	1-3 crs
NAVA-1110 Navajo I	4 crs
NAVA-1996 Topics in Diné Studies	3 crs
NAVA-2210 Navajo Culture	3 crs
NAVA-2220 Navajo History	3 crs
NAVA-2996 Topics in Diné Studies	1-3 crs

Social & Behavioral Sciences Courses:

BUSA-2420 Tribal Law	3 crs
CJUS-1110 Introduction to Criminal Justice	3 crs
ECON-1110 Survey of Economics	3 crs
NAVA-2230 Navajo Government	3 crs
PED-101 Physical Education	1 cr
PHED-1620 Fitness	1 cr
PHED 1830 Running	1 cr

PSYC-1110 Introduction to Psychology	3 crs
PSYC-2120 Developmental Psychology	3 crs
PSYC-1996 Topics in Psychology	1-3 crs
PSYC-2996 Topics in Psychology	1-3 crs
SOCI-1110 Introduction to Sociology	3 crs
SOCI-2310 Contemporary Social Problems	3 crs
SOCI-1996 Topics in Sociology	1-3 crs
SOCI-2996 Topics in Sociology	1-3 crs
SSC-100 College Success Skills	1 cr
SOSC-1996 Topics in Behavioral & Social Sci	3 crs
SOSC-2996 Topics in Behavioral & Social Sci	3 crs

Diné Studies: 3-4 credits

NAVA-1110 Navajo I	4 crs
NAV-121 International Leadership	3 crs
NAVA-1996 Topics in Diné Studies	1-3 crs
NAV-212 Navajo Historical Perspective of Navajo	3 crs
NAVA-2210 Navajo Culture	3 crs
NAVA-2220 Navajo History	3 crs
NAVA-2230 Navajo Government	3 crs
NAVA-2240 Diné Philosophy of Education	3 crs
NAVA-2996 Topics in Diné Studies	3 crs

Normal Time to Completion

All NTU programs completion differ depending on the degree and credit hours. Factors such as remediation courses, financial aid, course offerings and availability, changing majors, need for employment, family responsibilities, and/or reducing course load can affect students' time to complete a degree or certificate.

- A Certificate completion can take up to 3-4 semesters depending on placement and successful completion of courses.
- Associate degrees can take at least up to 6 academic semesters to complete if all courses are offered and completed successfully.
- Bachelor degrees can take up to 10 semesters if courses are all offered and completed successfully.

Students should meet with their academic and/or program advisor on a regular basis to determine status of certificate or degree completion according to the program curriculum and checklist.

BACHELOR DEGREE PROGRAMS

BACHELOR OF APPLIED SCIENCE DEGREES

ADVANCED MANUFACTURING ENGINEERING TECHNOLOGY

The Advanced Manufacturing Engineering Technology will provide students with a strong background in traditional methods while emphasizing new and emerging manufacturing methods. Students will acquire the specialized skills needed to digitize and computer model manufacturing processes including integrated simulations of multiple processes representing an entire plant. Foundational course work in materials and material processing will also be stressed.

Upon graduation students will be able to apply commercially current methods of manufacturing in addition to creating simulations of these manufacturing processes enabling accurate detailed understanding of the dynamics of the process. These skills will promote identification and resolution of potential failures and bottlenecks. The creation of the simulations will require the exercise of the digital scanning skills included in the curriculum. The student's process knowledge gained though simulation skills will be directly applicable to the design and operation of real processes on the shop floor.

The curriculum utilizes multiple, state of the art, additive manufacturing technologies in conjunction with commercial CNC machine tools and state of the art, computerized metrology systems. The multiple scanning technologies and industrially current software are used in the instruction of collecting and processing of digital data for integration into the multi-level computer simulation(s)

The successful graduate will have possible employment with major manufacturing firms, processing industries such as the gas and oil industry, mining and food processing in addition to the construction industry, architecture also, film and media. The broad scope of the curriculum will provide a good preparation for entrepreneurial opportunities.

B.A.S. - Advanced Manufacturing Engineering Technology
Requirements: 122-123 credits

Semester FIRST		**Credits**
ENGL 1110	Composition I	3
EE 101	Electrical Engineering Fundamentals	3
MATH 1220	College Algebra	4
ENGR 130	Engineering Graphics	3
ENGR 123	Computer Skills for Engineering	3
SSC 100	College Success	1
Semester TWO		
PHYS 1230C	Algebra Based Physics I	4
ENGR 103	Introduction to Engineering	3
ENGR 230	Advanced Engineering Graphics	3
MATH 1230	Trigonometry	4
CS 101	Programming I	3
Semester THREE		
MATH 1510	Calculus I	4
CHEM 1120C	Introduction to Chemistry	4
ENGR 143	Characteristics or Engineering Materials	3
ENGL 2210	Professional & Technical Communications	3
IE 223	Design and Manufacturing Process I	3
Semester FOUR		
ME 345	Statics	3
HUMN 1180	History of American Indians in Media	3
IE 343	Design & Manufacturing Process II	3
AMT 280	CNC Design of Machine Tools	3
ENGR 169	Basic Statics and Probability	3
Semester FIVE		
AMT 311	Laser Scanning Methods/Techniques	3
AMT 210	Applied GD&T	3
IE 243	Strength of Materials	3
AMT 325	Digital Inspection/Quality Control	3
Dine Studies	XXX	3-4
Semester SIX		
IE 483	Radio Prototyping	3
AMT 370	Introduction to Robotics	3
IE 484	Computer Aided Manufacturing	3
HUM XXX	Humanities Elective	3
XXX	Technical Elective	3
Semester SEVEN		
AMT 401	Capstone I	4
IE 433	Metrology and Instrumentation	3
IE 494	Computer Simulation for Industrial Engineering	3
AMT 430	PLC Programming	3
Semester EIGHT		
AMT 402	Capstone-II	4
AMT 415	NDT and DT Methods	3
IE 463	Facility Planning & Material Handling	3
HUM XXX	Humanities Elective	3
TOTAL CREDIT HOURS REQUIRED		**122-123**

HOTEL AND RESTAURANT ADMINISTRATION

The mission of the Hotel and Restaurant Administration program is to prepare students to become effective and efficient entrepreneurs, managers and executives in culinary, gaming, tourism and hospitality industries. To established the regional need for a degree that will allow current students to go beyond their current programs in fields like Culinary Arts and Baking in order to increase their employability in the growing hospitality market in the Navajo Nation and near the Nation's borders. A large number of careers that graduates from the Hospitality and Restaurant Administration BAS will prepare students for various positions related to: Restaurant Management, Lodging Management, Management of Tourist Attractions, work in the national and state parks and monuments that are common in and around the Navajo Nation, casino management, restaurant management, and catering management. There are also operations positions in all of these areas that NTU graduates from the Hospitality and Restaurant Administration will be qualified to fill.

B.A.S-Hotel and Restaurant Administration
Requirements: 124-125 credits

Semester ONE		**Credits**
SCIXXX	Physical/Natural Sciences	4
PSYC 1110	Introduction to Psychology	3
CUL 105	Nutrition	3
BCIS 1115	Introduction to Computers	3
ENGL1110	Composition I	3
SSC 100	College Success	1
Semester TWO		
ENGL 1120	Composition II	3
NAVXXX	Dine Studies	3
COMM 2120	Interpersonal Communication	3
CKG 208	Professional Cooking Basics	3
MATH 1220	College Algebra	4
Semester THREE		
SCIXXX	Physical/Natural Sciences	4
HIST 1110	United States History I	3
ECON 2110	Macroeconomics Principles	3
BKG 209	Professional Baking Basics	3
CUL 227	Introduction to Hospitality	3
Semester FOUR		
ACG 212	Introduction to Finance	3
CUL 206	Banquets and Catering	3
CUL 207	Management & Supervision	3
LAW 205	Professional Responsibility and Ethics	3
ECON 2120	Microeconomics Principles	3
Semester FIVE		
BUS 305	Effective Business Communication	3
BUS 340	Management Information System	3
CUL 365	Restaurant Operations Management	3
CUL 375	Hospitality Managerial Accounting	3
CUL 389	Facility and Food Safety	3
Semester SIX		
BUS 331	Social Environment of Business	3
BUS 335	Tourism and Hospitality Management	3
CUL 347	Facilities Management	3
CUL 362	Purchasing in Cost Control for Hospitality & Food Service	3
Semester SEVEN		
BUS 440	Business Analytics	3
CUL 426	Beverage Management & Controls	3
CUL 470	Hospitality Law	3
CUL 478	Hospitality Industry Human Resources Management	3
CUL 483	International Food & Wine	3
Summer Semester		
CUL 449	Advanced Hospitality Management Internship	3
Semester EIGHT		
CUL 416	Hospitality & Tourism Marketing	3
CUL 445	Revenue Management in Hospitality Operations	3
CUL 452	Capstone in Hospitality Management	3
CUL 489	Hospitality Industry Financial Analysis	3
COMM 1130	Public Speaking	3
TOTAL CREDIT HOURS REQUIRED		**125-125**

INFORMATION TECHNOLOGY

This program is structured to prepare students for immediate and continuing employment in two different areas: Careers in programming and computer or network operations and digital movie-making, digital sound, and graphics.

The Bachelor of Applied Science in Information Technology has a unique blend of computer programming and information technology skills. This program focuses on introducing and mastering parallel programming methodologies. It also blends a solid set of information technology skills with programming that includes computer security, web design, database design, and data center and cluster design and maintenance. Graduates of the program will be able to design, build, maintain, and program for distributed high performance computing and cloud computing environments that meet the global needs of business and scientific communities.

Any student seeking a **Bachelor of Applied Science degree** must complete a minimum of 36 credit hours of general education and 36 credit hours of core courses, and 48 hours of technology-based courses including practicum work. Students in the baccalaureate degree programs are required to complete a minimum of 30 credit hours in the upper division courses, i.e., 300 and 400 level courses before they can graduate. The required courses are listed below.

B.A.S. - Information Technology Requirements:
121-122 credits

Semester ONE		**Credits**
MATH-1510	Calculus I	4
IT-105	Introduction to Programming	3
IT-160	Introduction to Digital Ethics	3
ENGL-1210	Technical Communication	3
SSC 100	College Success	1
Semester TWO		
ENGL-2210	Professional and Technical Communication	3
BCIS-1115 or IT-XXX	Introduction to Computers or Lower Division Elective	3
IT-218	Algorithms & Data Structures	3
IT 142	Web Design Concepts	3
MATH-1520	Calculus II	4
Semester THREE		
HUMN 1180	History of Native American in Media	3
IT-150	System Administration	3
IT-262	Internetworking	3
IT-XXX	Lower Division IT Elective	3
PHYS-1230C or PHYS-1310C or BIOL-2110C or CHEM-1217C	Algebra-Based Physics I or Calculus-Based Physic I or Principles of Biology: Cellular and Molecular Biology or Principles of Chemistry I	4
Semester FOUR		
Diné Studies	NAVA1110, NAVA2210, NAVA2230	3-4
SSCXXX	Social Science Course	3
IT-222	Computer Security	3
IT-290	IT Big Data Project Management	3
PHYS-1240C or PHYS-1320C or BIOL-2120C or BIOL 226 or CHEM-1225C	Algebra-Based Physics II or Calculus-Based Physics II or Cellular and Molecular Biology or Principles of Biology or General Chemistry II for STEM Majors	4
Semester FIVE		
ENGL 2310 or NAVA 1310	Introduction to Creative Writing OR Rug Weaving I	3
MTH-410	Linear Algebra	3
IT-XXX	Lower Division IT Elective	3
IT 332	Network Security	4
IT-315	Multicore Programming	3
Semester SIX		
HUM XXX	Humanities/Social Science Course	3
IT-XXX	IT Upper Division Elective	4
MATH-1350	Introduction to Statistics	3
IT 375	Javascript Core Skills	4
IT 435	HPC Parallel Computing	3
Semester SEVEN		
MTH-205	Discrete Mathematics	3
IT-XXX	IT Upper Division Elective	3
IT 472	Web App Development	3
IT-405	Cluster Maintenance/Management	4
Semester EIGHT		
IT-440	Advanced Technology Security	3
IT-486	Information Management & Administration	3
IT-XXX	IT Upper Division Elective	3
IT XXX	IT Elective/ Any Engineering, Math, Computer Science or Information Technology course not repeating material	3
IT-499	Practicum	3
TOTAL CREDIT HOURS REQUIRED		**121-122**

Elective:
Lower Division Electives
IT-110 Introduction to Digital Logic/Hardware Programming
IT-111 Human Computer Interaction
IT-112 Photography
IT-115 Drawing and Visual Culture
IT-118 Introduction to C++
IT-120 Operating Systems
IT-121 Database Systems and Data Preparation
IT-125 Introduction to Digital Video
IT-200 Sound Design
IT-212 Documentary
IT-215 Motion Graphics
IT-220 Database Design
IT-225 Digital Video II
IT-275 Media Criticism
IT-195/295 Topics in Information Technology

Upper Division Electives
IT-312 Studio Recording
IT-333 Introduction to Machine Learning
IT-335 Data Visualization
IT-345 Editing Concepts
IT-350 Programming Interactivity
IT-415 Audio Project
IT-425 Applied Data Science
IT-445 3D Modeling/Animation
IT-480 Aural and Optical Perception
IT-395/495 Topics in Information Technology

INFORMATION TECHNOLOGY - NEW MEDIA

The New Media in the Bachelor of Applied Science in Information Technology prepares students to be effective in video/audio production and post-production environments that also includes a unique blend of information technology skill sets. Students will be introduced to the latest in film-making, web, and other media presentation technologies and methodologies as well as the technologies of information technology necessary to understand, build, and maintain the infrastructure that supports the development and dissemination of new media. Graduates of the program with an emphasis in new media will be able to create and deliver content and understand and support the infrastructure necessary to produce new media that includes the visualization of large data sets for varied industries.

B.A.S. - Information Technology - New Media
Requirements: 121-122 credits

Semester FIRST		**Credits**
ENGL1110	Composition I	3
MATH1220	College Algebra	4
IT 115	Drawing/ Visual Culture	3
IT 105	Introduction to Programming	3
IT 110	Introduction to Digital Logic/Hardware Programming	3
SSC 100	College Success	1
Semester TWO		
ENGL 2120	Intermediate Composition	3
MATH 1230	Trigonometry	4
IT 125	Introduction to Digital Video	3
IT 142	Web Design Concepts	3
IT 150	Introduction to System Administration	3
Semester THREE		
HUMN 1180	History of American Indians in Media	3
MATH 1510	Calculus I	4
IT 220	Database Design	3
IT 215	Motion Graphics	3
IT 275	Media Criticism	3
Semester FOUR		
NAVXXX	Dine Studies	3-4
IT 200	Sound Design	3
IT 280	IT Project Management	3
IT 225	Digital Video II	3
IT 350	Programming Interactivity	3
Semester FIVE		
PHYS1230C	Algebra Based Physics I	4
IT 415	Audio Projects	3
IT 335	Data Visualization	3
HUM 305	Film History	3
Semester SIX		
Humanities/Social Science Elective		3
SCIENCE	Physical Science Course	4
IT 345	Editing Concepts	3
IT 445	3D Modeling/Animation	4
IT 450	Interactive Project	3
Semester SEVEN		
SSCXXX	Social and Behavioral Sciences	3
ENGL 2310 or NAVA 1310	Introduction to Creative Writing OR Rug Weaving I	3
IT 480	Aural & Optical Perception	3
IT 490A	Senior Project	3
Semester EIGHT		
Humanities/Social Science Elective		3
BCIS 1115	Introduction to Computers	3
IT 490B	Senior Project	3
ITS 415	Audio Project	3
ITXXX	New Media Elective	3
TOTAL CREDIT HOURS REQUIRED		**121-122**

***Some General Education and IT courses have prerequisites. Please check the course description for the appropriate prerequisite course(s).*

Listing of New Media Electives:

IT 112 Photography
IT 312 Studio Recording
IT 212 Documentary

BACHELOR OF ARTS DEGREE

BUSINESS ADMINISTRATION

A degree in Business should open the door to many career options. The desire of the Department of Business is to provide an education in business of the highest possible quality. In the first two years of studying Business at NTU, students are required to take common set of courses to prepare them for more specialized courses in the third and fourth years. Many of these initial courses are shared with other departments at the university, allowing students to appreciate the interdisciplinary nature of business.

Students are encouraged to develop a broad knowledge of business. Knowledge in these specialized subjects is intended to lay the groundwork for entry into a range of much needed professions in the Native American Communities such as the Navajo Nation, entrepreneurship, hospitals, Navajo Housing Authority, Navajo Tribal Utility Association, etc.

A student needs to complete the core Business and general education courses within the first two years of study with a grade point average of 2.50 or better before taking the upper level core courses (300 and 400-level courses).

B.A. – Business Administration Requirements: 124 credits

Semester ONE		**Credits**
BIOL 1110C	General Biology	4
PSYC 1110	Introduction to Psychology	3
ACG 101	Accounting Principles I	3
BCIS 1115	Introduction to Computers	3
ENGL 1110	Composition I	3
SSC 100	College Success	1
Semester TWO		
CHEM 1120C	Introduction to Chemistry	4
NAVA 2210	Navajo Culture	3
COMM 2120	Interpersonal Communication	3
ACG 111	Accounting Principles II	3
MATH 1220	College Algebra	4
Semester THREE		
ENGL 2310	Introduction to Creative Writing	3
ECON 2120	Microeconomics Principles	3
ENGL 1120	Composition II	3
MATH 1350	Introduction to Statistics	3
LAW 203	Business Law	3
Semester FOUR		
ACG 212	Introduction to Finance	3
ACG 210	Principles of Management	3
LAW 205	Professional Responsibility and Ethics	3
ACG 225	Managerial Accounting	3
ECON 2110	Macroeconomics Principles	3
Semester FIVE		
ACG 216	Principles of Marketing	3
BUS 302	Human Resources Management	3
BUS 305	Effective Business Communication	3
BUS 310	Business Statistics	3
BUS 328	International Management	3
Semester SIX		
BUS 331	Social Environment of Business	3
BUS 335	Tourism and Hospitality Management	3
BUS 350	Organizational Theory and Behavior	3
BUS 340	Management Information System	3
BUS 352	Project Management	3
Semester SEVEN		
BUS 353	Supply Chain and Operation Management	3
BUS 364	Business of Gaming	3
BUS 375	Financial Management	3
BUS 440	Business Analytics	3
BUS 496	Senior Seminar and Strategic Management	3
Summer Semester		
BUS 437	Internship in Business	3
Semester EIGHT		
BUS 485	Global Business Strategies	3
BUS 480	Business Plan Development	3
BUS 380	Management for Environmental Sustainability and Durable Competitive Advantage	3
BUS 455	Entrepreneurial Practicum	3
TOTAL CREDIT HOURS REQUIRED		**123**

DINÉ CULTURE, LANGUAGE AND LEADERSHIP

This 4 year-degree program is to produce graduates for employment as cultural teachers/instructors/professors, cultural interpreters, cultural social workers, health care workers, community service workers, community liaisons, health educators, various leadership roles and other relevant occupations. The program consists of a variety of practical hands-on projects along with formal classroom instruction, which produces a well-rounded individual able to perform the duties required for entering Diné cultural related occupations. Students participate in classroom, hands- on laboratory, and field experiences while working with instructors and mentors in real life situations. Students are also required to serve as interns after the fourth semester. Both English and Navajo languages are used in all areas of Western and Diné cultural education. The program is designed with two tracks: Course of study for Navajo Speakers and Course of Study for Non- Navajo Speakers.

Students in the baccalaureate degree programs are required to complete a minimum of 30 credit hours in the upper division courses, i.e., 300 and 400 level courses before they can graduate.

B.A. - DCLL Requirements: 125 Credits

General Education Requirement		**Credits**
SSC 100	College Success	1
BCIS 1115	Introduction to Computers	3
ENGL 1110	Composition I	3
ENGL 1120	Composition II	3
COMM 2120	Interpersonal Communication	3
SOCIAL SCIENCE: **1.**		3
CREATIVE/FINE ARTS: **1.**		3
MATH 1220	College Algebra	4
NAVA 2220	Navajo History	3
SCIENCE W/LAB (AST, BIO, ENV, GEO, PHY): **1.** **2.**		**8**
General Diné Studies Program		
ECED 1130	Family & Community Collaboration	3
IT 275	Media Criticism	3
MATH 1350	Introduction to Statistics	3
NAVA 2210	Navajo Culture	3
NAVA 2230	Navajo Government	3
BUSA 2420	Tribal Law	3
NAVA 2240	Diné Philosophy of Education	3
DCLL CORE COURSES		
NAVA 1110 NAVA 1120	Navajo I or Navajo II	4
NAV 121	International Leadership	3
NAVA 1130 NAVA 2130	Beginning Navajo Reading and Writing Intermediate Navajo Language- Writing	4
NAV 210	Contemporary Navajo Life & Experiences	3
NAV 212	Navajo Historical Perspective	3
NAV 250	Introduction to Linguistics	4
NAV 301	Intermediate Navajo Language (Convo&Rdg)	4
NAV 302	Intermediate Navajo Language (Writing)	4
NAV 310	Colonization and De-Colonization	3
NAV 321	Global Indigenous Leadership	3
NAV 401	Advanced Navajo Language (Convo & Rdg)	4
NAV 402	Advanced Navajo Language (Writing)	4
NAV 410	Traditional Navajo Cultural Practices & Theory	3
NAV 411	Cultural Revitalization: Problems, Solution & Possibilities	3
NAV 421	Native North American Leadership	3
NAV 431	Theoretical Indigenous Leadership	3
NAV 441	Traditional Navajo Leadership	3
NAV 442	Contemporary Native Gender, Politics & Leadership	3
NAV 443	Navajo Morals & Ethics	3
NAV 490A	Researching Navajo (Senior Thesis)	3
NAV 490B	Researching Navajo (Senior Thesis)	3
TOTAL REQUIRED CREDITS:		**125**

BACHELOR OF FINE ARTS DEGREE

CREATIVE WRITING AND NEW MEDIA

The Bachelor of Fine Arts degree program in Creative Writing and New Media that is offered by Navajo Technical University will provide the knowledge and skills needed to secure gainful employment in a digital environment, to publish and market creative works online, or simply to function as a full participant in this new digital age.

The Bachelor of Fine Arts Degree in Creative Writing and New Media develops skilled writers who are technologically savvy, in order to foster the continuance of the narrative legacy of the Navajo people and expand its reach into the digital realm, and to advance participation in the international digital revolution. The transition to digitization is everywhere, and it affects education, business, and the arts. The digitization of the publishing industry, in particular, and the ever-increasing scope and influence of New Media, is creating unprecedented opportunities for writers, artists, and entrepreneurs worldwide, including the Navajo Nation.

The unique hybrid nature of the program, which builds upon a core Creative Writing program with additional coursework in New Media studies, offers a unique opportunity for students to go beyond the scope of the traditional Creative Writing program—which typically culminate with the production of a hard-copy manuscript—and produce a visual or digital product as well. The Navajo Nation is producing more and more writers, filmmakers, web-based designers and new media artists, clearly demonstrating a growing interest in these fields.

- **General Education Requirements – 31 credits**
- **Department Requirements - 34 credits**
- **Program Requirements - 38 credits**
- **Track A** *(Moving Image)* **and Track B** *(Interactive Design)* **- 18 credits**

B.F.A.- Creative Writing and New Media
Requirements: 121-122 credits

GENERAL EDUCATION REQUIREMENT		
Semester ONE (15 Credits)		**Credits**
BCIS 1115	Introduction to Computers	3
ENGL 1110	Composition I	3
SOCI 1110	Introduction to Sociology	3
MATH 1220	College Algebra	4
SSC 100	College Success Skills	1
PHED 1620 **OR** PHED 1830	Fitness **OR** Running	1
Semester TWO (16 Credits)		
Diné Studies	NAVA 1110, NAVA 2240 or NAVA 2230	3-4
Physical Sciences: BIOL 1110, BIOL 2110C, BIOL 1320C, BIOL 2310C, CHEM 1120C, GEOL 1110C, GEOL 1120C OR PHYC 1115C		4
Humanities/History: FDMA 2175, HIST 1110, HIST 1120, HIST 2150		3
PSYC 1110	Introduction to Psychology	3
ENGL 1120 Composition II **OR** ENGL 2210 Intermediate Composition		3
Semester THREE (15 Credits)		
COMM 1130	Public Speaking	3
ENGL 2310	Introduction to Creative Writing	3
ENGL 2560	Introduction to Native American Literature	3
ENGL 1410	Introduction to Literature	3
ENGL 1996 or 2996	*Topics in English-*	3
Semester FOUR (15 Credits)		
ENGL 2567	Contemporary Navajo Literature	3
ENGL 2320 ENGL 2330 ENGL 203	Introduction to Fiction Writing **OR** Introduction to Poetry Writing **OR** Beginning Writing for Stage and Screen	3
ENGL 2340	Introduction to Creative Nonfiction Writing	3
HUMN 1180	History of American Indians in Media	3
IT 115	Drawing/Visual Culture	3
Semester FIVE (15 Credits)		
ENGL 301 ENGL 302 ENGL 303	Intermediate Fiction Writing **OR** Intermediate Poetry Writing **OR** Intermediate Writing for Stage and Screen	3
HUM 305	Film History	3
ENGL 306	Intermediate Creative Nonfiction Writing	3
IT 125	Introduction to Digital Video	3
IT 142	Web Design Concepts (B)	3
Semester SIX (15 Credits)		
ENGL 401 ENGL 402 ENGL 403	Advanced Fiction Writing **OR** Advanced Poetry Writing **OR** Advance Writing for Stage and Screen	3
IT 335	Data Visualization	3
IT 275	Media Criticism	3
ENGL 405	Student Anthology	3
ENGL 406	Advanced Creative Nonfiction Writing	3
Semester SEVEN (15 Credits)		
IT XXX	IT 112 Photography IT 212 Documentary IT 312 Studio Recording	3
IT 215	Motion Graphics (A)	3
IT 270	Web Standards (B)	3
IT 200	Sound Design (A)	3
IT 490a	Senior Project (Capstone) (A/B)	3
Semester EIGHT (15 Credits)		
IT 490b	Senior Project (Capstone) (A/B)	3
ENGL 404	Creative Writing Thesis*	3
IT 415	Audio Project	3
IT 480	Aural/Optical Perception (A/B)	3
ITS 415	Directing and Producing (A/B)	3
TOTAL REQUIRED CREDIT HOURS		**121-122**

BACHELOR OF SCIENCE DEGREES

ANIMAL SCIENCE

Many career options are available with a degree in Animal Science. Through experiential learning, the Animal Science program will provide a high quality educational experience. For the most part, students will complete general education courses during their first two years at NTU to prepare for more specialized courses in their third and fourth years. Knowledge in these specialized subjects lays the framework for entry into a broad range of professions in Native American communities, as well as throughout the United States and also to pursue advanced professional degrees, such as a D.V.M. (Doctor of Veterinary Medicine), medical school, pharmacy school, physical therapy, dental school, etc.

A student needs to complete the core Animal Science and general education courses within the first two years of study with a grade point average of 2.00 or better before taking the upper level core courses (300 and 400-level courses). To complete the program, a credit load of 13-15 per semester along with summer sessions are mandatory.

B.S. - Animal Science Requirements: 123-124 Credits

Semester FIRST		**Credits**
ENGL 1110	Composition I	3
BIOL 2110C	Principles of Biology: Cellular & Molecular Biology	4
MATH 1220	College Algebra	4
BCIS 1115	Introduction to Computers/ Elective	3
SSC 100	College Success	1
Semester TWO		
ENGL 1120	Composition II	3
ASC 100	Introduction to Animal Science	3
COMM 1130	Public Speaking	3
BIOL 2120C	Cellular & Molecular Biology	4
Semester THREE		
ECON 1110	Survey of Economics	3
ASC 200	Animal Science Practicum with Lab	2
ASC 210	Animal Science Career Development	1
CHEM 1217C	Principles of Chemistry I	4
BIOL 2310	Microbiology	4
Semester FOUR		
CHEM1225C	General Chemistry II for STEM Majors	4
ASC 220	Comparative Anatomy of Animals w/Lab	3
ASC 230	Comparative Phys. Domestic Animals wi/Lab	3
HUM/SSC	Humanities/ Social Science Course	3
Semester FIVE		
BIOL 226	Principles of Genetics with Lab	4
PHYS 1230C	Algebra-Base Physics I	4
ASC 320	Animal Nutrition and Metabolism	3
ASC 340	Animal Reproduction and Lactation	3
Semester SIX		
NAVAXXX	Dine Studies Course	3-4
ASC 330	Feeds and Feeding with Lab	3
HUM/SSC	Humanities/Social Science Course	3
ASC 400	Sheep & Goat Production & Management with Lab	4
Summer Semester		
ASC 420	Dairy Production and Management w/ Lal	4
ASC 440	Swine Production and Management	4
Semester SEVEN		
ACG 210 OR ACG 212	Introduction to Financial Principles of Management OR Introduction to Finance	3
BIOL 302	Cell Biology	4
ASC 460	Beef Production and Management w/lab	4
CHEM 2130C	Organic Chemistry I	4
Semester EIGHT		
MATH 1350	Introduction to Statistics	3
BIOL2130C	Introduction to Biochemistry	4
ENV 365	Natural Resources Management w/ Lab	4
ASC 480	Horse Production and Management w/lab	4
Summer Semester		
ASC 498	Internship in Animal Science	3
TOTAL CREDIT HOURS REQUIRED		**123-124**

BIOLOGY

The Biology Degree program is rich in biology and chemistry courses, and in other specialized courses such as biochemistry, genetics and cell biology. The program provides a solid background in physics and mathematics.

Students develop a broad knowledge of biology that is integrated with dynamic high quality research programs in specialized areas like molecular biology, genetics, animal and plant physiology, ecology, cell and developmental biology, evolution and behavior. Research experience would instill in students the scientific application of theoretical knowledge to real world problems, as well as provide them the opportunity to work with, and get to know researchers working in their desired fields. Knowledge of these specialized subjects is intended to lay the groundwork for entry into a range of much needed careers in the Native American Communities (especially the Navajo Nation), including medicine, dentistry, optometry, pharmacy, conservation and management of the environment, and provide them broader job opportunities elsewhere in biotechnology, agriculture, forestry, and fisheries. The program provides students who are interested in going to medical school the right support and preparation to successfully pass the MCAT/PCAT* exams and the needed guidance for the application process.

Students interested in pre-med Biology need to complete the core Biology and general education courses within the first two years of study with a grade point average of 2.5 or better before taking the upper level core courses (300 and 400-level courses). In addition, Pre-med Biology majors are required to be in good standing thereafter with a grade point average of at least 3.00 or better to continue as pre-med majors.

**MCAT: Medical College Admissions Test*
*PCAT: Pharmacy College Admissions Tes*t

B.S. – Biology Requirements: 122-123 credits

Semester ONE		Credits
ENGL 1110	Composition I	3
PSYC 1110	Introduction to Psychology	3
MATH 1220	College Algebra	4
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
Semester TWO		
ENGL 1120	Composition II	3
MATH 1230	Trigonometry	4
HUMN 1180	History of American Indians in Media	3
NAVA 2210	Navajo Culture	3
BIOL 2110C	Principles of Biology: Cellular & Molecular Biology	4
Semester THREE		
ENGL 2310	Introduction to Creative Writing	3
CHEM 1217C	Principles of Chemistry I	4
PHYS 1115C	Survey of Physics	4
Semester FOUR		
MTH 315	Biostatistics	4
BIOL 2120C	Cellular and Molecular Biology	4
CHEM 1225C	General Chemistry II for STEM Majors	4
PHYS 1230C	Algebra-Based Physics I	4
Semester FIVE		
BIOL 2630C	General Botany	4
CHEM 2130C	Organic Chemistry I	4
BIOL 2310C	Microbiology	4
BIOL 226	Principles of Genetics	4
Semester SIX		
CHM 286	Inorganic Chemistry with Lab	4
BIOL 1310C	Introduction to Human Anatomy and Physiology I	4
BIOL302	Cell Biology	4
BIOL409	Molecular Biology	4
Semester SEVEN		
CHEM 2135C	Organic Chemistry II	4
BIOL 2130C	Introduction to Biochemistry	4
BIOL 1320C	Into to Human Anatomy & Physiology II	4
BIOL 410	Ecology	4
Semester EIGHT		
BIOL404	Bioinformatics	4
BIOL408	Nutrition and Obesity	4
BIOL411	Ethnobotany	4
BIOL ELEC - choose one	BIOL225 Medical Writing	4-5 credits
	BIOL400 Model Organisms	
	BIOL402 Biology Research Projects	
	BIOL405 Cancer Biology and Therapeutics	
	BIOL406 Diabetes and Complications	
	BIOL407 Diagnostic Enzymology	
	BIOL412 Development Biology	
	BIOL413 Evolutionary Biology	
TOTAL CREDIT HOURS REQUIRED		**122-123**

EARLY CHILDHOOD MULTICULTURAL EDUCATION

"Our Children will learn more because you learned more"

Navajo Technical University is dedicated to prepare Early Childhood Professionals in a culturally and linguistically diverse environment at a baccalaureate level. Students work intensely and progressively to prepare for their State Early Childhood Teacher Licensure from Birth to 8 years old. This program provides a unique opportunity to assist present or future teachers of young children to use child development knowledge within the childcare, preschool and primary schools. This includes practical field experience, which will enhance their professional practice and gain competence in working with Infants through 8 years old and their families. Students complete 16 full weeks of Student Teaching at an approved site during their final semester. We look forward to you to join us to bring about change in the community in order to improve the lives and education of our children.

Students are required the following:

- Federal, State and Navajo Nation Fingerprinting and background check.
- CPR/First Aid and Food Handling Training

B.S. - ECME Program Requirements: 119 – 122* Credits

General Education Requirements		Credits
SSC 101	College Success	1
English:		
ENGL 1110	Composition I	3
ENGL 1120	Composition II	3
ENGL 1410 or ENGL 2560 or ENGL 2650		3
Mathematics:		
MATH 1110	Math for Teachers I	3
MATH 1115	Math for Teachers II	3
Science: BIOL 1110C, GEOL 1110C, ENVS 1110C, PHYS 1115C or CHEM 1120C **1.** **2.**		8
Humanities:		
HIST 1110	United States History I	3
HIST 1120	United States History II	3
NAVA 2220	*Navajo History (AZ "H") for Arizona*	*3**
COMM 1130 or COMM 2120	Public Speaking or Interpersonal Communication (CORE REQUIREMENT)	3
Social Science:		
PSYC 1110	Introduction to Psychology	3
PSYC 2120	Developmental Psychology	3
ECON 1110, CJUS 1110, or SOCI 1110 POS 220: AZ & US Constitution (AZ Requirement)		3
Computer Technology: BCIS 1115		3
Diné Studies: NAVA 1120, NAV 2210, NAVA 2220, or NAVA 2230		3
Fine Arts: ENGL 2310 or NAVA 1310		3

Early Childhood Core Courses:		Credit
ECED 1001	Intro to Early Childhood (AZ Req.)	3
ECED 1110	Child Growth, Development, & Learning	3
ECED 1115	Health, Safety and Nutrition	3
ECED 1120	Guiding Young Children	3
ECED 1125	Assessment of Children & Evaluation of Programs	3
ECED 1130	Family and Community Collaboration	3
ECED 2110	Professionalism	2
ECED 2115	Intro. to Language, Literacy & Reading	3
ECED 2120	Curriculum Development through Play	3
ECED 2121	Curriculum Develop. Through Play Practicum (Birth-4 yr)	2
ECED 2130	Curriculum Dev. & Implementation	3
ECED 2131	Curriculum Dev. & Implementation Practicum (Age 3- 3rd Grade)	2
NAVA 2240	Diné Philosophy of Education	3
ECED 3105	Research in Child Growth, Development, and Learning	3
ECED 3160	Family, Language, and Culture	3
ECED 3405	Young Children with Diverse Abilities	3
TOTAL GENERAL EDUCATION AND CORE REQUIREMENTS CREDITS		**95-98***

CHOOSE ONE OF THE FOLLOWING TRACKS:

Track 1: Early Childhood Teacher Licensure Birth to Age 4		
ECED 3040	Integrated Curriculum-Birth through Age 4	4
ECED 3251	Emergent Literacy	3
ECED 3505	Advanced Caregiving for Infants and Toddlers	3
ECED 4901	Teaching and Learning Practicum (Birth through Age 4)	2
ECED 4931	Student Teaching Seminar	3
ECED 4955	Student Teaching	9
Total Required Credit Hours		**24**

Track 2: Early Childhood Teacher Licensure Birth to Age 8		
ECED 3180	Teaching and Learning: Math and Science	4
ECED 4281	Teaching and Learning: Reading and Writing	3
ECED 3280	Teaching and Learning: Soc. Stud. Fine Arts & Movement	3
ECED 4920	Teaching and Learning Practicum (Birth through Age 8)	2
ECED 4931	Student Teaching Seminar	3
ECED 4955	Student Teaching	9
Total Required Credit Hours		**24**

***Some General Education and ECME courses have prerequisites and co-requisites. Please check the course description for the appropriate prerequisite course(s).*

ELECTRICAL ENGINEERING

A Bachelor's degree in electrical engineering requires **129** credit hours and the electrical engineering degree is designed for a four-year program of study.

- **Pre-EE Requirements - 15 Credits**
- **Core EE Requirements - 60 Credits**
- **General Education Requirements - 39 Credits**
- **Concentration Electives – 15 Credits**

A student needs to complete general courses and general education electives within the first two years of study with a grade point average of 2.0 or better before taking the upper level core courses (300 and 400-level courses). However, to complete the program within four years, a credit load of 15 to 18 is recommended.

The electrical engineering program is designed to prepare students to design and improve electrical, electronic and computer systems. The program combines practical exposure to the most modern technologies available with a theoretical foundation that empowers students to master future changes and innovations.

Students can select them following area of concentration:

- Computer Engineering/Digital Systems
- Electric Power and Energy Systems
- Manufacturing

B.S. – Electrical Engineering Requirements: 129 Credits

Semester ONE		Credits
ENGL 1110	Freshman Composition	3
CS 101	Programming I	3
ENGR 123	Computer Skills for Engineering	3
ENGR 130	Engineering Graphics	3
MATH 1510	Calculus I	4
SSC 100	College Success	1
Semester TWO		
EE 101	Electrical Engineering Fundamentals	3
ENGR 103	Introduction to Engineering	3
ENGR 143	Characteristics of Engineering Materials	3
ENGR169	Basic Statistics & Probability	3
ENGL 1120	Composition II	3
NAVA 2230	Navajo Government	3
Semester THREE		
EE 102	DC Circuits & Systems	3
EE 103	Digital Circuits & Systems	3
CHEM 1217C	General Chemistry I with Laboratory	4
MATH 1520	Calculus II	4
PHYS 1230C or PHYS 1310C	Algebra-Based Physics I or Calculus-Based Physics I	4
Semester FOUR		
EE 201	AC Circuits & Systems	3
EE 207	Intro to Modeling & Simulation	3
EE 212	Instrumentation	2
EE 296	Sophomore Project	1
PHYS1240C or 1320C	Algebra-Based Physics II OR Calculus-Based Physics II	4
NAVA 2210	Navajo Culture	3

Semester FIVE		
EE 340	Electronic Circuits & Systems	3
EE 312	Instrumentation II	2
MATH 2410	Differential Equations	4
HUMXXX	Humanities	3
SSCXXX	Social Science	3
Semester SIX		
EE 303	Probability & Random Signals	3
EE 301	Signals & Systems	3
EE 396	Junior Research Project	3
MTH 410	Linear Algebra	3
MTHXXX	MATH 2530, MATH 1350 or MTH415	3
Summer After Junior Year		
EE 313	Summer Internship	3
Semester SEVEN		
EE 422	Senior Project	3
EE 498	FE Exam Prep	3
XXX	Concentration Course	3
XXX	Concentration Course	3
Creative Fine Arts Course	ENGL2310, ENGL2320, ENGL2330, NAVA1310	3
Semester EIGHT		
EE 423	Capstone Design **	3
XXX	Concentration Course	3
XXX	Concentration Course	3
XXX	Concentration Course	3
TOTAL REQUIRED CREDIT HOURS:		**129**

***capstone design course must be related to the chosen concentration.*

Listing of Concentrations: *choose one concentration*

Computer Engineering/Digital Systems Concentration		
CS 200	Data Structures I	3
EE 230	Introduction to VHDL and FPGA	3
EE 330	Computer Organization & Assembly Language Programming	3
EE 430	Computer Architecture and Design	3
EE 440	Operating Systems I	3
XXX	Technical Elective (Computer Engineering)	3
Electrical Power and Energy Systems Concentration		
EE 370	Electrical Machinery	3
EE 460	Electrical Power Plants	3
EE 470	Electric Power Devices	3
EE 471	Power System Analysis	3
EE 472	Power Electronics & Power Management	3
XXX	Technical Elective (Electrical Power)	3
Manufacturing Concentration		
IE 235	Lean Production	3
ENGR313	Engineering Economics	3
IE 363	Design of Experiment	3
IE 413	Quality Control	3
IE 483	Rapid Prototyping	3

Listing of Technical Electives:

EE 223 Semiconductors I EE 230 Introduction to VHDL/ FPGA
EE 330 Computer Organization & Assembly Language Programming
EE 343 Introduction to VLSI Design3 EE 370 Electrical Machinery
EE 313 Summer Internship* EE 403 Digital VLSI
EE 407 Communication Systems EE 413 Analog VLSI
EE 430 Computer Architecture & Design .....
EE 460 Electrical Power Plants
EE 470 Electric Power Devices EE 471 Power System Analysis
EE 472 Power Electronics & Power Mgmt.
EE 440 Operating Systems I
IT 315 Multicore Programming MTH 410 Linear Algebra
MTH433 Numerical Analysis w/ Computers ....EE-x95 Topics in EE
EE 196 Freshman Research Project
EE 296 Sophomore Research
EE 396 Junior Research Project
Other Courses Approved by Dept.

**Summer internship should be taken in a field that supports the chosen concentration.*

Environmental Engineering

A Bachelor's degree in Environmental Engineering requires 125-126 credit hours and the Environmental Engineering degree is designed for a four-year program of study. The minimum credit load for a full-time student is 12 credit hours per semester.

A student needs to complete general courses and general education electives within the first two years of study with a grade point average of 2.0 or better before taking the upper level core courses (300 and 400-level courses). However, to complete the program within four years, a credit load of 15 to 18 per semester is recommended. Also, this time can be reduced by attending summer sessions and/or interim sessions

Environmental Engineering Requirements: 125-126 Credits

Semester FIRST		CREDITS
ENGR-123	Computer Skills for Engineering	3
ENGR-130	Engineering Graphics	3
CS-101	Programming	3
ENGL-1110	Composition I	3
SSC-100	College Success Skills	1
MATH-1510	Calculus I	4
Semester TWO		
ENGR-103	Introduction to Engineering	3
ENGR-169	Basic Statistics & Probability	3
EE-101	Fundamentals of Electrical Engineering	3
GIT-105	Fundamentals of Cartography	3
PHYS-1310	Calculus Based Physics	4
Semester THREE		
MATH-1520	Calculus II	4
CHEM-1217C	Principles of Chemistry I	4
ENGL-1120 or ENGL-2210	Composition II or Professional and Technical Communication	3
ENVE-2110	Fundamentals of Environmental Engineering	3
ENGR-236	Inferential Engineering Statistics	3
Semester FOUR		
NAV XXX	Dine Studies	3-4
CHEM-1225C	General Chemistry II for STEM Majors	4
ENVE-286	Applications of Biology to Engineering	3
MATH-2410	Differential Equations	4
COMM1130	Public Speaking	4
Semester FIVE		
IE-380	Project Management	3
ENVE-355	Soil Mechanics	3
CHEM2130	Organic Chemistry	4
MTH-410	Linear Algebra	3
ME-353	Fluid Mechanics	3

Semester SIX		
HUMN-1180	History of American Indians in Media	3
IE-323	Human Factors	3
GEOL-1120	Environmental Geology	4
C&FA XXX		3
Semester SEVEN		
ENVE-403	Water & Wastewater Treatment System Design	3
ENVE-425	Advance Environmental Law	3
ENVE-481	Hydrogeology	3
ENVE-442	Environmental Engineering Lab	3
ENVE-455	Fate & Transport Process in Environmental Engineering	3
Semester EIGHT		
ENVE-429	Capstone	3
ENVE-468	Air Pollution Control	3
ENVE-XXX	Elective	3
ENVE-481	Hazardous Waste Management & Risk Assessment	3
Summer Semester		
ENVE-312	Summer Internship	3
TOTAL CREDIT HOURS REQUIRED		**125-126**

ENVIRONMENTAL SCIENCE AND NATURAL RESOURCES

The Environmental Science and Natural Resources Bachelor of Science degree program focuses on Environmental and Natural Resources management with an emphasis on environmental regulations compliance. The program is designed to meet the needs of tribal, state, and federal environmental and natural resources management and enforcement entities. The program provides a broad background in natural resources management, covering natural science courses, chemistry, mathematics, statistics, environmental law, and regulations enforcement. The program focuses on addressing environmental and natural resources management in Native American communities and homelands.

Graduates of this program should be able to seek gainful employment in entities and organizations that deal with natural resources management, environmental protection, energy production, environmental protection and enforcement, and mineral extraction and processing.

A Bachelor's degree in Environmental Science requires **122-123** credit hours and the Environmental Science degree is designed for a four-year program of study. Students in the baccalaureate degree programs are required to complete a minimum of 30 credit hours in the upper division courses, i.e., 300 and 400 level courses before they can graduate.

- **General Science Requirements - 32 Credits**
- **General Education Requirements - 35 Credits**
- **Core Environmental Science Courses - 56 Credits**

A student needs to complete general courses and general education electives within the first two years of study with a grade point average of 2.0 or better before taking the upper level core courses (300 and 400-level courses).

B.S. – Environmental Science & Natural Resources Requirements: 122-123 Credits

GENERAL EDUCATION REQUIREMENTS		**Credits**
ENGL1110	Composition I	3
ENGL2120	Intermediate Composition	3
MATH1220	College Algebra	4
MATH1230	Trigonometry	4
Dine Studies: NAVA 1110, NAVA 2210, or NAVA 2230		3-4
Humanities/Social Sciences: HIST 1120 and HUMN 1180		6
Creative & Fine Arts course: 1.		3
Natural or Physical Science: CHEM 1217C or BIOL 1110C		4
Information Tech/Applied Computers: BCIS 1115		3
SSC 100	College Success	1
ENV. SCI. & NAT. RES. CORE REQUIREMENTS		
Semester ONE		**Credits**
ENVS 1110C	Environmental Science I	4
GIT 105	Fundamentals of Cartography	3
ENVS 1130C	The Blue Planet	4
Semester TWO		
ENVS 1120C	Environmental Science II	4
ENV 245	Natural Resources I	4
CHM 286 or SUST 1134C	Inorganic Chemistry with Lab OR Introduction to Sustainability Studies	4
Semester THREE		
ENV 289	Natural Resources II	4
GIT 110	Geographic Information Systems I	3
CHEM 2130C or ENVS 2111C	Organic Chemistry I or Environmental Engineering & Science	4
Semester FOUR		
GEOL 1120C	Environmental Geology	4
ENV 255	Introduction to Hydrology	4
GIT 111	Geographic Information Systems II	3
Semester FIVE		
ENV216	Fundamentals of Ecology with Lab	4
CHEM 2325C	Environmental Chemistry	4
ENGR234	Engineering Statistics	3
Semester SIX		
ENV350	Environmental Law I	3
ENV365	Natural Resources Management w/Lab	4
MATH 1240	Pre-Calculus	4
Summer Session		
ENV 312	Summer Internship	3
Semester SEVEN		
ENV425	Advanced Environmental Law	3
GIT202	Remote Sensing	4
ENV485	Environmental Regulation Enforcement	3
Semester EIGHT		
GIT220	Database Query	3
ENV464	Capstone	4
GIT210	Service Learning Project	1
TOTAL REQUIRED CREDIT HOURS		**122-123**

*** Some General Education and ENV courses have prerequisite(s). Please check course descriptions for the appropriate prerequisite course(s).*

INDUSTRIAL ENGINEERING

The Industrial Engineering program at Navajo Technical University focuses on design of systems for manufacturing and service applications. Students learn material science, manufacturing processes, CAD/CAM, rapid prototyping and other subjects which allow them to build or rebuild systems in organizations. Industrial Engineering is a branch of engineering that deals with design and improvement of integrated systems, including human resources, materials, equipment, and energy; using mathematics, physical sciences, and social sciences to maximize production of goods and services. In order to maximize efficiency, industrial engineers study product requirements carefully and design manufacturing and information systems to meet those requirements using physical and mathematical models. In addition, they develop management control systems to help in financial planning and cost analysis, design production planning and control systems to coordinate activities and ensure product quality. Furthermore, they design and improve systems for the physical distribution of goods and services and determine the most efficient plant locations as part of facilities planning operations. In a nutshell, industrial engineers determine the most effective ways to use the basic factors of production; namely people, machines, materials, information, and energy to make products and provide services.

The program is designed to help the Native Nation, state, and federal agencies and companies prepare for careers in the 21st century. Graduates of Industrial Engineering should be able to seek gainful employment in manufacturing and servicing companies such as petroleum, pharmaceuticals, automotive, industrial products, transportation, aerospace, food products, consultants, computers, and consumer products, and communications. Graduates of this program can be employed in companies that need the following personnel: manufacturing engineers, quality control engineers, process engineers, field engineers, facilities engineers, logistic managers, operations managers, materials engineers, and project managers.

A Bachelor's degree in Industrial Engineering requires **123** credit hours and is designed for a four- year program of study. Students in the baccalaureate degree programs are required to complete a minimum of 30 credit hours in the upper division courses, i.e., 300 and 400 level courses before they can graduate. The minimum credit load for a full-time student is 12 credit hours per semester.

B.S. Degree in Industrial Engineering
Requirements: 123-124 Credits

Semester ONE		**Credits**
ENGL 1110	Composition I	3
EE 101	Electrical Engineering	3
MATH 1510	Calculus I	4
ENGR 130	Engineering Graphics	3
ENGR 123	Computer Skills for Engineering	3
SSC 100	College Success	1
Semester TWO		
CS 101	Programming I	3
ENGR 103	Introduction to Engineering	3
ENGR 230	Advanced Engineering Graphics	3
ENGR 169	Basic Statistics and Probability	3
PHYS 1230C	Algebra-Based Physics I	4
Semester THREE		
MATH 1520	Calculus II	4
CHEM 1120C	Introduction to Chemistry	4
ENGL 2210	Professional & Technical Communication	3
IE 223	Design & Manufacturing Processes I	3
ENGR 236	Inferential Engineering Statistics	3
Semester FOUR		
NAVAXXX	Diné Studies Course	3-4
IE 343	Design & Manufacturing Processes II	3
IE213	Structure & Properties of Materials	3
IE 235	Lean Production	3
CFAXXX	Creative and Fine Arts Course	3
Semester FIVE		
IE 380	Project Management	3
HUMN 1180	History of American Indians in Media	3
ME 345	Statics	3
MTH 410	Linear Algebra	3
ENGR 313	Engineering Economics	3
Semester SIX		
MATH 2410	Differential Equations	4
HIST 1120	United States History II	3
IE 323	Human Factors in Product Design	3
XXX	Technical Elective – Advisor Approval	3
IE 363	Design of Experiment	3
Semester SEVEN		
IE 413	Quality Control	3
IE 433	Metrology & Instrumentation	3
IE 453	Operations Research	3
IE 423	Capstone I	3
Semester EIGHT		
IE 424	Capstone II	3
IE 463	Facility Planning & Design	3
IE 473	Inventory Control & Production Plan	3
IE 494	System Simulation	3
Fundamentals of Engineering Examination		**NC**
Summer Session		
IE 312	Summer Internship	3
TOTAL REQUIRED CREDIT HOURS		**123-124**

MECHANICAL ENGINEERING

Mechanical engineers possess a diverse set of skills and work in a wide range of industries. Products made with the help of mechanical engineers include aircraft, vehicles, robots, motors and ships. They assist at all stages of product development and are crucial for developing a number of highly-advanced technologies. The unique set of skills that mechanical engineers possess makes them essential for all modern economies.

A Bachelor's degree in Mechanical Engineering requires 123 credit hours. It is designed for a four-year program of study. The minimum credit load for a full-time student is 12 credit hours per semester. A student must complete general courses and general education electives within the first two years of study with a grade point average of 2.0 or better before taking upper level core courses (300 and 400-level). To complete the program within four years, a credit load of 15 to 18 credits per semester is recommended. This time can be reduced by attending summer sessions and/or intersessions.

BS Degree in Mechanical Engineering
Requirements: 123 Credits

Semester One		**Credits**
ENGL 1110	Composition I	3
MATH 1510	Calculus I	4
ENGR 123	Computer Skills for Engineers	3
ENGR 130	Engineering Graphics	3
ENGR 101	Fundamentals of Electrical Engineering	3
SSC 100	College Success Skills	1
Semester Two		
ENGL 2210	Professional Technical Communication	3
NAV XXX	Dine Studies Course	3-4
CHEM 1120C	Introduction to Chemistry	4
ENGR 103	Introduction to Engineering	3
ENGR 230	Advanced Engineering Graphics	3
Semester Three		
MATH 1520	Calculus II	4
ME 345	Statics	3
PHYS 1310C	Calculus-Based Physics I	4
IE 213	Structure and Properties of Materials	3
SSCXXX	Social and Behavioral Science	3
Semester Four		
MATH 2530	Calculus III	4
IE 243	Strength of Materials	3
HUMN 1180	History of American Indians in Media	4
PHYS 1320C	Calculus –Based Physics II	4
ENGR 169	Basic Statistics and Probability	3
Semester Five		
MATH 2410	Differential Equations	4
ME 356	Machine Design	4
ENGL 2310	Introduction to Creative Writing	3
IE 223	Design and Manufacturing Processes	3
Semester Six		
ME 354	Thermodynamics	3
MTH 433	Numerical Analysis with Computers	3
ME 353	Fluid Mechanics	3
ME 331	Kinematics of Machinery	3
ME 305	System Dynamics	3
Semester Seven		
ME 400	Capstone Project I	3
ME XXX	ME Elective	3
ME 405	Heat Transfer	3
IE 433	Metrology and Measurements	3
ME 316	Mechanical Laboratory	3
Semester Eight		
ME XXX	ME Elective	3
AMT 370	Robotics	3
ME 410	Capstone Project II	3
ME XXX	ME Elective	3
TOTAL REQUIRED HOURS		**123**

Listing of Technical Electives:

ME 401 Introduction to Artificial Intelligence
ME 407 Finite Element Analysis
ME 404 Compliant Mechanisms
ME 409 Renewable Energy Sys.
ME 406 Gas Dynamics & Space Propulsion
ME 415 Additive Manufacturing

ASSOCIATE DEGREE PROGRAMS

ASSOCIATE OF APPLIED SCIENCE

ACCOUNTING

The Accounting program is offering an Associate of Applied Science Degree while incorporating the Dine' Philosophy of Education and applying the concept of "learn by doing" by completing hands-on applications. It enables students to be job-ready for career opportunities abound as: Bookkeeper, Accounting Technician, Accounts Payable/ Receivable Clerk, Payroll Clerk, or an Income Tax Preparer. Upon completion students have the option to continue and earn a Bachelors of Arts Degree in Business Administration.

A.A.S. - Accounting Requirements: 63-64 credits

GENERAL EDUCATION REQUIREMENTS		**Credits**
English/Communication: ENGL 1110 or ENGL 1210		3
Mathematics: MATH 1220 or higher		4
Natural or Physical Science course 1.		4
Dine Studies: NAVA 1110, NAVA 2210 or NAVA 2230		3-4
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
ECON 1110	Survey of Economics	3
ACCOUNTING CORE REQUIREMENTS		
Semester ONE		**Credits**
ACG 101	Accounting Principles I	3
ACG 201	Payroll Accounting	3
ACG 210	Principles of Management	3
Semester TWO		
ACG 111	Accounting Principles II	3
ACG 212	Introduction to Finance	3
LAW 203	Business Law	3
Semester THREE		
ACG 204	Advanced Accounting I	3
ACG 213	Introduction to Fund Accounting	3
ACG 215	Federal Taxation	3
ACG 216	Principles of Marketing	3
Semester FOUR		
ACG 214	Advanced Accounting II	3
ACG 211	Accounting Software Applications	3
ACG 220	Cost Accounting	3
ACG 225	Managerial Accounting	3
TOTAL REQUIRED CREDIT HOURS		**63-64**

ADMINISTRATIVE OFFICE SPECIALIST

The Administrative Office Specialist program consists of certificate and Associate of Applied Science degree paths. Attitudes and knowledge of today's workplace are emphasized for students in both certificate and degree courses. All of the equipment and software found in today's business offices is utilized in our classrooms and curriculum. This program can launch a career in a business/office environment or be used as a stepping stone on the path to a higher professional degree.

A.A.S. - Administrative Office Specialist Requirements: 60-61 Credits

GENERAL EDUCATION REQUIREMENTS		**Credits**
English/Communication: ENGL1110		3
Mathematics: MATH 1220 or higher		4
Humanities/Dine Studies: NAVA 1110, NAVA 2210 or NAVA 2230		3-4
Natural or Physical Science course: 1.		4
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
ADMINISTRATIVE OFFICE SPECIALIST CORE REQUIREMENTS		
Semester ONE		**Credits**
ADM 105	MS Excel Application	3
ADM 210	MS PowerPoint Presentation Skills	3
COMM 2120	Interpersonal Communication	3
ACG 212	Introduction to Finance	3
Semester TWO		
ADM 201	Advanced Document Formatting	3
ADM 204	Machine Transcription	3
ACG 210	Principles of Management	3
Semester THREE		
ADM 202	Office Communication	3
ADM 208	Office Accounting	3
LAW 203	Business Law	3
ACG 216	Principles of Marketing	3
Semester FOUR		
ADM 203	Advertising & Public Relations Strategies	3
ADM 205	Office Management	3
ADM 213	Internship	3
TOTAL REQUIRED CREDIT HOURS		**60-61**

AUTOMOTIVE TECHNOLOGY

Automotive Technology program concentrates primarily on traditional gas-powered engines. The students will be able to demonstrate on Lab Job Sheets, pass the practice tests to prepare to become ASE certified, understand an ASE certified technician's responsibility to nature and the environment regarding shop waste disposal, basic understanding of Work Order Intake and Delivery processes. This degree will allow students to learn the scope of skills and knowledge required of those who earn an A.A.S. in Automotive Technology.

A.A.S. – Automotive Degree Requirements:
63 Credits

Semester ONE		**Credits**
MATH 1220	College Algebra	4
ENGL 1210	Technical Communications	3
BCIS 1115	Introduction to Computers	3
AUT 101	Introduction to Automotive Technology	3
AUT 103	Electrical and Electronic Systems	4
SSC 100	College Success	1
Semester TWO		
NAVA 2210	Navajo Culture	3
PHYS 1115C	Survey of Physics	4
AUT 102	Brake Systems	4
AUT 104	Chassis, Suspension, and Steering	4
Semester THREE		
AUT 111	Drive Trains and Axles	4
AUT 113	Tune-up and Engine Performance	4
AUT 114	Automatic Transmissions/Transaxle Overhaul	4
AUT 212	Heating/Air Conditioning Systems	3
AUT 215	Engine Repair	4
Semester FOUR		
AUT 203	Advanced Electrical and Electronic Systems	4
AUT 213	Advanced Tune-up and Engine Performance	4
AUT 286	Practicum in Automotive Technology	3
TOTAL REQUIRED CREDIT HOURS		**63**

BUILDING INFORMATION MODELING

The Building Information Modeling (BIM) program prepare students to pursue a drafting career. Students in the CAD program work with 2-D CAD, Microsoft Office Suite, and commercial and residential blueprint reading. Student completing the BIM degree program will have a broad range of 2-D and 3-D CAD, drafting skills and a solid, well-rounded educational foundation. Skills obtained at NTU give students the opportunity to apply in various internships with NASA, NASA affiliates and gain employment in various industries such as architectural or engineering firms. Students completing the BIM program will be given the opportunity to take the Autodesk Certified User exam to show competency in AutoCAD, Inventor (mechanical 3- D software) and Revit (architectural 3-D software). Students completing the CAD program only have the opportunity to take the Autodesk Certified User exam show competency in AutoCAD. NTU has articulation agreement to assist students to transfer to the Bachelor of Environmental Planning and Design (BAEPD) degree program at the University of New Mexico (UNM). The Community and Regional Planning Department will recognize students who complete this course of study as having met the same requirements for the degree as UNM student who have completed UNM courses. Student should contact the Undergraduate Advisor at the School of Architecture and Planning for current curriculum requirements.

Building Information Modeling Requirements:
62 Credits

GENERAL EDUCATION REQUIREMENTS		**Credits**
English/Communication: ENGL 1110		3
Mathematics: MATH 1220 or higher		4
Dine Studies: NAVA1110		4
Natural or Physical Science course: **1.**		4
ENGR 123	Computer Skills for Engineering	3
SSC 100	College Success	1
BIM CORE COURSES		
Semester ONE		**Credits**
DFT 120	Computer-Aided Drafting I	3
GIT 110	Geographic Information System I	3
ENGR130	Engineering Graphics	3
Semester TWO		
PHYS 1115C	Survey of Physics	4
DFT 220	Computer-Aided Drafting II	3
AMT 311	Laser Scanning Methods & Techniques	3
CT 115	Introduction to Construction Project Management	3
Semester THREE		
DFT 112	Architectural Drafting	3
DFT 240	Building Codes	3
MATH 1350	Introduction to Statistics	3
ENGR 143	Characteristics of Engineering Materials	3
Semester FOUR		
DFT 212	Advanced Architectural Drafting	3
DFT 250	Construction Management/Estimation	3
CT 208	Materials and Methods of Construction	3
TOTAL REQUIRED CREDIT HOURS		**62**

CHEMICAL ENGINEERING TECHNOLOGY

Chemical Engineering and Process Technologists and Technicians work on industrial processes designed to convert raw materials into petroleum products. Since the Four Corners region has significant oil and gas fields, there are a number of refineries and other oil and gas related operations throughout the area. Technologists run production units, help design operations, implement process controls and address corrosion concerns. They do these tasks both in the field and in large plants. They also research products and technologies as well as environmental and reclamation techniques. Environmental reclamation, given the number of abandoned mine sites on the Navajo Nation and in Arizona, Utah, and Colorado, provides jobs throughout Navajo Tech's service area.

A.A.S. – Chemical Engineering Technology Requirements: 61-62 Credits

Semester ONE		**Credits**
MATH 1220	College Algebra	4
ENGL 1110	Composition I	3
CHEME 119	Safety, Health & Environment I	4
CHEME 115	Introduction to Process Technology	3
SSC 100	College Success	1
Semester TWO		
BCIS 1115	Introduction to Computers	3
MATH 1230	Trigonometry	4
NAV/HUM	NAVA 1110, NAVA 2210 OR NAVA 2230	3
CHEM 1120C	Introduction to Chemistry	4
CHEME 117	Process Technology I-Equipment	4
Semester THREE		
CHEME 218	Process Technology II - System	4
CHEME 202	Industrial Chemistry and Lab	4
CHEME 222	Fundamentals of Chemical Engineering	4
Semester FOUR		
CHEME 223	Petroleum Refinery Engineering & Petrochemicals	4
CHEME 224	Quality Control in Chemical Engineering	4
CHEME 230	Practicum in Industry	4
CHEME 231	Process Technology III-Operations	4
TOTAL REQUIRED CREDIT HOURS		61-62

CONSTRUCTION TECHNOLOGY

Construction Technology offers specialized instruction in modern techniques of the construction practice. The goal of the program is to produce highly competent and technically trained graduates who possess a solid understanding of construction concepts. The program prepares graduates to work with architects, engineers, contractors, and other concerned with construction. All graduates are encouraged to become Occupational Health and Safety Administration (OSHA) and National Center for Construction Educational Research (NCCER) certified.

The Associate of Applied Science Degree in Construction Technology also focuses on three fundamental principles: Creative Problem Solving/Spirit of Innovation, Collaboration and a Rich Learning Experience.

A.A.S. – Construction Technology Requirements: 65-66 Credits

Semester ONE		**Credits**
CT 100	Construction I	3
CT 103	Introductory Craft Skills	3
ENGL 1210	Technical Communication	3
MATH 1220	College Algebra	4
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
Semester TWO		
CT 102	Construction Math & Drafting	2
CT 104	Concrete and Masonry Construction	3
CT 110	Construction II	3
CT 115	Introduction to Construction Project Management	3
CT 210	Construction Site Safety Management (OASHA10)	3
NAVXXX	Dine Studies Course (Humanities)	3-4
Summer Session		
CT 204	Summer Internship	3
Semester THREE		
CT 208	Materials and Methods of Construction	3
CT 203	Construction Surveying	3
CT 205	Building Environmental Systems II	3
CT 206	Sustainable Construction	3
CT 216	Advance Construction Math and Drawing	3
Semester FOUR		
CT 200	Construction Codes and Specifications	3
CT 201	Construction Cost Estimating	3
CT 215	Advance Construction Project Management	3
SCIXXX	Natural/ Physical Science	4
TOTAL REQUIRED CREDIT HOURS		**65-66**

CULINARY ARTS

The A.A.S. Culinary Arts degree program is designed to provide graduates with the knowledge and skills necessary for employment in a number of food service industry settings. Students will obtain training in professional cooking and baking so they will understand the demands of product delivery. Students will also receive management training specific to a variety of demands in the industry such as food and beverage management, human resources management, and planning and management of both large and small scale catering and banquet events. Graduates will have gained a better understanding of their own interpersonal communication skills as they relate to both back-of-the-house and front-of-the-house communication demands.

A.A.S. - Culinary Arts Requirements: 61-62 Credits

GENERAL EDUCATION REQUIREMENTS		Credits
English		
1. ENGL 1110		3
Mathematics: MATH 1220 or higher		4
Dine Studies: NAVA1110, NAVA 2210 OR NAVA2230		3-4
Natural or Physical Science course **1.**		4
Humanities/Social Science **1.** COMM 1130 or COMM 2120		3
Information Tech/Applied Computers: BCIS 1115 or higher		3
SSC 100	College Success	1
CULINARY ARTS CORE REQUIREMENTS		
Semester ONE		**Credits**
CUL 103	Food Safety and Sanitation	3
CKG 101	Professional Cooking I	8
Semester TWO		**Credits**
CKG 111	Professional Cooking II	8
BKG 209	Professional Baking Basics	3
CKG 112	Professional Internship	3
Semester THREE		**Credits**
CUL 201	ServSafe Essentials	3
CUL 105	Nutrition	3
Semester FOUR		**Credits**
CUL 205	Food & Beverage Management	3
CUL 206	Banquets & Catering	3
CUL 207	Management and Supervision	3
TOTAL REQUIRED CREDIT HOURS		**61-62**

ENERGY SYSTEMS

The Energy Systems program teaches the students to explore science, technology, engineering and mathematics while they study the transformation of mechanical energy to electrical energy. The program emphasizes techniques used to harness the earth's renewable energy sources while preserving our natural resources. Students will learn the fundamentals of electricity as it pertainsto renewable and sustainable energy sources, which includes photovoltaics and wind energy. They will also apply theirknowledge of distributed energy systems through practical, design and installation of wind turbine and photovoltaic electrical systems (balance of systems). This includes stand-alone, grid-tied, hybrid and net-metering systems while applying the National Electrical Code (NEC) for safe and resilient electrical service. This degree program offers hands-on training with our partners in the renewable energy industry that will not only prepare students to compete for job opportunities as part of workforce development, but also meet the challenge for the growing demand in the development of eco-friendly renewable energy systems.

A.A.S. - Energy Systems Requirements: 61-62 Credits

GENERAL EDUCATION REQUIREMENTS		Credits
English/Communication:		
ENGL 1110 or ENGL 1210		3
COMM 1130 or COMM 2120		3
Mathematics: MATH 1220 or higher		4
Dine Studies: NAVA1110, NAVA 2210 OR NAVA2230		3-4
ENVS 1110C Environmental Science		4
Humanities/ Social Science Course: **1.**		3
Information Tech/Applied Computers: BCIS 1115 or ITS 120 Microsoft Office Suite		3
SSC 100	College Success	1
ENERGY SYSTEMS CORE REQUIREMENTS		
Semester ONE		**Credits**
CHEM 1120C	Introduction to Chemistry	4
ELC 101	Electrical Theory I	4
ERS 104	Electrical Mathematics	3
Semester TWO		
ELC 102	Electrical Theory I	4
ERS 106	Wind Solar Theory I	3
SUST 1134C	Sustainability	4
Semester THREE		
ELC 111	Commercial Wiring	4
ERS 102	Photovoltaic Theory and Design I	3
ENGR 123	Computer Skills for Engineers	3
Semester FOUR		
ERS 103	Photovoltaic Theory and Design II	3
ERS 115	Systems Control	4
TOTAL REQUIRED CREDIT HOURS		**61-62**

ENGINEERING TECHNOLOGY

The program is designed to prepare students for entry into an engineering or technology program or entry into the technical workforce. The credits earned as part of this Associates program apply to requirements in Electrical Engineering, Industrial Engineering, and Advanced Manufacturing Technology. Students completing this degree can work as an Engineering Technician or Draftsperson.

- General Education Requirements – 22 Credits
- Core Engineering Courses – 40

A.A.S. – Engineering Technology Requirements: 62-63 Credits

Semester ONE		Credits
ENGL 1110	Composition I	3
EE 101	Electrical Engineering Fundamentals	3
ENGR 123	Computer Skills for Engineering	3
ENGR 130	Engineering Graphics	3
MATH 1220	College Algebra	4
SSC 100	College Success	1
Semester TWO		
CS 101	Programming I	3
NAVXXX	Dine' Studies Course	3-4
ENGR 103	Introduction to Engineering	3
ENGR 143	Char. of Engineering Materials	3
ENGR 230	Advance Engineering Graphics	3

Semester THREE		Credits
IE 223	Design of Manufacturing Processes I	3
MATH 1230	Trigonometry*	4
Technical Elective: 1. 2.		6
PHYS 1230C	Algebra Based Physics*	4
Semester FOUR		**Credits**
CHEM 1120C	Introduction to Chemistry	4
ENGR 169	Basic Statistics & Probability	3
Technical Elective: 1.		3
ME 345	Statics	3
TOTAL REQUIRED CREDIT HOURS		**62-63**

ENVIRONMENTAL SCIENCE AND NATURAL RESOURCES

The Environmental Science and Natural Resources program emphasizes a thorough overview of environmental laws, hands-on experience, regulatory compliance, safety, and Native American perspectives on environmental and natural resource protection and management. The program is designed to meet the needs of tribal, state, and federal environmental and natural resource management entities, particularly those entities working in Native American communities. The program focuses upon preparing the student to address environmental redemption and restoration. It provides a general background to assist with natural resource management.

A.A.S. - Environmental Science and Natural Resource Requirements: 63-64 Credits

GENERAL EDUCATION REQUIREMENTS		Credits
English/Communication: ENGL 1110		3
Mathematics: MATH 1220 or Higher		4
Dine Studies: NAVA1110, NAVA 2210 OR NAVA 2230		3-4
Natural or Physical Science: CHEM 1217C OR BIOL 1110C		4
Information Tech/Applied Computers: BCIS 1115 or higher		3
SSC 100: College Success		1
ENV. SCIENCE & NAT. RES. CORE REQUIREMENTS		
Semester ONE		**Credits**
ENVS 1110C	Environmental Science I	4
GIT 105	Fundamentals of Cartography	3
ENVS 1130C	The Blue Planet	4
Semester TWO		
ENVS 1120C	Environmental Science II	4
ENV 245	Natural Resources I	4
SUST 1134C	Introduction to Sustainability Studies	4
Semester THREE		
ENV 289	Natural Resources II	4
GIT 110	Geographic Information Systems I	3
ENVS 2111C	Environmental Engineering and Science	4
Semester FOUR		
GEOL 1120C	Environmental Geology	4
ENV 255	Introduction to Hydrology	4
GIT 111	Geographic Information Systems II	3
TOTAL REQUIRED CREDIT HOURS		**63-64**

GEOGRAPHIC INFORMATION TECHNOLOGY PROGRAM

The Geographic Information Technology (GIT) program will serve to introduce students to the fundamental principles of geographic information systems, remote sensing, database applications, cartography, and enable students to understand the current state of knowledge residing in a geographic information system. The GIT program seeks to ready students for positions with governmental agencies, engineering companies, and topographical drafting organizations. Through the knowledge they receive from this program, they will also be capable of finding employment in a GIT department.

A.A.S. - GIT Requirements: 62 Credits

Semester ONE		Credits
DFT 120	Computer Aided Drafting	3
ENGL 1110	Composition I	3
NAVA 1110	Navajo I	4
GIT 105	Fundamentals of Cartography	3
GIT 110	Geographic Information Systems I	3
SSC 100	College Success	1
Semester TWO		
MATH 1220	College Algebra	4
ENVS1110C	Environmental Science I	4
GIT 111	Geographic Information Systems II	3
ENGR 103	Introduction to Engineering	3
ACG 210	Principles of Management	3
Semester THREE		
ENV 245	Natural Resources I	4
MATH 1230	Trigonometry	4
GIT 202	Remote Sensing	3
GIT 210	Service Learning Project	1
CT 203	Construction Surveying	3
Semester FOUR		
PHYS 1230C	Algebra Based Physics I Lecture & Lab	4
IT 335	Data Visualization	3
GIT 207	GIS Software Applications	3
GIT 220	Database Query	3
TOTAL REQUIRED CREDIT HOURS		**62**

INFORMATION TECHNOLOGY TECHNICIAN

This program is structured to prepare students for immediate and continuing employment opportunities in the broad disciplines of information technology and computer support. This includes positions such as helpdesk technician assistant, information system support, and data analyst assistant. The information technology program will involve and incorporate the Navajo Technical University Information Technology (IT) department real world projects and disciplines. This collaboration will offer students hands-on practical technology opportunity and allows the Navajo Technical University IT department support. Students who earn the Information

A.A.S. - Information Technology Technician Requirements: 62 Credits

Semester ONE		**Credits**
ENGL 1110	Composition I	3
MATH 1220	College Algebra	4
SSC 100	College Success	1
IT 105	Introduction to Programming	3
IT 110	Intro. to Digital Logic/Hardware Programming	3
IT 115	Drawing/Visual Culture	3
Semester TWO		
MATH 1230	Trigonometry	4
IT 118	Introduction to C ++	3
IT 120	Operating Systems	3
IT 125	Introduction to Digital Video	3
IT 150	Introduction to System Administration	3
Semester THREE		
SCIXXX	Physical/Natural Science Course	4
IT 142	Web Design Concepts	3
IT 220	Database Design	3
IT 218	Algorithms & Data Structures	3
IT 222	Computer Security	3
Semester FOUR		
NAVA 1110	Navajo I	4
IT 270	Web Standards	3
IT 262	Internetworking	3
IT 280	IT Project Management	3
TOTAL REQUIRED CREDIT HOURS		**62**

LAW ADVOCATE

The Law Advocate degree program is intended to prepare students to successfully complete the requirements for admission to the Navajo Nation Bar Association and to work as legal advocates in the legal and judicial systems of the Navajo Nation. Classes will allow local community residents to receive training to acquire new job skills or enhance existing job skills. Classes are offered in criminal, civil, and family law; with an emphasis on court procedure and practical skills. Legal research, legal writing, and legal ethics will be stressed.

A.A.S. - Law Advocate Requirements: 60-61 Credits

GENERAL EDUCATION REQUIREMENTS		**Credits**
English/Communication: ENGL 1110		3
Mathematics: MATH1220 or higher		4
Dine Studies: NAVA1110, NAVA 2210, NAVA 2230		3-4
Natural or Physical Science: **1.**		4
Social Science /Humanities Courses 1. 2. 3. 4.		12
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
LAW ADVOCATE CORE REQUIREMENTS		
Semester ONE		**Credits**
LAW 105	Advanced Legal Research & Writing	3
BUSA 2420	Tribal Law	3
Semester TWO		
LAW 201	Consumer Law	3
LAW 203	Business Law	3
Summer Internship		
LAW 221	Law Advocate Internship	3
Semester THREE		
LAW 204	Advanced Business Law	3
LAW 211	Administrative Law	3
LAW 212	Trial Practice	3
Semester FOUR		
LAW 205	Professional Responsibility and Ethics	3
LAW 225	Navajo Nation Bar Review	3
TOTAL REQUIRED CREDIT HOURS		**60-61**

PROFESSIONAL BAKING

The Professional Baking degree program provides students with advanced baking skills for the higher levels of commercial baking in a professional environment. Instruction focuses on a maximum hands-on experience as well as theory and safety. Students will be involved in all aspects of baking preparation including breads, sweet breads, assorted pastries, cakes and cake decorating. The program also includes advanced techniques such as working with spun sugar, chocolate, and design requirements for individual plates used in more formal setting such as banquets, caterings, and fine dining establishments.

A.A.S. – Professional Baking Requirements: 60-61 Credits

GENERAL EDUCATION REQUIREMENTS		Credits
English/Communication: ENGL 1110		3
Mathematics: MATH 1220 or higher		4
Dine Studies: NAVA1110, NAVA 2210 or NAVA 2230		3-4
Natural or Physical Science: **1.**		4
Information Tech/Applied Computers: BCIS 1115 or higher		3
SSC100	College Success	1
PROFESSIONAL BAKING CORE REQUIREMENTS		
Semester ONE		**Credits**
CUL 103	Food Safety and Sanitation	3
BKG 101	Professional Baking I	8
Semester TWO		
BKG 111	Professional Baking II	8
CKG 208	Professional Cooking Basics	3
Semester THREE		
CUL 201	ServSafe Essentials	3
CUL 105	Nutrition	3
CUL 206	Banquets and Catering	3
Semester FOUR		
BKG 201	Art of Grand Finale	4
BKG 202	Advanced Cake Decoration	4
CUL 207	Management and Supervision	3
TOTAL REQUIRED CREDIT HOURS		**60-61**

PUBLIC ADMINISTRATION

The A.A.S. degree in Public Administration is awarded upon completion of a course in a cross-disciplinary program. Students will develop the skills and the intellectual discipline necessary to enter any Navajo Nation governmental office and provide worthwhile and creative administrative and managerial services. The course requirements for this program are comprised of courses offered among several existing certificate and degree programs.

A.A.S. - Public Administration Requirements: 63-64 Credits

GENERAL EDUCATION REQUIREMENTS		Credits
English/Communication: ENGL 1110		3
Mathematics: MATH 1220 or higher		4
Dine Studies: NAVA 1110, NAVA 2210 OR NAVA 2230		3-4
Natural or Physical Science: **1.**		4
Information Tech/Applied Computers: BCIS 1115 or higher		3
SSC100	College Success	1
PUBLIC ADMINISTRATION CORE REQUIREMENTS		
Semester ONE		**Credits**
ACG 101	Accounting Principles I	3
ADM 101	Keyboarding and Formatting I	3
PAD 101	Introduction to Public Administration	3
Semester TWO		
PAD 110	Public Finance Administration	3
ACG 212	Introduction to Finance	3
ADM 115	Records Management	3
BUSA 2420	Tribal Law	3
Semester THREE		
PAD 210	Public Sector Management	3
ACG 210	Principles of Management	3
LAW 203	Business Law	3
PAD 225	Human Behavior in Organization	3
Semester FOUR		
LAW 205	Professional Responsibility and Ethics	3
ACG 216	Principles of Marketing	3
PAD 230	Internship/Practicum	3
PAD 295	Topics in Public Administration	3
TOTAL REQUIRED CREDIT HOURS		**63-64**

*** Some of the Business and General Education courses have a prerequisite. Please check the course descriptions for the appropriate prerequisite course(s)*

VETERINARY TECHNICIAN

The mission of the Veterinary Technology degree program is to provide students with the academic, professional "hands-on" knowledge, and skills required to master the American Veterinary Medical Association's Veterinary Technology Student Essential Skills which will prepare students as entry-level veterinary technicians, to successfully pass the VTNE (Veterinary Technician National Exam), and to perform as effective veterinary health care team members. Students will exhibit conduct that reflects practice standards that are professional, ethical, and legal. Graduates of this program will recognize career opportunities in traditional and non-traditional settings such as private veterinary practice, biomedical research, academia, food safety, government agencies, zoos, and other animal health-related fields.

The length of time necessary for completion of the program is a minimum of 5 semesters. A minimum of 73 credit hours must be earned in specific coursework including general education and core program courses. Students must meet with the Program Advisor before registering for classes each semester. Students must pass the VTNE in order to graduate and apply for state licensure.

Officially admitted student requirements include:

- Students may be granted provisional admission by the Admissions Committee. Admissions Committee will evaluate academic performance on a semester-basis or schedule determined by the committee.
- Required to maintain a minimum cumulative G.P.A. of 2.50 in program core and a grade of C is considered passing for each program core course. Failure to earn a C in a core course will result in repeating the failed course one year later before progressing into the next semester as the courses build on each other.
- If you leave the program for any reason other than failing a course (thus, waiting one year to repeat the course) must request for readmission through the Admissions Committee. Process may require submission of another application and required documents, volunteer work, interview, etc.
- Required equipment and supplies to bring to class, lab, clinical rotation, and field: calculator, scrub top, smock, stethoscope, digital thermometer, bandage scissors, equine/bovine weight tapes, black sharpie pen, and rubber boots.
- Extra time is required when taking VET 090 which are to participate in on-call duty, clinic duty, and livestock duty, and participate in community veterinary service and outreach while in the program according to schedule developed by Program Director and faculty. Failure to complete assigned duties will result in dismissal from the program or a failing grade in VET 090.
- Pass the Veterinary Technician National Examination (VTNE) prior to graduating. Students will receive a failing grade in VET250 Veterinary Technician National Examination Review course until passing the exam.
- Pay for the VTNE exam fee however will be reimbursed for one exam fee upon passing. Students will not be reimbursed exam fees for failed attempts of passing the exam.
- Officially admitted students will be required to complete semesters 2, 4, and 5 courses following a modified schedule in preparation to sit for the VTNE from July 15 – August 15.

Other requirements for admission into the Veterinary Technology Program can be found under Admission.

Veterinary Technician Requirement: 73-74 Credits

REQUIREMENTS BEFORE ADMISSION		**Credits**
English/Communication: ENGL1110 or ENGL1120 or ENGL2120		3
Mathematics: MATH 1220 or higher		4
Dine Studies: NAVA1110, NAVA 2210 OR NAVA 2230		3-4
Natural or Physical Science (2) courses: 1. BIOL 2110C **2.** CHEM 1217C		8
Introduction to Veterinary Technology: VET 090		1
VETERINARY TECH REQUIREMENTS		
Semester ONE		**Credits**
VET130	Veterinary Medical Terminology	1
VET132	Veterinary Office Procedure	1
VET135	Veterinary Anatomy	4
VET 138	Veterinary Physiology	4
VET136	Veterinary Nursing I	2
Semester TWO		
VET140	Veterinary Surgical Nursing	2
VET142	Veterinary Pharmacology for Technicians	2
VET144	Vet. Clinical Laboratory Procedures I	3
VET146	Veterinary Nursing II	2
VET148	Animal Nutrition	2
VET150	Veterinary Dentistry	2
Semester THREE		
VET230	Veterinary Medicine and Surgery	3
VET232	Veterinary Anesthesiology	3
VET234	Veterinary Clinical Laboratory Procedures II	4
VET236	Veterinary Diagnostic Imaging I	2
Semester FOUR		
VET240	Veterinary Diagnostic Imaging II	3
VET242	Avian, Exotic, Lab Animal Husbandry & Handling	2
VET244	Veterinary Clinical Laboratory Procedures III	3
VET246	Veterinary Nursing II	2
VET248	Veterinary Critical Care	3
VET250	Veterinary Technician National Exam Review	1
Semester FIVE (Summer)		
VET260	Veterinary Technology Practicum I (12wks)	3
TOTAL REQUIRED CREDIT HOURS		**73-74**

ASSOCIATE OF ARTS

COUNSELING

The Associate of Arts Degree Program in Counseling requires **64-65** credit hours and is designed as a two-year program of study. The program is designed to prepare students for entry level job as Behavioral Health Technicians at the Navajo Nation Department of Behavioral Health Services, in area hospitals, schools and surrounding Pueblos, and/or students may continue to obtain a baccalaureate degree in Counseling or Psychology. A GPA of 2.5 in all Counseling courses is required.

The A.A. degree has two concentrations: Substance Use Disorder and Crisis Management & Suicide Prevention.

- **General Education Requirements - 21-22 Credits**
- **Core Counseling Courses - 42 Credits**

COUNSELING: SUBSTANCE USE DISORDER		
Semester ONE		**Credits**
MATH 1220	College Algebra	4
ENGL 1110	Composition I	3
BCIS 1115	Introduction to Computer	3
PSYC 1110	Introduction to Psychology	3
CEPY 1110	Introduction to Counseling Theories	3
SSC 100	College Success	1
Semester TWO		
COMM 2120	Interpersonal Communication	3
BIOL 1110C	General Biology	4
CEPY 1140	Personality Psychology	3
COU 108	Foundation of Addiction	3
PSYC 2120	Developmental Psychology	3
Semester THREE		
COU 165	Introduction to Family Dynamics	3
COU 230	Case Mgmt. & Crisis Skills for Substance Use Disorder	3
COU 235	Group Dynamics	3
COU 255	Principles of Interviewing & Assessment	3
ENGL 2310	Creative Writing	3
Semester FOUR		
COU 210	Prevention & Treatment of Substance Use Disorder	3
COU 290A	Clinical Internship (Substance Abuse)	4
PSYC 245	Psychopharmacology in the Treatment of Addiction & Substance Use Disorders	3
PSYC 265	Social Psychology & Cultural Application	3
NAVXXX	NAVA1110, NAVA 2210 OR NAVA 2230	3-4
TOTAL REQUIRED CREDIT HOURS		**64-65**

COUNSELING: CRISIS MANAGEMENT & SUICIDE PREVENTION DEGREE		
Semester ONE		**Credits**
MATH 1220	College Algebra	4
ENGL 1110	Composition I	3
BCIS 1115	Introduction to Computer	3
PSYC 1110	Introduction to Psychology	3
CEPY 1110	Introduction to Counseling Theories	3
SSC 100	College Success	1
Semester TWO		
COMM 2120	Interpersonal Communication	3
BIOL 1110C	General Biology	4
CEPY 1140	Personality Psychology	3
COU 108	Foundation of Addiction	3
PSYC 2120	Developmental Psychology	3
Semester THREE		
COU 235	Group Dynamics	3
COU 255	Principles of Interviewing & Assessment	3
COU 165	Introduction to Family Dynamics	3
COU 250	Suicide Risk Assessment	3
ENGL 2310	Creative Writing	3
Semester FOUR		
COU220	Foundations in Crises & Suicide Risk Management	3
COU 285	Prevention, Education, Postvention Services & Advocacy	3
COU 290B	Clinical Internship (Crisis Management)	4
PSYC 265	Social Psychology & Cultural Application	3
NAVAXXX	NAVA 1110, NAVA 2210, or NAVA 2230 (humanities)	3-4
TOTAL REQUIRED CREDIT HOURS		**64-65**

GENERAL STUDIES

The purpose of the Associate of Arts degree in General Studies is to provide a flexible degree program that allows students to complete their degree by attending classes that focus primarily on general education courses yet provides insight into a variety of potential academic pathways for those who are undecided about a major. The General Studies program offers practical introductions to the field of general education classes at the college level; additionally, students may transfer many, if not all, credits to a four-year college or University If they choose to pursue a bachelorette degree.

A.A. - General Studies Requirements: 62 Credits

Semester ONE		**Credits**
MATH 1220	College Algebra	4
ENGL 1110 or ENGL1210	Composition I or Technical Communications	3
NAVA 2230	Navajo Government	3
NAVA 2240	Dine Philosophy of Education	3
BCIS 1115	Introduction to Computer	3
SSC 100	College Success	1
Semester TWO		
NAVA 2210	Navajo Culture	3
ENG 1410	Introduction Literature	3
NAVA 2220 NAV 212	Navajo History OR Navajo Historical Perspective of Navajo	3
CHEM 1120C	Introduction to Chemistry	4
HIST 1110	United States History I	3
Semester THREE		
COMM 2120	Interpersonal Communication	3
ENGL 1120 ENGL 2120	Composition II OR Intermediate Composition	3
PSYC 1110	Introduction to Psychology	3
NAV 210	Contemporary Navajo Life & Experiences	3
ECON 1110	Survey of Economics	3
Semester FOUR		
ENGL 2310	Introduction to Creative Writing	3
FDMA 2175	International Cinema	3
COMM 1130	Public Speaking	3
BIOL 1110C	General Biology	4
PED 101	Physical Education	1
TOTAL REQUIRED CREDIT HOURS		62

ASSOCIATE OF SCIENCE

COMPUTER SCIENCE

This program is designed to prepare students for entry-level jobs on the Navajo Nation. Students should be able to write sequential programs, design solutions to computer -related problems and develop a technical presentation. Students will be encouraged to continue towards bachelor's degrees in computer science.

A.S. – Computer Science Requirements: 62-63 Credits

Semester ONE		**Credits**
BCIS 1115	Introduction to Computers	3
MATH 1220	College Algebra	4
CS 101	Programming I	3
CS 120	Computational Thinking	3
ENGR 103	Introduction to Engineering	3
SSC 100	College Success	1
Semester TWO		
NAVAXXX	NAVA1110, NAVA 2210 OR NAVA 2230	3-4
ENGL 1110	Composition I	3
CS 125	Scripting	3
CS 150	Programming II	3
CS 175	Introduction to Computer Organization	3
Semester THREE		
MATH 1240	Pre-Calculus	4
ENGL 1120 or ENGL 2210	Composition II OR Professional & Technical Communication	3
EE 330	Computer Organization & Assembly Language	3
CS 201	Data Structures I	3
CS 225	Comparative Programming Languages	3
Semester FOUR		
SCIXXX	PHYS 1230C, BIOL 1110C, OR CHEM 1120C	4
MATH 1510	Calculus I	4
CS 251	Data Structures II	3
HUMXXX	Humanities Elective	3
TOTAL REQUIRED CREDIT HOURS		**62-63**

EARLY CHILDHOOD MULTICULTURAL EDUCATION

The Early Childhood Multicultural Education program provides a transferable associate degree which meets the requirements for articulation with the state of New Mexico and across the Navajo Nation and is a New Mexico state approved program under the NM Department of Education. Upon completion of the core credit hours in the degree program, students may be issued a state certificate from the Children, Youth and Families Department. The state certificate will indicate completion of the required Early Childhood Multicultural Education vocational courses. Students graduating from this program will be able to work in the early childhood educational field and/or pursue various bachelor degrees in the field of Early Childhood education. The program is consistent with the new core curriculum requirements for New Mexico, and incorporates cultural and linguistic standards required by the Navajo Nation. Courses in this program reflect Navajo family home values, beliefs, and experiences. The curriculum prepares students to demonstrate their skills and work effectively with children from birth to age 8 in a variety of settings.

An additional fee for the state-issued certificate required.

Students enrolled in this program must also:

- Submit a Teacher Education Program application to the Department of Public Education as required for Elementary Teaching (K-3).
- Maintain a 2.5 cumulative GPA while in the program

A.S. - ECME Degree Requirements: 72-73 Credits

GENERAL EDUCATION REQUIREMENTS		**Credits**
SSC 100	College Success	1
ENGL 1110	Composition I	3
ENGL 1120	Composition II	3
BCIS 1115	Introduction to Computers	3
MATH 1110	Math for Teacher I	3
MATH 1115	Math for Teacher II	3
Dine Studies: NAVA1110, NAVA 2210 OR NAVA 2230		3-4
Natural or Physical Science: BIOL 1110C, GEOL 1110C, ENVS 1110C, PHYS 1115C, or CHEM 1120C		8
Social/ Behavioral Science: PSYC 1110, PSYC 21120, ECON 1110, CJUS 1110, SOCI 1110, POS 220* (AZ Requirement)		3
Humanities/ Fine Arts: HIST 1110, HIST 1120, COMM 1130 or NAVA 2220* (AZ "H")		6
Fine Arts: ENGL 2310 or NAVA 1310		3
ECME CORE REQUIREMENTS		
ECED 1001	Introduction to Early Childhood	3
ECED 1110	Child Growth, Development, and Learning	3
ECED 1115	Health, Safety, and Nutrition	3
ECED 1120	Guiding Young Children	3
ECED 1125	Assessment of Children & Evaluation of Program	3
ECED 1130	Family and Community Collaboration	3
ECED 2110	Professionalism	2
ECED 2115	Introduction to Literacy and Reading Development	3
ECED 2120	Curriculum Development through Play	3
ECED 2121	Curriculum Development through Play Birth under 4 (PreK) Practicum	2
ECED 2130	Curriculum Development and Implementation	3
ECED 2131	Curriculum Development and Implementation Age 3(PreK) through Grade 3 Practicum	2
TOTAL REQUIRED CREDIT HOURS		**72-73**

NOTE: The Early Childhood Multicultural Education program has specific general education courses that students are encouraged to take so students should check with their advisor in order to choose the preferred courses from the general education electives.

***Some General Education and ECME courses have prerequisites and Corequisite. Please check the course description for the appropriate prerequisite course(s) and Corequisite course(s).*

MATHEMATICS

Mathematics is a program that focuses on the analysis of quantities, magnitudes, forms, and their relationships, using symbolic logic and language. It includes instruction in algebra, calculus, functional analysis, geometry, number theory, logic, topology and other mathematical specializations. Mathematics is a versatile program that can be applied to almost any career. A student with a degree in mathematics will have an endless opportunity. A student who studies mathematics will have the ability to think analytically, solve problems, and communicate precisely. Graduates of this program should be able to seek gainful employment as a teacher, mathematician, statistician, financial analyst, consultant, engineer, physician, lawyer, and research analyst

A.S. – Mathematics Requirements: 60-61 Credits

Semester ONE		**Credits**
MATH 1220	College Algebra	4
MATH 1240	Pre-Calculus	4
ENGL 1110	Composition I	3
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
Summer Session		
MATH 1230	Trigonometry	4
Semester TWO		
MATH 1510	Calculus I	4
MATH 1350	Introduction to Statistics	3
PHYS 1230C	Algebra Based Physics I	4
NAVXXX	NAVA1110, NAVA 2210 or NAVA 2230	3-4
Semester THREE		
MATH 1520	Calculus II	4
MTH 306	College Geometry	3
SOCI 1110	Introductions to Sociology	3
PSYC1110	Introduction to Psychology	3
Semester FOUR		
MATH2410	Differential Equation	4
COMM1130	Public Speaking	3
MATH 2530	Calculus III	4
MTH 410	Linear Algebra	3
TOTAL REQUIRED CREDIT HOURS		**60-61**

CERTIFICATE PROGRAMS

ADMINISTRATIVE OFFICE SPECIALIST

The certificate provides graduates with the knowledge and skills needed for entry level positions in today's offices. Students upon completion of the certificate program have the option of continuing for an AAS degree in Administrative Office Specialist.

Administrative Office Specialist Requirements: 31 Credits

GENERAL EDUCATION REQUIREMENTS		Credits
ENGL 1210	Technical Communications	3
MTH 113	Technical Mathematics	3
NAVXXX	Dine Studies Course	3
BCIS 1115	Introduction to Computers	3
ADMINISTRATIVE OFFICE SPECIALIST CORE COURSES		
Semester ONE		**Credits**
ADM 101	Keyboarding & Formatting I	3
ADM 113	Office Procedures	3
ADM 115	Records Management	3
SSC 100	College Success Skills	1
Semester TWO		
ADM 111	Keyboarding & Formatting II	3
ADM 114	Business Mathematics & Calculators	3
CJUS 1110	Introduction to Criminal Justice	3
TOTAL REQUIRED CREDIT HOURS		**31**

*** Please check course descriptions for the appropriate prerequisite course(s).*

AUTOMOTIVE TECHNOLOGY

The Automotive Technology program is designed to prepare individuals for jobs in maintenance and mechanical repair of cars and light trucks. The occupational competencies are aligned with National Automotive Technical Foundation (NATEF) and Automotive Service Excellence (ASE) standards. Post-secondary automotive technology programs are expected to teach eight competency areas: 1) proper tool care and safe work environment, 2) preparing service work orders, 3) repairing electrical/electronic systems, 4) repairing steering and suspension systems, 5) engine performance diagnostics and repair, 6) brake systems, 7) manual drive train and axles, and 8) heating and air-conditioning systems. Students must demonstrate satisfactory competence in each of the eight areas of focus in order to receive their Automotive Technology Certificate. A mechanical aptitude test will be administered to students before admission into the program.

Automotive Technology Requirements: 32 Credits

GENERAL EDUCATION REQUIREMENTS		Credits
ENGL 1210	Technical Communications	3
MTH 113	Technical Mathematics	3
NAVXXX	Dine Studies Course	3
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
AUTOMOTIVE TECHNOLOGY CORE COURSES		
Semester ONE		**Credits**
AUT 101	Introduction to Automotive Technology	3
Semester TWO		
AUT 102	Brake Systems	4
AUT 103	Electrical and Electronic Systems	4
AUT 104	Chassis, Suspension, and Steering	4
AUT 113	Tune-up and Engine Performance	4
TOTAL REQUIRED CREDIT HOURS		**32**

COMPUTER SCIENCE

The Certificate Program in Computer Science requires 32 credit hours and is designed for a one-year program of study. The program is designed to prepare students for entry level job on Navajo Nation and students may continue to obtain and an associate degree or a baccalaureate degree.

- General Education Requirements - 14 Credits
- Core Computer Science Courses - 18 Credits

Computer Science Requirements: 32 Credits

GENERAL EDUCATION REQUIREMENTS		Credits
ENGL 1110	Composition I	3
MATH 1220	College Algebra	4
NAVXXX	Dine Studies	3
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
COMPUTER SCIENCE CORE COURSES		
Semester ONE		**Credits**
ENGR 103	Introduction to Engineering	3
CS 101	Programming I	3
CS 120	Computational Thinking	3
Semester TWO		
CS 150	Programming II	3
CS 175	Introduction to Computer Organization	3
CS 125	Scripting	3
TOTAL REQUIRED CREDIT HOURS		**32**

CONSTRUCTION TECHNOLOGY

The Construction Technology program will broaden the knowledge and improve the skills of students in building construction. It will also prepare student for both trade and entry-level management in the construction industry within the state and national level. In addition to obtaining technical skills, student completing the program will have also developed competence in advanced critical thinking, career development, applied academics, and leadership skills required for Building Construction occupations. The Construction Technology certificate will be comparable to a first year apprenticeship that is offered by the chapters of the Associate Builders and Contractors (ABC), Associated General Contractors (AGC), the National Association Home Builders (NAHB), and other professional organizations, as well as private businesses (private contractors).

Construction Technology Requirements:
37 Credits

CONSTRUCTION TECHNOLOGY CORE COURSES		
Semester ONE		**Credits**
BCIS 1115	Introduction to Computers	3
ENGL 1210 ENGL 1110	Technical Communications OR Composition I	3
MTH 113 or above	Technical Mathematics or above	3
CT 100	Construction I	3
CT 103	Introduction to Craft Skills	3
SSC 100	College Success	1
Semester TWO		
CT 104	Concrete & Masonry Construction	3
CT 102	Construction Math & Drawing	2
NAV XXX	Dine Studies	3
CT 110	Construction II	3
CT 119	Construction Site Practicum	3
CT 115	Intro to Construction Project Management	3
CT 121	Introduction to Building Environmental System	2
WLD 101	Welding Fundamentals I	3
TOTAL REQUIRED CREDIT HOURS		**37**

COUNSELING

The Certificate Program in Counseling requires **34** credit hours and is designed for a one-year program of study. The program is designed to prepare students for entry level job on Navajo behavioral health facilities and students may continue to obtain and an associate degree or a baccalaureate degree. Graduates from this program will work on the Navajo Nation behavioral health facilities and eight graduates will be needed per year. A GPA of 2.5 is required in all Counseling courses.

Counseling Requirements:
34 Credits

GENERAL EDUCATION REQUIREMENTS		**Credits**
ENGL 1110	Composition I	3
MTH 113	Technical Mathematics	3
NAVA 2220	Navajo History	3
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
COUNSELING CORE COURSES		
Semester ONE		**Credits**
PSYC 1110	Introductory to Psychology	3
CEPY 1110	Introduction to Counseling Theories	3
Semester TWO		
PSYC 2120	Developmental Psychology	3
COMM 2120	Interpersonal Communication	3
CEPY 1140	Personality Psychology	3
CEPY1130	Counseling Substance Abuse in Schools & Communities	3
CEPY1198	Internship	3
TOTAL REQUIRED CREDIT HOURS		**34**

CULINARY ARTS

The Culinary Arts program provides students with the basic knowledge needed for entry into the professional food industry. Instruction focuses on a maximum hands-on experience, as well as theory and safety. Students will be involved in all aspects of meal preparation for the staff, students, and community.

Culinary Arts Requirements:
47 Credits

GENERAL EDUCATION REQUIREMENTS		**Credits**
ENGL1210	Technical Communications	3
MTH 113	Technical Mathematics	3
NAVXXX	Dine Studies Course	3
BCIS1115	Introduction to Computers	3
SSC 100	College Success	1
CULINARY ARTS CORE COURSES		
Semester ONE		**Credits**
CUL 103	Food Safety and Sanitation	3
CKG 101	Professional Cooking I	8
CUL 201	Serv Safe Essentials	3
CUL 105	Nutrition	3
Semester TWO		
CKG 111	Professional Cooking II	8
BKG 209	Professional Baking Basics	3
CKG 112	Professional Internship	3
CUL 207	Management & Supervision	3
TOTAL REQUIRED CREDIT HOURS		**47**

ELECTRICAL TRADES

The Electrical Trades program enables students to develop marketable skills and gain the knowledge needed to excel at various jobs in the electrical industry such as electrician, apprentice lineman, maintenance electrician, and electrical sales.

The electrical trade's classes meet each day in indoor or outdoor labs specifically designed for practical work experience within the trade. Safety rules, basic electricity, low voltage systems, ground fault circuit interceptors, correct and safe use of tools and equipment, design and installation of various circuits, use of the National Electrical Codes, and the study and practice of safe, efficient, and well-designed electrical systems for residential, commercial, and industrial facilities are the general topics covered in the program.

Students planning to pursue a Journeyman Electrician Certificate through the New Mexico Regulation and Licensing Department will gain one year of work experience from their electrical theory and lab experience at NTU. In order to improve their chances for acceptance into apprenticeship programs, students are strongly encouraged to take higher level math courses such as MATH 1115 and/or MATH 1220.

Electrical Trades Requirements:
38-39 Credits

Semester ONE		**Credits**
ENGL1210 OR ENGL1110	Technical Communications or Composition I	3
CT 103	Introduction to Craft Skills	3
BCIS1115	Introduction to Computers	3
MTH 113/114	Technical Mathematics or Quantway I	3 or 4
SSC 100	College Success	1
Semester TWO		**Credits**
NAV XXX	Dine Studies	3
ELC 100	Modern Residential Wiring	3
ELC 101	Electrical Level I	4
ELC 102	Electrical Trades Lab I	2
Semester THREE		
ELC 111	Commercial Wiring	4
ELC 112	Electrical Trades Lab II	2
ELC 113	Residential/ Commercial Blueprint Reading	4
ERS 114	National Electrical Code Exam Prep	3
TOTAL REQUIRED CREDIT HOURS		**38-39**

ENGINEERING TECHNICIAN

The program is designed to prepare students for entry into an engineering or technology program. All of the credits earned as part of the certificate program apply fully to first year requirements in Electrical Engineering, Industrial Engineering, and Advanced Manufacturing Technology. Students completing this certificate can work as an Engineering Technician or Draftsperson.

- General Education Requirements – 11 Credits *(The minimum is 10 for a certificate.)*
- Core Pre-Engineering Courses - 21 Credits

Engineering Technician Requirements:
32 Credits

Semester ONE		**Credits**
ENGL 1110	Composition I	3
MATH 1220	College Algebra or higher	4
EE 101	Electrical Engineering Fundamentals	3
ENGR 123	Computer Skills for Engineering	3
ENGR 130	Engineering Graphics	3
SSC 100	College Success	1
Semester TWO		
NAVXXX	Dine' Studies Course	3
CS 101	Programming I	3
ENGR 103	Introduction to Engineering	3
ENGR 169	Basic Probability and Statistics	3
ENGR 143	Characteristics of Engineering Materials	3
TOTAL REQUIRED CREDIT HOURS		**32**

ENVIRONMENTAL SCIENCE AND NATURAL RESOURCES

The Environmental Science and Natural Resources certificate program emphasizes a thorough overview of environmental laws, regulatory compliance and safety through Native American perspectives on environmental and natural resource protection and management. The certificate program is designed to provide students with the education and training to obtain entry-level positions as environmental or natural resources technicians. Additional training and education lead to an A.A.S. degree; this portion of the training deals with skills in assisting with managing projects and interpreting data, with emphasis on Native American training needs.

Environmental Science and Natural Resources Requirements: 32 Credits

GENERAL EDUCATION REQUIREMENTS		Credits
ENGL 1210	Technical Communications	3
MTH 113	Technical Mathematics	3
NAVA XXX	Dine Studies Course	3
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
ENVIRONMENTAL SCIENCE CORE COURSES		
Semester ONE		**Credits**
ENVS 1110C	Environmental Science I	4
GIT 105	Fundamentals of Cartography	3
ENVS 1130C	The Blue Planet	4
Semester TWO		
ENVS 1120C	Environmental Science II	4
CHEM1120C or BIOL 1110C	Introduction to Chemistry or General Biology	4
TOTAL REQUIRED CREDIT HOURS		**32**

*** Some General Education and ENV courses have a prerequisite. Please check course descriptions for the appropriate prerequisite course(s).*

GEOGRAPHIC INFORMATION TECHNOLOGY

The Geographic Information Technology (GIT) program will serve to introduce students to the fundamental principles of geographic information systems, remote sensing, database applications, cartography, and enable students to understand the current state of knowledge residing in a geographic information system. The GIT program seeks to ready students for positions with governmental agencies, engineering companies, and topographical drafting organizations. Through the knowledge they receive from this program, they will also be capable of finding employment in a GIT department.

Geographic Information Technology Requirements: 34 Credits

GENERAL EDUCATION REQUIREMENTS		Credits
ENGL 1110	Composition I	3
MTH 113	Technical Mathematics	3
NAVA 1110	Navajo I	4
IT 103	Creativity and Technology	3
GEOGRAPHIC INFORMATION CORE COURSES		
Semester ONE		**Credits**
DFT 120	Computer Aided Drafting I	3
GIT 105	Fundamentals of Cartography	3
GIT 110	Geographic Information Systems I	3
Semester TWO		
SSC 100	College Success Skills	1
ENGR 103	Introduction to Engineering	3
ENVS 1110C	Environmental Science I	4
GIT 111	Geographic Information Systems II	3
GIT 210	Service Learning Project	1
TOTAL REQUIRED CREDIT HOURS		**34**

INDUSTRIAL MAINTENANCE AND OPERATIONS

Navajo Technical University offers a certificate in Industrial Maintenance and Operations. An industrial maintenance mechanic is a person trained to repair and maintain commercial or industrial machinery in buildings, plants or factories. This program focuses on vibration analysis, electrical troubleshooting, drive system repair and hydraulic, pneumatic system troubleshooting and repair. They also troubleshoot and repair heating, ventilation, and air conditioning (HVAC) systems, electrical control systems and complete preventive maintenance of other types of machinery. The program is designed to serve the needs of the community, state, and federal agencies and companies in order to meet the challenges of the 21st century. Upon completion of the program, the students may decide to work, or if they want to further their education, they can transfer their credits to any college of their choice. Graduates of this program should be able to seek gainful employment in companies such as paper mills, saw mills, and the utilities companies.

Certificate – Industrial Maintenance and Operations Requirements: 32 Credits

GENERAL EDUCATION REQUIREMENTS		Credits
ENGL 1210	Technical Communications	3
MTH 113	Technical Mathematics	3
NAVXXX	Dine Studies Course	3
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
INDUSTRIAL MAINTENANCE CORE COURSES		
Semester ONE		**Credits**
ENGR 103	Introduction to Engineering	2
IMO 101	Industrial Maintenance I	5
Semester TWO		
CHEME 115	Introduction to Process Technology	3
IMO 102	Industrial Maintenance II	5
WLD 101	Welding Fundamentals	3
TOTAL REQUIRED CREDIT HOURS		**32**

INFORMATION TECHNOLOGY ASSISTANT

The IT certificate is designed to ensure a thorough knowledge of information systems and includes general practice using contemporary technologies in troubleshooting, problem solving, organization, customer support, analysis, evaluation, communication, and transmission of information. The certificate fosters communication skills through interpersonal and group interaction, opportunities through appropriate collaborative and active learning projects and experiences. Students who successfully complete the certificate program may continue in the program to complete requirements for an associate degree as an Information Technology Technician.

Information Technology Assistant Requirements: 32 Credits

GENERAL EDUCATION REQUIREMENTS		**Credits**
ENGL 1210	Technical Communications	3
MTH 1215	Intermediate Algebra	4
NAVXXX	Dine Studies Course	3
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
INFORMATION TECHNOLOGY ASSISTANT CORE COURSES		
Semester ONE		**Credits**
IT105	Introduction to Programming	3
IT110	Introduction to Digital Logic/Hardware Programming	3
IT150	Introduction to System Administration	3
Semester TWO		
IT 218	Algorithms and Data Structure	3
IT 280	IT Project Management	3
IT 262	Internetworking	3
TOTAL REQUIRED CREDIT HOURS		**32**

LAW ENFORCEMENT
"Offered in Chinle, AZ"

The certificate of Law Enforcement is a joint effort between NTU and the Navajo Nation Public Safety Department to produce Navajo Nation Police Officers. The 22-week certificate program provides both the academic and skills components that are required for Navajo Nation Law enforcement. The candidate must: 1. Satisfy the certificate requirements in the program prior to the date of graduation at which the certificate is to be awarded. 2 Have a minimum of 12 semester credits in residence that apply toward the certificate being pursued and meet the requirements for the applicable program.

The certificate in Law Enforcement on an academic track, that prepares students to fill both certified and non-certified law enforcement and criminal justice related positions. Students should be aware the different states have different requirements for police officer certification. The academic track does not provide certification for police officers in any state. The academic certificate, unlike the Navajo Nation Police Academy Law Enforcement Technical Certificate, includes twelve hours of general education.

Technical Certificate – Police Academy ONLY– Law Enforcement Requirements: 30 Credits

Semester ONE		**Credits**
PS 101	Introduction to Criminal Justice	3
PS 103	Public Safety Report Writing	3
PS 109	Substantive Criminal Law	3
PS 123	Law Enforcement Ethics: Ethics & Criminal Justice	3
PS 170	Forensic Science (Patrol Procedures)	3
PS 230	The Police Function I (Traffic)	3
PS 235	The Police Function II (Police Proficiency Skills)	3
PS 260	Procedural Criminal Law (Criminal Investigations	3
NAVA 2230	Navajo Government	3
BCIS 1115	Introduction to Computers	3
TOTAL REQUIRED CREDIT HOURS		**30**

Certificate – Law Enforcement Requirements: 30 Credits

Semester ONE		**Credits**
ENGL 1110 or 1210	Composition I or Technical Communication	3
BCIS 1115	Introduction to Computers	3
PS 101	Introduction to Criminal Justice	3
MTH 113	Technical Mathematics or higher	3-4
PED 120	Strength Training	1
SSC 100	College Success	1
Semester TWO		**Credits**
NAVA 2230 or POS 220	Navajo Government or US & Arizona Constitution	3
PS 109	Substantive Criminal Law	3
PS 123	Law Enforcement Ethics	3
PS 260	Procedural Criminal Law	3
PS 2250	History of American Policing	3
PED 130	Jogging	1
TOTAL REQUIRED CREDIT HOURS		**30**

LEGAL ASSISTANT

The Legal Assistant Certificate is intended to provide students with office skills and specialized legal knowledge and training in order to work as legal assistants under the supervision of attorneys and law advocates in the tribal, state, and federal legal and judicial systems. The Legal Assistant Certificate program combines courses from the Administrative Office Specialist program, the Information Technology program, and the Law Advocate program, giving the student knowledge and skills in a variety of areas.

Legal Assistant Requirements: 37 Credits

GENERAL EDUCATION REQUIREMENTS		Credits
ENGL 1210	Technical Communications	3
MTH 113	Technical Mathematics	3
NAVXXX	Dine Studies Course	3
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
LEGAL ASSISTANT CORE COURSES		
Semester ONE		**Credits**
ADM 101	Keyboarding and Formatting I	3
CJUS 1110	Introduction to Criminal Justice	3
LAW 103	Criminal Law	3
LAW 104	Legal Research & Writing	3
Semester TWO		
ITS 120	Microsoft Office Suite	3
LAW 112	Evidence	3
LAW 113	Domestic Relations and Family Law	3
LAW 202	Procedure in Criminal and Civil Cases	3
TOTAL REQUIRED CREDIT HOURS		**37**

MATHEMATICS

The mission of the mathematics program is to provide an environment where students can learn and become competent users of mathematics and mathematical application. The program aims to prepare graduates for employment as teachers, mathematicians, statisticians, financial analysts, consultants, engineers, physicians, lawyers, and researchers

Mathematics Requirements: 36 Credits

GENERAL EDUCATION REQUIREMENTS		Credits
ENGL 1110	Composition I	3
MATH 1220	College Algebra	4
NAVXXX	Dine Studies Course	3
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
MATHEMATICS CORE COURSES		
Semester ONE		**Credits**
ENGR 103	Introduction to Engineering	3
MATH 1240	Pre-Calculus	4
MATH 1230	Trigonometry	4
Semester TWO		
MATH 1510	Calculus I	4
MATH 1350	Introduction to Statistics	3
PHYS 1230C	Algebra Based Physics I	4
TOTAL REQUIRED CREDIT HOURS		**36**

NAVAJO COURT TRANSCRIPTION/INTERPRETATION PROGRAM

The program is comprised of classes in legal (tribal court) interpretation. The interpretation program involves a class in the introduction to the field of interpretation, a class in consecutive, simultaneous and sight interpretation, and a class in legal interpretation (tribal court system). Each student's progress and potential for successful completion of the program will be evaluated. Students must complete this course with a grade of B or higher, and must receive a score of at least a B on the exit examination in order to receive a certificate. This course will address the development and an awareness of the principles and the current issues involved in interpretation and translation.

Navajo Court Transcription/Interpretation Requirements: 33 Credits

GENERAL EDUCATION REQUIREMENTS		Credits
NAVA 2210	Navajo Culture	3
NAVA 1130	Beginning Navajo Reading & Writing	4
MTH 113	Technical Mathematics	3
ENGL 1210	Technical Communications	3
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
NAVAJO COURT TRANSCRIPTION/INTERPRETATION CORE COURSES		
BUSA 2420	Tribal Law	3
CRT 101	Introduction to Court Transcription	3
NAV 203	Interpretation/Translation (English/Navajo)	4
CRT 111	Transcription Lab I	3
CRT 112	Transcription Lab II (Court Case Studies)	3
TOTAL REQUIRED CREDIT HOURS		**33**

NURSING ASSISTANT

The Nursing Assistant program is for students who are interested in pursuing a Nursing Assistant Certificate and/or pre-requisite for an associate degree in nursing. Through this certificate program, students will learn the specific skill sets of the nursing assistant and prepare students to apply to an associate degree in nursing program. The nursing assistant courses prepare students for immediate employment as a nurse assistant. Upon successful completion of this program, students are awarded a Nursing Assistant Certificate and are eligible to take the New Mexico Nurse Assisting Certification (CNA) exam.

Admission into NRS 101/102, the C.N.A. clinical courses require students to have a minimum of 2.0 (C) GPA or permission of the instructor to take NRS 101/102. Students are required to have or obtain current CPR training prior to beginning their internship, and is offered during the beginning of NRS 101 semester. The appropriate level of CPR training is the CPR for Health Care Providers and should be obtained from the American Heart Association. In addition, students are also required to have a physical exam and current tuberculosis test (PPD), as well as a clear background check to be admitted into clinical internship placement (NRS 102).

Track 1: C.N.A. – 32-33 Credits

GENERAL EDUCATION REQUIREMENTS		**Credits**
ENGL1110	Composition I	3
MTH 113	Technical Mathematics	3
NAVXXX	Dine Studies	3
BCIS1115	Introduction to Computers	3
SCC 100	College Success	1
IS 090	Integrative Science (*Optional)*	(4)
CORE COURSES		
Semester ONE		**Credits**
NRS 103	Basic Medical Terminology	3
NRS 110	Body Structure and Functions	4
PSYC1110	Introduction to Psychology	3
Semester TWO		
NRS 101	Nursing Assistant Theory & Lab	5
NRS 102	Nursing Assistant Internship	1
ELECXXX	Elective:	3-4
TOTAL REQUIRED CREDIT HOURS		**32-33**

Track 2: Pre-Associate of Applied Science in Nursing 38 Credits

GENERAL EDUCATION REQUIREMENTS		**Credits**
ENGL1110	Composition I	3
MTH 113	Technical Mathematics	3
NAVXXX	Dine Studies Course	3
BCIS1115	Introduction to Computers	3
SSC 100	College Success	1
IS 090	Integrative Science *(Optional)*	4
CORE COURSES		
Semester ONE		**Credits**
BIOL1310C	Intro to Human Anatomy and Physiology I	4
NRS 239	Pathophysiology I	3
PSYC1110	Introduction to Psychology	3
CHEM1120 or BIOL2110C	Introduction to Chemistry or Principles of Biology. Cellular & Molecular Biology	4
Semester TWO		**Credits**
BIOL1320C	Intro to Human Anatomy and Physiology II	4
PSYC2120	Developmental Psychology	3
NRS 240	Pathophysiology II	3
NRS 100	Admission Placement Exam Review	1
TOTAL REQUIRED CREDIT HOURS		**38**

** These classes required for the ADN/RN programs

Recommended Elective Course Listing		**Credits**
ENGL 1120	Composition II	3
ENGL 1210	Technical Communications	3
PSYC 2120	Developmental Psychology	3
COMM 1130	Public Speaking	3
BIOL-1310C*	Human Anatomy and Physiology I	4
BIOL-1320C	Human Anatomy and Physiology II	4
CHEM1120*	Introduction to Chemistry	4
NRS 115	Technical Math for Health Profession	2
SOCI 1110	Introduction to Sociology	3
BIOL-2110C*	Principles of Biology: Cellular & Molecular Biology	4
BIOL-2120C	Cellular & Molecular Biology	4
BIOL 2310	Microbiology	4
NUTR2110	Human Nutrition	3
NRS 100	Admission Placement Exam Review	1
NRS 239	Pathophysiology I	3
NRS 240	Pathophysiology II	3

PLUMBING
"Offered only at Kirtland Site"

The plumbing program prepares students to install and repair water distribution system, drainage, gas, bathtubs, toilets, dishwashers, and water heaters, septic tanks in homes, business, and factories. Graduates are able to find work as pipefitters or steamfitters by installing and maintaining pipes, which carry chemicals and gases in manufacturing, commercial, and industrial settings. Support is available for apprenticeship program to obtain a journeyman certification in plumbing.

Plumbing Requirements: 35-36 Credits

Semester ONE		**Credits**
ENGL1210	Technical Communications	3
MTH 113	Technical Mathematics	3
MTH 113L	Technical Mathematics LAB	1
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
PLMB 101	Introduction to Plumbing Concepts & Applications	2
Semester TWO		**Credits**
NAVXXX	Navajo Studies Course	3-4
CT 102	Construction Math & Drawing	2
CT 121	Intro to Building Environmental Systems	2
CT 210	Construction Site Safety Management	3
PLMB 113	Plumbing & Pipefitting Fundamentals	2
PLMB 105	Plumbing Fixtures & Blueprint Reading	2
Semester THREE		
PLMB 104	Drainage, Waste & Venting	3
PLMB 103	Water Supply & Distribution Piping	3
PLMB 114	Gas Piping Installations	3
TOTAL REQUIRED CREDIT HOURS		**35-36**

PROFESSIONAL BAKING

The Professional Baking program provides students with the basic skills for the entry levels of commercial baking in a professional environment. Instruction focuses on a maximum hands-on experience as well as theory and safety. Students will be involved in all aspects of baking preparation including breads, sweet breads, assorted pastries, cakes and cake decorating.

Professional Baking Requirements:
44 Credits

GENERAL EDUCATION REQUIREMENTS		**Credits**
ENGL 1210	Technical Communications	3
MTH 113	Technical Mathematics	3
NAVXXX	Dine Studies Course	3
BCIS 1115	Introduction to Computers	3
SSC 100	College Success	1
PROFESSIONAL BAKING CORE COURSES		
Semester ONE		**Credits**
CUL 103	Food Safety and Sanitation	3
BKG 101	Professional Baking I	8
CUL 105	Nutrition	3
Semester TWO		
BKG 111	Professional Baking II	8
CKG 208	Professional Cooking Basics	3
CUL 207	Management & Supervision	3
BKG 112	Professional Internship	3
TOTAL REQUIRED CREDIT HOURS		**44**

WELDING TECHNOLOGY

The Welding Technology Program prepares students for work in the field Welding Technology. In addition to gaining an overall understanding of welding machines, weld processes, and hands-on welding proficiency, students develop skills in the areas of blueprint reading, welding symbols, weld inspection, destructive and non-destructive testing, metallurgy, computer-aided drafting along with precisions machine tool operations. Students gain knowledge and skills necessary to prepare them for weld qualification to code specifications.

The Certificate in Welding Technology stresses the practical applications of welding on plate pipe in all positions and the necessary theory to support those skill levels. Welding skills are developed with supported courses. A student must earn a grade of C or higher in all courses required for the program in order to receive a certificate.

Welding Technology Requirements:
37 Credit Hours

Semester ONE		**Credits**
BCIS 1115	Introduction to Computers	3
ENGL 1210	Technical Communications	3
WLD101	Welding Fundamentals	3
WLD 105	Pipe Welding I	3
SSC 100	College Success	1
Semester TWO		**Credits**
MTH 113	Technical Mathematics II or higher	3
WLD 115	Structural Welding I	3
NAVAXXX	Dine Studies Course	3
ENGR143	Characteristics of Engineering Materials	3
Semester THREE		**Credits**
WLD 125	Structural Welding II	3
WLD 130	Welding Fundamentals II	3
WLD 150	Pipe Welding II	3
WLD 156	Welder Qualification	3
TOTAL REQUIRED CREDIT HOURS		**37**

TECHNICAL CERTIFICATE

COMMERCIAL DRIVER LICENSE (CDL)

This is an entry-level tractor-trailer driver course. The primary goal of the program is to train the student driver to obtain a Commercial Driver license. Supervised training is used as a reliable way of teaching the special skills required to safely and legally operate various types of tractor -trailer combinations (van trailer, tanker, doubles, and triples). The curriculum incorporates general theories of tractor-trailer operation including proper maintenance, pre-trip inspections, daily log requirements, professional tractor-trailer maneuvers (basic skills) and field trips (driving the rig) throughout the Four Corners area. Graduates are employable as professional over-the-road drivers, drivers for local companies, or establish their own trucking company.

The Commercial Driver's License (CDL) program is a six-week program. Two sessions are offered each semester. Class size is limited and students are enrolled on a first come, first served basis. Students must be at least 18 years old and possess a current New Mexico driver's license and a DUI education certificate (if required), current DOT medical card, birth certificate, copy of NM Dept. MVD record, and proof of New Mexico residence (see page 9 for details) before applying to the commercial driver license program. Students may still attend training from other state residents, but have to abide by the resident state requirements to test in their state. Students who wish to obtain additional certification for hauling hazardous materials must be 21 years of age. After satisfactory completion of this training program, New Mexico state CDL examinations are given on-site.

CDL Requirements for AZ, CO, UT

Requirements for a Commercial Driver License (CDL) in AZ, CO, and UT are as follows:

- Hold a valid driver's license for over one year.
- Students need to be able to obtain a CDL in their state (Clean Motor Vehicle Report - MVR)
- Be a resident of that state with a physical address on the license or be able to prove residency.
- The students need to pass CDL physical and have a medical card.
- 21 years of age and over can drive inter-state.
- The students to be able to pass a hazardous materials (HAZMAT) background check.
- They need to take a written test in their home state, and skill tests can be done in any state.

Certificate - CDL Requirements: 18 Credits

COMMERCIAL DRIVERS LICENSE CERTIFICATE		
CDL REQUIRED COURSES:		**Credit**
CDL 100	General Knowledge	6
CDL 101	Pre-Trip and Backing Skills	3
CDL 102	Defensive Driving and Safe Practices	3
CDL 103	Driving Skills, Rules and Regulations	6
TOTAL REQUIRED CREDIT HOURS		**18**

CDL/HEAVY EQUIPMENT OPERATOR

The purpose of a two-semester certificate program in Heavy Equipment is to prepare students to operate and maintain heavy equipment for professional work in the construction industry. The students will receive classroom instruction and gain hands-on experience. A construction equipment operator drives and controls construction equipment, such as forklifts, backhoes, front end loaders, excavators, motor grades, and dozers. A heavy equipment operator assists construction of structures, bridges, roads, and buildings.

Semester ONE		**Credits**
HEOP 1110	Maintenance of Heavy Equipment	3
HEOP 1115	Forklift Operation	2
HEOP 1120	Backhoe Operation	2
HEOP 1125	Front End Loader Operation	2
HEOP 1130	Excavator Operation	2
HEOP 1135	Motor Grader Operation	2
HEOP 1140	Dozer Operation	2
Semester TWO		
CDL 100	General Knowledge	6
CDL 101	Pre-Trip and Backing Skills	3
CDL 102	Defensive Driving and Safe Practices	3
CDL 103	Driving Skills, Rules and Regulations	6
TOTAL REQUIRED CREDIT HOURS		**33**

COURSE DESCRIPTIONS

ACCOUNTING

ACG-101 (3) Accounting Principles I
This is an introductory course in the theory and practice of accounting that covers the purpose of accounting, the accounting process, and the various types of ownership structure. Also covered are types of business, career opportunities in accounting, analyzing financial transactions, adjusting entries, accounting worksheets, financial statements, and the closing process. Computerized exercise problems are used to assist student understanding and proficiency. This course is only offered for fall enrollment. *Offered: Fall. Prerequisite: ACG 111*

ACG-111 (3) Accounting Principles II
This course is a continuation of theory and practice of accounting study began in ACG-101. Specialized accounting procedures for a service business and its environment, entrepreneurship, and small businesses are emphasized. Topics covered include the modified cash basis and combination journal, accounting for cash, payroll accounting, employee earnings and deductions, payroll accounting, employer taxes, and reports. *Prerequisite: ACG-101. Offered: Spring.*

ACG-112 (3) Income Tax I
This is a practical approach to the income tax system involving preparation of individual tax returns using forms 1040EZ, 1040-A, and 1040. Emphasis is on the fundamentals of tax regulations/laws, tax schedules, worksheets and forms, and includes discussion of dependents, exemptions and allowable credits. The course is offered in the spring semester only. *Offered: Fall.*

ACG-113 (3) Accounting Applications
This course uses practice sets and hypothetical businesses in the three basic forms of business—sole proprietorship, partnership, and corporation—in order to stress the appropriate accounting applications for each type of business. The latest accounting software is used as well as workshops and seminars. *Prerequisites: ACG-111 and any computer course. Offered: Spring*

ACG-114 (3) Spreadsheet Accounting I
This is a tutorial and applications course using the Microsoft Excel software. This course is intended to reinforce accounting through the use of Excel spreadsheets. It is primarily a self-tutorial course that, in conjunction with Accounting I and II, teaches students how to produce graphs to support financial statements and other worksheets. *Offered: Occasionally.*

ACG-201 (3) Payroll Accounting
This course is designed to develop a well-rounded understanding of the payroll system used by all employers. The course concerns itself with all federal and state tax requirements, reporting forms such as the federal 940 and 941, depository requirements, and employee records resulting in a W-2 (Wage & Earning Statement). *Prerequisite: Third-semester accounting or public administration students only.*

ACG-204 (3) Advanced Accounting I
A continuation of Accounting Principles II (ACG-111), this course focuses on specialized accounting procedures for merchandising business and partnerships, accounts receivable, notes and interest, merchandise inventory, and long term assets. *Prerequisite: ACG-111. Offered: Fall.*

ACG-210 (3) Principles of Management
This is an introductory management course that will motivate student develop a basic understanding of management, its practices and techniques. It will also focus on the theory and fundamental concepts of management including planning, organization, leadership and control. Student will also be familiar with different ideas and terminologies that will be helpful in many managerial situations for the class will review the evolution of management thought, function and practice, will stress present approaches and developing concept by means of emphasizing different cases of management. *Offered: Spring*

ACG-211 (3) Accounting Software Applications
This course is intended to reinforce accounting concepts through the use of integrated computerized accounting software. It provides a self-paced, step-by-step environment in which students use it to create financial statements and other financial reports to strengthen the ideas they learn in their first year accounting courses and see how computer software can be used to make business decisions. It covers single proprietorship, partnership and corporations and whether it's a general business, manufacturing, consulting, product-base, service-based, contractor, wholesale/ distribution, engineering, non-profit, retail, and professional services type of business. *Prerequisite: ACG-114. Offered: Spring*

ACG 212 (3) Introduction to Finance
This an introductory finance course designed to make students understand the basic finance concepts. This course includes studies on firm's financial goals and decisions to maximize shareholders' wealth. The course stresses the understanding of finance theory and working knowledge of the financial environment in which the firm operates in order to develop appropriate financial strategies. It examines financial concepts and analytical techniques, financial performance, time value of money, measurement of risk and return, capital budgeting, capital structure, short-term financial planning, working capital management, and international finance. *Offered: Spring*

ACG-213 (3) Introduction to Fund Accounting
As an overview of not-for-profit organizations (organizations exempt from the payment of taxes), this course covers the role of management, financial analysis, the current status of financial accounting and managerial control in not-for-profit organizations, budgetary analysis and controls, and budget preparations. *Offered: Fall, Spring*

ACG-214 (3) Advanced Accounting II
This course is a continuation of Advanced Accounting I (ACG-204) and covers accounting for corporations and manufacturing businesses, organization and capital stock, earnings and distribution bonds, the statement of cash flow, the indirect method, analysis of financial statements, departmental accounting, the job order cost system, and the worksheet and financial statement. *Prerequisite: ACG-204. Offered: Spring*

ACG-215 (3) Federal Taxation
This course gives the student firsthand experience in preparing individual income tax return with the knowledge of U.S. tax laws for the current tax season. *Offered: Spring*

ACG-216 (3) Principles of Marketing
An introductory course in marketing which covers the evolution of modern management toward a marketing-oriented view of business; emphasizing the fundamental principles of the "marketing concept"; and integrating concepts in relation to consumer needs, marketing information, product development, pricing, distribution, selling, advertising and promotion. *Offered: Fall.*

ACG-220 (3) Cost Accounting
This course covers an analysis of cost data for goods and services for planning, controlling, and decision-making. Study of cost accounting emphasizes the concept of different costs for different purposes. The focus of study will be on cost accounting strategy and decision making process. It includes cost concepts and behavior, cost-volume-profit (break-even) analysis, Relevant costs for decision making, cost estimation, job costing, activity-based costing, cost allocation, budgeting and variance analysis.

ACG-225 (3) Managerial Accounting
This is an introductory course that stresses accounting concepts and procedures related to generating and using accounting information for planning, control, and decision-making of business operations. Student will learn alternative methods of preparing managerial accounting information and examining how these methods are used by different companies to maximize economic profit.

ACG-195/295 (1 – 3) Topics in Accounting
These courses cover a variety of topics surrounding the emerging applications and technologies in the areas of bookkeeping and accounting. Different section numbers indicate different topics so the course may be repeated for credit with differing section numbers. These courses are offered according to need, interest, and demand. *Offered: Occasionally.*

ADMINISTRATIVE OFFICE SPECIALIST

ADM-101 (3) Keyboarding & Formatting I
Keyboarding competence is the goal of the course. This course will use state-of-the-art word-processing software to learn to prepare letters, memos, reports, and other computer-based documents used in today's automated office environment. Offered: *Fall, Spring.*

ADM-105 (3) MS Excel Applications
This is a hands-on course in using Microsoft Excel. Various aspects of spreadsheet applications will be covered. *Prerequisite: ADM-101. Offered: Fall.*

ADM-111 (3) Keyboarding & Formatting II
Improved keyboarding competence is the goal of this course. Emphasis is placed on production of mail-able business letters, manuscripts, tables, business forms, and other correspondence on state-of-the-art equipment. *Prerequisite: ADM-10*1. Offered: Fall, Spring.

ADM-113 (3) Office Procedures
Students will use supplemental materials to complete coursework in time management and stress reduction. The Office Procedures course will stress the following: the high-tech workplace, success behaviors, work ethics, diversity, office communications, meetings, conferences and travel. Offered: *Fall, Spring.*

ADM-114 (3) Business Mathematics and Calculators
This course will introduce the student to working with the computer and 10-key calculator to do mathematical business processes using various formulas. Using the reach process, students will achieve speed and accuracy. *Prerequisite: Must be a second semester student before enrolling in this course or have permission from the instructor. Offered: Fall, Spring.*

ADM-115 (3) Records Management
The students will apply rules for alphabetic, numeric, geographic, topical, and chronological filing by using individual names, business names, school government units, and other common organizational units in storing and retrieving documents. Computer applications will be introduced. *Offered: Fall.*

ADM-201 (3) Advanced Document Formatting
Keyboarding competence on state-of-the-art equipment is the goal. Students produce business letters using different sized letterheads, technical reports, graphic aids, and IRS and FICA forms. Creation of legal and medical forms will be emphasized. *Prerequisite: ADM-111. Offered: Fall, Spring.*

ADM-202 (3) Office Communication
The purpose of this course is to develop professional oral and written proficiency that will lead to career success. Students will develop an awareness of the complexity of the communication process through writing clear, concise business documents. They will learn to manage the mail and various means of transporting documents from one location

to another. In addition, they will learn telephone skills and business etiquette, and learn to communicate interpersonally as well as in a group. *Offered: Fall.*

ADM-203 (3) Advertising & Public Relations Strategies
This course will provide students with the knowledge of how to present a business to the public and will teach students about the tools available that will give business documents/publications a polished and professional appearance. Students will produce their own business cards and brochures, write a newsletter, and produce a publication that profiles the students at Navajo Technical University. These projects will create an understanding of the importance and usefulness of marketing as a strategy in the marketplace. *Offered: Spring.*

ADM-204 (3) Machine Transcription
This course will introduce the concept of document processing by means of receiving dictation from a recording device. Transcribing, formatting, proof-reading, creating, editing, and printing are skills taught in the class. *Offered: Fall, Spring.*

ADM-205 (3) Office Management
Students will be presented with an overview of the Total Quality Management Process. They will learn teambuilding and their role as administrative assistants within a team. Students will be introduced to a process-focused approach of achieving continuous, measurable improvement in the workplace through the use of the Navajo Nation Foundation of Education and the Shewhart Cycle used in the Total Quality Management Training. Finally, students will look at office design and its importance to the flow of work and production within the office environment. *Prerequisite: ADM-113. Offered: Fall, Spring.*

ADM-208 (3) Office Accounting
This course covers cash accounting including financial statements, trial balance, balance sheets, and income statements. Its focus is on sole proprietorship. *Offered: Fall, Spring.*

ADM-210 (3) MS PowerPoint Presentation Skills
This course will offer the opportunity for the student to combine technology with public speaking skills for use in the business environment. Presentation Skills concentrates on oral communication and integration of computer technology into public presentations. Students will also learn about effective listening, group decision-making, and the impact of culture on communication. Culmination of the semester's work will be a presentation made using PowerPoint software. *Prerequisites: ADM-101. Offered: Fall, Spring.*

ADM-213 (3) Internship
In the internship portion of this program, students will work a minimum of 150 hours at office-related, supervised worksites. The student trainee is paid by the cooperating firm and supervised jointly by NTU and the employer. Office practice procedures will be composed of several practice simulations such as receptionist, records clerk, secretary, and administrative assistant**.** *Offered: Fall, Spring, Summer.*

ADM-195/295 (1–3) Topics in Administrative Office Specialist
Topics courses will address a variety of subjects in emerging areas of administrative professional skill development. Different section numbers indicate different topics so these courses may be repeated for credit if section numbers are different. Courses are offered according to need, interest, and demand. Offered: Occasionally.

ADVANCED MANUFACTURING TECHNOLOGY

AMT-210 (3) Applied GD&T
This course will provide in-depth understanding of all the essential principles underling the Geometric Dimensioning and Tolerancing methodology, as set forth in ASME Y14.5.2-1995. Adherence to this standard has been shown to provide the highest level of built-in quality of manufactured artifacts. The course will include lectures on GD&T theory and practicum inspection lab exercises to reinforce the theory lectures.

AMT-280 (3) Computer & Numerical Control of Machine Tools
Students will be introduced to the operation of the CNC Mill through the use of the basic fundamental of "G" codes and "M" codes. Machine and tool set up will also be covered. As part of the class, students will make several small projects on the CNC machines available. *Prerequisite: IE-223, ENGR130.*

AMT-311 (3) Laser Scanning Methods/ Techniques
Students will learn the basics of laser scanning for digital manufacturing and inspection. Medium to long range scanners and close range high quality scanners will be used in the course. Students will gain hands-on experience in capturing digital data, registering scans and processing scans. *Offered: Fall, Spring.*

AMT-322 (3) Structure & Property of Materials
The students will learn behavior of different engineering material under various conditions. Chemical, electrical, and mechanical properties of material will be investigated. *Prerequisite: PHYS-1115C***.**

AMT-325 (3) Digital Inspection/Quality Control
This course covers digital inspection utilizing computer-aided verification. Geometric dimensioning and tolerance control and basic size inspection will also be covered along with surface inspection and the basics of quality control. *Offered: Spring.*

AMT-370 (3) Robotics/Offline Programming
This course will cover the basics of industrial robotics and how to develop offline programming through simulations. Applications of robots, programming of robots, robot axes and kinematics will be explored. *Offered: Spring.*

AMT-401 (4) Capstone I
The main learning objective of this course is to provide hands-on training to students in discovering of potential research areas in the field of Advanced Manufacturing Technology, Comparing and contrast the several existing solutions for the problems identified, formulate and propose a plan to create a solution for the research plan identified. Conduct the experiments as a team and interpret the results and report and present the findings of the work conducted. A project topic must be selected by the students in consultation with their faculty. The aim of the project work is to deepen comprehension of Advanced Manufacturing Technology principles by applying them to a new problem, which may be the design and fabrication of a device or component for a specific application.

AMT-402 (4) Capstone II
The main learning objective of this course is to explore the additive manufacturing (AM) of polymers, metals, and ceramics, along with those for emerging materials (e.g., nanocomposites and biomaterials). Gain hands-on experience with a variety of AM machines; use these machines to fabricate protypes, post-process the parts, and record the results and appreciate the applications of AM across industries, including aerospace/automotive, medical devices, energy, electronics, and consumer products. This will allow students to get trained on both desktop and industrial-grade 3D printers for polymers and metals, addressing the full workflow from design to characterization and place AM in the context of the evolving manufacturing infrastructure, including advances in robotics, software, logistics, and digitization of data. This will also provide the students a comprehensive understanding of AM technology, its applications, and its implications both now and in the future.

AMT-412 (3) Advanced Digital Inspection
Course will provide both theoretical and practical concepts of combining digital information from an entire suite of manufacturing systems such as CAD design programs, CNC machine tools, laser and structured light scanners, CCD cameras, CMM and Touch probe systems with the goal of establishing a seamless once-though manufacturing process with dependable precision.

AMT-415(3) Simulation of Manufacturing Systems
The objectives of this course are to provide the students with a strong working knowledge of computer aided methods of integrated manufacturing systems and computer simulation of individual sub-systems such as CNC machine tools in addition to high level integrated simulation of the complete production plant.

AMT-425(3) Additive Manufacturing
Additive Manufacturing (AM) simply describes a method of building objects layer by layer. It can use range of materials and techniques. In this course students will learn basics all types of AM methods and their applications in the emerging Industry needs. AM works well with artificial Intelligence. Companies prefer AM for prototyping and low volume production. AM is pushing design engineers to approach problems in new ways. No longer constrained by the old rules for manufacturing and materials, engineers can now explore their own imaginations to find new solutions. That is leading to more competitive designs, more novel use of materials and better innovation overall.

AMT-430(3) PLC Programing
An introductory to Programmable Logic Controls (PLC), focusing on the underlying principles and requirements of discrete event control methods (Boolean logic) as a basis for understanding how PLCs work. The course will also provide practical information and skills about installing, programming, and troubleshooting a PLC system. *Offered: Fall.*

ANIMAL SCIENCE

ASC-100 (3) Introduction to Animal Science
This course will provide the understanding of different livestock species such as cattle, sheep, horses, poultry, and swine. Topics will provide an overview of breeds, genetics, nutrition, reproduction, and production. Students will need to earn a grade of C or higher to advance to the next level of the program.

ASC-200 (2) Animal Science Practicum
This course introduces the processes on handling and safety working with different livestock species. Students will demonstrate care and techniques used in farm animal management, handling, and restraint for efficient animal production. A lab is included as a part of this course. Students will need to earn a grade of C or higher to advance to the next level of the program. *Prerequisite: ASC-100.*

ASC-210 (1) Animal Science Career Development
This course is designed to inform students about career planning and management interventions and to accommodate students at various levels of decidedness regarding their career aspirations. Lectures, small group activities, electronic media, computer-based career guidance systems, outside projects and readings are techniques used to deliver instruction. Students will need to earn a grade of C or higher to advance to the next level of the program. *Prerequisite: ASC-100.*

ASC-220 (3) Comparative Anatomy of Animals
This course is designed to provide background in the anatomy of livestock species. The course covers the structure and function of each body system, including skeletal, muscular, circulatory, integumentary and respiratory. A lab is included as a part of this course. Students will need to earn a grade of C or higher to advance to the next level of the program. *Prerequisite: ASC-100, BIOL-2110C, and CHEM-1217C. Corequisite: ASC-230.*

ASC-230 (3) Comparative Physiology of Animals
This course is designed to cover the principles of physiology and unique characteristics of domestic livestock species. Students must earn a C or higher to advance to the next level of the program. *Prerequisite: ASC-100, BIOL-2110C, and CHEM-1217C. Corequisite: ASC-220.*

ASC-320 (3) Animal Nutrition and Metabolism
This course will cover the chemical composition of nutrients, biological reactions, and regulations in the metabolic pathways. Students will apply these concepts to growth and performance of animals of economic importance. Students will need to earn a grade of C or higher to advance to the next level of the program. *Prerequisites: ASC-200, ASC-210, and MATH-1220.*

ASC-330 (3) Feeds and Feeding
This course will cover the basic principles of feeding and management, feedstuffs, utilization of nutrients, formulating and balancing rations for domestic livestock species. Students will need to earn a grade of C or higher to advance to the next level of the program. *Prerequisite: ASC-220, ASC-230, ASC-320 and MATH-1220.*

ASC-340 (3) Animal Reproduction and Lactation
This course will cover the anatomy, physiology, function of the mammary gland of farm animals along with the problems that are caused by mastitis. This course will provide the understanding of the male and female reproductive systems, hormones, and the application of the principles of reproductive biology of livestock animals in production and management. Students will need to earn a grade of C or higher to advance to the next level of the program. *Prerequisite: ASC-220 and ASC-230.*

ASC-400 (4) Sheep and Goat Production and Management
This course will cover the aspects and approaches to manage and operate a sheep and goat operation. Topics will include but are not limited to handling, facilities, nutrition, anatomy, genetics, and physiology. A lab is included as part of this course. Students will need to earn a grade of C or higher to advance to the next level of the program. *Prerequisite: ASC-340, ASC-320, ASC-230, and ASC-220. Corequisite: ASC-330.*

ASC-420 (4) Dairy Production and Management
This course integrates principles of anatomy, nutrition, genetics, reproduction, housing, health, herd management, nutrient management and physiology related to the dairy industry. A lab is included as part of this course. Students will need to earn a grade of C or higher to advance to the next level of the program. *Prerequisite: ASC-340, ASC-330, ASC-320, ASC-230, and ASC-220.*

ASC-440 (4) Swine Production and Management
This course will examine the principles of modern pork production including: breeding systems, disease control, applied economics, housing, marketing, pork quality and pork nutrition. A lab is included as part of this course. Students will need to earn a grade of C or higher to advance to the next level of the program. *Prerequisites: ASC-340, ASC-330, ASC-320, ASC-230, and ASC-220.*

ASC-460 (4) Beef Production and Management
This course will cover the aspects and approaches to manage and operate a beef cattle operation. Topics will include but are not limited to handling, facilities, nutrition, anatomy, genetics, and physiology. A lab is included as part of this course. Students will need to earn a grade of C or higher to advance to the next level of the program. *Prerequisite: ASC-340, ASC-330, ASC-320, ASC-230, and ASC-220.*

ASC-480 (4) Horse Production and Management
This course will cover the aspects and approaches to manage and operate an equine operation. Topics will include but are not limited to handling, facilities, nutrition, anatomy, genetics, and physiology. A lab is included as part of this course. Students will need to earn a grade of C or higher to advance to the next level of the program. *Prerequisite: ASC-340, ASC-330, ASC-320, ASC-230, and ASC-220.*

ASC-498 (3) Internship in Animal Science
Internship will provide work experience in livestock production and management, agribusiness, or service organizations. Students will have to work a total of 320 hours to complete course along with a final paper written about the experiences gained from the internship. Students will need to earn a grade of C or higher to advance to the next level of the program. *Prerequisites: ASC-480, ASC-460, ASC-440, ASC-420, and ASC-400.*

ART

ARTS-1110 (3) Arts and Design Survey
An introduction to disciplines within Arts and Design encompassing two-dimensional, and three-dimensional studies. Projects will be based on a common conceptual theme for the semester. Students will gain a fundamental understanding of issues of aesthetics, innovation, critical interpretation and col1aboration central to arts and design studies. Discussions and assigned readings will provide a critical overview of historical and cross-cultural examples.

ARTS-2996 (1-3) Special Topics
Specific subjects and credits to be announced in the Schedule of Classes.

ASTRONOMY

ASTR-1010C (4) Introduction to Solar System Astronomy
Astronomy 1010 provides a historical introduction to the science of astronomy, with an emphasis on the nature and evolution of models of the solar system. We spend time on the fundamentals of modern astronomy, including motion, forces, gravity, and the nature of light. We focus on the dynamics and physical properties of solar system objects, including planets, moons, asteroids, and comets. Finally, our study culminates with an investigation of the origin of the

solar system. Additional topics may include recent advances in astronomical research and findings from current solar system exploration by automated spacecraft. Astronomy 1010 is a course designed for students having little or no background in astronomy or physics. The course focuses on interpretation of the nature of the solar system based on modern observational techniques and the properties of light and matter. The course includes laboratory activities (indoor and outdoor) investigating the properties of the objects within our Solar System in addition to an analysis of Solar System phenomena. Topics include measuring the properties of Solar System objects (their sizes, distances, etc.), analyzing their motions, developing an understanding of the observational effects of Earth's own motion, and an introduction to the methods employed by astronomers to make new discoveries. *Lab included. Lab fee: $125.00*

ASTR-1110C (4) Introduction to Stellar and Galactic Astronomy
Stars, galaxies, and the structure of the universe are explored in this descriptive course. Starting with a review of the fundamentals of astronomy, the course then moves on to the formation, evolution, and death of stars. The course then continues with the nature of galaxies, galaxy evolution, current concepts in cosmology, and the large scale structure of the universe. Astronomy 1110 is a course designed for students having little or no background in astronomy or physics. The course focuses on interpretation of the nature of the universe based on modern observational techniques and the properties of light and matter. The course includes laboratory experiments concerning the nature of light, laws of motion, an introduction to the internet and computer simulations of data taking and analysis similar to current research in astronomy

AUTOMOTIVE TECHNOLOGY

AUT-101 (3) Introduction to Automotive Technology
This course covers opportunities for employment, automotive technician responsibilities, and an overall view of the modern day automobile industry. Shop safety, tools, shop equipment, repair parts, and other accessories are topics covered in this course. The operation of a gasoline engine, various procedures for diagnostic analysis, and the repair of those engines will be performed. *Offered: Fall, Spring*.

AUT-102 (4) Brake Systems
The theory, diagnosis, and repair of disc and drum brakes is covered in this course. Mechanical and hydraulic theory and principles will be addressed, as well as brake resurfacing, precision measuring, overhauling, bleeding, and adjusting. Anti-lock brake system theory, diagnosis, repair, and scanning will also be learned. *Offered: Fall, Spring*.

AUT-103 (4) Electrical and Electronic Systems
This course teaches electrical theory, diagnosis, and repair as it pertains to automotive applications. Starting and charging systems, batteries, body electrical systems, engine compartment electrical systems, and accessories are some of the topics that will be covered. *Offered: Fall, Spring.*

AUT-104 (4) Chassis, Suspension, and Steering
This course teaches wheel alignment theory, diagnosis, and repair for both front- and rear- wheel drive vehicles. Some of the topics covered include suspension systems, tire and wheel analysis, shocks and struts, bushings, and manual and power steering components. *Offered: Fall, Spring.*

AUT-111 (4) Drive Trains and Axles
This course will cover the theory, diagnosis, and repair of various drive train components on front and rear wheel drive vehicles. Systems that include U-joints, C/V joints, drive lines, flywheels, clutches, manual transmissions, transaxles, differential ring and pinion, axles, and yokes are explained. Seals, bearings, and fluids are additional topics that will be taught. *Offered: Fall, Spring.*

AUT-113 (4) Tune-Up/Engine Performance
This course will cover conventional and electronic gasoline engine tune-up procedures. Topics will include engine mechanics, fuel systems, ignition systems, and computer systems. Modern engine control system diagnostics and repair procedures pertinent to today's automobile will also be covered. *Pre-requisite: AUT-103. Offered: Fall, Spring.*

AUT-114 (4) Automatic Transmission and Transaxle Overhaul
This course is a study of the operation, hydraulic principles, and related circuits of modern automatic transmission and transaxles. Topics include diagnosis, disassembly, and assembly procedures with emphasis on the use of special tools and proper repair techniques.

AUT-195 (1–3) Topics in Automotive Technology
These topics courses are designed to explore contemporary or emerging technologies in the automotive technology field. Content varies each semester so course may be repeated for credit with differing section numbers. These courses are offered according to interest, need, and demand. *Offered: Fall, Spring*.

AUT-203(4) Advanced Electrical and Electronics Systems
This course is a continuation of AUT-103 and teaches advanced electrical theory, diagnosis, and repair. The course also offers more in-depth study of starting systems, charging systems, batteries, body electrical systems, engine compartment electrical systems, and accessories. *Prerequisite: AUT-103 or permission of the instructor. Offered: Fall, Spring.*

AUT-212 (3) Heating/Air-Conditioning Systems
This course covers the theory, diagnosis, and repair of heating and air conditioning systems as they pertain to the automobile. Compressors, hoses, receiver driers, evaporators, condensers, expansion devices, heater cores, water pumps, thermostats, core plugs, fans, and belts are some of the components that will be covered. National standards for the safe and environmentally correct use of refrigerants will also be emphasized. *Offered: Fall, Spring.*

AUT-213 (4) Advanced Engine Performance
This course covers diagnostic procedures pertinent to today's automobile. Some of the topics of instruction will include wiring diagrams, sensor diagnostics, check engine light diagnostics, engine analyzer diagnostics, scan tool diagnostics, electrical meter diagnostics, and other forms of modern automotive diagnostics. *Prerequisite: AUT-113 or permission of the instructor. Offered: Fall, Spring.*

AUT-215 (4) Engine Repair
This course teaches the theory and repair of all types of automotive engines and engine-related components. Engine blocks, intake and exhaust manifolds, cylinder heads, valve trains, pistons, connecting rods, and crank shafts are some of the topics that will be covered. Precision measurement, shop safety and good working habits will also be introduced to the student throughout the course. *Offered: Fall, Spring.*

AUT-286 (3) Practicum in Automotive Technology
This course will consist of Hands-on assignments here at the Navajo Technical University Automotive Shop. *Offered: Fall, Spring.*

BIOLOGY

BIOL-225 (3) Medical Writing
This course is design to provide students with the means for communicating their scientific knowledge according to biomedical conventions. Topics covered include, the scientific method, developing a literature search strategy, reading and writing scientific papers, instructions for preparing a laboratory report or scientific paper, examples of good laboratory reports, poster presentations, oral presentations, word processing in Microsoft word, making graphs in Microsoft excel, preparing oral presentations with Microsoft PowerPoint. *Prerequisite: ENGL-1110 and ENGL-1120. Offered: Spring.*

BIOL-226 (4) Principles of Genetics
This course is to enable students understand the fundamental terms and principles of genetics and its importance to society at large, especially the hereditary nature of traits that are fundamental to who and what we are. The fundamental concepts in genetics will be reviewed (cell types, units of heredity, alleles, phenotypes, DNA, RNA, gene locations in chromosomes, mitosis and meiosis, mutations). Topics to be covered include, chromosome and cellular reproduction, heredity, sex determination and sex-linked characteristics, pedigree analysis and genetic testing, linkage, recombination, and gene mapping, bacterial and viral genes, chromosomal variation, DNA and the chemical nature of the gene, RNA, the genetic code, regulation of gene expression, gene mutations and repair, molecular genetics and biotechnology, genomics and proteomics, organelle DNA, developmental genetics and immunogenetics, and also cancer, quantitative, evolutionary and population genetics. *Lab included. Prerequisite: BIOL-2110C or BIOL-2120C or permission of the instructor. Lab fee: $125.00 Offered: Fall.*

BIOL-302 (4) Cell Biology
The purpose of the course is to enable students understand the cell as a microcosm that demonstrates all the themes that connect the concepts of biology. Topics to be covered include Microscopy and cell investigation, prokaryotic and eukaryotic cell anatomy and physiology, endomembrane systems and their functions, cytoskeletons and function, extracellular matrix, membrane structure and function, passive and active membrane transport, cellular metabolism, cellular respiration, photosynthesis, cell communication, cell cycle and cell culture. Loss of cell cycle control and cancer will be emphasized. *Lab included. Prerequisite: BIOL-2110C or BIOL-2120C or permission of the instructor. Lab fee: $125.00. Offered: Spring.*

BIOL-400 (4) Model Organisms
This course provides information on the simplest and most accessible systems in which the fundamental problems in biology are easily solved. The most important model organisms to study include, *Escherichia coli* and its phage, the T-phage and phage λ; baker's yeast *Saccharomyces cerevisiae*; the mustard-like weed, *Arabidopsis thaliana*; the nematode *Caenorbabditis elegans*; the fruit fly *Drosophila melanogaster*; and the house mouse *Mus musculus*. The course will consider the principal features and advantages of each model system and the kind of experimental tools that are available for studying each organism, and some of the biological problems that have been studied in each case. *Lab included. Prerequisite: BIOL-2310C, BIOL-302, or permission of the instructor. Lab fee: $125.00. Offered: Spring.*

BIOL-402 (5) Biology Research Project
The biology research project is to provide students with the essential hands-on learning opportunities required for through understanding of biology experimentation. The projects to be approved by instructors must offer features that encourage students to think about how concepts apply to the problems at hand. By working on these projects, students are expected to appreciate the scientific method in general, and laboratory policies and procedures in particular. Students would be required to prepare oral presentations to appropriate classes as assigned by instructor. *Prerequisites: BIOL-2110C, BIOL-2120C, BIOL-2310C, BIOL-226, BIOL-302. Offered: Spring.*

BIOL-404 (4) Bioinformatics
The course is designed to allow contemporary biologists familiarize themselves with several bioinformatics programs and databases that would enable them deal with numerous challenges posed by the genomic era. The course explains the basics of bioinformatics followed by discussion of current computational tools for solving biological research problems. Major themes in bioinformatics are covered, including biological databases, sequence alignment, gene and promoter prediction, molecular phylogenetics, structural bioinformatics, genomics, and proteomics. *Prerequisites: BIOL-2110C, BIOL-2120C, BIOL-226, BIOL-302, and CHM-471 or permission of the instructor. Offered: Spring.*

BIOL-405 (3) Cancer Biology and Therapeutics
This course is designed to acquaint students with the prevailing theory which underpins the genesis and treatment of cancer. Topics covered include broad insight into cancer, etiology of cancer, identification and histopathology of cancer, cancer cell immortality, oncogenes, tumor suppressor genes, apoptosis, angiogenesis, metastasis, and therapeutics. *Prerequisites: BIOL-2110C, BIOL-2120C, BIOL-226, BIOL-302, and CHM-471 or permission of the instructor. Offered: Spring.*

BIOL-406 (3) Diabetes and Complications
American Indians have higher morbidity and mortality rate from diabetes compared to other Americans. This disease is preventable to some degree, thus provoking culturally congruent intervention programs. The benefit to the community is enormous when interest is stirred on the outcomes of the disease. The historical and social context of diabetes will be discussed by focusing on its classification, diagnosis, epidemiology, and global burden. The normal and pathophysiology of diabetes will be explained followed by pathogenesis of types I and II diabetes, obesity, insulin resistance and metabolic disturbances. Various causes of diabetes and complications will also be discussed. *Prerequisites: BIOL-2110C, BIOL-2120C, and CHM-471 or permission of the instructor. Offered: Spring.*

BIOL-407 (3) Diagnostic Enzymology
This course is aimed at contributing to students' knowledge of the role of diagnostic enzymology in diagnosis of diseases at certain stages outside histological recognition. The course will begin with an introduction to enzymology and kinetics of enzymatic reactions, fundamental aspects of measurement of enzyme activities, basis of diagnostic enzymology, spectroscopic and non-spectroscopic measurements of reaction products, problems associated with sample used for assays, and the main types of samples for enzyme analysis, including urine, blood, and milk. Practical aspects involving measurement of enzyme reaction rates, special problems regarding the reliability of enzyme assays, and specific examples of the value of diagnostic enzymology using enzymes from the typical samples will be discussed. *Prerequisites: BIOL-2110C, BIOL-2120C, and CHM-471 or permission of the instructor. Offered: Spring.*

BIOL-408 (3) Nutrition and Obesity
The aim of this course is to enhance the application of the knowledge of nutrition in selecting, combining, preparing, storing, serving, and modifying food to nurture the health of an individual. The course also examines the role of over-nutrition in obesity and disease. Topics would include the science of food, nutrition and health, major nutrients and vitamins, macro and micro-elements, water and electrolyte balance, interrelationship of nutrients, recommended daily allowances, cereals, pulses, nuts and oils, vegetables, fruits, milk and milk products, meat and fish, eggs, beverages, spices, and condiments, nutritive value of Indian/Navajo foods, food adulteration, exchange list, food poisoning and food borne infection, toxicants in food, food allergy, nutrition of normal infants, pre-school children, children, adolescents, old age and pregnant women. Nutrition, obesity and disease would also be discussed. *Offered: Spring.*

BIOL-409 (4) Molecular Biology
This course provides an introduction to the fundamental concepts of molecular biology and its applications. It will cover a broad range of topics to show that molecular biology is applicable to human medicine and health, as well as veterinary medicine, evolution, agriculture, and other areas. The course begins by defining some basic concepts in genetics such as biochemical pathways, phenotypes and genotypes, chromosomes, and alleles. It will explain the characteristics of cells and organisms, DNA, RNA, and proteins. It will also describe genetic processes such as transcription, recombination and repair, regulation, and mutations. The topics on viruses and bacteria discuss their life cycle, diversity, reproduction, and gene transfer. Other topics covered include molecular evolution; the isolation, purification, detection, and hybridization of DNA; basic molecular cloning techniques; proteomics; and processes such as the polymerase chain reaction, DNA sequencing, and gene expression screening. Up to date topics to be treated include genetic engineering, genomics, and related areas, and also treats topics in medical, agricultural, and social aspects of molecular biology. *Lab included. Prerequisite: BIOL-2110C or BIOL-2120C or permission of the instructor. Lab fee: $125.00. Offered: Spring.*

BIOL-410 (4) Ecology
This course seeks to provide students with a basic understanding of ecology and its importance. The course will thus provide a basic synthesis of how individual organisms interact with their physical environment, and with each other, to generate the complex ecosystems we see around us. The unifying theme of the course is biodiversity-its patterns, causes, and the growing worldwide threats to it. Basic ecological principles will be presented using clearly described examples from the current ecological literature. Examples have been chosen carefully to represent as wide a range of ecosystems (terrestrial and aquatic, northern and southern hemisphere) and life forms (animal, plant and microbe) as possible. Particular attention is paid to consequences of global change on organisms, populations, ecological communities and ecosystems. The expected outcome is the presentation of a persuasive picture of how the Earth's natural systems function, and how that functioning may change over the coming century if compliance in international climate change agreement fails. *Offered: Fall.*

BIOL-411 (4) Ethnobotany
This course teaches ethnobotany as the study of the classification, use, and management of plants by people, and will draw on a range of disciplines, including natural and social sciences, to show how conservation of plants and of local knowledge about them can be achieved. It will also

demonstrate how ethnobotany is critical to the growing importance of developing new crops and products such as drugs from traditional plants. The course will establish the basic introduction to the field, showing how botany, anthropology, ecology, economics and linguistics are all employed in the techniques and methods involved. It will explain data collection and hypothesis testing and will provide practical ideas on fieldwork ethics and the application of results to conservation and community development. *Offered: Spring.*

BIOL-412 (4) Developmental Biology
The substance of this course on Developmental Biology embodies the breadth, the intellectual rigor, and the wonder of contemporary developmental biology. The course will introduce students to the field. It will integrate classical developmental biology with all the incredible advances that have been made in recent years. Students will be taught ''Integration'' as the key theme in developmental biology. The mechanisms of transcriptional gene regulation and of aging, the data on amniotes limb development, the ways in which fertilization occurs, and the mechanisms of sex determination will each be integrated. Developmentally important genes will be "integrated" into genetic regulatory networks. The course will also highlight the importance of genomics, genetic regulatory networks, and digital visualization techniques in this field. Cytoskeletal dynamics, which integrate the genetic regulatory genes with morphogenetic events, will stress the discussions of neural development and cell signaling. Enduring Features: An evolutionary context will show the revolutionary new discoveries of the horizontal transfer of enhancer-bearing transposable elements as well as the possible origins of multicellularity as a developmental response to bacteria. *Offered: Spring.*

BIOL-413 (4) Evolutionary Biology
This course on evolutionary biology offers a wide range of original ideas, based on articles and reviews on evolution, in the broadest sense of that term. The topics to be discussed will range from anthropology and behavior to molecular biology and systematics. A broad spectrum of topics to be discussed will include such subjects as natural selection among replicating molecules *in vitro*, mate recognition and the reproductive behavior of Drosophila, molecular systematics of *Crocodilian*, evolution of the monocotyledons, and the communication network made possible among even distantly related genera of bacteria by plasmids and other transposable elements. *Offered: Spring.*

BIOL-1110C (4) General Biology
This course introduces non-science majors to basic biological concepts including, but not limited to, the properties of life, biochemistry, cell biology, molecular biology, evolution, biodiversity, and ecology. *Prerequisite: A grade of C or better in High school Science/Biology or satisfactory placement score (IS 090).* Lab included. *Lab fee: $125.00. Offered: Fall, Spring.*

BIOL-1310C (4) Introduction to Human Anatomy and Physiology I
This introductory course is the first of two that covers the anatomy (structure) and physiology (function) of the human body, which includes the study of basic chemistry, molecules, cells, tissues, organs, organ systems, and terminology related to these concepts. Systems covered in this course include the integumentary, skeletal, muscle and nervous systems. This course is the first of two that introduces laboratory exercises in regards to human anatomy and physiology of the human body. This includes histological study, biochemical processes, mammal organ dissections, and the use of models to illustrate anatomical arrangement. *Prerequisite: A grade of C or better in High school Science/Biology or satisfactory placement score (IS 090) or Permission of the instructor. Lab included. Lab fee: $125.00. Offered: Spring.*

BIOL-1320C (4) Introduction to Human Anatomy and Physiology II
This introductory course is the second of two that covers the anatomy (structure) and physiology (function) of the human body including the endocrine, cardiovascular, lymphatic, digestive, respiratory, urinary and reproductive systems as well as terminology related to these topics. This course is the second of two that introduces laboratory exercises in regards to human anatomy and physiology of the human body. This includes histological study, biochemical processes, mammal organ dissections, and the use of models to illustrate anatomical arrangement. *Prerequisite: Grade of "C" or better in BIOL-1310C (Human Anatomy and Physiology I) or permission of the instructor. Lab included. Lab fee: $125.00. Offered: Fall.*

BIOL-2110C (4) Principles of Biology: Cellular and Molecular Biology
This course introduces students to major topics in general biology. It focuses on the principles of structure and function of living things at the molecular, cellular and organismic levels of organization. Major topics included are introduction to the scientific process, chemistry of cells, organization of cells, cellular respiration, photosynthesis, cell division, DNA replication, transcription, and translation. Lab included. *Lab fee: $125.00.*

BIOL-2120C (4) Cellular and Molecular Biology
This course takes a detailed look at the principles of cellular biology with an emphasis on the structure, physiology, bioenergetics, cell division, and gene expression of microbe, plant, and animal cells. Major topics include the diversity of organic molecules and macromolecules, metabolism, cellular respiration, photosynthesis, cell division, DNA replication, and protein synthesis. Major modern research tools will also be explored. This course is intended for science majors. Lab included. *Prerequisite: BIOL 2110C. Lab fee: $125.00.*

BIOL-2130C (4) Introduction to Biochemistry
This introductory course will explore the major themes of biochemistry including the structure and function of the major classes of molecules found in biological organisms, the basic strategies for biochemical pathway regulation, the chemistry and regulation of energy metabolism, and the molecular basis of genetic information transfer. Lab included. *Lab fee: $125.00 Prerequisite: BIOL-302, or permission of the instructor. Offered: Fall.*

BIOL-2310C (4) Microbiology
Introduction to the basic principles of microbiology, microbial pathogenesis, host defenses and infectious diseases. The course will emphasize concepts related to the structure and function of microorganisms, including their mechanisms of metabolism and growth. Host parasite interactions will also be emphasized, including mechanisms of microbial pathogenesis and mechanisms of host defenses against infectious diseases. Lab will emphasize both the theory and hands on application of techniques used in a microbiology laboratory for the growth and identification of bacterial species. Students will learn microscopy skills and staining techniques for the observation of bacteria. Students will also learn aseptic techniques used for isolation of bacteria, inoculation of cultures, and interpretation of selective and differential growth media for the identification of bacterial species. *Prerequisite*: *BIOL-2110C or BIOL-2120C or permission of the instructor. Lab fee: $125.00. Offered: Fall.*

BIOL-2630C (4) General Botany
This course is an introduction to the fundamental principles of plant biology and botanical science. Topics covered include plant biochemistry, plant and fungal cell biology, plant reproduction, plant morphology and anatomy, plant physiology, plant genetics, plant ecology, archaean, bacterial, protistan, fungal and plant evolution. Lab will include an introduction to laboratory techniques dealing with plant biochemistry, plant, bacterial, and fungal cell biology, plant reproduction, plant morphology and anatomy, plant physiology, plant genetics, and plant evolution. *Prerequisite: A grade of C or better in High school Science/Biology or satisfactory placement in NTU placement score (IS 090). Lab Fee: $125.00. Offered: Fall.*

BAKING

BKG-101 (8) Professional Baking I
The Professional Baking, I course provides students with the basic skills and knowledge for entry levels in baking in a professional environment. Instruction focuses on a maximum hands-on experience as well as theory and kitchen safety. Students will be involved in all aspects of baking preparations including breads, sweet breads, assorted pastries, cakes and cake decorating. *Prerequisites: Successful completion of ENG-098 or equivalent and MTH-113 or equivalent, or instructor approval. Course Fee: $100.00 Offered: Fall, Spring.*

BKG-111 (8) Professional Baking II
This course will include baking and pastry theory topics, demonstrations, and hands-on applications. Students will have the opportunity to further develop proficiencies in a variety of breads, fillings, tarts, pies, and specialty desserts. Emphasis will also be on advanced theory topics, skills, and techniques of classical and contemporary pastry arts. Specialty topics will include Genoese, international buttercreams, icings, sugar and chocolate decoration. *Prerequisites: BKG-101 and CUL-103. Course Fee: $100.00. Offered: Fall, Spring.*

BKG-201 (4) Art of Grand Finale
Students will learn the art of designing, decorating and plating individual desserts for single-serving and banquet functions. Students will also learn chocolate and pulled-sugar techniques. *Prerequisite: BKG-111. Corequisite BKG-202.Course Fee: $100.00. Offered: Fall, Spring.*

BKG-202 (4) Advanced Cake Decorating
Students will learn a variety of cake-baking skills and advanced decorating techniques from single-serving cake portions to wedding cakes to cakes for banquet dessert tables. *Prerequisite: BKG-111. Corequisite BKG-201 Course Fee: $100.00. Offered: Fall, Spring.*

BKG-209 (3) Professional Baking Basics
The Professional Baking Basics course provides students with the basic knowledge needed to understand the day-to-day operation of a free-standing bakery or hotel bakery department. Students will be involved in all aspects of baking preparation including a strong emphasis on display, marketing, and sales aspects. *Pre-requisite: CUL-101. Offered: Fall, Spring*

BUSINESS ADMINISTRATION

BUS-302 (3) Human Resource Management
This course is the study of human resource management function in organization, and encompasses recruitment, selection, and maintenance of a qualified, motivated, and productive workforce. The effective performance of these functions requires understanding and skill in employment law, planning, job analysis, recruitment, selection, orientation, training, employee development, performance appraisal, compensation, benefits, safety, and labor relations. Emphasis is placed on how human resource management as a whole enhances organizational performance and success. Even if you do not enter into a career in Human Resources, this course will be useful no matter what career path you pursue since it addresses issues that will have an impact on you in the workplace. *Prerequisite: "C" or better in ACG-210, LAW-205.*

BUS-305 (3) Effective Business Communication
This course presents communication as integral to management strategy and as a critical component for success in the workplace. In this class, you will develop a foundation for designing effective messages, both written and oral, from

concept to delivery. You will use a strategic communication model to identify objectives, analyze audiences, choose information, and create the most effective arrangement and channel for that message. Particularly, the course emphasizes elements of persuasive communication: how to design messages for diverse and possibly resistant audiences and how to present that information in a credible and convincing way. Specifically, you will practice drafting and editing clear, precise, and readable written business documents as well as learn to design documents to make information easily accessible to a busy, executive-level reader. *Prerequisite: "C" or better in ENG-L1120.*

BUS-310 (3) Business Statistics
This course is an introduction to the principles and practice of business statistics emphasizing the role of data in decision-making. Among the topics that the course will cover are data collection techniques and their limitations, visual and numerical summaries of data, sampling distributions, confidence interval estimation, hypothesis testing, goodness of fitness tests, and linear regression techniques. *Prerequisite: "C" or better in MATH-1350.*

BUS-328 (3) International Management
This course introduces to the principles and practices of managing international businesses for it is an interdisciplinary course depicting a broad view of the increasing level, scope, and complexity managers facing in this new millennium of international businesses while captivating the general management perspective throughout the semester. It also lays the foundation for the study of International management. Business is becoming increasingly global. The barriers to trade continue to fall, and the level of trade among countries continues to rise. The result is that a firm's competitors may no longer be in the next state or province but in a country that it hardly knew existed a few years ago and people need to be abreast with it. *Prerequisite: "C" or better in ACG-210.*

BUS-331 (3) Social Environment of Business
In a world economy that is becoming increasingly integrated and interdependent, the relationship between business and society is becoming ever more complex. The globalization of business, the emergence of civil society organizations in many nations, and new government regulations and international agreements have significantly altered the job of managers and the nature of strategic decision making within the firm. At no time has business faced greater public scrutiny or more urgent demands to act in an ethical and socially responsible manner than at the present. *Prerequisite: "C" or better in BUS-305.*

BUS-335 (3) Tourism and Hospitality Management
The Tourism & Hospitality course will introduce students to the world's largest industries, from destination planning, hotel and restaurant management to sports, entertainment and event management, and include the study of geography, economics, and world cultures. Tourism & Travel are thriving industries with a multitude of employment opportunities. This program will provide students with curriculum focused on current tourism, travel and hospitality related industries. Students learn about the history of the industry, explore traveler motivation and consumer needs, the industry's economic and environmental impacts, domestic and international travel, and sales in tourism. *Prerequisite: "C" or better in ACG-210.*

BUS-340 (3) Management Information System
The purpose of this course is to provide an introduction to the field of management of information systems (MIS). Managing information systems has become a task for all levels of managers and all function areas of the business. This course is designed to familiarize students with the concepts related to the utilization of information technology in business organizations. It will focus both on technical and managerial aspects of information technology adoption in the organization. Topics such as information technology infrastructure, electronic commerce, information systems and business strategy, ethical issues related to information systems will be covered in class. The course should provide the student with knowledge of the core principles of MIS, focusing on breadth rather than depth of knowledge. Learning activities will include case studies, group assignments, and application software exercises that will provide an opportunity to apply MIS concepts to real-world applications. *Prerequisite: "C" or better in BCIS-1115 and ACG-210.*

BUS-350 (3) Organizational Theory and Behavior
Organization Theory and Behavior examines the theoretical frameworks developed to aid us in understanding how public sector organizations are structured and operate. The study of organization theory also examines how people interact and work together within an organizational setting. The purpose of this course is for students to explore and understand the classical and contemporary organizational theory and behavior literature. Organizations are the medium through which work in the public sector occurs. Thus, in order for students to become effective public administrator, they must gain a fundamental understanding of the nature of organizations and the various factors that influence human behavior within them. During the course of this semester we will examine classical and contemporary readings on organizational theory to introduce you to the various perspectives on the structure and behavior of the organizations that we inhabit daily. *Prerequisite: "C" or better in PSYC-1110 and BUS-305.*

BUS-352 (3) Project Management
This course covers key components of project management including project integration, project scope management, project time and cost management, quality management, human resource considerations, communications, risk management, and procurement management. Project Management introduces project management from the standpoint of a manager who must organize, plan, implement, and control tasks to achieve an organization's

schedule, budget, and performance objectives. *Prerequisite: "C" or better in BUS-305.*

BUS-353 (3) Supply Chain and Operation Management
This course focuses on management and improvement of supply chain processes and performance. It will be valuable for students who would like to pursue a career in consulting or take a position in operations, marketing or finance functions in a manufacturing or distribution firm. We explore important supply chain metrics, primary tradeoffs in making supply chain decisions, and basic tools for effective and efficient supply chain management, production planning and inventory control, order fulfillment and supply chain coordination. We will also investigate topics such as global supply chain design, logistics, and outsourcing, several other recent supply chain innovations. *Prerequisite: "C" or better in BUS-302.*

BUS-364 (3) Business of Gaming
This course will investigate the history of gaming in the United States and will investigate why the gaming industry is one of the fastest-growing industries from its beginning and up through modern day operations. Students will also gain an understanding the importance of gaming and how it highlights tourist attractions. Students will also gain an understanding of how Native American tribes use revenues for economic development. Students will also gain an understanding of the state and federal laws that govern gaming and casino management. This course will also cover on the topic sociology of gambling and its addiction. *Prerequisite: "C" or better in ACG-210.*

BUS 375 (3) Financial Management
Financial Management studies corporate finance and capital markets, emphasizing the financial aspects of managerial decisions. It touches on all areas of finance, including the valuation of real and financial assets, risk management and financial derivatives, the trade-off between risk and expected return, and corporate financing and dividend policy. The course draws heavily on empirical research to help guide managerial decisions. *Prerequisite: "C" or better in ACG-212.*

BUS-380 (3) Management for Environmental Sustainability and Durable Competitive Advantage
Businesses are increasingly applying strategic management tools to incorporate considerations of sustainability into decision-making and operations. While some businesses incorporate sustainable practices because of an ethical conviction to do well for society and the environment, most are motivated to address pressures from stakeholders such as regulators, shareholders, customers and neighbors and to exploit knowledge and experience for long term competitive advantage. This course will examine how businesses develop and implement strategies to promote sustainability. Students will examine roles and responsibilities of sustainable strategic managers and learn how to apply the tools of strategic business management to problems of sustainability. Students will consider how managers apply leadership practices to promote sustainable practices in their organizations. Business case study analysis will be a critical component of this course, as will team work. *Prerequisite: "C" or better in BUS-352.*

BUS-437 (3) Internship in Business
An internship experience provides the student with an opportunity to explore career interests while applying knowledge and skills learned in the classroom in a work setting. The experience also helps students gain a clearer sense of what they still need to learn and provides an opportunity to build professional networks. *Prerequisite: "C" or better in BUS-352.*

BUS-440 (3) Business Analytics
The course is an introduction to Business Analytics. It covers managerial statistical tools in descriptive analytics and predictive analytics, including regression. Other topics covered include forecasting, risk analysis, simulation, and data mining, and decision analysis. This course provides students with the fundamental concepts and tools needed to understand the emerging role of business analytics in organizations and shows students how to apply basic business analytics tools in a spreadsheet environment, and how to communicate with analytics professionals to effectively use and interpret analytic models and results for making better business decision. Emphasis is placed on applications, concepts and interpretation of results, rather than theory and calculations. *Prerequisite: "C" or better in BUS-310, BUS-340.*

BUS-455 (3) Entrepreneurial Practicum
The objective of an Entrepreneurial Practicum is to provide students with a practical client working experience, which is essential for a more complete understanding of the application of technical degree coursework and business theories and procedures. In the course, students learn about the entrepreneurial mindset and explore the steps to entrepreneurship. In the Practicum student work takes on the characteristics of a real business with guided, then independent application of skills and knowledge in an entrepreneurial setting. Students network with professionals who are entrepreneurs or who assist entrepreneurs in finding opportunities for commercialization. *Prerequisite: "C" or better in BUS-352.*

BUS-480 (3) Business Plan Development
This course will prepare the student for running a business. The emphasis of the course will be in the development of a functional business plan while gaining a thorough knowledge of the legal requirements for establishing a business along with an understanding of the financial obligations of owning a business. This course provides participants wide range of business/management skills, but especially know-how to launch a new venture company or start one inside an established organization. *Prerequisite: "C" or better in BUS-440.*

BUS-485 (3) Global Business Strategies
In this course students learn to assess corporate strategy and to develop corporate strategy for transnational's, multinationals and other global corporate entities. Through lecture, reading, case study, and activities, students analyze corporate functions such as marketing, operations, human resource management and finance to learn to successfully manage these functions in a foreign setting. Geopolitical, macroeconomic, and market trends are probed for their effect on firm strategy. Thus students learn to effectively analyze that strategy and to forecast the immediate effect and global impact of large-scale forces. *Prerequisite: "C" or better in BUS-331.*

BUS-496 (3) Senior Seminar and Strategic Management
The project completed during the semester will allow the student to demonstrate mastery of the competencies expected of graduates of the Business Administration program. Emphasis is on critical thinking, effective communication, ethical decision-making, understanding of operating in a Navajo Nation context, and application of appropriate research methods. The student will assume the role of management consultant for the purpose of this project. In this role the student will identify problems and formulate reasonable solutions for a client they have identified as the focus of their project. An alternative project will be designed with the student in the role of a potential entrepreneur who proposes to set up a new business based upon the student's ideas. The student will identify the product or service, the target market, potential challenges, and possible solutions to those challenges. *Prerequisite: "C" or better in BUS-352.*

BUSA-(3) 2420 Tribal Law
This course will examine the special relationship that exists between the federal government and tribal governments. It includes jurisdiction in Indian country, state tribal relations and tribal governing structures. *Offered: Fall, Spring*

BUSINESS COMPUTER INFORMATION SYSTEMS

BCIS-1115 (3) Introduction to Computers
This is a lecture and hands-on course on different technologies commonly use in business and different agencies like computer, printer and other computer devices. It includes introduction to hardware, operating software, and MS Office applications like Excel, Word, Access, PowerPoint, Publisher, & other MS Office Tools. The class will include an overview of the history of technology and its future, as well as giving a fundamental introduction to industry-standard application software for word processing, spreadsheet, database management, and graphics. Basic computer use, files and file structure, windows, the Internet, programming, ethics, and security will also be addressed. This course (or a higher level course) is a general education requirement for all degree programs. *Offered: Fall, Spring, Summer.*

CHEMICAL ENGINEERING TECHNOLOGY

CHEME-115 (3) Introduction to Process Technology
Provides an overview of process-based manufacturing industries with a focus on process technology operations using a systems perspective. Includes concepts of safety, process instruments, environmental standards, and continuous process improvement. *Offered: Fall, Spring.*

CHEME-117 (4) Process Technology I – Equipment
Introduces students to the purpose, components, and the process technician's role for operating and troubleshooting the equipment used within the process industry. *Offered: Fall, Spring.*

CHEME-119 (4) Safety, Health & Environmental I
An overview of safety, health, and environmental issues in the performance of all job tasks associated with the process industries. This course covers recognition, control, and regulation of safety hazards in the workplace. Topics include record keeping, training, facilities, personal protection equipment, fire protection and governmental regulations. *Offered: Fall, Spring.*

CHEME-130 (2) Introduction to Process Operations
Introduction to chemical and refinery plant operations. Topics include process technician process technician duties, responsibilities and expectations; plant organizations; plant process and utility systems; and the physical and mental requirements of the process technician. Also, the course is designed to provide hand-on experience in process operations, instrumentation and controls. *Offered: Fall, Spring.*

CHEME-202 (4) Industrial Chemistry and Lab
Chemical concepts of industry, basic chemical engineering and chemical processing, basic organic chemistry, synthetic polymers, diffusion, fluid flow, heat transfer, air and water pollution, and energy routes. *Prerequisite: A grade of C in CHEM-1217C, CHEM-1225C. Offered: Fall, Spring.*

CHEME 218 (4) Process Technology II – Systems
The course is related to the studies of the interrelation of various process systems to process equipment. Examines how to arrange process equipment into basic systems; describes the purpose and function of specific process systems; explains how factors affecting process systems are controlled under normal conditions; introduces the concept of system and plant economics. *Pre-requisite: CHEME-117. Offered: Fall, Spring.*

CHEME-222 (4) Fundamentals of Chemical Eng.
Use of basic mathematical concepts and computer tools, physical laws, stoichiometry and the thermodynamic properties of matter to obtain material and energy balances for steady and unsteady state systems. This course introduces basic mass and energy balances as preparation for subsequent courses in heat transfer, fluid flow, mass transfer and reaction engineering for physical, chemical, metallurgical and biological processes. All these processes

begin with general mass and energy balances. *A grade of A in a course equivalent to MATH-1220 or satisfactory placement score. Offered: Fall, Spring.*

CHEME-223 (3) Petroleum Refinery Engineering & Petrochemicals
Topic to be covered include: gasoline, diesel, plastic, rubber, and synthetic fiber, catalytic reforming of naphtha, oil refinery processes, fluid catalytic cracking, ethylene, propylene, steam cracking of natural gas liquids such as ethane and propane, detergents, and adhesives. *Prerequisite: A grade of C in CHEM-1225C. Offered: Fall, Spring.*

CHEME-224 (4) Quality Control in Chemical Engineering
The course will cover how products are designed, manufactured, and brought to market. Additionally, students learn to track how these products perform in the consumer market and how to package and transport products in optimal ways. The course will emphasize on the procedure of the control of the quality and testing methods of products to uncover defects and reporting to management who make the decision to allow or deny product release. The course is a combination of lectures, class work and possible practical training. *A grade of A in a course equivalent to in MATH-1220 or satisfactory placement score. Offered: Fall, Spring.*

CHEME-230 (4) Practicum in Industry
The course introduces the processes to appropriate practicums and provides counselor trainee experiences that complement classroom learning and help prepare the students for employment. Students will learn how to explore state-approved community treatment agencies and apply for placement with them by developing a resume and cover letter, and interviewing with sites open to student placement. Students will be learning to observe and participate in treatment programs, while practicing professional behavior and learning about the organizations. *Offered: Fall, Spring.*

CHEME-231 (4) Process Technology III – Operations
This course covers process technology today, process hazards, permit systems, quality and economics. In addition, plant science physics and chemistry are discussed in relationship to process technology and training. Also covered are; Process Technician's role and maintenance duties, bulk chemical handling and storage, process unit shutdown, turnarounds and process unit startup. *Pre-requisite CHEME-218. Offered: Fall, Spring.*

CHEMISTRY

CHEM-286 (4) Inorganic Chemistry with Lab
Build a descriptive and theoretical framework for understanding inorganic systems. Advanced atomic structure and bonding theories will be applied to understanding the properties and reactions of inorganic compounds. Systematic presentation of properties and reactions of representative elements of the periodic table with application of chemical principles. Theories of electronic structure, stereochemistry, and symmetry properties of inorganic molecules. Three lectures and one laboratory period. *Pre-requisite: CHEM-1217C. Lab Fee: $125.00 Offered: Fall*

CHEM-1120C (4) Introduction to Chemistry
This course covers qualitative and quantitative areas of non-organic general chemistry for non-science majors and some health professions. Students will learn and apply principles pertaining, but not limited to, atomic and molecular structure, the periodic table, acids and bases, mass relationships, and solutions. Lab covers qualitative and quantitative areas of non-organic general chemistry for non-science majors and some health professions. Students will learn and apply principles pertaining, but not limited to, atomic and molecular structure, the periodic table, acids and bases, mass relationships, and solutions. The laboratory component introduces students to techniques for obtaining and analyzing experimental observations pertaining to chemistry using diverse methods and equipment. *Lab fee: $125.00. Offered: Fall, Spring, Summer.*

CHEM-1217C (4) Principles of Chemistry I
As the first of a two-semester sequence, this course teaches fundamental concepts in chemistry, including the electronic structure of atoms, chemical periodicity, nature of chemical bonds, molecular structure, the three phases of matter, etc. In addition, the application of these concepts to various chemical sub-disciplines, such as organic chemistry, biochemistry, and materials chemistry. Designed for majors in chemical sciences and engineering, it is assumed that the students are familiar with college algebra, chemical nomenclature, stoichiometry, and scientific measurements. Lab introduces students to chemistry measurements, atomic structure, chemical reactions, stoichiometry, thermochemistry, quantum chemistry, periodic properties, atomic and electronic structures of atoms, and bonding. *Prerequisite: MATH-1220, CHEM-1120C. Lab fee: $125.00. Offered: Fall, Spring, Summer.*

CHEM-1225C (4) General Chemistry II for STEM Majors
This course is intended to serve as a continuation of general chemistry principles for students enrolled in science, engineering, and certain pre-professional programs. The course includes, but is not limited to a theoretical and quantitative coverage of solutions and their properties, kinetics, chemical equilibrium, acids and bases, entropy and free energy, electrochemistry, and nuclear chemistry. Additional topics may include (as time permits) organic, polymer, atmospheric, and biochemistry. The laboratory component is designed to complement the theory and concepts presented in lecture, and will introduce students to techniques for obtaining and analyzing experimental observations pertaining to chemistry using diverse methods and equipment. *Prerequisite: CHEM-1217C. Lab fee: $125.00. Offered: Fall*

CHEM-2130C (4) Organic Chemistry I
This course is the first of a two semester sequence of Organic Chemistry, the chemistry of carbon containing compounds, as required for chemistry, medical science, and engineering majors. The course includes theoretical, qualitative, and quantitative discussion of Organic Chemistry concepts, including but not limited to a review of electronic structure and bonding, acids and bases, stereochemistry, an introduction to organic compounds, isomers, substitution and elimination reactions of alkyl halides, reactions of alkenes, alkynes, alcohols, ethers, epoxides, amines, and thiols, mass and infrared spectrometry, ultraviolet/visible spectroscopy, and nuclear magnetic resonance. *Prerequisites: CHEM-1225C Lab fee: $125.00. Offered: Fall, Spring*

CHEM-2135C (4) Organic Chemistry II
This course is the second of a two-semester sequence of Organic Chemistry, the chemistry of carbon containing compounds, as required for chemistry, medical science, and engineering majors. The course will emphasize structure, main physical properties, chemical reactivity, and reaction mechanisms relating to alcohols, arenes and carbonyl compounds, as well as continued integration of mass and infrared spectrometry, ultraviolet/visible spectroscopy, and nuclear magnetic resonance technique and analysis. *Lab fee: $125.00. Prerequisite: CHEM-2130C.*

CHEM-2325C (4) Environmental Chemistry
This course introduces students with a topics-based approach to chemistry of the environment. They are expected to have some knowledge of chemistry, with a desire of applying this knowledge to the environment. Topics of interest include environmental of water, water pollution, water treatment, geochemistry, atmospheric chemistry, air pollution, radioactivity, hazardous materials and resources. Lab included. *Pre-requisite: CHEM-1217C. Lab Fee: $125.00 Offered: Spring*

COOKING

CKG-101 (8) Professional Cooking I
The Professional Cooking, I course provides students with the basic knowledge needed for entry into the professional food industry. Instruction focuses on a maximum hands-on experience, as well as theory and food safety and sanitation. Students will be involved in all aspects of meal preparation for the staff, students and community. *Course fee: $100.00. Offered: Fall, Spring.*

CKG-111 (8) Professional Cooking II
Students advance into more intricate cookery methods associated with dinner and banquet preparation. Table service and banquet setups are also covered. This course also gives the basics of baking and dessert creation. *Prerequisite: CKG-101. Course fee: $100.00. Offered: Fall, Spring.*

CKG-112 (3) Professional Internship
The internship features on-the-job training at different locations. The student improves cooking and baking skills along with developing an understanding of cooperation and respect with regard to fellow workers, supervisors, and future employers. *Prerequisite: CKG-101. Offered: Fall, Spring.*

CKG-208 (3) Professional Cooking Basics
The Professional Cooking Basics course provides students with the basic knowledge needed to understand the day-to-day operation of a commercial kitchen. The course will involve a strong emphasis on planning and organization of a food service operation which includes recipe breakdown, scheduling, ordering, and menu planning. Students will also learn about the basic cooking styles used in all professional kitchens. *Prerequisite: CKG-101 or BKG-101. Course fee: $100.00. Offered: Fall, Spring.*

COMMERCIAL DRIVER LICENSE

CDL-100 (6) General Knowledge and Endorsements
This course covers the general knowledge of combination vehicles, air brakes, tank vehicles, doubles, triples, hazardous material, defensive driving, log books, trip planning, map reading, and drug and alcohol avoidance. *Offered: Fall, Spring.*

CDL-101 (3) Pre-Trip and Backing Skills
This course provides the students opportunities to practice their skills in backing a tractor-trailer. The students will perform straight-line backing, alley docking, parallel parking, conventional and sight-side parking, and backward serpentine control. *Offered: Fall, Spring.*

CDL-102 (3) Defensive Driving and Safe Practices
This course will provide opportunities for students to practice shifting and lane control, left and right turns, light and medium city traffic, Interstate highway navigation, the proper use of on and off ramps, mountain driving, and railroad crossings. Safety is stressed at all times. *Offered: Fall, Spring.*

CDL-103 (6) Driving Skills, Rules and Regulations
The students will practice over the road skills and perform 108 pre- and post- trip inspections. The students will also learn the skills necessary to be used in hooking and unhooking trailers and securing various loads. *Offered: Fall, Spring.*

COMMUNICATION

COMM-1130 (3) Public Speaking
This course introduces the theory and fundamental principles of public speaking, emphasizing audience analysis, reasoning, the use of evidence, and effective delivery. Students will study principles of communication theory and rhetoric and apply them in the analysis, preparation and presentation of speeches, including informative, persuasive, and impromptu speeches. *Prerequisite: ENGL-1210 or ENGL-1110 or a comparable English course. Offered: Fall, Spring.*

COMM-1996 (1-3) Topics in Communication
Specific subjects and credits to be announced in the Schedule of Classes.

COMM-2120 (3) Interpersonal Communication
This course provides an introduction to the study of interpersonal communication. Students will examine the application of interpersonal communication in personal and professional relationships.

COMM-2996 (1-3) Topics in Communication
Specific subjects and credits to be announced in the Schedule of Classes. *Offered: Occasionally*

CRIMINAL JUSTICE

CJUS-1110 Introduction to Criminal Justice
This course provides an overall exploration of the historical development and structure of the United States criminal justice system, with emphasis on how the varied components of the justice system intertwine to protect and preserve individual rights. The course covers critical analysis of criminal justice processes and the ethical, legal, and political factors affecting the exercise of discretion by criminal justice professionals. *Offered: Fall, Spring*

COMPUTER SCIENCE

CS-101 (3) Programming I
This course introduces the student to some of the basic concepts of programming languages. Statements such as assignments, conditional statements, and loops will be covered. The student will learn how to write simple programs. *Offered: Fall, Spring.*

CS-120 (3) Computational Thinking
This course prepares the student to problem solving, using fundamental concepts of computer science. The latter includes problem solving, abstraction, modularity. Computational thinking can be used to solve problems algorithmically and efficiently. *Offered: Fall, Spring.*

CS-125 (3) Scripting
This course is to introduce the student to writing lightweight computer programs to automate the process of solving certain problems. This course will also be used to familiarize the student with the command-line interface. *Offered: Fall, Spring.*

CS-150: (3) Programming II
This course in a continuation of CS 250, and will cover concepts in the object-oriented language JAVA, such as classes, objects, and inheritance. *Prerequisite: CS-101. Offered: Fall, Spring.*

CS-175 (3) Introduction to Computer Organization
This course prepares the student for Computer Organization. Binary, octal, and hexadecimal numbers will be covered, as well as conversions from one system into another. Two-complement numbers will be introduced. Assembly language, control mechanisms, memory, input, output will be introduced at a basic level. *Offered: Fall, Spring.*

CS-201 (3) Data Structures I
This course will focus on lists, stacks, and queues. Students will learn how to implement such data structures. They will also learn to choose the appropriate data structure for to solve a problem. *Prerequisites: CS-150*

CS-225 (3) Comparative Programming Language
This course will study several major programming languages and their characteristics. It covers basic concepts and underlying design principles of different kinds of programming languages. *Prerequisite:CS-150*

CS-251 (3) Data Structures II
This course will focus on recursion, sorting, as well as certain graph algorithms, such as shortest paths and minimum spanning trees. *Prerequisites: CS-200*

CONSTRUCTION TECHNOLOGY

CT-100 (3) Construction I
This course is designed to prepare students for entry into the Advanced Residential Construction course. Instruction includes identifying and utilizing all tools and machines associated with carpentry, material layout, the cutting, shaping, and assembling of wood products, furniture construction and cabinetry. The course also presents information related to current manufacturing materials and techniques, technologies, and equipment used to produce products for the marketplace. In addition to technical skills, students completing this course will also develop advanced critical thinking, applied academic skills, and career development skills. *Course fee: $100.00. Offered: Fall, Spring.*

CT-102 (2) Construction Math & Drawing
Introduction to the principles of drafting to include terminology and fundamentals, including size and shape descriptions, projection methods, geometric construction, sections, auxiliary views, and reproduction processes. *Offered: Fall, Spring.*

CT-103 (3) Introduction to Craft Skills
Development of skills and techniques necessary for basic construction/industrial maintenance craft skills. *Lab Fee: $125.00. Offered: Fall, Spring.*

CT-104 (3) Concrete and Masonry Construction
A study of the versatility, durability, and mix design of quality concrete. Also included is the study of the use of masonry in modern construction. Both classroom and laboratory experiences will assist students in developing a firm understanding of use concrete and masonry materials. *Lab Fee: $125.00. Offered: Fall, Spring.*

CT-108 (2) Residential Plumbing
In this course, students will be introduced to all aspects of residential plumbing and be able to identify and utilize hand and power tools associated with residential plumbing. In

addition, students will begin to learn about site layout and the identification of symbols related to plumbing. This course is designed to teach the basics that students will build upon in the Advanced Residential Plumbing course. *Offered: Fall, Spring.*

CT-109 (2) Basic Electric
This course is designed to provide students with the fundamentals of the electrical trade, including the information and basic skills needed for identification and proper usage of materials, blueprint reading, and the use of hand and power tools associated with residential wiring. *Offered: Fall, Spring.*

CT-110 (3) Construction II
This course provides practical experience and related technical information for occupations specializing in carpentry. Students will learn to utilize layout tools, layout building lines, form concrete, frame floors, walls, roofs, install roofing components, install thermal, sound and moisture protection, install doors, windows, and trim, apply exterior and interior components, apply roof coverings, paint surfaces, and decorative woodworking. *Prerequisite: CT-100. Course fee: $100.00. Offered: Fall, Spring.*

CT-111 (3) Woodworking with Lab
The carpenter's working tool kit, including shop tools, will be used by students in accordance with pre- established safety practices. Small projects will precede larger ones, and a semester project showing the student's progress will account for most of the grade. *Course fee: $100.00. Offered: Fall, Spring.*

CT-113 (3) Introduction to Cabinet Making
This course is a continuation of Woodworking I. Shop techniques for cabinetmaking and simple furniture will be introduced and projects will reflect advanced techniques in woodworking. *Prerequisite: CT-111. Course fee: $100.00. Offered: Fall, Spring.*

CT-114 (3) Field Project II
This project will provide students with a second opportunity to perform carpentry fieldwork in the construction industry. On-the-job training (with strict attendance requirements) to fulfill stated production requirements is expected and high quality workmanship is required. A comprehensive view of the complete building process will result from the realistic variety of tasks each student performs. *Prerequisite: CT-112.*

CT-115 (3) Introduction Construction Project Management
The course is designed to develop the learner's/student's knowledge and skills in traditional and innovative construction project management, and project delivery systems such as project participants, construction administration, control of quality in construction, organizational structure of a construction project, professional construction management, defining scope of work in a construction management contract, resident project representative and inspectors as members of the construction projects and handling job-related information. Documentation – records and reports. *Offered: Fall.*

CT-119 (3) Construction Site Practicum
As work becomes available in the field, transportation will be provided to enable students to test their skills at a job site. Industry standards will be emphasized and quality workmanship required. A general understanding of the complete building process will result from the varied tasks asked of each individual. *Offered: Fall, Spring.*

CT-121 (2) Introduction Building Environmental System
This course provides an introduction to the building systems, operations, and maintenance of residential properties. Topics include basic mechanical, electrical, and plumbing systems. The course is aligned with the National Center for Construction Education and Research standards. *Offered: Fall.*

CT-195 (1 – 3) Topics in Construction Technology
This course explores a variety of contemporary technologies and applications in the field of construction technology. Course content varies each semester so the course may be repeated for credit with differing section numbers. The course is offered based upon the need, interest, and demand. *Offered: Occasionally.*

CT-200 (3) Construction Codes and Specification
A study of the interpretation of technical building specifications, codes, and contract documents as they affect the selection, and application of materials and equipment. The course will emphasize understanding of local and state codes. *Offered: Fall, Spring.*

CT-201 (3) Construction Cost Estimating
Students will study fundamentals of performing construction estimates including making material quantity take-offs and labor estimates. The Construction Specifications Institute (material divisions) will be used to organize the estimating process. Emphasis is placed on interpreting plans and specifications to determine accurate material quantities and labor estimates, selection of appropriate material grades and types, and other miscellaneous cost associated with successful completion of a building project. *Offered: Fall.*

CT-202 (3) Construction Planning & Control
Covers the concepts and techniques for scheduling and control systems for effectively managing a construction project. Students will obtain the skills and knowledge necessary to effectively plan and schedule a project, to monitor and control all project aspects, and to anticipate and resolve problems as they occur. *Prerequisite: CT-115. Offered: Fall.*

CT-203 (3) Construction Surveying
Presents fundamentals of surveying, including use of transit, reading angles, land description, restrictions and legal

problems. Covers topographical maps and their use. *Offered: Fall.*

CT-204(4) Construction Technology Internship
Major focus is to provide practical on-the-job experience working with a construction company. Student interns might work in the areas of print reading, estimating, equipment management, project supervision, or other management related activities and tasks. *Offered: Fall.*

CT-205 (3) Building Environmental Systems II
The emphasis in this class is on building's impact on the environment, active HVAC systems – central heat and cooling sources, passive methods of cooling and heating, electrical systems – day lighting, and electrical lighting, plumbing systems – water supply, plumbing fixtures, sanitary piping, and storm water drainage, and fire protection – detection and alarm systems, smoke control and fire suppression. *Prerequisite: CT-121. Offered: Fall.*

CT-206 (3) Sustainable Construction
This course is to provide the learners/students with information, knowledge, and tools to understand sustainability requirements in construction, as related to the driving forces for sustainable construction, materials usage, the challenge of materials product selection and major environmental and resource concern, the purpose of green building assessment, green building council Leadership in Energy and Environmental Design (LEED) building rating system, and construction operation and commissioning (site protection, construction materials management, construction, and demolition waste management,) and the green building benefits.

CT-208 (3) Materials and Methods of Construction
This course provides an introductory overview of the various materials used in construction. The students will learn about material and product manufacturing techniques and how they relate to mechanical and non-mechanical properties of the various materials. Common construction methods are introduced and building details are explored. Students have the opportunity to experience material capacity and behavior as well as construction methods in demonstrations and lab experiments. Furthermore, material applications and detailing in structural and non-structural building components are explored. Resulting from this course, students will gain a comparative knowledge of material properties and possible applications in construction and architecture. *Offered: Fall.*

CT-210 (3) Construction Site Safety Management
Emphasis is placed on identifying and reducing safety risk on the job site. Students will study OSHA standards, accident and fire prevention, protection from hazardous materials, use of protective equipment and clothing, construction equipment and other safety concerns. The role of managers, workers, sub-contractors and others is stressed. Student will gain an appreciation for how accidents and safety concerns affect morale and productivity. *Offered: Fall.*

CT 215 (3) Advanced Construction Project Management
Covers the concepts and techniques for scheduling and control systems for effectively managing a construction project. Students will obtain the skills and knowledge necessary to effectively plan and schedule a project, to monitor and control all project aspects, and to anticipate and resolve problems as they occur. *Prerequisite: CT 115. Offered: Fall*

CT-216 (3) Advanced Construction Math and Drawing
This course introduces students to drawing skills and techniques necessary to produce basic construction drawings. Emphasis is placed on the interpretation of the requirements of contract drawings, understanding terminology, symbols, and conventions used in residential, commercial, and industrial drawings, including architectural, structural, mechanical, electrical plans and sections. *Prerequisite: CT-102. Offered: Fall.*

COUNSELING

CEPY-1110 (3) Introduction to Counseling Theories
This course provides knowledge in current theoretical approaches to counseling. Theoretical models such as psychodynamic, existential, person-centered, cognitive and behavioral therapy, rational emotive behavioral therapy, family systems, individual, and solution-focused therapies will be studied. *Pre-requisite: ENGL-1110 & PSYC-1110. Offered: Fall, Spring.*

CEPY-1130 (3) Counseling Substance Abuse in Schools and Communities
This course will cover substance abuse issues in the society. Substance abuse and addiction within family, impacts to members of the community as well as intervention and treatment approaches will be discussed. *Offered: Fall, Spring.*

CEPY-1140 (3) Personality Psychology
This course will provide a foundational knowledge of the nature and nurture determinants of human behavior. It will include the definition and scientific measurement of personality. Theories studied will include the psychodynamic, Neo-Freudian, biological, humanistic, cognitive, traits, and behavioral theories. *Offered: Fall.*

CEPY-1198 (3) Internship
Students will do internships in behavioral health facilities to gain practical knowledge about counseling in the areas of substance abuse prevention and treatment, personality psychology, counseling theory, etc. *Offered: Fall, Spring.*

COU-108 (3) Foundations of Addiction
This course provides foundational knowledge regarding addiction and substance use disorders. Biopsychosocial dynamics; stages, processes, and impact of addiction and substance use; and the role of the addiction professional in

prevention, intervention, relapse prevention, and aftercare will be studied. How substance use impacts family and community will be explored. The course provides overviews of the substance abuse counselor's code of ethics, HIPAA, and legal issues involved in counseling.

COU-165 (3) Introduction to Family Dynamics
This course introduces the historical and theoretical perspectives of family dynamics and systems. Topics include roles, communication styles, boundaries, generational patterns, cultural influences, and couples and parenting dynamics. Skills and modalities relevant to working with families with substance use disorders will be explored.

COU-210 (3) Prevention and Treatment of Substance Use Disorders
This course focuses on the treatment of substance use disorders. Students demonstrate and apply assessment, diagnosis, and treatment methods, as well as understanding of risk factors, social influences, prevention strategies, intervention, treatment planning, and relapse prevention. The importance of family involvement, family education, and community involvement in prevention will be discussed.

COU-220 (3) Foundations in Crisis and Suicide Risk Management
This introductory course provides an overview of the knowledge areas needed in the provision of services in health and mental health settings for youth and adults. Emphasis will be placed on youth and will focus on Native American youth in particular.

COU-230 (3) Case Management and Crisis Skills for Substance Use Disorders
This course provides foundational knowledge on stages of change, interviewing techniques, screening and assessment, report writing, record keeping, treatment planning, and case management. In addition, students develop knowledge and skill in crisis intervention in preparation for working with clients and families with addiction or substance use disorders.

COU-235 (3) Group Dynamics
This course provides foundational knowledge in the study of group dynamics, stages, and processes. Students learn the importance of screening, intervention, and leadership styles in effective group interventions. Self-help groups and community resources are explored.

COU-250 (3) Suicide Risk Assessment
This course provides the necessary knowledge and skills to conduct a risk assessment of clients/patients within local health and mental health settings, that include risk and protective factors for suicide and other mental health problems (substance abuse, mental disorders, conduct disorders, etc.). Emphasis will be placed on youth and will focus on Native American youth in

COU-255 (3) Principles of Interviewing and Assessment
This course prepares students to enter their practicum and engage in clinical work. The course will provide theoretical material and an opportunity to observe demonstrations of clinical applications, to practice basic listening and inquiry skills, substance abuse and risk assessment, treatment planning, and to discuss the impact of culture and personal attitudes on clinical interviewing. Students' participation will include discussion, clinical role-playing, and creating audiotape and videotape demonstrations of role-played interviews.

COU-260 (3) Relapse Prevention in the Treatment of Substance Use Disorders
This course focuses on relapse prevention. Identifying potential triggers for relapse and developing relapse prevention plans are explored. Students are provided with strategies for connecting their clients with community resources.

COU-270 (3) Crisis Intervention and Risk Management
This course provides the necessary knowledge and skills to work as a member of a health team to provide competent crisis and suicide risk management. Based on current analyses of clinical roles for within local health and mental health settings, students will demonstrate their willingness work as a member of the team and their ability to manage clients with increased risk for suicide and psychiatric crises.

COU-285 (3) Prevention, Education, Postvention Services, and Advocacy
This course provides a description of roles that go beyond direct suicide and crisis assessment and management. Students will learn about efforts for suicide prevention and education locally, on a statewide basis, and nationally. Using culturally informed models, students will learn the skills and knowledge necessary to provide these types of services.

COU-290A (4) Clinical Internship (Substance Abuse Concentration)
Supervised practicum/internship allows students concentrating in Substance Abuse Counseling to develop counseling skills and to perform all the activities that a regularly employed professional substance abuse counselor would be expected to perform in a supervised setting. The practicum/internship is performed under the supervision of a faculty member and an on-site clinical supervisor approved by the university. Documentation of counseling-related activities is submitted directly to the professor. *Pass/Fail Course*

COU-290B – (4) Clinical Internship (Crisis Management & Suicide Prevention Concentration)
Supervised practicum/internship allows students concentrating in Crisis Management & Suicide Prevention to develop counseling skills and to perform all the activities that a regularly employed professional crisis management counselor would be expected to perform in a supervised setting. The practicum/internship is performed under the

supervision of a faculty member and an on-site clinical supervisor approved by the university. Documentation of counseling-related activities is submitted directly to the professor. *Pass/Fail Course*

COURT TRANSCRIPTION

CRT-101 (3) Introduction to Court Transcription
Tribal Court history and system will be introduced and discussed. It will include the introduction of equipment, its usage, transcription formatting learns the different types of transcriptions such as verbatim, written, recorded translation and customized transcriptions. Student will familiarize themselves with formats, equipment and computer software, and introduce to Navajo Language alphabets on the keyboard.

CRT-111 (3) Transcription Lab I
This will include exercises in transcribing English spoken by Instructor in the classroom. Exercises in transcribing English from recorded devices, such as tape or CDs. Students will be thoroughly introduced to basic Navajo language alphabets on computer keyboard. In addition, students will exercise in transcribing Navajo language spoken by Instructor in classroom while using equipment. Student will visit to courtroom while hearings are in sessions and actual hearing the transactions. Afterward, students will have discussion with Justices of the Supreme Court as to what they require in transcription and translation. Through the course, various forms of laboratory skills be learned, exercises of learned skills and instructions. A thorough exam will take place in order to take the CRT 112 class.

CRT-112 (3) Transcription Lab II (Court Case Studies)
This will include continuation of exercises in transcribing English spoken by Instructor in the classroom. Additional, seeking exercises in in conducting detailed transcribing of English into Navajo language from recorded devices, such as tape or CDs. Students will be thoroughly introduced to advanced and all Navajo language alphabets on computer keyboard. In addition, students will exercise in transcribing more complicated Navajo language spoken by Instructor in classroom while using equipment. Student will visit to courtroom while hearings are in sessions with complicated cases and actual hearing language in transactions. Afterward, students will have discussion with Justices of the Supreme Court as to what they expect in English/Navajo transcriptions and translations. Through the course, various forms of advanced laboratory skills learned will be exercised. Also, students will interact with cultural studies professors as to what they would require in language transcription and especially in translation. A thorough exam on certificate complete will take place in order to earn the Navajo Court Transcriptions/Translation Program certification.

CULINARY ARTS

CUL-103 (3) Food Safety & Sanitation
In this course, students will learn about food borne illnesses, kitchen safety, fire hazards, and in-depth kitchen sanitation procedures based on current professional standards. Upon successful completion of the course, students will also receive their Food Handler's Permit and Serv-Safe certification. *Offered: Fall, Spring, Summer.*

CUL-105 (3) Nutrition
This course will cover information regarding nutrition in the food service industry. Topic areas will include fats, carbohydrates, protein, vitamins, minerals, additives, and chemical pesticides. Students will use the food pyramid in relation to menu analysis. The digestive system for food intake will be examined through video presentation. Students will examine product labels, using information from the Food and Drug Administration. *Offered: Fall, Spring.*

CUL-201 (3) ServSafe Essentials
This course will include basic and advanced food safety and sanitation techniques, demonstrations, and hands-on application of local, state, and federal laws. Students will have the opportunity to pass and take the national sanitation test for a National ServSafe Certificate. *Offered: Fall, Spring.*

CUL-205 (3) Food & Beverage Management
This course is designed to introduce the students to all aspects of an operating restaurant and how to apply management skills to successfully run an operation from kitchen to dining room. The students will also learn menu design, wine list organization, bar management, inventory control and executing a successful operational plan. *Offered: Fall, Spring.*

CUL-206 (3) Banquets & Catering
This course will prepare students to plan, prepare a menu for, and execute an off-site catering and an in- house banquet. Students will learn how to plan events ranging from a simple coffee service to an appetizer party to a buffet line to a full five-course sit-down meal. *Course fee: $100.00.*

CUL-207 (3) Management & Supervision
This course is designed to prepare students for focusing directly on the first line hospitality supervisor and applying the wisdom of management theory and experience to the hospitality workplace in down-to-earth terms. The course is also designed to meet the management challenges in terms of the growing need for understanding the basics of human relationships. *Offered: Fall, Spring.*

CUL-227 (3) Introduction to Hospitality & Tourism
Study of hotels, restaurants, tourism and the hospitality industry around the world. The scope of the industry, development and history of the hospitality industry on an international basis, ethical issues and career opportunities.

CUL-347 (3) Facilities Management
Principles of facility management in the hospitality industry related to coordination of the physical space with guest services. The organization, duties, and administration of hotel support departments. The various jobs in lodging housekeeping, engineering, security, and convention and meeting services. Facilities management, purchasing, and furnishing, fixtures and equipment concepts.

CUL-362 (3) Purchasing in Cost Control for Hospitality & Food Service
Theory, processes, and complexities of procurement and cost controls for products and services utilized in hospitality industries. Emphasis on management of the purchasing process, cost control systems, and technology applications. *Offered: Fall, Spring*

CUL-365 (3) Restaurant Operations Management
Restaurant Operations Management is one of the most vital components of the hospitality industry. Through instruction, discussion and hands-on experience, the student is given the opportunity to engage in processes and complexities of food production in a commercial setting including cooking principles and techniques, safety, sanitation and profitability. The course will have emphasis on quality and quantity food production, station set-up, timing and service. Students will develop service management skills for the front of the house and develop service management skills for the hospitality industry, including table service techniques; leadership behavior, motivation; communication training, staffing and professionalism with an emphasis on restaurant management operations. *Offered: Fall, Spring*

CUL-375 (3) Hospitality Managerial Accounting
Key accounting concepts and the selective application of its most effective strategies and tactics are mission critical factors for most hospitality operations. Students participate in real-world hands-on managerial accounting in a hospitality setting. Covers the tax changes made in 2010 and the updated operating statistics. Revenue management and dynamic pricing, accounting for gift cards, unsecured bank loans, and profitability indexes are introduced. *Offered: Fall, Spring*

CUL-389 (3) Facility and Food Safety
Students will learn how to have a clean & safe kitchen and facility. In this course students will learn about food borne illnesses, kitchen safety, fire hazards, and in depth kitchen sanitation procedures that are the current professional standards. Also the student will learn what facility cleanliness and sanitation standards are required through the Federal and State Environmental Health Departments. The students at the end of this course be certified in food safety and sanitation through chef certification.com and will count towards their final certification level of Certified Culinarian through the American Culinary Federation. Also the student will have his/her Federal food handlers card which is required to work on any Federal property. Also the student will be certified in SERV-SAFE which is the new industry standards for Hotel and Restaurant safety and sanitation This course is a hybrid which means it involves both an online and classroom environment. Chefcertification.com hosts the online environment and will be the ones who issue the usernames and passwords. The online environment can take up to two weeks to build so please be patient. This course has nothing to do with Moodle. *Offered: Fall, Spring*

CUL-416 (3) Hospitality and Tourism Marketing
Students develop actual marketing campaign for business within hospitality industry. Emphasis on (a) analysis of market, competition and product, (b) planning financial budget and (c) developing short-term and long-range strategies to achieve desired profit through effective advertising, sales and public relations plan. *Offered: Fall, Spring*

CUL-426 (3) Beverage Management and Controls
Foundation in beverage service, operations and management. Strategies to manage beverage and bar operations, control systems and profitability, product selection and marketing, facility requirements and responsible alcohol service. Topics include purchasing, resource control, legislation, marketing, physical plant requirements, staffing, service and the selection of wines to enhance foods. *Offered: Fall, Spring*

CUL-445 (3) Revenue Management in Hospitality Operations
Successful Restaurant Management is a comprehensive text on the business of opening and successfully operating a restaurant. An emphasis is placed on marketing and market studies so that readers understand target markets for specific concepts and their impact on the restaurant's success. The important principles of accounting are included as well as information on the purpose of a business plan, the contents of a business plan, and business structure. Training Guides, employee manuals, job descriptions, and tips on using the Internet are all included in this comprehensive course. This in-depth, all-inclusive text includes everything a new restaurant operator needs to learn and know prior to financing and opening a successful restaurant. *Offered: Fall, Spring*

CUL-449 (3) **Advanced Hospitality Management Internship**
Management experience in multiple aspects of a hospitality or tourism organization. Exploration of human resources, development of an understanding of organizational behavior, conflict resolution, negotiating and communication techniques. Application of critical thinking skills to solve problems. The interaction between the customer and the products and services provided by the organization. *Offered: Fall, Spring*

CUL-452 (3) Capstone in Hospitality Management
The capstone course will provide the students an opportunity to utilize the skills gained from the previous semesters. Students will begin a semester project containing several

managements, advertising and marketing courses including project management. The course will contain the research and planning of the project along with a project proposal complete with deliverables. Students will provide a project report, a final presentation and deliverables agreed upon in the project proposal. Prerequisite: Management, marketing, advertising & project management. *Offered: Fall, Spring*

CUL-470 (4) Hospitality Law
Examination of the laws regulating the hospitality industry. The interrelationships between law, the hospitality industry, and the public. Exploration of ethics, how legal principles apply in a global environment, and fundamental principles of tort and contract law. *Offered: Fall, Spring*

CUL-478 (3) Hospitality Industry Human Resources Management
Theories and practices used for personnel management in the hospitality and services industries. The organization of a human resources department, hiring, discipline, compensation, job analysis and performance evaluation. *Offered: Fall, Spring*

CUL-483 International Food & Wine
The International Food and Wine course provides students with the basic knowledge of the different cuisines and wine from around the world. The course will involve a strong emphasis on knowing the food and wine used in the different cuisines and menu planning with nutritional items. Students will also learn about where the origins of the world food and wine started. *Prerequisites: Must be 21 or older. Offered: Fall, Spring*

CUL-489 (3) Hospitality Industry Financial Analysis
Study of managerial accounting concepts and applications specific to the hospitality industry with an emphasis in analysis of financial reports, ratio analysis, CVP analysis, and operations budgeting. *Offered: Fall, Spring*

DRAFTING- COMPUTER-AIDED

DFT-111 (3) Mechanical Drafting
This course will cover mechanical drafting techniques using 2-D drafting software as well as 3-D software. The course will cover the essentials of mechanical drafting including orthographic projections, sectional views, auxiliary views, threads, fasteners, and springs, and dimensions. *Pre-requisite: DFT-101 or permission of the instructor. Offered: Fall.*

DFT-112 Architectural Drafting
This course will cover the basics of architectural drafting using 2-D drafting software as well as 3-D software. This course will give students the tools to create floor plans, electrical plans, plumbing plans, foundation plans, elevations, and sections. The students will utilize the tools learned in Computer Aided I and II in order to create construction documents efficiently. *Pre-requisite: DFT 120 and DFT-220 or permission of the instructor.*

DFT-120 (3) Computer-Aided Drafting I
This course is designed to help students gain proficiency in computer-aided drafting skills using AutoCAD software. The course will cover the basic commands to create simple AutoCAD 2-D drawings, thereby creating a strong foundation for more advanced tools. *Offered: Fall.*

DFT-212 (3) Advanced Architectural Drafting
This course will build on the skills obtained in Architectural Drafting (DFT-112) by using mostly 3-D architectural software. Students will create 3-D architectural models, create documents from the models, and learn visualization techniques used in many of today's architectural firms. *Prerequisite: DFT-112 or equivalent or permission of the instructor. Offered: Spring.*

DFT-220 (3) Computer-Aided Drafting II
This course is a continuation of Computer-Aided Drafting I (CAD-120). Students continue to build on the skills obtained in CAD I by using more advanced techniques and 3-D drawing techniques. This course will also show students how to become more efficient and creative in creating drawings. Each student will have the opportunity to take the Autodesk Certified User exam. *Prerequisite: DFT-120 or permission of instructor. Offered: Spring.*

DFT- 240 (3) Building Codes
This course introduces commercial (current International Building Codes) and residential building codes (current International Residential Codes). In addition, accessibility standards such as the American with Disability Act (ADA), fire safety, and space planning. Knowledge of standard building codes will prepare students to apply to floor plans generated in the Architectural Drafting courses. *Offered: Fall.*

DFT- 250 (3) Construction Management/Estimation
This course covers the managerial oversight of a construction project and estimation. Topics covered are coordinating, hiring, and fulfilling construction contracts. Emphasis on managing materials, equipment's, budgets, schedules, and employees. *Offered: Spring.*

DFT-290 (3 – 12) Internship
Internship opportunities will be limited to what is available. Students will work part-time to full-time and earn appropriate credit hours accordingly. The internships may include, but are not limited to, mechanical drafting, 3-D application, architectural drafting, 3-D modeling, or civil drafting. The internship must be approved by the instructor and students will be required to prepare oral presentations to appropriate classes as assigned by the instructor. *Offered: Fall, Spring.*

DFT-195/295 (1– 3) Topics in Computer-Aided Drafting
This course presents a variety of topics related to emerging technologies in the field of computer -aided drafting. Course content varies each semester so the course may be repeated for credit with differing section numbers. The course is based upon need, interest, and demand. *Offered: Occasionally.*

EARLY CHILDHOOD MULTICULTURAL ED.

ECED-195/295 (1 – 3) Topics in Early Childhood Multicultural Education
This course addresses a variety of emerging themes in the field of early childhood multicultural education. The course content varies each semester so the course may be repeated for credit with differing section numbers. The course is offered according to need, interest, and demand. *Offered: Occasionally.*

ECED-1001(3) Introduction to Early Childhood
This is a survey course that covers major concepts across basic areas of study in early childhood education. Focuses on curriculum development in all areas, including literacy, numeracy, the arts, health, science skills, and adaptive learning for children, birth through eight years old. Students will learn theoretical and practical aspects of the development of young children, focusing on different learning theories, and the needs of children from birth through age eight. The important educational roles and challenges of a professional educator and significant historical roots and current practices of different early childhood education programs will be studied. The object of this study is to gain the knowledge, skills, and insights necessary to confidently and appropriately attains the goal of being a leader in educating young children, parents, and families. Throughout the course, students will be expected to begin developing their own philosophy of early childhood education.

ECED-1110 (3) Child Growth, Development and Learning
This basic course in the growth, development, and learning of young children, prenatal through age eight, provides students with the theoretical foundation for becoming competent early childhood professionals. The course includes knowledge of how young children grow, develop and learn. Major theories of child development are integrated with all domains of development, including biological-physical, social, cultural, emotional, cognitive and language. The adult's role in supporting each child's growth, development and learning is emphasized. *Offered Spring.*

ECED-1115 (3) Health, Safety, and Nutrition
This course provides information related to standards and practices that promote children's physical and mental well-being sound nutritional practices, and maintenance of safe learning environments. It includes information for developing sound health and safety management procedures for indoor and outdoor learning environments for young children. The course examines the many scheduling factors that are important for children's total development, healthy nutrition, physical activity, and rest

ECED-1120 (3) Guiding Young Children
This course explores various theories of child guidance and the practical applications of each. It provides developmentally appropriate methods for guiding children and effective strategies and suggestions for facilitating positive social interactions. Strategies for preventing challenging behaviors through the use of environment, routines and schedule will be presented Emphasis is placed on helping children become self-responsible, competent, independent, and cooperative learners and including families as part of the guidance approach. *Offered: Fall.*

ECED-1125 (3) Assessment of Children and Evaluation of Programs
This basic course familiarizes students with a variety of culturally appropriate assessment methods and instruments, including systematic observation of typically and non-typically developing children. The course addresses the development and use of formative and summative assessment and evaluation instruments to ensure comprehensive quality of the total environment for children, families, and the community. Students will develop skills for evaluating the assessment process and involving other teachers, professionals and families in the process. *Offered: Spring.*

ECED-1130 (3) Family and Community Collaboration
This beginning course examines the involvement of families and communities from diverse cultural and linguistic backgrounds in early childhood programs. Ways to establishes collaborative relationships with families in early childhood settings is discussed. Families' goals and desires for their children will be supported through culturally responsive strategies. *Offered fall/spring.*

ECED-2110 (2) Professionalism
This course provides a broad-based orientation to the field of early care and education. Early childhood history, philosophy, ethics and advocacy are introduced. Basic principles of early childhood systems are explored. Multiple perspectives on early care and education are introduced. Professional responsibilities such as cultural responsiveness and reflective practice are examined. *Offered: Spring.*

ECED-2115 (3) Introduction to Language, Literacy and Reading Development
This course is designed to prepare early childhood professionals for promoting children's emergent literacy and reading development. Through a developmental approach, the course addresses ways in which early childhood professionals can foster young children's oral language development, phonemic awareness, and literacy problem solving skills, fluency, vocabulary, and comprehension. This course provides the foundation for early childhood professionals to become knowledgeable about literacy development in young children. Instructional approaches and theory-based and research based strategies to support the emergent literacy and reading skills of native speakers and English language learners will be presented. *Offered fall*.

ECED-2120 (3) Curriculum Development through Play
The beginning curriculum course places play at the center of curriculum in developmentally appropriate early childhood

programs. It addresses content that is relevant for children birth through age four in developmentally and culturally sensitive ways of integrating content into teaching and learning experiences. Information on adapting content areas to meet the needs of children with special needs and the development of IFSPs is included. Curriculum development in all areas, including literacy, numeracy, the arts, health, science, social skills, and adaptive learning for children, birth through age four, is emphasized. *Corequisite ECED-2121. Offered fall.*

ECED-2121 (2) Curriculum Development through Play. Birth through Age 4 (PreK) Practicum
The beginning practicum course is a co-requisite with the course Curriculum Development through Play –Birth through Age 4. The field based component of this course will provide experiences that address curriculum content that is relevant for children birth through age four in developmentally and culturally sensitive ways of integrating content into teaching and learning experiences. Information on adapting content areas to meet the needs of children with special needs and the development of IFSPs is included. Curriculum development in all areas, including literacy, numeracy, the arts, health, science, social skills, and adaptive learning for children, birth through age four, is emphasized. *Corequisite ECED-2120. Offered fall.*

ECED-2130 (3) Curriculum Development & Implementation
The curriculum courses focuses on developmentally appropriate curriculum content in early childhood programs, age 3 through third grade. Development and implementation of curriculum in all content areas, including literacy, numeracy, the arts, health and emotional wellness, science, motor and social skills, is emphasized. Information on adapting content areas to meet the needs of children with special needs and the development of IEP's is included. *Prerequisite: ECED-2120. Corequisite ECED-2131. Offered: Spring.*

ECED-2131 (2) Curriculum Development and Implementation Age 3 (PreK) through Grade 3 Practicum
The beginning practicum course is a co-requisite with the course Curriculum Development and Implementation: Age 3 through Grade 3. The field based component of this course will provide experiences that address developmentally appropriate curriculum content in early childhood programs, age 3 through third grade. Development and implementation of curriculum in all content areas, including literacy, numeracy, the arts, health and emotional wellness, science, motor and social skills is emphasized. Information on adapting content areas to meet the needs of children with special needs and the development of IEPs is included. *Prerequisite: ECED-2121. Corequisite ECED-2130. Offered: Spring.*

ECED-3040 (4) Integrated Curriculum: Birth through Age 4 (Pre-K)
This advanced course focuses on developmentally appropriate content, learning environments, and curriculum implementation for children Birth-Age 4. It emphasizes integration of content areas (the arts, literacy, math, health/emotional wellness, science, social studies, motor, and adaptive living skills,) and the development of rich learning environments for infants, toddlers, and preschool children. *Offered: Fall.*

ECED-3105 (3) Research in Child Growth, Development, and Learning
This advanced course in child growth, development, and learning builds upon the foundational material covered in the basic course in children growth, development, and learning. An integration of major theories of child development is provided by focusing on contemporary research in all aspects of development, including bio-ecological, social-affective, cognitive-learning, language-cultural, and methodological aspect of research in early childhood development and education. This course focuses on preparing early childhood professional to use empirically-based research to inform their teaching of young children as well as preparing teachers to be researchers in their own classrooms.

ECED-3160 (3) Family, Language, and Culture
This course analyzes the interrelationships between family, language, and culture and connected to children's development and learning. In this course language is understood as a human activity and higher mental process which build on the children, families, community, and cultural background. Language conceived as human activity must be examined through an understanding of dialogue, because dialogue is a way of promoting positive relationships between home, school, and community, partnerships. In the course of these collaborative partnerships, is vision for a better world and well-being for young children will emerge and concretize in a culturally and linguistically responsive pedagogy. *Offered: Spring.*

ECED-3180 (4) Teaching and Learning: Math and Science
The focus of this advanced curriculum course is on the standards, principles, and practices in teaching mathematics and science to young children in preschool through grade 3. An emphasis is placed on developing a content –rich integrated math and science, curriculum that focuses on children's development and interests, includes appropriate content, process, environment, and material with an emphasis son problem-solving as the major means of constructing basic concepts. Field experiences, required. *Offered: Fall.*

ECED -3251 (3) Emergent Literacy
This advanced course is designed to prepare early childhood professional to study literacy development, specifically oral language, writing and reading. This course focuses on

children from birth through Pre-K, including children with diverse abilities. Through a developmental approach, the course addresses: 1) recent theory and research that translate into practical strategies, assessment materials, and preparation of literacy rich environments, 2) the socio-cultural context in which children develop literacy, 3) culturally, linguistically and developmentally appropriate literacy curricula, 4) process used to determine the appropriateness of various literacy strategies, 5) assessment, evaluation, and accountability, and 5)literacy leadership. *Offered: By Demand.*

ECED-3280 (3) Teaching and Learning: Social Studies, Fine Arts, and Movement
The course focuses on the aims, scope, and integration of methods of teaching social studies, the fine arts, and movement across the curriculum. This course emphasizes an integrated approach to teaching the "what and why" of social studies: assessing student learning: planning units, lessons, and activities: developing effective instructional strategies: and acquiring knowledge of social studies content. Concepts of expressive art include the visual arts, music, movement, and dramas. *Offered: Fall.*

ECED-3405 (3) Young Children with Diverse Abilities
This course builds on the broad knowledge gained in previous coursework. It provides a specific focus on educational policies, programs, practices, and services appropriate for infants, toddlers, preschoolers, and early primary children who exhibit delays and disabilities. The course will provide a means toward a deeper understanding and sensitivity to the needs and feelings of children with diverse abilities and their families. The foundation includes research of young children their families, cultural sensitivity and competence, and activity-based interventions. Legal requirements of educating the child with disabilities or other special needs will be identified. *Offered: Fall.*

ECED-3505 (3) Advanced Caregiving for Infants and Toddlers
The advanced field-based course is intended to focus students in defining and implementing developmentally appropriate elements of quality programming for infants and toddlers in safe, healthy, responsive, and caring environments. The experiences in the approved setting will emphasize strong nurturing relationships, cultural competence, recognition of diverse learning needs and styles of every child, appropriate guidance techniques, and partnership with the families, culture, and community represented. Students are assisted through the course in advancing their ability to observe, discuss, and implement element of quality programming for infants and toddlers in the home, small-group, or while-group care situation. *Offered: By Demand.*

ECED-4281 (3) Teaching and Learning: Reading and Writing
The foundation of this course is an understanding of the reading process including the relationship between reading, writing, listening, and speaking: individual needs and abilities in reading instruction: and how to organize classrooms and select materials to support literacy development. Concepts of phonemic awareness, phonics instruction, vocabulary development, fluency, and comprehensions are integrated with the use of developmentally appropriate authentic assessment techniques, language/literacy immersion, and multicultural children's literature. *Offered: Fall, Spring.*

ECED-4901 (2) Teaching and Learning Practicum (Birth through Age 4)
The field practicum is a co-requisite course with Teaching and Learning Reading and Writing; Teaching and Learning Math and Science; Teaching and Learning Social Studies, Fine Arts, and Movement. The field-based component of this set of courses will provide experiences that address curriculum content and practice teaching that is relevant for children birth to age 4 in developmentally and culturally sensitive ways. *Offered: By Demand.*

ECED-4920 (2) Student Teaching Practicum (Birth through Age 8)
This course provides opportunities for students to apply knowledge gained from Curriculum Development and Implementation II and develop skills in planning learning environments and implementing curriculum in programs serving young children from birth through age eight, including young children with special needs, linguistic and cultural needs. Students will understand and implement the Diné Philosophy of Education. Learning experiences will cover all content areas, including literacy, math, science, social studies, health/wellness, the arts, and adaptive skills for children, birth through age eight. *Offered: Fall.*

ECED-4931 (3) Student Teaching Seminar
This seminar will give students an opportunity to work with a faculty member and focus on knowledge gained from course, classroom experiences, and interaction with others. Students will use practical experiences and observations from the semester long teaching assignment and further develop skills in planning learning environments and implementing curriculum in programs serving young children from birth through age four including young children with special needs, linguistic and cultural needs. Students will implement the Diné Philosophy of Education. Learning experiences will cover all content areas, including literacy, math, science, social studies, health/wellness, the arts, and adaptive skills for children, birth through age eight. *Offered: Fall, Spring.*

ECED-4955 (9) Student Teaching
This semester long teaching will offer students an opportunity to apply knowledge and skills gained from classroom learning, theories, practicum, internships, and experiences from the program. Students will work with a faculty member who will guide, offer reflections, and feedback on experience. Students in the program will be

placed at school sites according to their particular concentrations and particular to the area they plan to receive certification. Students will apply the Diné Philosophy of Education. Learning experiences will cover all content areas, including literacy, math, science, social studies, health/wellness, the arts, and adaptive skills for children, birth through age four. *Offered: Fall, Spring.*

ECONOMICS

ECON1110(3) Survey of Economics
This course will develop students' economics literacy and teaches students how economics relates to the everyday life of individuals, businesses and society in general. The course will also introduce students to the roles different levels of governments play in influencing the economy. At the conclusion of the course, students will be able to identify economic causes for various political and social problems at national and international levels, and have a better understanding of everyday economic issues that are reported in media and public forums. *Offered: Fall, Spring, Online.*

ECON-2110 (3) Macroeconomics Principles
Macroeconomics is the study of national and global economies. Topics include output, unemployment and inflation; and how they are affected by financial systems, fiscal and monetary policies. *Prerequisite: "C" or better in ECON1110.*

ECON2120 (3) Microeconomics Principles
This course will provide a broad overview of microeconomics. Microeconomics is the study of issues specific to households, firms, or industries with an emphasis on the role of markets. Topics discussed will include household and firm behavior, demand and supply, government intervention, market structures, and the efficient allocation of resources. *Prerequisite: "C" or better in ECON- 1110.*

ECN-195 (1 – 3) Topics in Economics
This course addresses a variety of emerging themes in the field of economics. The course content varies each semester so this course may be repeated for credit with differing section numbers. The course is offered according to need, interest, and demand. *Offered: Fall, Spring. Occasionally.*

ELECTRICAL ENGINEERING

EE-101 (3) Electrical Engineering Fundamentals
Introduction to fundamentals of electrical engineering theory and practice. This course covers the foundations of engineering problem solving and other skills necessary for success. Students will be taught engineering practice through hands-on approaches. Students will learn basic electrical elements (resistors, capacitors, and inductors), power sources, Ohm's law and Kirchhoff's law. *Prerequisite: CS-101, MATH-1215. Offered: Fall.*

EE-102 (3) DC Circuits & Systems
In depth study of electrical theory, analysis and design of electric circuits. This course builds upon the basics presented in EE-101 Electrical Engineering Fundamentals. Resistive networks will be discussed in-depth and solved using node and loop analysis. Operational Amplifiers and applications will be introduced. First and second order circuits will be touched on. *Prerequisite: EE-101 & MATH-1220. Offered: Spring.*

EE-103 (3) Digital Circuits & Systems
A first course in digital logic design. Data types and representations, Boolean algebra, state machines, simplification of switching expressions, and introductory computer arithmetic. Design will include traditional schematic design methods and an introduction to hardware description languages such as VHDL and Verilog. *Prerequisite: EE-101 & MATH-1220. Offered: Spring.*

EE-195/295/395/495 (1 – 3) Topics in Electrical Engineering
Topics courses will address a variety of subjects in emerging areas of Electrical Engineering. Different section numbers indicate different topics so these courses may be repeated for credit if section numbers and topics are different. Only six hours of Topics can be counted towards the B.S.E.E. degree. Courses are offered according to need, interest, and demand.

EE-201 (3) AC Circuits & Systems
Sinusoidal steady-state analysis and phasors. This course builds upon the basics presented in EE-102 Electrical Engineering Fundamentals II. Application of circuit analysis techniques to solve single-phase and three-phase circuits including power, mutual inductance, transformers and passive filters. *Prerequisite: EE-102 & MATH-1230. Offered: Fall.*

EE-202 (3) Electrical Engineering Fundamentals IV
Laplace transforms, Fourier series, Bode plots, and their application to circuit analysis. This course is a continuation of EE-201 Electrical Engineering Fundamentals III. *Prerequisite: EE-201 & MATH-2410. Offered: Spring.*

EE-207 (3) Intro to Modeling and Simulation
This course will introduce the use of computer simulation as a tool to create models of proposed electrical networks and to implement and verify them using Computer simulation packages. *Prerequisite: EE-102, EE-103, MATH-1510 COREQ (EE-212, EE-296).*

EE-212 (2) Instrumentation I
This class introduces students to fundamental laboratory practices and the use of test equipment to measure basic electrical components, DC/AC circuits using ohmmeters, voltmeters, ammeters and oscilloscopes. Units, systems of units and standards will be covered extensively. *Prerequisite: EE-101 Offered: Fall.*

EE-223 (3) Semiconductors I
This course will introduce students to the operation and fabrication of semiconductor devices. A study of semiconductor fundamentals and physics of semiconductor

devices to include: properties of materials and devices used in electrical engineering; theory of operation of semiconductor devices; p-n junction diodes, bipolar transistors (n-p-n and p-n-p), and field-effect devices. *Prerequisites: CHEM1217C, EE-203*

EE-230 (3) Introduction to VHDL and FPGA
The goal of the course is to introduce digital design techniques using field programmable gate arrays (FPGAs). This course will cover FPGA architecture, digital design flow and other technologies associated with field programmable gate arrays. The course will involve an extensive number of labs and projects which will give the students hands-on experience on designing digital systems on FPGA platforms. *Prerequisite: EE-103. Offered: Fall.*

EE-296 (1) Sophomore Project
Sophomore level individual or team project under EE faculty direction and guidance. The project provides design experience and develops practical skills. Repeatable. Pre: sophomore standing or consent. Requires consent by EE faculty mentor and department chair. Different section numbers indicate different topics so these courses may be repeated for credit if section numbers and topics are different. The research courses can be used to clear deficiencies encountered by transfer students and caused by curriculum changes. Sophomore Project cannot be counted towards a concentration elective in the B.S.E.E. degree. Courses are offered according to need, interest, and demand. *Corequisite: EE-207*

EE-301 (3) Signals & Systems
Analytical techniques for continuous-time and discrete time signal, system, and circuit analysis. *Prerequisite: MATH-2410, EE-340. Offered: Fall.*

EE-302 (3) Electromagnetic Fields and Waves
This course will introduce students to static electric and magnetic fields, time varying electromagnetic fields and Maxwell's equations from an engineering aspect. *Prerequisite: EE-202, PHYS-1320C*

EE-303 (3) Probability and Random Signals
Introductory discrete and continuous probability concepts, single and multiple random variable distributions, expectation, introductory stochastic processes, correlation and power spectral density properties of random signals, random signals through linear filters. *Prerequisite: ENGR-169, EE-207. Offered: Fall, Spring.*

EE-304 (3) Energy Systems & Power Electronics
Three-phase circuits, renewable and conventional energy supply systems, synchronous generators, transformers, induction and DC machines, power electronics for motor speed control and rectification, per unit systems and power system representation. *Prerequisite: EE-302.*

EE-310 (3) Embedded System Design
Implementation of embedded computer systems focusing on the development of hardware and software for an embedded microcontroller system. Topics include: (i) internal microcontroller architecture, (ii), interfacing peripheral devices, (iii) mixed analog and digital systems, (iv) hardware and software implementation of several systems using a microcontroller and peripherals. *Prerequisite: EE-103. Offered: Spring.*

EE-312 (2) Instrumentation II
This laboratory courses covers computer-based instrumentation systems such as LabVIEW and MATLAB for applications in electrical engineering. Students will learn how to design computer-based instrumentation systems and will conduct engineering experiments to demonstrate their skills. *Prerequisite: EE-212, Co-requisite: EE-340. Offered: Spring.*

EE-313 (3) Summer Internship
Students will work part-time to full-time in an electrical engineering related industry. The internship must be approved by the instructor and students will be required to make written reports and prepare oral presentations to appropriate classes as assigned by the instructor. *Prerequisite: Junior Standing, EE-396 Offered: Summer.*

EE-320 (3) Instrumentation & Process Control
Introduction to the feedback control problem. Modeling and analysis of linear continuous systems in time and frequency domains. Fundamentals of single-input-single output control system design. Stability criteria. Nyquist and root-locus design. Introduction to analytical design. Z-transforms and digital control. Laboratory design project. *Prerequisite: EE-212, EE-301. Offered: Spring.*

EE-330 (3) Computer Org. & Assembly Language Program
Introduction to computer organization, how major components in a computer system function together in executing a program, and assembly language programming. *Prerequisite: EE-230*

EE-340 (3) Electronic Circuits & Systems
This course will cover fundamental device characteristics including diodes, MOSFETs and bipolar transistors; small- and large-signal characteristics and design of linear circuits. Linear integrated circuitry including Operational amplifiers (Op-Amp) applications and theory will be covered extensively. *Prerequisite: MATH-1230, EE-201, Co-requisite: EE-312.*

EE-343 (3) Introduction to VLSI Design
This course provides an introduction to VLSI (Very Large-Scale Integration) systems by examining basic CMOS logic circuits and VLSI design styles. VLSI architectures and current trends in chip design are investigated. Students will work in groups on a project specific to the function of a large digital system and lay out its physical design, and verify and debug its digital behavior. Students will be introduced to modern Computer-Aided Design (CAD) software. *Prerequisite: EE-223. Offered: Fall.*

EE-370 (3) Electrical Machinery
Operating principles and modeling of different types of electric machines including DC, brushless DC, induction, permanent magnet and conventional synchronous machines; control aspects of these machines within modern electric drives for applications such as industry automation, energy conservation through variable speed drives, wind generators and electric vehicles. *Prerequisite: EE-302*

EE-396 (3) Junior Research Project
Junior level individual or team project under EE faculty direction and guidance. The project provides design experience and develops practical skills. It may be a continuation of EE 296 or a new project. Repeatable. Pre: 296 and junior standing or consent. Requires consent by EE faculty mentor and department chair. Different section numbers indicate different topics so these courses may be repeated for credit if section numbers and topics are different. The research courses can be used to clear deficiencies encountered by transfer students and caused by curriculum changes. Junior Project can be counted for up to three hours' concentration elective in the B.S.E.E. degree. Courses are offered according to need, interest, and demand. *Prerequisite: PHYS-1240C, PHYS-1320C122, MATH-2410, EE-296*

EE-403 (3) Digital VLSI
The course will cover design methodologies of Very Large Scale Integrated (VLSI) circuits that are seen in the industry. There will be a brief review of integrated Complementary Metal Oxide Semiconductor (CMOS) device basics. The fundamentals of device configurations in circuits, and its logic circuit building blocks (inverters, latches, etc.) will also be covered. This course will be largely based on a design project in which the students will design, analyze, and optimize a small CMOS circuit. *Prerequisite: EE-343. Offered: Fall.*

EE-406 (3) Computer Networks
Internetworking, unicast and multicast routing, congestion control, network quality of service, mobile networking, router architectures, network-aware applications, content dissemination systems, network security, and performance issues. *Offered: Fall, Spring.*

EE-407 (3) Communications Systems
Communication System Components, Communication media, Channel capacity and noise, Modulation and Demodulation, Sampling, Aliasing and Interpolation, Correlation and Spread-Spectrum CDMA, Pulse Shaping and Eye Diagrams, Matched Filtering, Carrier Recovery and PLL, OFDM and MIMO, Equalization. (Labs and projects*) Prerequisite: EE-303. Offered: Fall.*

EE-413 (3) Analog VLSI
This course will examine the design methodologies of very large-scale integration (VLSI) analog circuits. Students will work on group projects and perform computer simulations to design, analyze and test analog circuits. *Prerequisite: EE-343*

EE-422 (3) Senior Project
The Senior Project will provide the students an opportunity to utilize the skills gained from the previous semesters. Students will begin the senior project containing several elements of electrical engineering. *Prerequisite: EE-313, EE-396 & MTH-410. Offered: Fall.*

EE-423 (3) Capstone Design
An individual or team project under EE faculty direction and guidance. This project provides hands-on project activity providing practical skills, EE subject exposure and experience. *Prerequisite: EE-422 & EE-498. Offered: Fall, Spring.*

EE-430 (3) Computer Architecture and Design
Computer architecture using processors, memories, and I/O devices as building blocks. Issues involved in the design of instruction set architecture, processor, pipelining and memory organization. Design philosophies and trade-offs involved in Reduced Instruction Set Computer (RISC) architectures. *Prerequisite: EE-230. Offered: Fall.*

EE-440 (3) Operating Systems I
Introduction to operating systems using UNIX as the case study. System calls and utilities, fundamentals of processes and inter-process communication. *Prerequisite: EE-430*

EE-460 (3) Electrical Power Plants
Generation of electric power using fossil, nuclear and renewable, including solar, geothermal, wind, hydroelectric, biomass and ocean, energy sources. Power plant thermal cycle analysis. Cogeneration and combined cycles. Economics, operations, and design of electric power stations. Energy storage. *Prerequisite: EE-304. Offered: Fall.*

EE-470 (3) Electric Power Devices
Analyzes devices used for short circuit protection, including circuit breakers, relays, and current and voltage transducers. Protection against switching and lightning over voltages. Insulation coordination. *Prerequisite: EE-304. Offered: Fall.*

EE-471 (3) Power System Analysis
Review of transmission line parameter calculation. Zero sequence impedance, symmetrical components for fault analysis, short circuit calculation, power flow analysis, power system stability, and power system control concepts. Prerequisite: EE-460 EE-472 (3) Power Electronics and Power Management Principles of switch mode power conversion, analysis, design and control of dc-dc converters, PWM rectifiers and inverters, power management, power electronics applications in information technology, renewable energy systems, motion control and lighting. *Prerequisite: EE-470.*

EE-472 (3) Power Electronics & Power Management
This course will introduce students to the switching electronics circuits in order to control the flow of electrical energy. Students also learn to optimize the control of electric

power in electronic equipment, which impacts reliability, performance, cost, and time-to-market. *Prerequisite: EE-460, EE-470. Offered: Fall.*

EE-498 (3) FE Exam Prep
The fundamentals of engineering (FE) course trains the students on all the material related to the exam. The material includes Electrical Networks, Electromagnetics, Signals, Electric Power, and Circuit Analysis. It includes Quizzes & Computer-Based Test(CBT) exams. *Prerequisite: Senior Standing, EE-313, Corequisite: EE-422. Offered: Fall.*

ELECTRICAL TRADES

ELC-100 (3) Modern Residential Wiring
This course includes electrical principles and practices, as well as a thorough understanding of the National Electrical Code requirements. It covers not only the "how" but the "why" of safe electrical wiring practices. Although the content is concerned primarily with residential installations, many of the same concepts and principles may be applied to commercial and industrial constructions. The chapters are in logical sequence. The order of instructions follows the normal order in which the installation will be made. Modern Residential Wiring makes the study of electrical wiring easy. Even the most complicated procedures are simply explained and easy to understand. The illustrations should be carefully examined as they will often clarify and explain the more difficult principles of electricity and the requirements of the National Electrical Code. It provides both the fundamentals of electrical wiring and the latest practices in the trade. All practical applications will follow New Mexico and National Electrical Code. *Offered: Fall.*

ELC-101 (4) Electrical Level I
This course includes theory of electricity, electron theory of current, resistance and voltage, conducting and insulating materials, electron magnetic induction, circuit fundamentals, series circuits, parallel circuits, voltage drops, safety and grounding, bonding, wiring systems, and correct use of tools and equipment. All practical applications will follow New Mexico and National Electrical Codes. *Prerequisite: CT-103. Offered: Fall, Spring.*

ELC-102 (2) Electrical Trades Lab I
Lab 1 will include branch circuitry wiring and installations of electrical nonmetallic boxes, single-pole, three-way, four-way switches, duplex receptacles, lamps or fixtures, and ground fault circuit interrupter outlets. Small appliance branch circuits wiring, water heater, electric dryer and range outlets, termination of branch circuit onto an overcurrent device with supervision and testing the circuits. Calculating for measurements to bend conduit with a hand bender ½' – 1 ¼". *Prerequisite: CT-103 Lab fee: $125.00. Offered: Fall, Spring.*

ELC-111 (4) Commercial Wiring
Advanced instruction in the study of electricity will be covered. Areas of instruction will include safety and grounding essentials, wiring systems, device wiring, branch circuits, service entrance components, service locations, service rating, sizing services, power disturbances, building categories and service schemes, low voltage, basic motor control, mobile home service, and light commercial wiring. Hands-on applications are included and will follow the National Electrical (NEC) to determine correct procedures in installation, fabrication, design, and design of electrical equipment. *Prerequisite: ELC-101and CT-103. Offered: Fall, Spring.*

ELC-112 (2) Electrical Trades Lab II
This is a continuation of Electrical Trades Lab I. This course is designed to us e various raceways such as electrical metallic tubing and rigid metal conduit in construction. Students are taught how to use benders and the computations and placement of conduit for fabrication and installations. Supervised work- experience/internship will enhance students' abilities in problem solving and allow them to gain knowledge and experience in the installation of wiring protection, wiring methods, materials, and equipment during for general use electrical work. The National Electrical Code will be used to determine correct procedures in the installation, fabrication, design, and testing of electrical equipment. This course is for students who wish to obtain an Electrical Trades Certificate and is not a required course for students working toward their A.A.S. in Energy Systems. *Prerequisite: ELC-102. Lab fee: $125.00. Offered: Fall, Spring.*

ELC-113 (4) Residential/Commercial Blueprint Reading
Basic instruction is provided in reading and interpreting blueprints and specifications. Emphasis is on terminology, symbols, notations, scaling, dimensions, and basic blueprint drawing techniques. Construction methods, materials, and structural support of residential, commercial, and industrial building are also covered. Lab instruction will facilitate student knowledge to determine correct sizing, placement, and design of electrical components in residential and light commercial buildings. Load calculations include computed load for general lighting, small and large appliances, air conditioning, heating, and space heating. The National Electrical Code (NEC) book will be used to ascertain pertinent rules, explanatory data, tables, and examples. *Offered: Fall, Spring.*

ELC-195 (1 – 3) Topics in Electrical Trades
This course presents a variety of emerging technologies, and applications of those technological improvements, in the electrical trades. Course content varies each semester so the course may be repeated for credit with differing section numbers. The course is offered based on demand, need, and interest. *Offered: Occasionally.*

ENGLISH

ENGL-100 (3) Introduction to College Reading & Writing
This course develops vocabulary and grammar skills in addition to strengthening reading comprehension. The focus is on improving both written and oral communication skills using online resources and individual tutoring. Students will learn to read and understand a variety of diverse texts, and they will draft essays using different rhetorical forms. Successful participation in this course involves completing assignments on time, participation in class activities and lectures, and individual tutoring if necessary. *Accuplacer Score: Less than 261.*

ENGL-203 (3) Beginning Writing for Stage & Screen
This introductory course, writing for the Screen and Stage I, is first in a three-part series of courses related to the craft of writing scripts for the screen and stage. Students will be introduced to paradigms for playwriting scripts and the motion picture screenplay structure. Students will also be introduced to the basic elements of playwriting. Students will study concepts developed by successful scriptwriters and playwrights, both Native and non-native. Students will practice scriptwriting techniques and explore concepts of character development while crafting the first twenty pages of a full-length script for either the stage or the screen. *Pre-requisite ENGL-2310. Offered: Spring.*

ENGL-301(3) Intermediate Fiction Writing
This intermediate course builds on the concepts introduced in 200, and emphasizes workshop critiques of student drafts. Focus on workshop vocabulary, strategies for revision, and reading as a writer. Writing intensive: drafting, work-shopping, and revising. Students publish one story on the class website. *Prerequisite: ENGL-2320.*

ENGL-302 (3) Intermediate Poetry Writing
This intermediate course builds on the concepts introduced in ENG 200 and introduces students to modern forms and techniques. Focus on the process of writing poetry, taking risks and developing voice, and using the critical vocabulary to critique constructively. Emphasizes writing as a reader and incorporates the workshop critique of student's drafts. *Pre-requisite: ENGL-2330. Offered: Fall, Summer, Online.*

ENGL-303 (3) Intermediate Writing for Stage & Screen
This course, writing for the Screen and Stage II, is second in a three-part series of courses related to the craft of writing scripts for the screen and stage. Students will analyze three scripts using techniques introduced in the prerequisite to this course (Writing for the Screen and State I). Paradigms for playwriting scripts and the motion picture screenplay structure will be applied as students continue crafting film and stage projects. The basic elements of playwriting will be expanded and students will apply techniques and concepts developed by successful native and non-native scriptwriters and playwrights. Students will also become proficient in script writing techniques, explore concepts of character development and continue developing their scripts using industry approved software. *Prerequisite: ENGL-203. Offered: Fall, Spring.*

ENGL 306 Intermediate Creative Nonfiction Writing
This intermediate writing workshop will build upon, extend, and strengthen the skills and knowledge of craft and form students learned in ENG 204, Beginning Creative Nonfiction Writing. In a workshop, students write essays and submit them to their instructor and classmates who will carefully read and prepare written responses to the work. During class, the instructor will lead thorough discussions of each essay submission. The purpose of this discussion will be to identify successful aspects of the draft and to provide suggestions for improving elements of the draft that might require attention. All of this will be done with the understanding that writing an effective essay is the result of a long process of revising and refining. The ultimate goal of the workshop is to provide strategies for revision. By the end of the semester, students will have not only written three essays, but will have read, considered, and, in effect, "rewritten" their classmates' essays as well. As a result, students become better writers by becoming more astute and thoughtful readers. Through close reading of published work in the genre, writing exercises, drafting, peer critique sessions, and revision, students will learn how to shape their personal experiences and investigations.

ENGL-401 (3) Advanced Fiction Writing
This course is an advanced workshop for students who have mastered the fundamentals of short story writing. Strong emphasis on discussion and revision. Combines formal workshop critique with study of published authors and some theory. Students are acquainted with the process of publishing in print and electronic forms. *Prerequisite: ENGL-301. Offered: Fall, Summer, Online.*

ENGL-402 (3) Advanced Poetry Writing
This course is an advanced workshop for students who have mastered the basic elements and techniques of poetry and are concentrating on poetry writing. Emphasis on intensive discussion and revision. Combines formal workshop with study of published authors and some theory. Students are acquainted with the process of publishing in print and electronic forms. *Prerequisite: ENGL-302. Offered: Fall.*

ENGL-403 (3) Advanced Writing for Stage & Screen
This course, writing for the Screen and Stage III, is the final part in a series of courses related to the craft of writing scripts for the screen and stage. Students will have mastered paradigms for playwriting scripts and the motion picture screenplay structure. Students will have mastered the basic elements of playwriting. Students will know the concepts developed by successful scriptwriters and playwrights, both Native and non-native. Scripts for the screen/stage will be completed and the best practices for writing techniques and concepts of character development will be mastered and apparent in full-length film/stage scripts created using software that meets the industry' s standards. An

Environmental Scan of the Theater and Motion Picture industry will be required. Students will master the concepts of script writing techniques and explore concepts of character development. The course will include The Writer's Table Workshop where students will give and receive peer feedback and participate in storytelling, including the Oral Tradition. *Prerequisite: ENGL-303 Offered: Fall.*

ENGL-404 (3) Creative Writing Thesis
This course enables third-year Creative Writing majors to select, edit, revise, refine and complete a thesis portfolio that contains a collection of polished work in the genres of their choice (poetry, fiction, writing for creative nonfiction, scriptwriting) written during their first and second years. There will be a review of technical terms and trends in contemporary poetry, fiction and drama to insure a sound knowledge of literature. The process will be undertaken with the guidance of a faculty member chosen by the student. *Prerequisite: Major in creative writing and third-year standing. Offered: Fall.*

ENGL-405 (3) Student Anthology
This course is an introduction to the process of producing an anthology of writing. Students collaborate with faculty and peers to learn to select, edit, design and publish a collection of creative work in print and electronic form. Students critique and evaluate submitted work and oversee all aspects of production. *Offered: Spring.*

ENGL-406 (3) Advanced Creative Nonfiction Writing
This course, designed for students who have completed ENGL-2340 – Introduction to Creative Nonfiction, offers students an opportunity to continue to practice writing creative nonfiction in a guided workshop format. The primary emphasis in the course will be on the professor and students reading and providing constructive feedback on the students' creative nonfiction writings. In addition, the students will read further examples of various types of creative nonfiction writing and complete writing exercises designed to allow them to work on the voice, structure, and technique of their writing. Throughout the semester, students will turn in short writing exercises and essays, culminating in either perfecting an essay to submit for possible publication or drafting a proposal for a book-length publication.

ENGL-1110 (3) Composition I
In this course, students will read, write, and think about a variety of issues and texts. They will develop reading and writing skills that will help with the writing required in their fields of study and other personal and professional contexts. Students will learn to analyze rhetorical situations in terms of audience, contexts, purpose, mediums, and technologies and apply this knowledge to their reading and writing. They will also gain an understanding of how writing and other modes of communication work together for rhetorical purposes. Students will learn to analyze the rhetorical context of any writing task and compose with purpose, audience, and genre in mind. Students will reflect on their own writing processes, learn to workshop drafts with other writers, and practice techniques for writing, revising, and editing. *Prerequisite: A grade of C or higher in ENGL-100 or satisfactory placement scores. Offered: Fall, Spring, Summer.*

ENGL-1120 (3) Composition II
In this course, students will explore argument in multiple genres. Research and writing practices emphasize summary, analysis, evaluation, and integration of secondary sources. Students will analyze rhetorical situations in terms of audience, contexts, purpose, mediums, and technologies and apply this knowledge to their reading, writing, and research. Students will sharpen their understanding of how writing and other modes of communication work together for rhetorical purposes. The emphasis of this course will be on research methods. *Prerequisite: A grade of C or higher in ENGL-1210 or ENGL-1110. Offered: Fall, Spring, Summer.*

ENGL-1210 (3) Technical Communications
This is an introductory study of written and verbal communications used in the technical professions with emphasis in the planning, execution, and editing of professional and technical documents and other communication media. *Prerequisite: A grade of C or higher in ENGL-100 or satisfactory placement scores. Offered: Fall, Spring.*

ENGL-1310 (3) Introduction to Journalism
This course is intended as an introduction to print and online journalism. The student is introduced to the journalistic style of writing, terms used in journalistic work, editing copy, as well as layout and design. Emphasis is also placed on examining complexities surrounding the media, particularly media ethics. *Prerequisite: must be concurrently enrolled in, or have successfully (C or higher) completed ENGL-1110, ENGL-1210, or a comparable ENGL course. Offered occasionally.*

ENGL-1410 (3) Introduction to Literature
In this course, students will examine a variety of literary genres, including fiction, poetry, and drama. Students will identify common literary elements in each genre, understanding how specific elements influence meaning. *Prerequisite: C or higher in ENGL 1110 or permission of instructor. Offered: Fall, Spring.*

ENGL-2120 (3) Intermediate Composition
This course builds upon and refines the writing skills acquired in previous writing courses, with a focus on non-fiction prose. Research, composition, exposition and presentation abilities will be practiced and developed. Through analysis and revision, students will develop strategies to improve the versatility and impact of their writing. Course topics and emphases may vary by section. *Prerequisite: A grade of C or higher in ENGL-1210 or ENGL-1110 or an equivalent course. Offered: Fall, Spring.*

ENGL-2210 (3) Professional and Technical Communications
Professional and Technical Communication will introduce students to the different types of documents and correspondence that they will create in their professional careers. This course emphasizes the importance of audience, document design, and the use of technology in designing, developing, and delivering documents. This course will provide students with experience in professional correspondence and communicating technical information to a non-technical audience.

ENGL-2310 (3) Introduction to Creative Writing
This course will introduce students to the basic elements of creative writing, including short fiction, poetry, and creative nonfiction. Students will read and study published works as models, but the focus of this "workshop" course is on students revising and reflecting on their own writing. Throughout this course, students will be expected to read poetry, fiction, and non-fiction closely, and analyze the craft features employed. They will be expected to write frequently in each of these genres. *Offered: Fall, Spring. Prerequisite: ENGL 2310*

ENGL-2320 (3) Introduction to Fiction Writing
This course will introduce students to the basic elements of fiction writing. This course is a reading and "workshop" introduction to the fundamental working modes of fiction. Throughout this course, students will be expected to read classic and contemporary fiction closely and analyze the craft features employed. They will be expected to write frequently in various fiction genres throughout the course. *Prerequisite: ENGL-2310. Offered: Spring.*

ENGL-2330 (3) Introduction to Poetry Writing
This course will introduce students to the basic elements of poetry. This course is a reading and workshop introduction to the fundamental working modes of poetry. Students will be expected to read classic and contemporary poetry and analyze the craft features employed. In this course, students will read, write, and respond to poetry and develop their understanding of poetic conventions. *Prerequisite ENGL-2310. Offered: Spring.*

ENGL-2340 (3) Introduction to Creative Nonfiction Writing
This course will introduce students to the basic elements of creative nonfiction. This course is a reading and workshop introduction to the fundamental working modes of creative nonfiction. Throughout this course, students will be expected to read classic and contemporary works in the various genres of creative nonfiction and analyze the craft features employed. They will be expected to write frequently in these genres. Students will explore techniques of nonfiction such as prosody, exposition, descriptive detail, and narrative voice. *Offered: Fall, Spring.*

ENGL-2560 (3) Introduction to Native American Literature
This course will introduce students to the literature produced by Native American authors as well as explore issues relevant to the study of Native American literature. The course will also introduce the basic elements of literary analysis. *Offered: Fall, Spring.*

ENGL-2567 (3) Contemporary Navajo Literature
While the Navajo people have always had a deep appreciation for the power and beauty of language, as reflected in the songs, prayers and stories that have sustained them through untold generations, it is not until recently that a number of Navajos have begun to write and publish widely in a number of different genres. Some of those writers are now attracting critical attention and winning prestigious literary prizes. This course will introduce students to some of those Navajo writers and their works. Some of the major themes, issues, and concerns that these writers share as a focus of their work will be discussed, as well as the new and still-evolving role of the writer in contemporary Navajo culture. *Offered: Fall, Spring.*

ENGL-2650 (3) World Literature I
In this course, students will read representative world masterpieces from ancient, medieval, and Renaissance literature. Students will broaden their understanding of literature and their knowledge of other cultures through exploration of how literature represents individuals, ideas and customs of world cultures. The course focuses strongly on examining the ways literature and culture intersect and define each other. *This course may not be offered every semester.*

ENGL-1996/2996 (1-3) Topics in English
Emphasis on a literary and/or writing subject chosen for the semester. Repeatable for an unlimited credit under different subtitles. *Offered: Occasionally*

ENGINEERING

ENGR-101 (3) Fundaments of Electrical Engineering
Introduction to fundamentals of Electrical Engineering theory and practice. This course covers the foundations of engineering problem solving and other skills necessary for success. Students will be taught engineering practice through hands-on approaches. Students will learn basic electrical elements: resistors, capacitors, inductors, power sources, Ohm's Law and Kirchhoff's Law. *Prerequisite: MATH-1215. Fall Class*

ENGR-103 (3) Introduction to Engineering
This course Students develop the skills and tools necessary for solving both simple and complex engineering problems. This course discusses the fundamentals of engineering with an emphasis on the design process, ethics, problem solving and preparation for the study of engineering. The students will work in teams on an end of semester project. The student will be introduced to many concepts including breaking down problems, understanding the creation of a Design

Notebook, Engineering Journal and Project Notebook. Hands on projects are used to help students understand reverse engineering and to explore creativity. This course is intended to begin the mastery of the basic knowledge and skills required for all engineering fields offered at Navajo Technical University. *Prerequisite: MATH-1215 or higher Offered: Spring.*

ENGR-123 (3) Computer Skills for Engineering
This course will introduce the student to computer operation, the interrelation of hardware and software, methods of effective use of the Microsoft Office suite. Emphasis is placed on how to create & format documents in Word, how to use formulas, add-ins with other features of Excel for calculation or presentation and creation, formatting and use of PowerPoint to present reports and project results. Library research methods and the use of data bases for finding journal articles are covered. A set of projects are assigned to utilize the most commonly used features of Word, Excel, and PowerPoint. Students are introduced to best methods of presentation using these media. Other features which are important to creating engineering analysis and reports are covered. *Offered: Fall.*

ENGR-130 (3) Engineering Graphics
In this course the basic principles of Engineering Graphics, blueprint reading and geometric constructions are reviewed. Multi-view projections and 3D visualization, and basic dimensioning are introduced. The course also introduces students to solid modeling and basic methods of rapid prototyping including 3-D printing.

E**NGR-143 (3) Characteristics of Engineering Materials**
This course introduces the basic features of materials and selected methods of Classification of Materials. Topics include Nature of Materials, Types of Materials, Scale of Materials, Properties of Materials, Application of Materials, Processing of Materials, and Characterization Methods for Classification of Materials. *Offered: Fall, Spring.*

ENGR-169 (3) Basic Statistics and Probability
This course will introduce students to Descriptive Statistics, presentation of Statistical Data and the field of Probability. Probability will include manipulation of probabilities and conditional probabilities. Many distributions such as the Standard Normal, Student, Binomial, Geometric, Negative Binomial and Joint probability are covered. Calculation of error is introduced to the student. *Pre-requisite: MATH-1215. Offered: Spring.*

ENGR-230 (3) Advanced Engineering Graphics
This course will use 3-D mechanical software to explain proper solid modeling techniques used for rapid prototyping, analysis, and other applications which require 3-D models. The students will learn the 3-D tools and techniques used by NASA and contractors such as Lockheed Martin, Aerojet, Boeing, and others. *Pre-requisite: ENGR-130. Offered: Spring.*

ENGR-236 (3) Inferential Engineering Statistics
Inferential Engineering Statistics devotes more time to Hypothesis testing for single samples and two samples sets. Students will be introduced to regression, multiple regression, correlation and ANOVA. Simple design of experiments concepts is introduced. *Prerequisites: MATH-1510 & ENGR-169. Offered: Fall*

ENGR-313 (3) Engineering Economics
Topics covered include: cost and worth comparison, capital costs, time value of money, replacement economics, taxes, economic efficiency of alternate designs, minimum costs and maximum benefits, risk and uncertainty. Students will learn how to apply economics to engineering in projects with identification of constraints in order to ensure projects are feasible and efficiently designed and completed. *Prerequisites: MATH-1215 or higher. Offered: Fall*

ENERGY SYSTEMS

ERS-102 (3) Photovoltaic Theory & Design
This course introduces students to the theory and design of a Photovoltaic system. Occupational Safety and Health Administration (OSHA) for Construction Industry Safety is introduced and strictly followed as hazards in the workplace are often encountered. A comprehensive look into the operation of a solar cell and how electricity is produced from the atomic level. This course will cover photovoltaic modules, mounting techniques, balance of systems and load calculations. Student will learn how to prepare a solar site analysis, which includes azimuth and tilt angle, magnetic declination and orientation of the earth, as it relates to the Sun. Students learn to design and interpret a PV system using schematics, single line and wiring diagrams commonly used in the solar industry. Understanding safe installations, which includes system design, wiring requirements and component selection, in accordance with the National Electrical Code. Students exercise the installation of photovoltaic systems and hardware using the Amatrol Photovoltaic Installation Learning System as part of hands-on training. *Prerequisites: ERS 106 & MATH-1220. Offered: Fall, Spring.*

ERS 103 Photovoltaic Theory and Design II
This is an advanced course in photovoltaic theory and design. Students will develop advanced skills in system design. Implementation of software associated with systems design, PV analyzers, thermal imaging and micro-grid model to understand PV efficiency. Students will learn to calculate load profiles in determining the efficiency of implementing PV systems in real- life applications to minimize cost of electricity to customers. Exercise the installation of pole mount, ground mount and roof mount systems. Working on campus projects, as well as, partners in the solar industry to provide hands-on in the surrounding communities installing PV system as part of workforce training and development. *Prerequisites: ERS 102 & MATH-1220. Offered: Fall, Spring.*

ERS-104 (3) Electrical Mathematics
This course will introduce students to mathematical principals in an electrical context in order to understand their relevance in the electrical field. Electricity is the movement of electrons which involves two fundamental phenomena: electric charge and electric current. Students will learn basic math principals in arithmetic, notations, numbering systems, measurements, conversions, formulas and equations, using Kirchhoff and Ohm's Law. Basic electronics will be introduced through terminology and the use of electronic devices and components. Resistors, diodes, transistors, and capacitors will be included, as well as, hands-on electrical/electronic projects using computer-aided models and integrated mathematics will enables students to conceptualize events taking place in an AC and DC circuit. *Prerequisites: MTH-113. Offered: Fall, Spring*

ERS-106 (3) Wind and Solar Power
This course will introduce students to two of the most common renewable energy sources available. Students will learn the history of wind and solar power. The conversion from mechanical, kinetic energy into clean renewable energy. The evolution and difference between a windmill and wind turbine, different types and types of generators/motors used to produce electricity. Students also learn the basics of photovoltaics (PV). Basic theory, design, and assembly of PV systems, which include, solar heating systems and types of PV systems: stand- alone, grid-tied, and hybrid systems will be covered. The introduction of basic measuring instruments used in the wind and solar industry when designing and preparing for a site evaluation. *Prerequisites: ELC-101 & MATH-1220. Offered: Fall, Spring.*

ERS-114 (3) National Electrical Code (NEC) Exam Prep
This course will focus on preparation for the journeyman electrician exam. General information for learning methods on how to use the code, code arrangement, code enforcement, and code interpretations will be presented. Emphasis on code questions regarding wiring and protection, wiring methods and materials, equipment for general use and special occupancies, load calculations, special equipment and conditions, communication systems, cross sections of conduit and conductors, and conductor properties will also be studied. A series of code research projects will enable students to be better prepared to obtain licensing by a governing board or agency. The use of computers and software will be included to enhance code research assignments. *Prerequisite: ELC-101. Offered: Fall, Spring.*

ERS-115 (4) System Controls
This course is designed to give students advanced knowledge in Balance of Systems. Students will study various components used in the solar industry. Types of inverters, charge controllers, conductors, raceways, components, combiner boxes and over-current protection devices used in various applications. Students will participate in ongoing research in the development of a data acquisition system which will be installed in PV systems owned by customers to improve system performance. As part of the student's final project, the will design and construct a solar generator and present as part of their final. *Prerequisites: ERS-102 & ERS-106. Offered: Spring.*

Environmental Engineering

ENVE 286 (3) Applications of Biology to Environmental Engineering
Ubiquitous and rich sensor-filled environments are finding their way out of the laboratory and into our workplaces and homes. Networked societies where personal computing devices for mobile phones to smartcards filler pockets and electronic devices surround us at home and work. The Web has grown from a largely academic network into the Hubble business and everyday lives. As the distinctions between the physical and the digital and between work and leisure start to break down, human-computer interaction is also changing radically. This course introduces students to HCI interaction design, and usability or interactive systems design. Students will be introduced to the foundations, design process, and models and theories of HCI. *Prerequisite: MATH-1120 or PHYS-1310C*

ENVE 312 (3) Summer Internship
The goals of Summer Internship program are for Environmental Engineering students to develop and demonstrate employer-valued skills such as application of engineering know-how to solve problems, teamwork, excellent oral and written communication skills, time and resource management, and attention to details.

ENVE 325 (3) Environmental & Water Engineering
Principles and methods of analysis of environmental engineering focusing on physical, chemical, and biological principles. Topics include greenhouse gas effects, tropospheric air pollution, environmental air pollution, environmental risk assessment, surface and group water pollution, drinking and wastewater treatment, and control of the soil-water-plant medium for optimum plant growth and environmental protection.

ENVE 338 (3) Introduction to Environmental Engineering Water Chemistry
Covers principles of chemistry applicable to the understanding, design, and control of water and wastewater treatment processes and to reactions in receiving waters. Topics include chemical thermodynamics, reaction kinetics, acid-base equilibria, mineral precipitation/dissolution, and electrochemistry. Focuses on the mathematical description of chemical reactions relevant to engineered processes and natural systems, and the numerical or graphical solution of these problems. *Prerequisite: CHEM-2130C*

ENVE 355 (3) Soil Mechanics
Soil mechanics is the study of soil physical properties and processes as applied to management and prediction under natural and managed ecosystems. The course will deal with

the dynamics of physical soil components and their phases such as solids, liquids, and gases. It will draw on the principles of science and engineering.

ENVE 390 (3) Hydrology
Watershed based hydrologic phenomena including hydrologic water-cycle analysis, precipitation, evapotranspiration, snow/snowmelt, streamflow, floods, routing and surface runoff events. Statistical and probabilistic methods in water supply and flood hydrology. Application of analytical techniques to solve water resource problems. *Prerequisite: PHYS-1310C or MATH-1510*

ENVE 403 (3) Water & Waste System Design
Design of unit operations in water, wastewater, waste management, and/or air quality engineering. Student-generated data informs and drives the design of relevant processes. Design of drinking water and wastewater treatment plants. Applies microbiology, water chemistry principles and includes treatment plant design techniques, disinfection, and reuse. *Prerequisite: CHEM-2130C*

ENVE 442 (3) Environmental Engineering Lab
Theory and application of environmental laboratory methods for measurement of fundamental properties and characteristics of dissolved and particulate constituents in water, air and soil systems using basic concepts including mass, energy, and number balances and risk. *Prerequisite: CHEM-2130C*

ENVE 455 (3) Fate & Transport Processes in Environmental Engineering
Introduction to movement and transformation of substances released in the natural environment. Fundamentals of advection, dispersion and reaction. Aggregation and parameterization of various mixing processes, leading to dispersion at larger spatial and temporal scales. Importance of heterogeneity, anisotropy and stratification in natural media. Basic principles are illustrated by application to atmospheric, river and estuarine pollution problems. *Prerequisite: GEOL-1120C or ME-353*

ENVE 468 (3) Air Pollution Control Engineering
This course deals with air pollution control and quality engineering. We will cover fundamentals of air pollutant formation in process technologies and identification of options for mitigating or preventing air pollutant emissions. Air quality engineering will deal with large-scale, multi-source control strategies, with focus on the engineering principles of atmospheric pollutant interactions. *Prerequisite: ENVE-455*

ENVE 472 (3) Hydrogeology
This course focuses on the theory and principles of groundwater and stream flow, and their interconnection with hydrologic cycle. Topics include hydrologic equation, evapotranspiration, well drilling and testing, porosity and permeability, Darcy's law, confined and unconfined aquifers, flow nets, geology of groundwater occurrence, water table maps, geophysical exploration methods, well logs, stream flow, hydrographs, and contaminant transport in porous media.

ENVE 475 (3) Microbiology for Engineers
Surveys microbiology topics germane to modern civil and environmental engineering. Provides fundamentals needed to understand microbial processes and ecology in engineered and natural systems and reviews applications emphasizing the interface between molecular biology and classical civil engineering.

ENVE 481 Hazardous Waste Management and Risk Assessment
The objective of this course is to enable students to think and apply multidisciplinary approaches to managing industrial and hazardous wastes. Topics include familiarization with sources, classification, storage, transportation, various physicochemical and biological remediation technologies, and pertinent federal and state regulations. Knowledge of physicochemical and/or biological characteristics of a waste will be used to design appropriate disposal options. Lectures are supplemented with real-world case studies such as the abandoned uranium mine wastes. *Prerequisite: CHEM-2130C or GEOL-1120C*

ENVE 2110 (3) Fundamentals of Environmental Engineering
This course focuses on cross-disciplinary approaches to understanding mechanisms of contaminant release, transport, and fate in the environmental systems (soil, water/wastewater. Atmosphere). Principles of mathematics, chemistry, physics, and biology will be used to characterize, quantify, analyze, and manage resources and pollution challenges in the environmental systems. *Prerequisite: ENGR-103*

ENVIRONMENTAL SCIENCE AND NATURAL RESOURCES

ENV-216 (4) Fundamentals of Ecology with Laboratory
A study of the relationships among organisms and their environments, at several different levels and scales. This course provides an overview of the complex and diverse field of ecology, from the ecology of individual organisms and their adaptations to the environment, to the dynamics of populations and species interactions in ecological communities, and the intricacies of energy flow and nutrient cycling in ecosystems. Three lectures and one laboratory period. *Lab Fee: $125.00. Offered: Fall.*

ENV-245 (4) Natural Resources I
This course will introduce the student to the management of natural resources. Topics covered include natural resource conservation, management, and resource protection. Flora and fauna surveys will be conducted to provide a field investigation experience. Endangered species conservation, protection, and mitigation will be covered. An extended field outing with assignments is required in this course. Lab included. *Lab Fee: $125.00. Offered: Fall.*

ENV-289 (4) Natural Resources II
This course will provide a more in-depth study of natural resource use and management. Concepts to be covered in this course include forestry management techniques, watershed management, wildlife management, flora and fauna field identification and collection methods, dendrology, bird, reptile, and fish identification. An extended fishing outing with assignments is required in this course. Lab included. *Prerequisite: ENV-201. Lab Fee: $125.00. Offered: Spring.*

ENV-255 (4) Introduction to Hydrology
This course is an introduction to the hydrological cycle and the processes of precipitation, evaporation, transpiration, runoff, and infiltration. Students will be able to describe the hydrologic cycle and understand the physical principles that govern groundwater and surface water hydrology. The course includes a laboratory component that allows students to gain field experience in measuring water levels in water wells, stream gauging, making indirect discharge measurements, and collect water-quality samples from sources of groundwater and surface water. *Prerequisites: MATH-1220 and ENGL-1110. Offered: Spring.*

ENV-195/295 (1 – 3) Topics in Environmental Science and Natural Resources
This course focuses on a variety of emerging issues, technologies, and applications in the field of environmental science, including natural resource management, preservation, and development. Course content varies each semester so the course may be repeated for credit with differing section numbers. The course is offered according to need, interest, and demand. *Offered: Fall, Spring.*

ENV-312 (3) Summer Internship
This is not a course per se, it is a way for students to experience hands-on learning and gain experience in the area of science. There are several opportunities for students to gain this experience and may apply and accept internships with many different organizations. The student is required to have an internship that is at least 10 weeks in duration, lasting 40 hours per week, and the student is to submit weekly reports regarding the internship and, upon their return to campus, they are to present a 30-minute power point summary of the knowledge they gained in their internship experience. *Offered: Fall, Spring, Summer.*

ENV-350 (3) Environmental Law
This course covers the basic principles of law from how a bill becomes a law, the three branches of government and how they affect the development of laws, state and federal law jurisdiction, federalism, commerce clause, and the fundamental framework for law in the United States. This course also covers rulemaking, adjudication, enabling legislation, and how administrative agencies are created and how they can change their regulations. Lastly, the National Environmental Policy Act is covered and includes the Categorical Exclusion, Environmental Assessment, and the Environmental Impact Statement documents. *Offered: Fall.*

ENV-365 (4) Natural Resources Management with Laboratory
This course is presented as an introduction into the field of natural resources management with many areas touched upon such as fisheries, forestry, soils, natural resource regulations and law, tribal natural resources management, and traditional perspectives of natural resources. Students will be exposed to the range of disciplines contributing to effective natural resources management and will learn of the variety of career options in the field. Three lectures and one laboratory period. *Lab Fee: $125.00. Offered: Fall, Spring.*

ENV-395 (1) Special Topics in Environmental Science and Natural Resources *Offered: Occasionally.*
This course focuses on a variety of emerging issues, technologies, and applications in the field of environmental science, including natural resource management, preservation, and development. Course content varies each semester so the course may be repeated for credit with differing section numbers. The course is offered according to need, interest, and demand.

ENV-425 (3) Advanced Environmental Law
This course introduces some of the most important concepts, issues, and statutes in environmental law. After discussing the economic and ethical bases for environmental law and briefly reviewing the relevant principles of constitutional and common law, students examine a representative selection of federal statutes, including the National Environmental Policy Act, the Endangered Species Act, "Superfund," and the Clean Air Act. *Offered: Fall, Spring.*

ENV-464 (3) Capstone
Learn skills that prepare students for a career in the environmental science field. The class will be broken up into two parts, the first part will focus on resume writing, applying and interviewing for jobs/graduate school, and exploring career opportunities. The second part will focus on a senior project that will consist of writing an Environmental Assessment Draft for an existing or future project. Student will review literature and laws that must be considered in an assessment and determine the important components of as assessment including the Biological Evaluation, Archaeological Survey, and field flora and fauna of the proposed project site. This course will conduct an actual Environmental Assessment as a service learning project. *Offered: Fall, Spring.*

ENV-485 (3) Environmental Regulation Enforcement
This course covers the major environmental laws as they pertain to wildlife, natural resources, pollution, and environmental regulation and enforcement in the United States. The federal agencies responsible for regulation enforcement to protect these natural resources are covered including their respective responsibilities. Students will gain knowledge on how regulations are developed, amended, and enforced in the United States. Major laws covered include the National Environmental Policy Act, Clean Air Act, Clean Water Act, Endangered Species Act, Resource Conservation

and Recovery Act, and environmental laws of the Navajo Nation. *Offered: Fall, Spring.*

ENVS-1110C (4) Environmental Science I
Introduction to environmental science as related to the protection, remediation, and sustainability of land, air, water, and food resources. Emphasis on the use of the scientific method and critical thinking skills in understanding environmental issues. Lab covers general principles and theory relating to environmental science and management. Focal areas for the course include: water management, climate, pollution and waste management. Students taking this course will come away with a basic. *Lab fee: $125.00.*

ENVS 1120C (4) Environmental Science II
Provides a continuation of general principles and theory relating to environmental science and management. Focal areas for the course include: mining, energy production, mitigation of environmental problems, and topical matters relating to tribal communities. Students taking this course will build upon prior learning to develop an intermediate understanding of the main issues faced by technicians and managers of environmental science departments. Lab continues coverage of general principles and theory relating to environmental science with a focus on environmental testing. Focal areas for the course include: weather and climate, food production, ethics, and risk assessment. Students taking this course will come away with a basic understanding of the skills required of technicians and environmental science practitioners. *Prerequisite: ENVS-1110C. Lab fee: $125.00.*

ENVS 1130C (4) The Blue Planet
To understand global change and environmental concerns, this course weaves together an understanding of Earth's systems, including the lithosphere, atmosphere hydrosphere, and biosphere. We will look at scientific approaches to understanding human interactions and impacts on Earth systems. Lab included. *Lab fee: $125.00.*

ENVS 2111C (4) Environmental Engineering and Science
Principles in environmental engineering and science: physical chemical systems and biological processes as applied to pollution control. Lab included. *Lab fee: $125.00.*

FILM AND DIGITAL MEDIA

FDMA-2175 (3) International Cinema
A cinematic exploration of other nations, cultures and ways of perception. Films from around the world provide the basis for such topics as the historical development of a nation's cinema through the eyes of its leading directors; an in-depth focus on the works of a foreign filmmaker; a multi-cultural comparison of films thematically linked; and other subjects related to appreciating international cinema. *Offered: Fall, Spring.*

GEOLOGY

GEOL-1110C (4) Physical Geology
Physical Geology is an introduction to our dynamic Earth introducing students to the materials that make up Earth (rocks and minerals) and the processes that create and modify the features of our planet. The course will help students learn how mountains are formed, how volcanoes erupt, where earthquakes occur, and how water, wind, and ice can shape the landscape. Students will also develop a basic understanding of the way's humans have altered the planet including our impact on natural resources and global climate change. *Lab fee: $125.00. Offered: Occasionally.*

GEOL-1120C (4) Environmental Geology
This course is a survey of environmental geology with an introduction to problems of pollution, population, human relations to the environment, resource use, geologic hazards and environmental problems. The course covers the major components of the Earth system, i.e. atmosphere, lithosphere, hydrosphere, and biosphere, and how they are related. Environmental Geology addresses the mechanisms that drive these Earth processes, how different parts of the Earth are connected, how matter and energy flow through our environment, and how humans fit into the environmental systems. Emphasis is placed on the use of the scientific method and the development of critical thinking skills in understanding environmental issues. Lab is an introduction to geologic materials and processes as applied to the human environment. Included are practical exercises with rocks, minerals, topographic and geologic maps, and water, mineral and energy resources. Hazards associated with natural processes will be evaluated. *Lab fee: $125.00. Offered: Occasionally.*

GEOGRAPHIC INFORMATION TECHNOLOGY

GIT-105 (3) Fundamentals of Cartography
This course covers the design, purpose, use, and proper development of maps. Concepts covered include mapping with online Geographic Information System (GIS) software, vector vs. raster data, and history of mapmaking, the map design process, the legend editor, classification in the legend editor, palettes, typography, map projections, scale, and layout. Upon completion of the course, students are able to understand the basic implementation of map design to produce quality maps. *Offered: Fall, Online.*

GIT-110 (3) Geographic Information Systems I
This course introduces the hardware and software components of a Geographic Information System (GIS). Students will use GIS computer software to familiarize themselves with the functionality of using spatial data, thereby gaining an understanding of the concept of the points, lines, and polygons used to define GIS themes. Fundamental concepts of computer science will be introduced, providing the foundation of GIS knowledge that will be built upon in subsequent classes. *Prerequisite: MATH-1220 Offered: Fall, Online*

GIT-111 (3) Geographic Information Systems II
In this course, the study of spatial analysis, raster processing, digital terrain modeling, map arithmetic, and advanced GIS structures will be studied through hands-on laboratory assignments designed to provide time for students to master these skills. Practical application of GIS software will be utilized. *Prerequisite: GIT-110 Offered: Spring, Online*

GIT-202 (4) Remote Sensing
This course introduces students to the fundamental principles of remote sensing, with specialized applications in the new technologies and GIS. The focus of the course is to help students understand the current state of knowledge in remote sensing. Lab included. Lab Fee: $125.00 *Prerequisite: MATH-1220 Offered: Fall, Online*

GIT-207 (3) GIS Software Applications
This course is designed to explore the use of GIS in specific problem-solving contexts. The goal is to enable students to recognize and define a geographic problem, apply methodologies that permit analysis of the problem, design a series based on analytical steps, and to finally implement a solution using GIS software. *Prerequisite: GIT-111 Offered: Fall, Online*

GIT-210 (1) Service Learning Project
This course provides students with the opportunity to apply knowledge and skills (learned in the Geographic Information Technology program) to a real world learning project. The project will be determined by the students and instructor and will be designed to enhance classroom and lab training through application in a worksite setting. *Prerequisite: GIT-111 Offered: Spring, Online*

GIT-220 (3) Database Query
Structured Query Language (SQL) is the standard for accessing data stored in relational databases. Students can become fluent in this indispensable language separately, but this class emphasizes the use of SQL to solve GIS problems by "thinking in SQL." The strategy is to teach syntax early and then concentrate on applying SQL to solve problems. The class includes a suite of hands-on lab exercises that reinforce the concepts and technology. At the completion of the lab work, students will have worked with all the major concepts and tools of SQL and will leave the course able to use SQL to retrieve data, create queries, generate reports, and program applications. *Lab Fee: $125.00 Prerequisite: GIT-111 Offered: Spring, Online*

GIT-195/295 (1–3) Topics in Geographical Information Technology
This course covers a variety of topics related to emerging issues and technological applications in the geographical information technology field. Course content varies each semester so this course may be repeated for credit with differing section numbers. The course is offered according to interest, need, and demand.

HEAVY EQUIPMENT OPERATOR

HEOP 1110 (3) Maintenance of Heavy Equipment
In this course, students will learn about heavy equipment safety and maintenance. The maintenance will cover the electrical systems, hydraulic systems, implements, engine, transmission, and final drive. The training will emphasize the Heavy Equipment Operators job duties as it pertains to general maintenance.

HEOP 1115 (2) Forklift Operation
In this course, students will learn safety, inspection and operation of a forklift. This course covers various forklift configurations. Students will demonstrate all phases of operation from pre- to post-operation inspections and theory. Students will demonstrate basic equipment operation exercises such as moving, lifting, driving load/unload, and job assessments. Students will become familiar with operator safety and safe forklift operation.

HEOP 1120 (2) Backhoe Operation
Students will learn safety, inspection, theory, and operation of a backhoe. Students will demonstrate all phases of operation from pre- and post-operation inspections, operational theory, and material designation. The students will perform safety, quick coupling, digging, loading, maintenance and job-related techniques.

HEOP 1125 (2) Front End Loader Operation
Students will learn. Safety, inspection, theory, and operation of a front-end loader. Students will demonstrate all phases of operation from pre-post-operation inspections, theory, loader techniques, and material designation. The student will perform safety, loading, digging, maintenance and job-related techniques.

HEOP 1130 (2) Excavator Operation
In this course, safety, inspection, and operation of hydraulic excavator will be taught. This course covers various excavator configurations (standard and telescoping excavators). Students will demonstrate all phases of operation from pre- post-operation inspections, theory, and material designation. Students will demonstrate basic equipment operation exercises such as quick coupling, digging, loading, trimming, trenching, and job-related techniques. Students will become familiar with operator safety and safe excavation job layout.

HEOP 1135 (2) Motor Grader Operation
Students will learn safety, inspection, theory. and operation of road building with the motor grader. Students will demonstrate all phases of operation from pre-post-operation inspections, theory, road building techniques, and material designation. The student will perform safety, grading, filling, blading, cutting smoothing, ditching, windrow management, maintenance, and job-related techniques.

HEOP 1140 (2) Dozer Operation
Students will learn safety, inspection, theory, and operation of a dozer. Students will demonstrate all phases of operation

from pre- post-operation inspections, theory, and material designation. The student will perform safety, grading, filling, blading, cutting, sloping, dozing, maintenance, and job-related techniques.

HISTORY

HIST-1110 (3) United States History I
The primary objective of this course is to serve as an introduction to the history of the United States from the pre-colonial period to the immediate aftermath of the Civil War. The elements of this course are designed to inform students on the major events and trends that are essential in the understanding of the development of the United States within the context of world societies. *Prerequisite: C or better in ENGL-098 or permission of the instructor. Offered: Fall, Spring, Summer, Online.*

HIST-1120 (3) United States History II
The primary objective of this course is to serve as an introduction to the history of the United States from reconstruction to the present. The elements of this course are designed to inform students on the major events and trends that are essential in the understanding of the development of the United States within the context of world societies. *Prerequisite: C or better in ENGL-098 or permission of the instructor. Offered: Fall, Spring, Summer, Online.*

HIST-2150 (3) History of the American Southwest
This course is designed to provide you with an overview of American History of the Southwest starting from the American acquisition of the Southwest to modern times. Major themes in American Southwestern history will be covered. Work will consist of reading our course textbooks and utilizing the internet *--resources. A research paper 5 pages' double spaced will be required and due the last week of the semester. Thematically, this course will be divided into three parts. *Prerequisite: C or better in ENGL-098 or permission of the instructor. Offered: Fall, Spring, Summer, Online.*

HIST-1996/2996 (1 – 3) Topics in History
Specific subjects to be announced in the Schedule of Classes.

HUMANITIES

HUM-305 (3) Film History
This course explores the major film movements from 1895 to 1940, from the silent era to the advent of color film. Students will learn the fundamental forms of cinema as developed by Eisenstein and Griffith, while being introduced to the concepts of 'mise-en scene', montage editing, and expressionism and film noir. The work of numerous directors such as Chaplin, Murnau, Browning, Lang, Renoir, Hawks, and Ford & Capra will be explored. Students will become familiar with the history of cinema as informing and informed by culture, social history, emerging technologies and industry adaptations, and trends in visual art. Lectures and screenings are accompanied by assigned readings. *Offered: Fall.*

HUMN-1180 (3) History of American Indians in Media
This course is designed to allow students to examine the careers and lives of American Indians with a focus on the history of American Indians in Media. Media is a word which encompasses a broad range of topics. Students will explore issues through film, the spoken word, the written word and live performance which may be relevant to the historical significance of how American Indians are viewed. This includes contemporary fiction/non-fiction writings, filmmaking and acting, theater performances, musical and spoken word recordings, and radio and television broadcasting with an emphasis on Native Language Revitalization. In addition, the course will attempt to broaden the student's ability to analyze and evaluate oral and written communication in terms of situation, audience, purpose, aesthetics and diverse points of view, while exploring the voices of North American Indigenous Peoples. *Offered: Fall, Spring.*

HUMN-1996/2996 (1-3) Topics in Humanities
Specific subjects to be announced in the Schedule of Classes. *Offered: Occasionally*

INDUSTRIAL ENGINEERING

IE-195 (3) Special Topics
Topic of relevant engineering material not usually included in the Industrial Engineering curriculum appropriate for the freshman level student. *Offered: Fall or Spring.*

IE-213 (3) Structure and Properties of Materials
The students will learn behavior of different engineering material under various conditions. Chemical, electrical and mechanical properties of material will be investigated. *Prerequisite: PHYS-1230C, CHEM-1120C. Offered: Fall.*

IE-223 (3) Design and Manufacturing Processes I
An introductory course in manufacturing processes and systems will be covered. In addition, various manufacturing processes will be studied, including casting, forming, machining, and welding. Also, manufacturing systems such as industrial robotics and fundamentals of production lines will be covered. Students will develop hands-on skills through team projects. *Offered: Fall.*

IE-235 (3) Lean Production
This course will introduce the student to variations of the Toyota Production System as it is used in industry and business to improve efficiency and to build a problem-solving culture in an organization. Topics will include: 5S, Value Stream Mapping, SMED, Kanban, Takt Time, Process at A glance and organizational culture change. Course will also compare other manufacturing philosophies and systems for manufacturing and production. *Offered: Fall and Spring.*

IE-243 (3) Strength of Materials
Stresses and stress, strain energy, elastic and plastic deformation will be discussed. The student will be able to understand how the strength of materials affects all industrial engineering applications. *Prerequisite: IE-213. Offered: Spring*

IE-295 (3) Special Topics
Topic of relevant engineering material not usually included in the Industrial Engineering curriculum appropriate for the sophomore level student. Others may take with permission of the instructor. *Offered: Occasionally.*

IE-312 (3) Summer Internship
Students will work part-time to full-time in a manufacturing related industry. The internship must be approved by the instructor and students will be required to prepare written and oral presentations to appropriate classes as assigned by the instructor. Offered: Fall, Summer and Spring.

IE- 323 (3) Human Factors in Product Design
Students will learn physical and psychological factors which affect human performance in system design. In addition, course material will cover performance as applied to safety, reliability, productivity, stress reduction. The human/equipment interface design will also be discussed. *Prerequisite: ENGR -236.Offered: Fall.*

IE-343 (3) Design and Manufacturing Processes II
This course will cover machining, process planning, blueprint reading, geometric dimensioning and tolerancing, and measuring instruments. The students will develop hands-on learning in team projects. *Prerequisite: IE-223. Offered: Spring.*

IE-363 (3) Design of Experiment
Analysis of variance for different types of factorial designs (single factor, nested, and random factors) will be discussed. Also, different factors during design of experiment, i.e., dependent, independent, and control variables will be explored. *Prerequisite: ENGR-236. Offered Spring.*

IE 380 (3) Project Management
This course examines the organization, planning, and controlling of projects and provides practical knowledge on managing project scope, schedule and resources. Topics include project life cycle, work breakdown structure and Gantt charts, network diagrams, scheduling techniques, and resource allocation decisions. Concepts are applied through team projects and tutorials using project management software. *Prerequisite: Junior status. Offered: Fall.*

IE-395 (3) Special Topics
Topic of relevant engineering material not usually included in the Industrial Engineering curriculum appropriate for the Junior level student. Others may take with permission of the instructor. *Offered: Fall and Spring*.

IE-413 (3) Quality Control
This course covers digital inspection utilizing computer-aided verification. Geometric dimensioning and tolerance control and basic size inspection will also be covered along with surface inspection and the basics of quality control. *Prerequisite: IE-363. Offered: Fall.*

IE-423 (3) Capstone I
The Capstone I course will provide the students an opportunity to utilize the skills gained from classes taken during their course of study in their program. Students will be assigned a two semester project containing elements from many classes including project management. Students must work in multidisciplinary groups each group containing at least one Industrial Engineering student and one Electrical Engineering student. The initial project proposal will contain the research and planning of the project along with a project proposal complete with deliverables. Students will provide weekly project reports, a final project report, a final presentation and deliverables as agreed upon in the project proposal. *Prerequisite: Senior Standing, IE-223, IE-343& IE -380. Offered: Fall.*

IE-424 (3) Capstone II
The Capstone II course will provide the students an opportunity to utilize the skills gained from classes taken during their course of study in their program. Students will be assigned a two-semester project containing elements from many classes including project management. Students must work in multidisciplinary groups each group containing at least one Industrial Engineering student and one Electrical Engineering student. The initial project proposal will contain the research and planning of the project along with a project proposal complete with deliverables. Students will provide weekly project reports, a final project report, a final presentation and deliverables as agreed upon in the project proposal. This Capstone II will be a continuation of the project started in IE-423. *Prerequisite: IE-423. Offered: Spring.*

IE-433 (3) Metrology and Instrumentation
Students will learn different types of measurement techniques, including laser scanning for computer-aided manufacturing and inspection, optical instruments, temperature, pressure, and force measurements. Medium to long range scanners and close-range high-quality scanners will be used in the course. Students will gain hands-on experience in capturing digital data, registering scan, and processing scans. *Prerequisite: IE-223. Offered: Fall.*

IE-453 (3) Engineering Optimization
In this course data mining techniques and applications of operations research applied to financial engineering, site selection, and transportation will be learned. *Prerequisite ENGR-236 & MATH-1520. Offered: Fall.*

IE-463 (3) Facility Planning & Material Handling
Students will be able to learn how to plan a facility, location, layout models, design, analysis, supply chain relationships, and improvement of warehousing operations. Students will also study how to handle materials within the context of planning and implementation of processes. *Prerequisite: ENGR-313.Offered: Spring.*

IE-473 (3) Inventory Control & Production Planning
In this course, manufacturing support systems and production planning are discussed. Different approaches to

the planning of material and capacity as well as the differences between push systems, pull systems and theory of constraints will be explored. *Prerequisite: ENGR -313. Offered; Spring.*

IE-483 (3) Rapid Prototyping
Different methods of rapid prototyping processes used in product design will be introduced. The operating principles and characteristics of current and developing rapid prototyping processes will be discussed. *Prerequisite: IE-223. Offered: Spring.*

IE-484 (3) Computer Aided Manufacturing & Robotics
This course will introduce the use of computers as a tool to aid in manufacturing, distribution and service environments with computer numerically controlled machines, automated storage systems and robotics. *Prerequisite: ENGR-123. Offered: Fall.*

IE-494 (3) Computer Simulation for Industrial Engineering
This course will introduce the use of computer simulation as a tool to create models of proposed physical systems for manufacturing or service environments to evaluate concepts and designs previous to their implementation. Students will learn to use one of the premier software packages to be able to create, evaluate and take descriptive statistics for use in assessing preliminary designs and to give feedback on projects. *Prerequisite: ENGR-236.Offered: Spring.*

IE-495 (3) Special Topics
Topic of relevant engineering material not usually included in the Industrial Engineering curriculum appropriate for the Senior level student. Others may take with permission of the instructor. Offered: Fall, Spring.

INDUSTRIAL MAINTENANCE AND OPERATIONS

IMO-101 (5) Industrial Maintenance I
This course involves developing knowledge of fundamental skills of a certified industrial maintenance mechanic. Modules covered are Occupation Safety and Health Administration (OSHA) safety, construction math, introductory basic hand tools, basic power tools, basic construction drawings, basic rigging, communication skills, basic employability skills, and basic material handling.

IMO-102 (5) Industrial Maintenance II
The course involves developing a knowledge-based of fundamental skills required of certified industrial mechanics. Modules will include: orientation of trade, tools of the trade, fasteners and anchors, oxyfuel cutting, gaskets and packets, math, construction drawings, pumps and valves, test instruments, rigging, mobile and support equipment, and lubrication. Lab will be scheduled weekly to emphasize and anchor the course material.

INTEGRATED SCIENCE

IS 090 (4) Integrated Science
This course is designed for students who have taken inadequate, or no previous high school level science courses. The course will provide the needed background to gain clear understanding of the biological or chemical processes for University level courses. Specific simple science themes to be covered include, Inorganic and Organic Chemistry, the Chemistry of Life (Biochemistry), Cell Organization and Basic Physics. Inorganic chemistry topics to be covered are Atomic structure, chemicals and symbols, atoms and molecules, ionization, liquid mixtures, diffusion and osmosis, and chemistry of nerve cell propagation. Topics to be covered in organic chemistry will include covalent bond, polar and nonpolar covalent bonds, and functional groups in organic compounds, hydrogen bonds, and isomers. Topics in biochemistry would include, carbohydrates, lipids, proteins, nucleotides, enzymes, methyl groups, biological oxidation, photosynthesis, and oxygen-carbon dioxide transport in blood. Topics to be covered in basic physics include, introductory mechanics and properties of matter, heat, light, sound waves, electricity, magnetism, atomic and nuclear energy. *This course has no Prerequisites and laboratory sessions*. Offered: Fall, Spring, Summer.

INFORMATION TECHNOLOGY

IT-103- (3) Creativity and Technology
Creativity is the ability to take disparate experiences, emotions, knowledge gained from reading or discussion, conversations, information, and visual stimuli to create a new synthesis. Often called "out of box thinking," creativity allows a high level of problem analysis and problem solving. It often demands that people get out of where they are comfortable and fee up their thought and emotional processes to see what they are examining in a new, "creative" way. It also leads to the creation of new products and processes that create value for organizations or businesses that drive the business forward. Learning about, and becoming good at creative processes, is especially important t to economic development for poor communities. Those who are creative often face opposition, so part of becoming a creative thinker is learning how to understand why people oppose creative ideas and come up with strategies to deal with oppositional thinking and behavior both intellectually and emotionally.

IT-105 (3) Introduction to Programming
This course will introduce students to the basics of programming concepts and techniques. Students will be introduced to the logic of design in programming and fundamentals of working with data types, conditional statements, loops, and simple algorithms. The Processing programming language will be used to introduce students to the concepts behind the Java programming language through structured code to create and manipulate graphical objects and animations. Offered: Fall.

IT-110 (3) Introduction to Digital Logic/Hardware Programming
This course will introduce students to the knowledge base necessary for a deep understanding of how computers work from the transistor level to abstract programming to accomplish tasks and solve problems. Fundamental understanding of how information is stored and manipulated at the bit level will be explored within the context of what is necessary to be successful in crafting solutions as a programmer. Boolean algebra and number systems relevant to computing will be introduced and mastered as it pertains to digital logic design and hardware programming. Software Defined Hardware and Open Source hardware will be introduced and projects will be completed demonstrating the ability to apply what is learned from the content of the course. Offered: Fall.

IT-111 (3) Human Computer Interaction
Ubiquitous and rich sensor-filled environments are finding their way out of the laboratory and into our workplaces and homes. Networked societies where personal computing devices for mobile phones to smartcards filler pockets and electronic devices surround us at home and work. The Web has grown from a largely academic network into the Hubble business and everyday lives. As the distinctions between the physical and the digital and between work and leisure start to break down, human-computer interaction is also changing radically. This course introduces students to HCI interaction design, and usability or interactive systems design. Students will be introduced to the foundations, design process, and models and theories of HCI.

IT- 112 (3) Photography
Students will learn the basics of using digital cameras, lighting, lenses, composition, posing, and editing. Students will learn how to create professional images that can be used in many digital media fields. *Offered: Fall, Spring*

IT- 115 (3) Drawing and Visual Culture
This course is will introduce students to the fundamental principles of visual representation and design. Students will develop familiarity with definitive works in the visual canon and important movements that have changed visual representation throughout history. Additionally, students will be asked to make subjective and objective evaluations of visual work. *Offered: Fall.*

IT-118 (3) Introduction to C++
This course provides fundamentals and core of object-oriented programming principles and techniques using C++. Topics include Classes, Objects, Pointers, Dynamic memory allocation, Overloading, Data abstraction, Information hiding, Encapsulation, Inheritance, I/O Streams. Covers in detail Polymorphism, Virtua function, Exceptions Handling. Selected topics will include Class template, container classes, Vector classes.

IT-120 (3) Operating systems
This course introduces the structures of Operating Systems, including CPU scheduling, memory management, and device management. Considers the unifying concept of the operating system as a collection of cooperating sequential processes. Covers topics including file systems, virtual memory, disk request scheduling, concurrent processes, deadlocks, security, and case studies of Setting Up Local Network Services; Virtualization- Basic Concepts, Setting Up Xen, VMware on Linux Host and Adding Guest OS

IT-121 (3) Database Systems and Data Preparation
Ubiquitous and rich sensor-filled environments are finding their way out of the laboratory and into our workplaces and homes. Networked societies where personal computing devices for mobile phones to smartcards filler pockets and electronic devices surround us at home and work. The Web has grown from a largely academic network into the Hubble business and everyday lives. As the distinctions between the physical and the digital and between work and leisure start to break down, human-computer interaction is also changing radically. This course introduces students to HCI interaction design, and usability or interactive systems design. Students will be introduced to the foundations, design process, and models and theories of HCI.

IT- 125 (3) Introduction to Digital Video
In this class students are introduced to the technical and aesthetic issues surrounding the moving image. The topics introduced in this class include optics, exposure, framing, lenses, resolution, compression, transfer, editing, audio production, pacing, documentary, and the film canon. Students are required to produce a brief documentary style project at the end of the semester. Throughout the course, students will be encouraged to apply the Diné Philosophy of Learning to the course material. *Offered: Fall, Spring.*

IT-142 (3) Web Design Concepts
This course provides a thorough and practical guide to creating professional web sites and web pages. Students will acquire the skills necessary to create multi-column CSS layouts with optimized graphic files. Topics covered include simple XHTML, DTDs, CSS, optimizing web graphics, site development, hosting, domain names, and FTP. *Offered: Fall, Spring.*

IT-150 (3) Introduction to System Administration
This course exposes students to the best practices of system and network administration, independent of specific platforms or technologies. Students will learn six key principles of site design and support practices: simplicity, clarity, generality, automation, the mutation, and basics. This course examines the major areas of responsibility for system administrators within the context of these principles. Students will also be introduced to change management and revision control, server-upgrades, maintenance windows, and service conversions. *Offered: Fall, Spring.*

IT-160 (3) Introduction to Digital Ethics
Ethics is important to any professional field. In Digital Ethics a number of issues are important. These include ethics related to the developers/customers relationship, the

importance of "non-compete" agreements in commercial settings, maintaining standards, maintaining integrity in the development of computer programs and the management of network systems, protecting individual privacy for users of the Internet, designing and implementing firewalls and security measures to protect user information, respect for trademarks and copyrights, maintaining professional relationships with clients, co-workers, or users of systems the technician/developer/designer develops, maintains, or implements, and developing habits of professional behavior such as follow-up, honesty, openness, communication of challenges, and respect for others. *Offered: Spring.*

IT-200 (3) Sound Design
The prerequisite for this class is the completion of all general studies math requirements. This class is designed to introduce students to the audio production work flow. Topics covered include the fundamentals of acoustics, digital audio representation, microphones, DAWs, mixing, synthesis, and recording. Students are required to produce an audio project by the end of the semester that could take the form of a podcast, remix, radio play, original composition, or soundtrack. Throughout the course, students will be encouraged to apply the Diné Philosophy of Learning to the course material. *Offered: Fall, Spring.*

IT-212 (3) Documentary
Students will learn the art of documentary film making. Students will learn how to research, create surveys, create questions, create a thesis, conduct interviews, and use the three-act story structure to tell their stories. *Offered: Fall, Spring.*

IT-215 (3) Motion Graphics
This class is designed to introduce students to the technical and aesthetic challenges of creating two dimensional animations. Students are introduced to the history of animation, raster graphics, vector graphics, tweening, filters, lower-thirds, title sequences, and text animation. Students are required to produce a short (1-2 minute) two-dimensional animation project by the end of the semester. *Offered: Fall.*

IT-218 (3) Algorithms & Data Structures
This course introduces the fundamentals of algorithm function and design for sorting and order statistics and advanced design and analysis techniques. Data structure discussion will include elementary structures, hash tables, binary search and red-black trees, Fibonacci Heaps, and disjoint sets. Selected topics will include multithreaded algorithms, matrix operations, linear programming, string matching, computational geometry, NP-completeness, and approximation. *Prerequisite: IT-105. Offered: Fall.*

IT-220 (3) Database Design
This course exposes students to basic, platform-independent principles of relational database design. Students will apply common-sense design methodology for developing databases that work. Students will also learn the fundamental principles and syntax of structured query language (SQL). *Offered: Fall.*

IT- 222 (3) Computer Security
This course introduces the essentials of computer and network security and covers of all the objectives for CompTIA'a Security+ certification program. Best practices, roles, and responsibilities of security practitioners are covered. Defensive measures are also introduced to protect computer systems and networks from attacks. *Offered: Fall.*

IT-225 (3) Digital Video II
"Introduction to Digital Video" is a prerequisite for this class. Digital Video II introduces students who already have basic camera competency to the technical and aesthetic challenges of narrative film making. The topics introduced in this class include set design, sound design, cinematography, advanced camera techniques, jibs, steadicams, chromakey, story boarding, script writing, directing, lighting, and scheduling. Each student is required to produce a short narrative project and crew on other student projects. Throughout the course, students will be encouraged to apply the Diné Philosophy of Learning to the course material. *Offered: Spring.*

IT-262 (3) Internetworking
This course introduces students to TCP/IP protocols, Internet architecture, and current networking technologies. Topics to be covered include layering and packet formats for all the Internet protocols, including TCP, IPv4, IPv6, DHCP, and DNS. Other areas of interest will be covered such as new trends in Internet systems, including packet classification, Software Defined Networking (SDN), and mesh protocols. *Prerequisite: IT-150. Offered: Fall, Spring.*

IT-270 (3) Web Standards
This course provides a thorough and practical guide to applying web standards enforced by the World Wide Web Consortium (W3C). Students will be exposed to standards that will allow content to be more compatible with multiple different viewing devices such as screen readers, cell phones, PDFs, HTML, XML, and CSS. *Prerequisite: IT-142. Offered: Fall.*

IT–275 (3) Media Criticism
Radio, TV, Film, Internet have become the main channels of education, information and entertainment for today. This course presents an introduction into understanding and 'reading' Media. In the class you develop intelligent perception of Media, and look at the History, Present and Future of Mass Media. You learn about the slogan 'The Medium is the message' and its meaning, and develop a professional approach in dealing with Media. *Offered: Fall, Spring*.

IT-280 (3) IT Project Management
This course examines the organization, planning, and controlling of projects and provides practical knowledge on managing project scope, scheduling and managing resources. Topics include project life cycle, work

breakdown structure and Gantt charts, network diagrams, scheduling techniques, and resource allocation decisions. Concepts are applied through team projects and tutorials using project management software. *Offered: By Demand*.

IT-290 (3) Big Data Project Management
This course will introduce students to the knowledge-based necessary to manage and deliver top-notch solutions for an organization. Students will go through the data science project life cycle, explore the common pitfalls encountered at each step, and learn how to avoid them. The effective use of DevOps and ModelOps will be covered to improve data science projects. *Prerequisite: IT-120*

IT-312 (3) Studio Recording
Students will learn about studio recording. Including microphone selection, placement, hardware, and software applications, mixing, editing, and mastering. Students will be able to create professional sounding recordings used by many studio professionals. *Offered: Fall, Spring.*

IT-315 (4) Multicore Programming
Multiprocessor Machines, or Multicores, as they are known in the industry, are quickly taking over every aspect of computing. The art of programming these systems, currently mastered by few, requires ad understanding of new computational principles, algorithms, and programming tools. This course seeks to introduce students to the tricks of the trade by providing a comprehensive presentation of the guiding principles ad algorithmic techniques necessary for effective multiprocessor programming. *Prerequisite: IT-218. Offered: Fall.*

IT-332 (4) Network Security
This course provides a thorough and practical guide to network security through understanding your attacker in depth. System threats are covered including reverse engineering, SQL attacks, social engineering, anti- forensics, and other advanced attacks against UNIX and Windows systems. Emphasis is placed on acquiring the skill of reverse engineering to understand malware, trojan binaries, spyware, and SQL injection. *Prerequisite: IT-222. Offered: Fall, Spring.*

IT-333(3) Introduction to Machine Learning
This course exposes students to the fundamental concepts of machine learning. Students will apply these concepts to build environments where machines/software can learn and adapt to complex situations and develop solutions. Some areas of application to be covered include: recommendation engines; face recognition; predicting with regression algorithms; neural networks; text analysis techniques; clustering and topic modeling; convolutional neural networks; and reinforcement learning. *Prerequisite: IT-218*

IT-335 (3) Data Visualization
This course is designed to introduce students to data visualization. Developing the skills to clearly and concisely visualize that data will be an invaluable tool in the future. Students will work with a variety of different visualization tools to produce static and dynamic visualizations. Students will analyze a variety of visualizations to determine what make certain methods effective, and what detracts from the clear and concise communication of information. The students work will them be collected in a multimedia web portfolio. *Offered: Fall.*

IT-345 (3) Editing Concepts
This course introduces students to the rules of editing through the use of non-linear editing systems. Students will learn about rhythms, screen direction, and continuity. Students will also learn about the key movements and concepts in the history of editing films, from Edwin S. Porter, to Segei Eisenstein to Hitchcock and contemporary editors. Students will speak the language of editing, apply the elements of editing to tell a story, explore and use sound track, and become proficient in the fundamentals of industry standard editing platforms. *Prerequisite: IT-225. Offered: Fall, Spring.*

IT-350 (3) Programming Interactivity
This class is designed to expose students to non-linear media design. Topics covered include Flash, action- script, Max/MSP, Quartz composer, Open Frameworks, and micro-controllers. Students are required to produce an original interactive media project by the end of the semester. *Offered: Fall.*

IT-375 (4) Javascript Core Skills
This course exposes students to the Document Object Model (DOM) and how to use JavaScript to add dynamic effects and manipulate the structure of the document on the fly. Students will use JavaScript and the DOM to enhance web pages with client-side dynamic effects and create markup on the fly. Some topics to be covered include: application of dynamic behavior to web pages without inserting JavaScript; writing scripts that degrade gracefully when JavaScript isn't available; using web standards to ensure cross -browser compatibility; harnessing the power of the DOM to create user-controlled animation; and using Ajax. *Prerequisite: IT-270. Offered: Fall, Spring.*

IT-405 (4) Cluster Maintenance/Management
This course offers information about building Linux clusters from the ground up. Best practices, helpful hints, and guidelines are covered that allow building one server or hundreds of servers at a level that administrators at any experience level can understand. Students will incorporate best practices and cutting edge approaches for bringing up a Linux cluster to production level. *Prerequisite: IT-260. Offered: Fall, Spring.*

IT-435A (3) & B (3) HPC/Parallel Computing
This senior level course pair will bring together the knowledge and skill sets obtained in the program to determine how parallel computer environments can be successfully applied to large-scale scientific computations. Students will successfully implement clusters of multicore/manycore machines to solve specific problems.

Intelligent workload management systems will be explored and applied to automate the scheduling, managing, monitoring, and reporting of HPC workloads on massive scale, multi-technology installations. *Prerequisite: IT-315. Offered: Fall, Spring.*

IT-415 (3) Audio Project
The audio project is designed for students who have completed audio production. The student must create a pitch for their audio project at the beginning of the semester, and then, in close contact with their program advisor, spend remaining time writing, directing, recording, editing, and showing a work that demonstrates mastery of the technical and aesthetic challenges of audio production. Acceptable final project are musical recordings, net casts, or sound design for film. *Offered: Fall, Spring.*

IT-440 Advanced Technology Security
This senior level course pair will bring together the knowledge and skill sets obtained in the program to apply computer and network security tools and environments to allow the deep analysis of compromised systems and test live environments for existing weaknesses and mitigate any potential loss of information those weaknesses may cause. *Prerequisite: IT-332. Offered: Fall, Spring.*

IT-445 (4) 3D Modeling/Animation
In this class students are introduced to the technical and aesthetic challenges of creating three dimensional animations. Topics covered include 3-D modeling, texturing, OpenCL, augmented reality, and 3-D environment design. Students who are interested in learning the fundamentals of basic computer geometry, will look at the basic elements that make up the 3D models. Students will be introduced to a couple of application programs that are used in today's 3D modeling environment. Students will have hands on training in creating, lighting, editing and mapping of materials for the 3D models. Modeling projects will be planned, designed and produced. Students will be encouraged to work as a team. Students are required to produce a short (1-2 minute) 3-D animation project by the end of the semester. *Prerequisite: IT-215. Offered: Spring.*

IT-450 (3) Interactive Project
The interactive project is designed for students who have completed *Programming Interactivity.* The student must create a pitch for their interactive project at the beginning of the semester, and then, in close contact with their program advisor, spend remaining time constructing, designing, and showing a work that demonstrates mastery of the technical and aesthetic challenges of interactive design. Acceptable final project is highly interactive website, programs, or installations. *Prerequisite: IT-350. Offered: Fall.*

IT- Web App Development
This senior level course pair will bring together the knowledge and skill sets obtained in the program to apply HTML5, CSS3, and JavaScript to create and deploy web applications. Topics will include creating a user interface, writing a server, building client-server communication and using a cloud-based service to deploy applications. *Prerequisite: IT-375. Offered: Fall, Spring.*

IT-480 (3) Aural and Optical Perception
The prerequisites for this class are completion of all general studies science and math requirements. This class is designed to introduce students to the aural and optical perception systems in the human body. Students learn the basic anatomy of the eye, ear, and how each communicates with the brain. An emphasis will be placed on the phenomena in perception that impact media design. Throughout the course, students will be encouraged to apply the Diné Philosophy of Learning to the course material. *Offered: Fall.*

IT-485A (3) & B (3) Advanced Technology Administration
This senior level course pair will bring together the knowledge and skill sets obtained in the program to apply virtualization solutions, including networking, storage, servers, operating systems, application optimization, security and clustering. Interoperable design tools will be used to implement highly-efficient architectures for new, expanded, or retrofit datacenter projects. *Prerequisite: IT-405. Offered: Fall, Spring.*

IT-486 (3) Information Management/Administration
This course will introduce students to the knowledge-based necessary to apply the tools and techniques in the building of information systems. Students will gain a business perspective on putting together systems to support all business areas. Students will build, hands-on, the information systems that can include database management, data communications, website design and development, information system security, big data and analytics, electronic and mobile commerce, and informatics. Prerequisite: IT-290

IT-490a and b (3) Senior Project
The senior project is designed for students in their senior year who have already demonstrated competency in video, audio, and animation. The student must create a pitch for their senior project at the beginning of the year, and then, in close contact with their program advisor, spend two semesters writing, directing, shooting, editing, and showing a work that demonstrates mastery of the technical and aesthetic challenges of media production. *Offered: Fall, Spring.*

IT-499 (3) Practicum
This course provides a forum where students can acquire entry level knowledge and skills in Information Technology while in a performance setting. Students apply the knowledge and skills acquired at NTU in an appropriate work environment approved by the instructor. *Prerequisites: Sophomore standing*

IT-195/295/395/495 (1–3) Topics in Information Technology
This course examines a variety of topics, trends, and emerging technologies of contemporary interest to those in information technology or related fields. Course content varies each semester so course may be repeated for credit with differing section numbers. Typically, the course that is offered under this heading is an elective and is offered according to interest, need, and demand. *Offered: Occasionally.*

ITS-120 (3) Microsoft Office Suite
This course is designed to provide students with hands-on experience related to the personal computer and its uses in society. Application programs from the Microsoft Office Suite will be taught including Word, Excel, Outlook, Access and PowerPoint. This course is designed to provide students with a general introduction to word processing, spreadsheet, database, and presentation software. Students will be completing many hands- on assignments and activities using a personal computer in a supportive lab setting. *Prerequisite: BCIS-1115 or permission of the instructor. Offered: Fall, Spring*.

ITS-195/295 (1 – 3) Topics in Information Technology
This course examines a variety of topics, trends, and emerging technologies of contemporary interest to those in information technology or related fields. Course content varies each semester so course may be repeated for credit with differing section numbers. Typically, the course that is offered under this heading is an elective and is offered according to interest, need, and demand.

ITS 415 (3) Directing and Producing
The producer's job is to evaluate a story, secure the rights and pitch the story to secure financing. Students will learn this process: evaluate and improve a story, pitch the story, schedule the project, develop a basic budget and discuss and solve problems during production, or class projects. They will learn the producer's role in the six phases of the film manufacturing process. The course will also examine the role of the director in relation to critical, creative areas of motion picture production. Students will work in digital video format to practice their skills. *Offered: By Demand*.

LAW ADVOCATE AND LEGAL ASSISTANT

LAW-103 (3) Criminal Law
Criminal Law is the study of U.S. Constitutional law as applied in the federal court systems, and Navajo Nation criminal laws as applied with the Nation. Students will become familiar with the sources of criminal law, essential elements that must be proven to determine if a crime has been committed, crimes against persons, property, the community, and a further study of defenses against accusations of crime. *Offered: Fall*.

LAW-104 (3) Legal Research and Writing
This course introduces the student to on-line legal research as well as to traditional book-based research. Writing assignments include memorandums of law and legal briefs, as well as other legal research assignments relevant to the effective practice of law. *Prerequisite: Must be concurrently enrolled in or successfully completed (earned a grade of C or higher) ENGL-1210 or ENGL-110 or a comparable English course. Offered: Fall.*

LAW-105 (3) Advanced Legal Research and Writing
This course is a continuation of LAW-104 and will hone the skills of students in finding the law, framing questions into legal categories, and organizing legal research to write effective, persuasive documents. *Prerequisite: LAW-104. Offered: Spring*.

LAW-112 (3) Evidence
Topics to be covered include real [direct] and circumstantial evidence, presumptions, burdens of proof, province of courts [judges] and juries, uses of wrongfully obtained evidence, hearsay, and other forms of evidence. Presentation of evidence to the court and jury is included, with emphasis on laying proper foundations. Resources for this course will include evidentiary rules of the Navajo Nation District Courts and the Federal Rules of Evidence. *Offered: Fall*.

LAW-113 (3) Domestic Relations and Family Law
This course examines the areas of marriage, divorce, annulment, adoption, child support and enforcement, and other domestic relations matters in the Navajo Nation judicial system. Criminal laws that pertain to family matters will also be studied, as well as federal laws that apply to the Nation such as the Indian Child Welfare Act. *Offered: Spring*.

LAW-201 (3) Consumer Law
This course examines the typical consumer issues that confront Navajo people on the Reservation. Students will examine credit sales and purchases and repossessions, and learn how to prepare writs of sequestration and bonding in issues that may come before the Navajo Nation Court system. *Offered: Spring*.

LAW-202 (3) Procedure in Criminal and in Civil Cases
This course examines the courtroom rules of litigation. The resource for this course will be the civil rules and Criminal Rules of Procedure for the District Courts of the Navajo Nation, as well as the federal rules of procedure. Students will learn alternative dispute resolution techniques as practiced in the Peacemaker Division of the Navajo District Court. *Offered: Spring*.

LAW-203 (3) Business Law
The class will cover in-depth the law of contracts, credit, employment, agency, commercial paper, insurance, real and personal property, probate, and business organizations. Students will be expected to read and understand the various Navajo Nation Code provisions that apply to these business topics. *Offered: Fall, Spring*.

LAW-204 (3) Advanced Business Law
This class is a continuation of LAW 203. Emphasis will be placed on the Navajo Uniform Commercial Code, the body of law that governs commercial contracts and other transactions on the Nation. *Prerequisite: LAW-203. Offered: Fall.*

LAW-205 (3) Professional Responsibility and Ethics
The resource for this course is the Model Rules of Professional Conduct for members of the Navajo Bar Association. *Offered: Spring*.

LAW-211 (3) Administrative Law
This course examines the Navajo Rules of Civil and Criminal Appellate Procedure. Administrative Law examines the delegation of legislative and executive authority by the Navajo Nation to its various agencies and boards, powers of the agencies, rule-making by the agencies, due process, hearing rights, and appeals for judicial review from adverse agency decisions. *Offered: Fall.*

LAW-212 (3) Trial Practice
This course covers in-depth the conduct of a trial including pre-trial matters and motions, particularized rights, plea negotiation and pre-trial settlement, deferred prosecution, pretrial discovery, and the trial itself from jury selection to verdict. Students will attend available trials conducted in the Crownpoint District Court and will participate in a moot court. *Offered: Spring*.

LAW-221 (3) Law Advocate Internship
Students will work as law-advocates-in-training in an office-related supervised work site. Ideally, the work site such as the office of the prosecutor, Legal Defense office, Family or Peacemaker Division, of District Court will be directly engaged in some aspect of the Navajo Nation legal and judicial system. *Offered: Fall, Spring*.

LAW-225 (3) Navajo Nation Bar Review
This course will help students prepare to take the Navajo Nation Bar exam. The course will review material covered in both the legal assistant and law advocate programs. The ultimate goal of the law advocate program is to provide the training and skills needed by students in order to pass the Navajo Nation bar and become law advocates for the Navajo Nation; this course will be the final step in attaining that goal. *Offered: Fall, Spring.*

LAW-195/295 (1 – 3) Topics in Law Education
This course examines a variety of legal topics of contemporary interest. Course content varies each semester so course may be repeated for credit with differing section numbers. This course is offered based upon demand, interest, and need. *Offered: Occasionally.*

MECHANICAL ENGINEERING

ME-305 (3) System Dynamics
The purpose of this course is to teach students to 1) model dynamic systems in the time and s-domain, 2) predicts dynamic system behavior and 3) design controllers for this behavior. Students will practice assembling systems of differential equations for electrical, mechanical and other physical problems. Techniques for solving these equations algebraically and with software tools such as MATLAB/Octave will also be studied. *Prerequisite: MATH 2410 Offered: Spring*

ME- 316 (3) Mechanical Laboratory
The purpose of this course is to teach students to 1) model manufacturing process tolerance, 2) predict material damage and properties after processing and 3) operate/maintain manufacturing equipment such as CNC machines, 3D printers and material test equipment. This will be done through multiple design assignments and lab sessions. Calculations and models developed for example design scenarios will be compared to real-world manufactured examples. *Prerequisite: MATH 1230 Offered: Fall*

ME-331 (3) Kinematics of Machinery
The purpose of this course is to teach students to 1) correctly apply basic kinematic terms and concepts, 2) analyze the kinematics of mechanisms and 3) include models of non-idealities such as friction. Multiple aspects of mechanisms will be analyzed through several techniques. Important mechanism characteristics such as their singularities and non-ideal behavior will be simulated using software. *Prerequisites: MATH 1230 Offered: Spring*

ME-345 (3) Statics
This course will introduce students to the science of statics. During the course students will learn how to determine the relationships between forces acting on rigid bodies at rest. Areas covered will be scalar and vector quantities, resultants, analysis of structures, friction, centroids and center of gravity. *Prerequisite: MATH-1230. Offered: Fall.*

ME-353 (3) Fluid Mechanics
Topics include: Fluid properties, turbulent and laminar flow, gas dynamics. *Prerequisites: PHYS-1230C & MATH-1510. Offered: Fall, Spring*

ME-354 (3) Thermodynamics
Topics included: Laws of Thermodynamics, Phases of substances, processes and cycles, Work and heat, Control Volumes, Entropy and Enthalpy. *Prerequisites: PHYS-1230C & MATH-1510. Offered: Fall, Spring*.

ME-356 (4) Machine Design
This course will teach students to 1) identify stress-strain relationships in common mechanical geometries, 2) predict failure in common engineering materials, 3) predict failure in fasteners and 4) design hardware with common components such as bearings. Major formulas for analyzing stress and strain in machine elements will be studied. Students will also learn to simulate mechanical behavior using finite element software such as CalculiX. *Prerequisite: ME 345 & IE 243 Offered: Fall*

ME-400 (3) Capstone Project I
The purpose of this course is to teach students to 1) use common product design strategies, 2) use appropriate scheduling and financial planning tools and 3) prepare a range of project deliverables in a realistic setting. It is the first of a two-part series taken by seniors in the program. These concepts will be taught through participating in a complete product design process. This process will involve all design stages including benchmarking, concept development, analysis, detailed design, prototyping and testing. The course experience will culminate in a realistic set of engineering deliverables. *Prerequisite: ME 331 & ME 356 Offered: Senior Year-Fall*

ME-401 (3) Introduction to Artificial Intelligence
The purpose of this course is to teach students to 1) implement and use search methods, 2) correctly use planning algorithms, 3) compensate for data uncertainty and 4) solve problems using machine learning. Several common applications of artificial intelligence will be discussed. AI methods will be implemented in each case in Python or C++ and their performance will be compared to illustrate method tradeoffs and capabilities. *Prerequisite: ENGR 169 & MATH 1510*

ME-404 (3) Compliant Mechanisms
The purpose of this course is to teach students to 1) synthesize compliant devices, 2) model their force-deflection behavior, 3) utilize pseudo-rigid-body models and 4) predict component failure. Models of the kinematics of compliant mechanisms will be reviewed and their physical limitations such as fatigue limits will be examined. This information will be used to design monolithic mechanisms for real-world applications. *Prerequisite: ME 356*

ME-405 (3) Heat Transfer
In this class, students will learn to 1) model heat transfer through conduction, 2) convection, 3) radiation and 4) correctly design heat exchangers. Algebraic and empirical models for heat transfer phenomena will be studied and used to evaluate heat exchanger design. Software tools for simulating different types of heat transfer will also be introduced. *Prerequisite: ME 354 Offered: Fall*

ME-406 (3) Gas Dynamics & Space Propulsion
The objective of this course is to teach students to 1) model propulsion dynamics, 2) simulate fluid flow behavior and 3) predict the effects of shockwaves on flow. A range of different spacecraft propulsion systems will be evaluated and their principal physical limitations will be analyzed. Students will also learn to simulate their behavior with computers. *Prerequisite: ME 354 & ME 353*

ME-407 (3) Finite Element Analysis
The objective of this course is to teach students to 1) implement 1, 2 and 3-dimensional finite element methods, 2) model physical problems using an isoparametric formulation and 3) understand and solve convergence problems. Multiple finite element formulations will be implemented in Python or C++ and used to solve basic problems in continuum mechanics. Specific problems concerning stress, vibration and fluid flow will all be considered. *Prerequisite: ME 356*

ME-409 (3) Renewable Energy Sources
In this course, students will learn to 1) model the underlying physics of multiple types of renewable energy, 2) anticipate variability in natural energy sources and 3) optimize energy output from common technologies. Energy pathways will be examined in each process and key physical characteristics will be identified. Variability in natural phenomena such as wind and water-based energy will be modeled and used to anticipate energy generation potential. ME 354 & ME 353

ME-410 (3) Capstone Project II
The purpose of this course is to teach students to 1) use common product design strategies, 2) use appropriate scheduling and financial planning tools and 3) prepare a range of project deliverables in a realistic setting. It is the second of a two-part series taken by seniors in the program. These concepts will be taught through participating in a complete product design processes. This process will involve all design stages including benchmarking, concept development, analysis, detailed design, prototyping and testing. The course experience will culminate in a realistic set of engineering deliverables. *Prerequisite: ME 400 Offered; Senior Year-Spring*

ME-415 (3) Additive Manufacturing
The purpose of this course is to teach students to 1) model printed part material properties, 2) predict anisotropic material characteristics, 3) anticipate part deformation and 4) adapt part designs for additive manufacturing. Models for materials commonly used in additive manufacturing will be discussed and used to design and manufacture components. Computer simulation tools will also be used to predict part performance. *Prerequisite: ME 356*

MATHEMATICS

MTH-113 (3) Technical Mathematics
This course will cover the application of arithmetic, measurement, introduction to algebra, equations and formulas, ratio and proportion, geometry, right triangle trigonometry, Law of Sines, and basic statistics. The Navajo cultural ways of learning and knowing are integrated as well. *Satisfactory placement score 237 and under will require Corequisite of MTH-113L.*

MTH-113L (1) Technical Mathematics Lab
Technical Mathematics with lab is a 1 credit hour lab. The math lab will focus on additional practice exercises on concepts and applications involving arithmetic, fraction, decimal, and percentages. The math lab will offer tutoring and online assignments. The class is aligned to Math 113 that will cover lessons pertaining to Basic Concepts, Signed numbers, Metric system, Equations & Formulas, Ratio and Proportion, Linear equations, Geometry, and Right Triangle Trigonometry. Also, the course will be integrated to other fields of study to make it real and relevant.

MTH-114 (4) Quantway-I
This course will provide a pathway to earning a college-level liberal arts mathematics course. All college students need to be able to make reasonable decisions about fiscal, environmental, and health issues that require quantitative reasoning skills. A collaborative, activity-based approach issued in this course to explore numerical relationships, graphs, proportional relationships, algebraic reasoning, and problem solving using linear, exponential and other mathematical models. Students will develop conceptual and procedural tools that support the use of key mathematical concepts in a variety of contexts. This course is not designed for Science, Engineering, or Math students and/or others who require calculus. *Offered: Fall, Spring*.

MTH-205 (3) Discrete Mathematics
This course is a survey of elementary logic and set theory, functions, direct proof techniques, contradiction and contraposition, mathematical induction and re-curs ion, elementary combinatorics, basic graph theory and minimal spanning trees. *Prerequisite: A grade of C or better in MATH-1220 or an equivalent course. Offered: Occasionally*

MTH-306 (3) College Geometry
An axiomatic approach to fundamentals of Geometry both Euclidean and no-Euclidean. Emphasis on historical development. College Geometry also presents a formal and fundamental development of neutral and Euclidean geometry with an emphasis on valid arguments. Non-Euclidean geometry will also be investigated. The course begins with a thorough review of geometry, including using synthetic and algebraic approaches, and continues with a selection of more advanced topics. Topics covered include two- and three-dimensional shapes, proving triangles congruent or similar, quadrilaterals, circles, plane geometry and non-Euclidean geometry. *Pre-requisite: A grade of C or better in MATH-1510 or an equivalent course or satisfactory placement score. Offered: Fall, Spring, Online.*

MTH-315 (4 Credits) Biostatistics
This course is designed for students of biology, its allied disciplines, medicine or other health related areas. The course would motivate students to master the statistical methods that are most often used in the medical literature. It starts with an introduction of biostatics and its role in biomedical research, and proceeds through descriptive statistics, probability, statistical inference, to the concept of drawing random samples from populations. Basic methods of estimation, including confidence intervals will also be presented. Other topics would include hypothesis testing, nonparametric statistics, regression analysis, and analysis of variance (ANOVA). Methods of design for epidemiological studies and methods of analysis for person-time data would similarly be discussed. *Prerequisite: A grade of C or better in MATH-1220 or an equivalent course or satisfactory placement score*. *Offered: Spring*.

MTH-410 (3) Linear Algebra
The course covers a study of matrices, vectors on a plane, determinants, linear transformations, eigenvalues, and eigenvectors. The class will use technology device such as graphing calculator to aid in computations. Furthermore, they will be trained to be independent learners through both independent practices as well as cooperative learning. *Pre-requisite: A grade of C or better in MATH-1520 or an equivalent course or satisfactory placement score. Offered: Fall, Spring*.

MTH-415 (4) Discrete Mathematics Structures
Discrete Mathematical Structures is an integral course in computer science that covers topics like propositional logic, predicate logic, functions and relations, combinatorics, mathematical induction, recursion, algorithms, matrices, graphs, and Boolean Algebra. Furthermore, students will learn how to represent abstract ideas in math using equations, graphs, symbols. They are expected to be more independent learners. *Pre-requisite: MTH-123. Offered: Occasionally*.

MTH-433 (3) Numerical Analysis with Computers
Introductory concepts and calculus, errors, root finding for nonlinear equations, interpolation and approximation theory, numerical integration and differentiation, linear algebra, eigenvalues and eigenvectors will be discussed. *Prerequisite: MATH-1520 & MATH-2410. Offered: Occasionally.*

MATH-1110 (3) Math for Teachers I
Investigates the representation of rational numbers and rational number arithmetic, including base ten and decimal numbers, fractions, and arithmetic operations on these sets. Connections to basic geometric concepts are included. Explanation and problem solving is emphasized throughout. *Prerequisite: MATH-1215*

MATH-1115 (3) Math for Teachers II
Develops basic geometric concepts including rigid transformations and congruence; dilations and similarity; length, area and volume; systems of measurement and unit conversions; and connections to coordinate geometry. Explanation and problem solving is emphasized throughout.

MATH-1215 (4) Intermediate Algebra
A study of linear and quadratic functions, and an introduction to polynomial, absolute value, rational, radical, exponential, and logarithmic functions. A development of strategies for solving single-variable equations and contextual problems. *Prerequisite: A grade of C or better in MATH-113 or equivalent*. *Offered: Fall, Spring, Summer, Online*.

MATH-1220 (4) College Algebra
The study of equations, functions and graphs, reviewing linear and quadratic functions, and concentrating on polynomial, rational, exponential and logarithmic functions. Emphasizes algebraic problem-solving skills and graphical representation of functions. *Prerequisites: A grade of C or better in MATH-1215 or satisfactory placement scores. Offered: Fall, Spring, Summer, Online*.

MATH-1230 (4) Trigonometry
A study of plane trigonometry including the definitions of the fundamental trig functions using right angle triangle and unit circle approaches. Trig functions of any real number will be evaluated and the functions graphed along with their transformations. Trigonometric identities will be developed and demonstrated including multiple angle identities and identities developed from them. Inverse Trigonometric functions will be developed and used to solve trigonometric equations. Trigonometric applications will be solved using right angle trigonometry and the laws of sines and cosines. Trigonometric methods will be applied to complex numbers and the use of 2D vectors and vector dot products. *Prerequisite: A grade of C or higher in MATH-1220 or satisfactory placement score. Offered: Fall, Spring, Summer, Online.*

MATH-1240 (4) Pre-Calculus
This course extends students' knowledge of polynomial, rational, exponential and logarithmic functions to new contexts, including rates of change, limits, systems of equations, conic sections, and sequences and series. *Prerequisite: A grade of C or higher in MATH-1220 or satisfactory placement score. Offered: Fall, Spring, Summer, Online.*

MATH-1350 (3) Introduction to Statistics
This course discusses the fundamentals of descriptive and inferential statistics. Students will gain introductions to topics such as descriptive statistics, probability and basic probability models used in statistics, sampling and statistical inference, and techniques for the visual presentation of numerical data. These concepts will be illustrated by examples from a variety of fields. *Prerequisite: A grade of C or better in MATH-1220 or an equivalent course. Offered: Fall, Spring*.

MATH-1510 (4) Calculus I
Introduces the intuitive, numerical and theoretical concepts of limits, continuity, differentiation and integration. Includes the study of extrema, curve sketching, and applications involving algebraic, exponential, logarithmic and trigonometric functions. Designed for mathematics, science and engineering majors. *Prerequisite: A grade of C or better in MATH-1230. Offered: Fall, Spring, Summer, Online*.

MATH-1520 (4) Calculus II
Continues course of study begun in Calculus I. Covers integration techniques, numerical integration, improper integrals, some differential equations, sequences, series and applications. *Prerequisite: A grade of C or better in MATH-1510 or an equivalent course or satisfactory placement score. Offered: Fall, Spring, Summer, Online*.

MATH-2410 (4) Differential Equations
An introduction to differential equations. Students will be able to classify, construct, and solve different types of equations. Systems of equations, Laplace transforms, series solutions, and numerical methods are introduced. This course is not designed for students seeking a degree in mathematics. *Prerequisite: MATH-1520. Offered: Fall, Spring.*

MATH-2530 (4) Calculus III
Continuation of Calculus 2 including multivariate and vector calculus, level curves and surfaces, partial derivatives, gradient, directional derivatives, tangent planes, optimization, multiple integrals in Cartesian, cylindrical and spherical coordinate systems. At times, the learning process relating to the Navajo Culture in the areas of Nitsáhákees, Nahat'á, Iiná and Sihasin will be covered as well as other cultures (multi-cultural studies). *Prerequisite: A grade of C or better in MATH-1520 or an equivalent course or satisfactory placement score. Offered: Fall, Spring*.

NAVAJO / DINÉ STUDIES

NAV-121 (3) International Leadership
This course will explore the nature of leadership in selected world communities. It will look at challenges arising from global issues and how each region of the world addresses local problems. It will further review leadership roles in the complexities of the global logic of corporations, governments, NGOs and multi-lateral agencies. Various parts of the world's continents will be reviewed, such as Asia, Africa, South America, and other Western nations. *Offered: Spring*.

NAV-203 (4) Interpretation/Translation (Navajo/Eng.)
Theoretical and Navajo principles, ethics, and underlying techniques will be discussed in reference to conference, court, community, and so forth, interpreting and translation, high-level proficiency in a first language (Navajo) is essential. The translation will focus on the usage of Navajo into English and at times, English into Navajo languages translation. This will include building a particular vocabulary of English and Navajo words pertaining to the Navajo Tribal Court System. It will also, include the three modes of interpreting, translation and language registers.

NAV-210 (3) Contemporary Navajo Life & Experiences
An overview of current and historical issues is addressed in this course, which have resulted in policies and regulations affecting Diné. Issues include education, treaties, self-determination, sovereignty, federal-state- tribal legislations, natural resources, and economics, among others, which impact the lives of contemporary Diné. *Offered: Fall, Spring.*

NAV-212 (3) Navajo Historical Perspective of Navajo
This course addresses history from Diné perspective about Diné ancestors and the students in contemporary time. Historical correlation will be made collaboratively with Diné creation stories and the western- constructed history of Diné people. *Offered: Fall, Spring*.

NAV-250 (4) Introduction to Navajo Linguistics
This course is an introduction to the scientific study of Navajo language. Language is addressed as a cognitive and cultural phenomenon. Students will learn the basics of

linguistic analysis, phonetics, phonology, morphology, syntax, semantics and pragmatics. Offered: Fall, Spring.

NAV-301 (4) Intermediate Navajo Language (Conversation & Reading)
This course will concentrate on conversation and continue with reading and writing courses of the Navajo language. It will focus on the mastery of pronunciation, identification and syntax of the Navajo language, and continue to increase vocabulary words and conversation skills. *Prerequisite: NAVA-1120 or NAVA-2130. Offered: Fall*.

NAV-302 (4) Intermediate Navajo Language (Writing)
This course will concentrate on writing the Navajo language. It will continue to focus on the mastery of pronunciation, identification and syntax of Navajo language, and continue the work to increase vocabulary words and conversation skills. *Prerequisite: NAV-301*. Offered: Spring.

NAV-310 (3) Colonization and De-Colonization
This course introduces and examines colonization and decolonization through Diné philosophy and theories. Within it, the course will address the role of Diné in the support and affirmation of colonization and how students participate in the process of decolonization, knowingly and unknowingly. *Offered: Fall*.

NAV-321 (3) Global Indigenous Leadership
The course will cover leadership concepts in various global Indigenous communities. Communities to be considered are in Africa, South America, Central America, North America (Canada, Hawaiians, Island communities and those indigenous to the United States), northern Europe and Asia. The various forms of leadership within each community will be fully explored and discussed. *Prerequisite: NAV-121. Offered: Fall*.

NAV-401 (4) Advanced Navajo Language (Conversation & Reading)
This advanced course will concentrate on technical conversation and advanced reading of the Navajo language. It will continue to focus on the mastery of pronunciation, identification and syntax of Navajo language, and continue the work to increase vocabulary words and conversation skills. *Prerequisite: NAV-302. Offered: Fall*.

NAV-402 (4) Advanced Navajo Language (Writing)
This advanced course will concentrate on writing of the Navajo language. It will include technical writing in conversation, presentation, lectures, and contexts to a Navajo audience. *Prerequisite: NAV-401. Offered: Spring*.

NAV-410 (3) Traditional Navajo Cultural Practice & Theory
This course will focus on the historical framework of how Navajo culture was practiced, prior to the 1950s, and discuss key theories extracted from that time period of the history of Navajo people. *Prerequisite: Fluent Navajo Speaker. Offered: Spring*.

NAV-411 (3) Cultural Revitalization: Problems, Solutions, & Possibilities
There are multiple social problems with the current Navajo Nation, which are redefining what Navajo culture is now. What is preventing the retention and maintenance of the traditional cultural practice of Diné ancestral history is the focus of this course. What are the barriers to retention and maintenance of the culture? What are the solutions to retain and maintenance the culture? What are the possible future outlooks for the culture? *Offered: Fall, Spring*.

NAV-421 (3) Native North American Leadership
Various tribes in the United States and Native communities in Alaska and Hawaii will be the focus of this course in analyzing its concept of leadership. Historical and traditional methods of leadership will be fully analyzed and discussed within the Western contemporary context of leadership in today's Indigenous communities and nations. *Prerequisite: NAV-321. Offered: Fall, Spring*.

NAV-431 (3) Theoretical Indigenous Leadership
The theories of cultural leadership of selected global Indigenous communities will be explored in this course. The theoretical use in the implementation of Western empirical cultural leadership will be analyzed. *Offered: Fall, Spring.*

NAV-441 (3) Traditional Navajo Leadership
This course explores historical theories and practice of citizenship and leadership as it relates to the Navajo experience. Topics of citizenship, citizenship education, and politics and leadership studies will be addressed. The focus will be on Navajo Nation, its history, and current Western political affairs. This course will help students develop their own vision and plan that relates to being a Navajo citizen and a servant leader in Navajo public service. *Prerequisite: Fluent Navajo Speaker. Offered: Spring*.

NAV-442 (3) Contemporary Navajo Gender, Politics, & Leadership
Current social issues pertaining to gender, politics and leadership will be addressed in this course. Topics that will be explored include: It is more common to see women as candidates for Navajo leadership, which counters the theory that asserts women as Navajo leader based on the Creation Stories is forbidden. What is the contemporary thinking of Navajo people about this cultural rule? How can it be made workable to satisfy the needs of all Navajo people? What are some of the other gender related concepts that affect the contemporary Navajo reaction to its Western structured politics and leadership? *Offered: Spring.*

NAV-443 (3) Navajo Morals and Ethics
The Navajo Creation Stories will be revisited in class to provide the basic cultural constructions of Navajo morals and ethics. These two topics will be addressed, analyzed and brought through Navajo history into contemporary times. The current roles of traditional morals and ethics in today's Western-based Navajo society will be further explored by the students. *Prerequisite: Fluent Navajo Speaker. Offered: Spring*.

NAV-490a&b (3) Researching Navajo (Senior Thesis)
Each senior student will write a senior thesis approved by the students Senior Thesis Committee. The committee will be formed by the student and approved by the Department Chair and the Undergraduate Dean. The student will select a social issue of the Navajo people and write about the evolution of the problem and explain how it became a problem and address some possible solution to the issue. The Senior Thesis Committee will approve the thesis as a part of the student's graduation requirement. The student's ability to write, analyzes, comprehend, understand, and convey his/her thoughts in Navajo and English will be the basis of the Committee's approval. *Offered: Fall, Spring*.

NAVA-1110 (4) Navajo I
The purpose of this beginning class is to develop listening, speaking, reading and writing skills to communicate at an elementary level. The course will use a communicative approach for students to learn about the fundamentals of vocabulary, grammar, conversation, and Navajo cultures. *Offered*: *Fall, Spring, Summer*.

NAVA-1120 (4) Navajo II
Navajo II is a continuation of Navajo I. The purpose of this course is to enhance speaking, reading and writing of Navajo. The course will use a communicative approach for students to learn and utilize more complex vocabulary and grammar for reading, writing, and conversing in the language. *Prerequisite: NAVA-1110. Offered: Spring.*

NAVA-1130 (4) Beginning Navajo Reading and Writing
This course is for students who want to learn to read and write Navajo. Lectures are presented exclusively in Navajo. Students will develop reading and writing skills while increasing intercultural awareness and understanding of Navajo communities and the significance of Navajo language in the past and the present, along with its contributions to Native American cultures. *Prerequisite: Fluent Navajo Speaker. Offered: Fall*.

NAVA-1210 (3) Navajo Cultural Arts
This course introduces students to Navajo Cultural Arts through explorations of Diné history, philosophy, and lifeways. Lectures and in-class demonstrations offer tools for sash belt weaving, basketry, and moccasin making. The course culminates in projects that require students to demonstrate their technical and artistic expertise. *Supply fee: $100.00. Offered: Occasionally.*

NAVA-1310 (3) Navajo Rug Weaving I
The origin, purpose, philosophy and historical development of weaving from Diné perspective will be taught in this class. Rug weaving in-class projects includes traditional upright-loom weaving techniques and design. *Supply fee: $100.00. Offered: Spring*.

NAVA-1320 (3) Navajo Rug Weaving II
Development of design, skills, and creativity in weaving will be taught, including geometrical, pictorial, and double-woven rugs and comparative study of Diné historical and contemporary weaving will be explored. *Prerequisite: NAVA-1310. Supply fee: $100.00. Offered: Spring.*

NAVA-1330 (3) Navajo Rug Weaving III
Student will learn the advance techniques in weaving. This course involves some discussions on origin, comparative study and development of the complex design and creativity of the advanced Navajo rug weaving process using the geometrical, twilled or two-faced weaving techniques. Some math and design planning will be utilized in this class. *Prerequisite: NAVA-1320. Supply fee: $100.00. Offered: Occasionally*.

NAVA-2130 (4) Intermediate. Navajo Language - (Writing)
This part two of introductory course for native speakers will focus on beginning writing of the Navajo language. In addition, it will continue building skills toward mastery of pronunciation and identification of the Navajo sound system through increased vocabulary and conversation skills. *Prerequisite: NAVA-1130. Offered: Spring*.

NAVA-2210 (3) Navajo Culture
This course examines the moral values in the Navajo society, and their contribution to the definition of identity and autonomy. The course includes instruction in the clan system, symbolic interpretation and understanding of the Navajo educational philosophy, and the four principles that bring harmony to the culture. The course discusses the historical perspective and the contemporary society of the Navajo (Diné) people. *Offered: Fall, Spring*.

NAV-2220 (3) Navajo History
Introduces the history and culture of the Navajo people from the earliest times to the present. The course will examine cultural change, the interaction of the Navajo with other native groups and especially with European peoples. *Offered: Fall, Spring.*

NAVA-2230 (3) Navajo Government
This course is a study of the history, nature, organization, and operation of the Navajo tribal government. It concentrates on its evolution since its beginning in the 1920s, and examines the legal and political basis for, and functions of, the tribal government. The course brings an overview of the major contributions from each tribal administration and the political relationship of the Navajo to the state and federal governments. *Offered: Fall, Spring*.

NAVA-2240 (3) Diné Philosophy of Education
This course explores the historical perspective and folklore of the early existence of Diné people. The course continues to explore the historical perspective and folklore of the early existence of the Diné people. The course includes an in-depth look at the four principles of the Diné culture and how Diné philosophy reflects today's society. *Offered: Fall, Spring*.

NAVA-1996/2996 (1 – 3) Topics in Diné Studies
This course addresses contemporary themes in the field of

Diné language, culture, history, arts, and related areas. Course content varies each semester so the course may be repeated for credit with differing section numbers. The course is offered according to interest, need, and demand.

NURSING

NRS-100 (1) Placement Exam Prep Course
This course will focus on reviewing the most current nursing content, test approaches, and other topic areas designed to achieve success on the placement (i.e., HESI A2) entrance exam for the ADN program. *Prerequisites: ENGL-1110, MTH-113, NRS-103, NRS-110; or permission of instructor. Offered: Fall, Spring.*

NRS-101 (5) Nurse Assisting Theory and Lab
This course prepares the student to perform nursing assistant skills required for the care and comfort of individuals in various health care settings. Pre-requisite: demonstration of 8th grade reading ability. *Lab fee: $56.00. Offered: Fall, Spring*.

NRS-102 (1) Nurse Assisting Internship
This course provides the practical experience for nursing assistant students. Students will apply the nursing assistant skills learned in the nursing assistant theory and lab course in the care and comfort of individuals in various health care settings. This course is graded on a pass/fail basis. *Lab fee: $50.00 Co-requisite: NRS-101. Offered: Fall, Spring*.

NRS-103 (3) Basic Medical Terminology
This course presents basic concepts of medical terminology. A general overview of work elements that make up medical terminology will be examined. Common medical terminology will be presented. Opportunities will be given for students to learn correct pronunciation and spelling as they define the medical terms assigned. *Offered: Fall, Spring*.

NRS-110 (4) Body Structure and Functions
This course provides students with an introduction to human anatomy and physiology. It is intended as a first course that will provide a foundation for more complex clinical discussions and more advanced anatomy and physiology courses. This course may be offered as either an online course or in the classroom or it may be offered using a combination of both teaching methods. *The course delivery method is determined by the instructor and may vary from semester to semester. Offered: Fall, Spring*.

NRS 115 (2) Technical Math for Health Professions
This course provides a review of practical mathematics required for accurate and safe medication administration. The content is arranged for a progression of basic to more complex information. Students will be assisted to learn and understand their individual strengths and weaknesses in math and build on this information. Practice is given in dosage calculations across the lifespan, skills required for accurate oral and injectable drug dosage calculations, and reading and interpreting drug orders and labeling. Introductory information is given for intravenous therapy. *Offered: Fall, Spring*.

NRS 239 (3) Pathophysiology I
The course focuses on forming a basic understanding of pathophysiology for Nursing and Allied Health students and professional health care practice. Diseases and conditions studied will be examined from a conceptual basis and exemplars will be those of greatest incidence, prevalence and importance. *Prerequisites or Co-requisite: BIOL-1320C, or a grade of A or B in NRS-110.*

NRS 240 (3) Pathophysiology II
This course is a continuation of Pathophysiology I, focusing on forming a basic understanding of pathophysiology for nursing students and students majoring in allied health. Diseases and conditions studied will be examined from a conceptual basis and exemplars will be those of greatest incidence, prevalence and importance. *Prerequisites: BIOL-1320C, NRS-239*

NRS-195 (1 - 6) Topics in Nursing
This course explores a variety of topics related to emerging concerns, technologies, and areas of skill development pertinent to the nursing and health-related fields. Course content varies each semester and the course is offered according to interest, need, and demand.

NUTR-2110 (3) Human Nutrition
This course provides an overview of nutrients, including requirements, digestion, absorption, transport, function in the body and food sources. Dietary guidelines intended to promote long-term health are stressed.

PUBLIC ADMINISTRATION

PAD-101 (3) Introduction to Public Administration
This is an Introductory to Public Administration. It will provide an overview of numerous factors that affect public administration, and study the theories and issues relating to it. This course will cover also important areas including; federalism, contexts of administration, organization theory, organization behavior, management, leadership, labor relations, public personnel management, budgeting, decision making, bureaucracy, and ethics and accountability. This course will also tackle public administration in different countries that will enhance students' understanding of public administration systems. Current cases related to public administration will be incorporated so that students can use critical thinking to analyze issues and apply public administration theories. *Offered: Fall, Spring*.

PAD-110 (3) Public Finance Administration
This course focus on administrative activities associated with the handling of public monies for all kinds of public organizations, including non-profit organizations and entities of the local, state and federal levels of government. Administrative activities of concern here are the less visible day to day planning of public monies and related technical

support activities rather than the more visible political activities associated with public budgeting. *Offered: Fall, Spring, Online*.

PAD-210 (3) Public Sector Management
This course provides an overview of the key issues to be addressed and explain on public administration. It will also describe the political actors and institutions external to a government agency that help determine the success or failure of that agency in accomplishing its mission. It will also give an opportunity for student to examine the strategies and structures that government agencies adopt to operate effectively and efficiently in their environments. Public sector management also broadened student knowledge on government systems designed for managing human, fiscal and information resources. This course also recognizes the importance of student developing basic management skills such as communication, motivation, teamwork and group dynamics, decision making, power, influence, and leadership. The course will employ variety of cases, exercises, and simulation to give students some sense of real-world implications of their actions, learn from one's experience, reflection and insights. *Offered: Fall, Spring.*

PAD-225 (3) Human Behavior in Organization
This course studies the underlying reasons why people act the way they do and help them evaluate the strength and deficit in their biological, psychological, and social development. A variety of theories and research about human growth and development both internal and external variables that influence human behavior in an organization will also be covered. *Offered: Fall, Spring, Online*.

PAD-230 (3) Internship/Practicum
In the internship portion of this program students will work a minimum of 150 hours at any government agencies like Navajo Nation work related to Public Administration. *Offered: Fall, Spring*.

PAD-295 (3) Topics in Public Administration
This course examines a variety of topics related Public Administration. Course content varies each semester so course may be repeated for credit with differing section numbers. The course is offered according to interest, need, and demand. *Offered: Fall, Spring*.

PHYSICAL EDUCATION

PED-101 (1) Physical Education
This course offers seasonal physical activities during each semester for men and women to promote healthy living and fitness throughout life. *Offered: Fall, Spring*.

PED-120 Strength Training
Introductory Activities in strength training individualized programming safety, fitness, benefits, and exercise selection.

PED-130 Jogging
This is an introductory activity in the proper running techniques, program design, pacing, form running, interval training and distance running.

PHED-1620 (1) Fitness
Individual sections vary based on topic content; "audience"; type or level of participation. *Offered: Fall, Spring*.

PHED-1830 (1) Running
Individual sections vary based on topic content; "audience"; type or level of participation. *Offered: Fall, Spring*.

PED-195 (1) Topics in Physical Education
This course focuses on a variety of areas in physical education, wellness, exercise, and fitness. Course content varies each semester so the course may be repeated for credit with differing section numbers. This course is offered based on need, interest, and demand. *Offered: Occasionally.*

PHYSICS

PHYS-1115C (4) Survey of Physics
Overview of the concepts and basic phenomena of physics. This course provides a largely descriptive and qualitative treatment with a minimum use of elementary mathematics to solve problems. No previous knowledge of physics is assumed. Lab included. *Lab fee: $125.00. Offered: Fall, Spring.*

PHYS-1230C (4) Algebra-Based Physics I
An algebra-based treatment of Newtonian mechanics. Topics include kinematics and dynamics in one and two dimensions, conservation of energy and momentum, rotational motion, equilibrium, and fluids. Lab includes a series of experiments associated with the material presented in PHYS-1230C. *Prerequisite: MATH-1215 or permission of the instructor. This course is only offered in the fall semester. Lab Fee: $125.00. Offered: Fall, Spring*.

PHYS-1240C (4) Algebra-Based Physics II
The second half of a two semester algebra-based introduction to Physics. This course covers electricity, magnetism and optics. A series of laboratory experiments associated with the material is presented. This course is the appropriate for students who plan no further study in physics. *Prerequisite: PHYS-1230C. This course is only offered in the spring semester. Lab Fee: $125.00. Offered: Fall, Spring.*

PHYS-1310C (4) Calculus-Based Physics I
A calculus level treatment of classical mechanics and waves, which is concerned with the physical motion concepts, forces, energy concepts, momentum, rotational motion, angular momentum, gravity, and static equilibrium. A series of laboratory experiments associated with the material presented in Calculus-based Physics I. Students will apply the principles and concepts highlighting the main objectives covered in coursework for Calculus-based Physics I. This approach combines inquiry-based cooperative learning with

comprehensive use of computer tools. *Prerequisite: MATH-1220, MATH-1230, or MATH-1240. Lab Fee: $125.00.*

PHYS-1320C (4) Calculus-Based Physics II
A calculus-level treatment of classical electricity and magnetism. It is strongly recommended that this course is taken at the same time as Calculus-based Physics II laboratory. A series of laboratory experiments associated with the material is presented in lab. *Prerequisite: PHYS-1310C and MATH-1510. Lab Fee: $125.00. Offered: Fall, Spring*.

POLITICAL SCIENCE

POS-220 (3) United States and Arizona Constitution
Examination of the United States Constitution and the constitution and government of the State of Arizona. *Offered: Fall*.

PLUMBING

PLMB-101 (2) Introduction to Plumbing Concepts and Applications
Introduction to plumbing concepts and applications will provide foundational knowledge that students will need to successfully participate in and complete future classes. Role of a plumber regarding use of tools, safety, role of standards and codes, ensure that products installed in the field are marked and satisfied for intended use, and importance of proper plumbing will be discussed.

PLMB-103 (3) Water Supply and Distribution Piping
Students will be able to understand water supply and distribution more effectively. Discuss and identify requirements for proper installation of water supply and distributions systems as well as plumbing fixtures and fittings in accordance with the uniform plumbing codes.
Prerequisite: A grade of C or better in PLMB-101, and PLMB 105

PLMB-104 (3) Drainage, Waste, and Venting
Students will be able to demonstrate a strong understanding of drain, waste, and vent systems effectively. Discuss and identify requirements for proper installation of drain, waste, and vent systems. Identify fixture unit loads for wastewater, and drain, waste, and vent system sizing. Students will be able to understand installation of various components in the systems in accordance with plumbing code. *Prerequisite: A grade of C or better in PLMB-101, and PLMB 105*

PLMB-105 (2) Plumbing Fixtures and Blueprint Reading
Fixtures, appliances, pump systems design, plumbing codes and standards, acceptable installation practices and acceptable materials, troubleshooting and repair of pipes will be discussed. In addition, students will demonstrate a strong understanding of basic drawing tools, measuring tools, lettering, drawings, and symbols found on blueprint, which are associated with plumbing and pipe industry.
Prerequisite: A grade of C or better in PLMB-101.

PLMB-113 (2) Plumbing and Pipefitting Fundamentals
Students will be able to identify common pipes and fittings used for plumbing installations. Pipe joining, valves, venting, backflow prevention and water quality will be discussed. Additionally, terminology of design, construction and sizing, and approved uses of different materials will be taught in this course. *Prerequisite: A grade of C or better in PLMB-101*

PLMB-114 (3) Gas Piping Installations
Student will be able to gain hands-on experience in safe handling of natural gas, liquefied petroleum gas, fuel oil, potential hazards, systems installations, and testing.
Prerequisite: A grade of C or better in PLMB-105.

PSYCHOLOGY

PSYC-245 (3) Psychopharmacology in the Treatment of Addiction and Substance Use Disorders
This course provides a foundational understanding of the biological and psychological components of substance use disorders, addiction and treatment, and application to the client with co-occurring disorders. Students gain foundational knowledge in the principles of pharmacology, anatomy, and physiology as they apply to the major classes of medications. The course also focuses on current drugs used in the treatment of addiction and substance use disorders.

PSYC-265 (3) Social Psychology and Cultural Applications
This course provides a study of social and group factors affecting individual behavior. Attention is given to the development of attitudes, roles, norms, group processes, aggression and cooperation, persuasion, stereotypes and

PSYC-1110 (3) Introduction to Psychology
This course will introduce students to the concepts, theories, significant findings, methodologies, and terminology that apply to the field of psychology. *Offered: Fall, Spring, Summer, Online*.

PSYC-2120 (3) Developmental Psychology
Study of human physical and psychological change and stability from a lifespan development perspective. *Prerequisite: PSYC-1110 or permission of instructor. Offered: Fall, Spring*

PSYC-1996/2996 (1 – 3) Topics in Psychology
This course examines a variety of topics related to contemporary psychology issues and practices. Course content varies each semester so course may be repeated for credit with differing section numbers. The course is offered according to interest, need, and demand. *Offered*: *Occasionally*.

PUBLIC SAFETY

PS-101(3) Introduction to Criminal Justice
This course provides an overall introduction to law enforcement. It is particularly geared toward preparing students for a basic understanding of the criminal justice system, the history of law enforcement in the Navajo Nation, supervision of law enforcement agencies at the federal state, and tribal level, supervision and management structures as they relate to police officers, ethics and professionalism, and stress management. This course is driven by specific outcomes that must be mastered before students will be allowed to continue to the next course in sequence.

PS-103 (3) Public Safety Report Writing
A discussion of the defining characteristics of good reports and field notes and the importance and uses of each. The form, style and procedures for writing various reports are described and techniques for developing a complete, descriptive and accurate narrative are provided. Elements of composition, required substance, proper and improper conclusions and descriptions of person and property are proficiency must be demonstrated. *Offered: Fall, Spring*.

PS-109 (3) Substantive Criminal Law
This is an introduction to the basic concepts, phrases and definitions needed to study criminal law. It includes an introduction and a description of the laws of arrest, search and seizure, rules of evidence, an overview of summonses, subpoenas, and warrants allowed in the state of Arizona and the Navajo Nation, civil processes, administration of criminal justice, juvenile law, and procedures, constitutional law, substantive criminal law, and liability issues. Students are also expected to master appropriate courtroom demeanor for officers. *Offered: Fall, Spring*.

PS-123 (3) Law Enforcement Ethics: Ethics & Criminal Justice (Community & Police Relations)
Police Officer are subject to considerable pressure in their job, but must realize that they work inside a community and that part of their job is to maintain good relationships with the citizens of that community. Community-policing is today considered the linchpin in creating and maintaining an effective police force. This is especially important in the Navajo Nation where culture plays such an important role in community life. Topics include cultural awareness, victimology, interpersonal communications, crime prevention, and police and the community. *Offered: Fall, Spring*.

PS-170 (3) Forensic Science (Patrol Procedures)
This course involves observation as well as a significant amount of study. The topics covered include a study of the types, purposes, and techniques of police patrol, an examination of domestic violence and factors related to understanding it and procedures for responding effectively to crisis situations, understanding and responding to situations involving mental illness, how to respond safely to crimes in progress, fundamental techniques for crown control, and substantive traffic law (NN, State, Federal). The course also presents other topics such as bomb threats and disaster training, intoxication cases, communication and police information systems and how to handle cases that involve hazardous materials, bias-motivated crimes, fires, and civil disputes. *Offered: Fall, Spring*.

PS-230 (3) The Police Function 1 (Traffic)
The Police Function (Traffic) teaches students the knowledge and skills they need to perform the duties expected of officers patrolling the highways and interacting with drivers, Topics include: Impaired Driver Cases, Traffic Citations, Traffic Collision Investigation, Practical Traffic Collision Investigation, Traffic Direction, and Substantive Traffic Law. (NN, State, Federal) *Offered: Fall, Spring.*

PS-235 (3) The Police Function II (Police Proficiency Skills)
There are a number of skills all police officers must master (and become proficient at) before they become officers. This course covers the following skill area: First Aid, Firearms Training, Physical Conditioning, High Risk Stops, Defensive Tactics Vehicle Operations, and Pursuit Operations. There are high level physical abilities required for success in this course, so students should be in good health and physical shape when they begin this training. *Offered: Fall, Spring*.

PS-260 (3) Procedural Criminal Law
This course covers the principles common to all types of investigation. Topics include: Preliminary Investigation, Physical Evidence Procedures, Interviewing and Questioning, fingerprinting, Sex Crimes Investigation, Death Investigations, Organized Criminal Activities, Investigation of Specific Crimes, and narcotics and Dangerous Drugs. *Offered: Fall, Spring*.

PS 2250-History of American Policing
This course provides an overall exploration of the historical development and structure of the United States criminal justice system, with emphasis on how the varied components of the justice system intertwine to protect and preserve individual rights. The course covers critical analysis of criminal justice processes and the ethical, legal, and political factors affecting the exercise of discretion by criminal justice professionals.

SOCIOLOGY

SOCI-1110 (3) Introduction to Sociology
This course will introduce students to the basic concepts and theories of sociology, as well as to the methods utilized in sociological research. The course will address how sociological concepts and theories can be utilized to analyze and interpret our social world, and how profoundly our society and the groups to which students belong influence them. Students will be given the opportunity to challenge their "taken for granted" or "common sense" understandings about society, social institutions, and social issues. Special

attention will also be paid to the intimate connections between their personal lives and the larger structural features of social life. In addition, the implications of social inequalities, such as race/ethnicity, gender, and social class will be central to the course's examination of social life in the United States. *Prerequisite: A grade of C or better in ENG-098 or an equivalent course. Offered: Occasionally*

SOCI-2310 (3) Contemporary Social Problems
This course studies the nature, scope, and effects of social problems and their solutions. The course will concentrate on sociological perspectives, theories, and key concepts when investigating problems, such as inequality, poverty, racism, alienation, family life, sexuality, gender, urbanization, work, aging, crime, war and terrorism, environmental degradation, and mass media. This course is designed to build students' sociological understanding of how sociological approaches attempt to clarify various issues confronting contemporary life, as well as how sociologists view solutions to these problems. *Prerequisite: A grade of C or better in ENGL 098 or an equivalent course. Offered: Occasionally*.

SOCI-1996/2996 (1-3) Topics in Sociology
Specific subjects to be announced in the Schedule of Classes. *Offered: Occasionally*

SOCIAL SCIENCE

SSC-100 (1) College Success Skills
This course is designed for the student first enrolling at Navajo Technical University. Its purpose is to help students make the most of their college experience by acquiring skills and information about college life and culture, instructors' expectations, study and test-taking strategies, and managing their financial and educational future. The student will also discover helpful information that will assist those planning to transfer to a four-year institution, if that is a goal for the student. The Diné Philosophy of Learning is an important component of this class. *Offered: Fall, Spring, Summer, Online.*

SOSC-1996/2996 (1 – 3) Topics in Behavioral and Social Sciences
This course covers a variety of topics in the fields of political science, anthropology, and related social science disciplines. Course content varies each semester so the course may be repeated for credit with differing section numbers. This course is offered based upon interest, need, and demand. *Offered: Occasionally*.

SUSTAINABILITY

SUST-1134C (4) Introduction to Sustainability Studies
This course provides a broad survey of various aspects of sustainability. Students will explore topics such as climate change, renewable energy, water, agriculture, green building, socially responsible business, micro lending, environmental justice, smart growth, and alternative progress indicators. Students will examine both contemporary challenges to sustainable development and examples of successful sustainability initiatives on local, national, and global levels. Lab included. *Lab fee: $125.00.*

VETERINARY TECHNOLOGY

VET-090 (1) Introduction to Veterinary Technology
This course will give veterinary technology students an overview of the veterinary technology program and an overview of a career in veterinary technology. Students must earn 75% or better to advance to the next level of courses in the major. This course is offered in the fall and spring semesters only. *Offered: Spring*.

VET-130 (1) Veterinary Medical Terminology
This course provides students with a foundation in the language of veterinary medicine, focusing on prefixes, suffixes, word roots and their combining forms. *Prerequisites*: *BIOL-2110C, CHEM-1217C, and ENGL-1110 or ENGL-1120 or ENGL-2210, and MATH-1220, and NAVA-1110 or higher. Students must earn 75% or better to advance to the next level of courses in the major. Offered fall semester.*

VET-132 (1) Veterinary Office Procedures
This course will provide students with experience with commonly encountered clinical procedures with an emphasis on the role of the veterinary technician in the management of veterinary patients, records, laws and ethics, and client communication. This course will also introduce students to veterinary management software. *Prerequisites: BIOL-2110C, CHEM-1217C, and ENGL-1110 or ENGL-1120 or ENGL-2210, and MATH-1220, and NAVA-1110 or higher Students must earn 75% or better to advance to the next level of courses in the major. Offered: Fall*

VET-135 (4) Veterinary Anatomy
This course provides background in the anatomy of animals. The course covers the structure and physical location of multiple body systems including but not limited to skeletal, muscular, circulatory, integumentary, respiratory, cardiovascular, urogenital, reproductive, nervous, and endocrine. Applied laboratory experiences are included. *Prerequisites: Prerequisites: BIOL-2110C, CHEM-1217C, and ENGL-1110 or ENGL-1120 or ENGL-2210, and MATH-1220, and NAVA-1110 or higher and VET 090. Students must earn 75% or higher to advance to the next level of courses in the major. Offered: Fall*

VET-136 (2) Veterinary Nursing I
This course will cover small animal patient assessment techniques (signalment, history, and patient data), restraint, and husbandry. *Prerequisites: BIOL-2110C, CHEM-1217C, and ENGL-1110 or ENGL-1120 or ENGL-2210, and MATH-1220, and NAVA-1110 or higher. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Fall.*

VET-138 (4) Veterinary Physiology
This course provides background in the physiology of animals. The course covers the function and importance of multiple body systems and how they work within the body to maintain homeostasis. The body systems covered include but are not limited to skeletal, muscular, circulatory,

integumentary, respiratory, cardiovascular, urogenital, reproductive, nervous, and endocrine. Applied laboratory experiences are included. *Prerequisites: BIOL-2110C, CHEM-1217C, and ENGL-1110 or ENGL-1120 or ENGL-2210, and MATH-1220, and NAVA-1110 or higher and VET 090. Students must earn 75% or higher to advance to the next level of courses in the major. Offered: Fall.*

VET-140 (2) Veterinary Surgical Nursing
This course provides familiarity with surgical instruments, surgical support equipment, and surgery room preparation. *Prerequisites: VET-130, VET-131, VET-132, VET-134, and VET-136. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Spring.*

VET-142 (2) Veterinary Pharmacology for Technicians
This course provides background in pharmacology principles, including topics such as: mechanism of drug action, types of drugs, pharmacy management, client communication, regulations, and calculations related to drug dosages. *Prerequisites: VET-130, VET-131, VET-132, VET-134, and VET-136. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Spring.*

VET-144(3) Veterinary Clinical Laboratory Proc. I
This course will cover the biology, clinical appearance, laboratory handling, and laboratory diagnosis of parasitic disease and their zoonotic potential. *Prerequisites: VET-130, VET-131, VET-132, VET-134, and VET-136. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Spring.*

VET-146 (2) Veterinary Nursing II
This course will cover small animal patient diagnostic specimen collection and therapeutic techniques. *Prerequisites: VET-130, VET-131, VET-132, VET-134, and VET-136. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Spring.*

VET-148 (2) Animal Nutrition
This course provides a foundation in the principles of animal nutrition emphasizing the relationship between nutrition and health. The course focuses on the basic elements of nutrition including the major categories of nutrients, and their sources, digestion, and metabolism. Both large and small animal feeds and feeding will be covered. *Prerequisites: VET-130, VET-131, VET-132, VET-134, and VET-136. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Spring.*

VET-150 (2) Veterinary Dentistry
This course will cover dental anatomy, physiology, and pathophysiology, routine prophylaxis including equipment, environment, instruments, supplies, radiology, and client education. *Prerequisites: VET-130, VET-131, VET-132, VET-134, and VET-136. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Spring.*

VET-230 (3) Veterinary Medicine and Surgery
This course will cover common medical and surgical conditions of small and large animals with the emphasis on the role of the veterinary technician in the management of these cases. *Prerequisites: VET-140, VET-142, VET-144, VET-146, and VET-148. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Fall.*

VET-232 (3) Veterinary Anesthesiology
This course provides an overview of the fundamentals of pre-anesthetic preparation, induction, anesthetic maintenance, post-operative care, and anesthesia monitoring for patients. The students will gain knowledge on anesthetic agents including their actions, side effects, and methods of delivery. Students will learn about anesthetic equipment, pain management, and basic life support and emergency response procedures. *Prerequisites: VET-140, VET-142, VET-144, VET-146, and VET-148. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Fall.*

VET-234 (4) Veterinary Clinical Lab. Procedures II
This course will cover the biochemical parameters that characterize disease. Topics include sample collection, analysis of urine, blood, cytological samples, basic principles of anatomic pathology, and necropsy procedure. *Prerequisites: VET-140, VET-142, VET-144, VET-146, and VET-148. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Fall.*

VET-236 (2) Veterinary Diagnostic Imaging I
This course will introduce students to the basic principles of radiology including the production of x-rays, radiation safety, diagnostic applications, equipment, darkroom procedures, the radiographic image, animal positioning and technique. An instruction to computed tomography, ultrasound, and endoscopy will be covered. *Prerequisites: VET-140, VET-142, VET-144, VET-146, and VET-148. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Fall.*

VET-240 (2) Veterinary Diagnostic Imaging II
This course will provide hands-on experience utilizing radiographic equipment, positioning of animals for radiographs, developing a technique chart and utilizing dark room procedures. *Prerequisites: VET-230, VET-232, VET-234, and VET-236. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Spring.*

VET-242 (2) Avian, Exotic, Lab Animal Husbandry and Handling
This course provides students with knowledge and skills in clinical procedures and focuses on exotic and laboratory animal husbandry, handling, restraint, and specific problems encountered with exotic and lab animals. *Prerequisites: VET-230, VET-232, VET-234, and VET-236. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Spring.*

VET-244 (3) Veterinary Clinical Laboratory Procedures III
This course will cover the biology, clinical appearance and laboratory diagnosis of bacterial and viral causes of veterinary disease, including zoonotic importance. Laboratory safety and maintenance of laboratory equipment will also be covered. *Prerequisites*: *VET-230, VET-232, VET-234, and VET-236. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Spring.*

VET-246 (2) Veterinary Nursing III
This course will cover large animal patient assessment techniques (signalment, history, and patient data), restraint, husbandry, patient diagnostic specimen collection, therapeutic techniques, and dental techniques. *Prerequisites*: *VET-230, VET-232, VET-234, and VET-236. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Spring.*

VET-248 (2) Veterinary Critical Care
This course will provide instruction assessment, monitoring, and intervention with emergencies. The student will use knowledge of overall anatomy, physiology, disease, or injury to assist in veterinarian diagnoses and treatment. *Prerequisites*: *VET-230, VET-232, VET-234, and VET-236. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Spring.*

VET-250 (1) Veterinary Technician National Examination Review
This course will review the following topics in preparation for clinical practice and the Veterinary Technology National Exam (VTNE): Pharmacy & Pharmacology, Surgical Nursing, Dentistry, Laboratory Procedures, Animal Care and Nursing, Diagnostic Imaging, Anesthesia, Emergency Medicine/Critical Care, and Pain Management/Analgesia. Students will also learn test taking skills. *Prerequisites*: *VET-230, VET-232, VET-234, and VET-236. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Spring.*

VET-260 (3) Veterinary Technology Practicum I
This 12-week course provides students with the opportunity to supplement coursework with practical work experience in a veterinary setting under the supervision of a veterinarian and experienced personnel. *Prerequisites*: *VET-240, VET-242, VET-244, VET-246, VET-248, and VET-250. Students must earn 75% or better to advance to the next level of courses in the major. Offered: Summer.*

WELDING

WLD-101 (3) Welding Fundamentals I
Emphasizes safety, setup and shut down of oxyacetylene equipment. Provides training in thermal cutting procedures on straight line, beveling, piercing, inside and outside radius on plate, pipe, and structural shapes. Also covers the fundamentals of oxyacetylene welding, filler wire identification, and identification of weld discontinuities and defects and corrective practices. Lab exercises include flat, horizontal and vertical positions on carbon steel. Offered: Fall. *Course Fee: $35.*

WLD-105 (3) Pipe Welding I
Learn basic pipe welding. Learn how to cut, bevel, fit-up and weld pipe joints. *Course Fee: $35. Offered: Fall, Spring.*

WLD-115 (3) Structural Welding I
Emphasis will be placed on AWS entry and advanced level welder skills with SMAW, including all position welding wild mild and stainless-steel electrodes. Plasma arc and air carbon arc cutting, metallurgy, heat treatment, and weld defects. *Offered: Fall, Spring. Course Fee: $35.*

WLD-125 (3) Structural Welding II
A continuation of WLD-115. Welding vertical, overhead, lap-joints, T-joints, and bevel joints. **Pre-requisite WLD-115. Course Fee: $35. Offered: Fall, Spring.*

WLD-130 (3) Welding Fundamentals II
Emphasizes application of safety and gas tungsten arc welding (GTAW) on carbon steel. Fabrication and repairs are stressed. Customer billing techniques are introduced. Introduces Gas Tungsten Arc Welding (GTAW) safety, machine set up and shutdown procedures. Topics include personal protective equipment (PPE) GTAW uses, advantages and disadvantages, base metal prep, constant current (CC) power source, DCEP/DCEN polarity and AC current, tungsten types, prep and identification, types of filler metal, shielding gas uses and weld discontinuities and defects identification and corrective practices. Lab exercises include flat and horizontal positions on carbon, aluminum and stainless steel. *Offered: Fall, Spring.*
**Prerequisite WLD-101. Course Fee: $35.*

WLD-150 (3) Pipe Welding II
This is continuation of WLD-105, with groove welded joints in a horizontal fixed and 45-degree fixed positions (5-F, 5-G, 6-F, and 6-G). **Pre-requisite WLD-105. Course Fee $35. Offered: Fall, Spring.*

WLD-156 (3) Welding Qualification
The course will cover simulated qualification procedures for shielded metal arc welding (SMAW), gas tungsten arc welding (GTAW), and gas metal arc welding (GMAW), in all positions. This will prepare student for the AWS welding qualification certificate. *Prerequisite WLD-101, WLD-115, WLD-105. Offered: Fall, Spring.*

ZUNI

ZUNI-1110 (3) Introduction to Zuni
This course is designed help individuals develop basic conversational skills in Shiwi listening and speaking. *Offered: Fall, Spring.*

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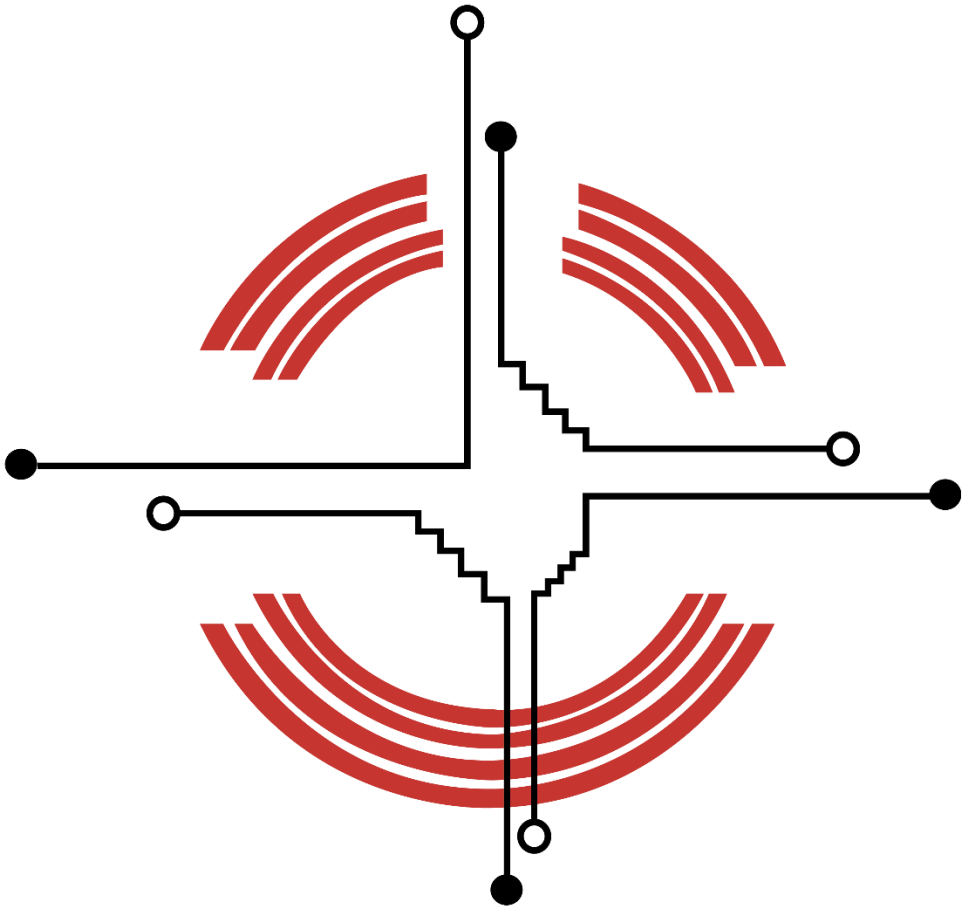
Instructional personnel have Professional Development Plans which, do not require State of New Mexico Post-Secondary Certification. (Ref. State of New Mexico Board of Education Regulation No. 88-5)

NAVAJO TECHNICAL UNIVERSITY



2022-2023 CATALOG

ADDENDUM

BACHELOR OF SCIENCE

Chemistry

A Bachelor of Science degree in Chemistry requires 121 credit hours and the Chemistry is designed for a four-year program of study. The minimum credit load for a full-time student is 12 credit hours per semester. A student needs to complete general courses and general education electives within the first two years of study with a grade point average of 2.0 or better.

Chemistry Requirements: 122 Credits

ENVIRONMENTAL ENGINEERING PROGRAM		
Semester FIRST		**CREDITS**
ENGL 1110	Composition I	3
MATH 1220	College Algebra	4
BCIS 1115	Introduction to Computers	3
CHEM1120C	Introduction to Chemistry	4
SSC-100	College Success Skills	1
Semester TWO		
ENGL 1120	Composition II	3
MATH 1230	Trigonometry	4
PHYS 1115C	Survey of Physics	4
CHEM 1217C	Principles of Chemistry I	4
Semester THREE		
ENGL 2310	Introduction to Creative Writing	3
CHEM 1225C	General Chemistry II for STEM Majors	4
PHYS 1230C	Algebra Based Physics I	4
COMM 1130C	Public Speaking	3
Semester FOUR		
BIOL 2110C	Principles of Biology: Cellular & Molecular Biology	4
CHEM 286	Inorganic Chemistry with Lab	4
PHYS 1230C	Algebra Based Physics II	4
NAVA 2210	Navajo Culture	3
Semester FIVE		
CHEM-2130C	Organic Chemistry	4
BIOL 2130C	Introduction to Biochemistry	4
CHEM 3250C	Quantitative Analysis with Lab	4
CHEM 2325C	Environmental Chemistry	4
Semester SIX		
CHEM 2135C	Organic Chemistry II	4
CHEM 3500C	Food and Chemistry of Cooking with Lab	4
CHEM 3545	Mathematical & Computational Methods in Chemistry	4
CHEM 3620C	Physical Chemistry I with Lab	4
Semester SEVEN		
CHEM 4750	Nanoscience and it Application in Chemistry	3
CHEM 4225C	Industrial and Polymer Chemistry with Lab	4
CHEM 4330C	Analytical Chemistry with Lab	4
CHEMXXX	Chemistry Elective XXX	3
Semester EIGHT		
CHEM 4530	Inorganic Chemistry II with Lab	4
CHEM 4640C	Pharmaceutical Chemistry with Lab	4
CHEMXXX	Chemistry Elective XXX	3
CHEM 4420C	Physical Chemistry II with Lab	4
CHEM 4445	Seminar in Chemistry	1
Summer Semester		
ENVE-312	Summer Internship	3
TOTAL CREDIT HOURS REQUIRED		**122**

ELECTIVES:

CHEM 4820A&B	**Chemistry Research Projects**
CHEM 4935C	**Advanced Electrochemistry Studies & Energy S. R.**
CHEM 4500C	**Forensic Chemistry**
CHEM 4110C	**Instrumental Analysis**

BACHELOR SCIENCE

Computer Science

The program is designed to prepare students for careers in the 21st century with the Navajo Nation, state, and federal agencies as well as private companies. Completion of the Computer Science program will enable employment opportunities in public and private sectors in diverse industries related to computing, such as software, automotive, healthcare, and aerospace. Graduates of this program can be employed in positions, such as software system developers, software application developers, software testers, or big data analysts. The program is also designed to provide a foundation to graduates who wish to pursue an advanced degree in Computer Science or related field.

BS Computer Science Requirements:
122-123 credits

Semester ONE		**Credits**
BCIS 1115	Introduction to Computers	3
CS 101	Programming I	3
CS 101L	Programming I Lab	1
CS 120	Computational Thinking	3
MATH 1510	Calculus I	4
SSC 100	College Success	1
Semester TWO		
MATH 1520	Calculus II	4
ENGL 1110	Composition I	3
CS 150	Programming II	3
NAVA XXX	Dine Studies	3
Semester THREE		
CS 201	Data Structures	3
CS 175	Introduction to Computer Organization	3
ENGL 1120 or ENGL 2120	Composition II or Intermediate Composition	3
CS 225	Comparative Programing Languages	3
Semester FOUR		
ENGR 169	Basic Statistics and Probability	3
HUMNXXX	Humanities Elective	3
CS 251	Data Structures II	3
PHYS 1230 or BIOL 1110 or CHEM 1120	Algebra Based Physics I or General Biology or Introduction to Chemistry	4
Semester FIVE		
ENGR 236	Inferential Engineering Statistics	3
CS 375	Principles of Computer Architecture	3
CS 300	Computer Networks	3
CFAXXX	Creative Fine Arts Elective	3
PHYS 1240 or BIOL 2110 or CHEM 1217	Algebra Based Physics II or Principles of Biology: Cellular and Molecular Biology or Principles of Chemistry I	4
Semester SIX		
CS 380	Principles of Operating Systems	3
MTH 410	Linear Algebra	3
MTH 205	Discrete Mathematics	3
CS 385 or CS 390	Applied Cryptography or Software Engineering	3
SOCXXX	Social & Behavioral Sciences Elective	3
Summer		
CS 399	CS Internship	3
Semester SEVEN		
CS 400	Parallel and Distributed Computing	3
CS 470	Automata Theory	4
XXX	Social & Behavioral Sciences Elective	3
CS 420	Capstone I	3
CS 450	Data Science I	3
Semester EIGHT		
CS 475	Ethics in Data Science	3
CS 480	Algorithms and Complexity	4
CS 421	Capstone II	3
CS 451	Data Science II or Numerical Analysis with Computers	3
CS 495	CS 495 Topics in Computer Science	3
TOTAL REQUIRED CREDIT HOURS		**122-123**

Course Descriptions:

CHEMISTRY

CHEM 3250C (4) Quantitative Analysis with Lab
Analytical chemistry is the science of obtaining, processing, and communicating information about the composition and structure of matter. In other words, it is determining what matter is and how much of it exists. It emphasizes the fundamentals of chemical measurement in chemistry, biology, engineering, and medical sciences. Analytical chemistry contributes to the quality of our day to day life, starting from safe drinking water and clean air standards, to life-saving blood and drug tests. *Prerequisite: A grade C or higher in CHEM-1217C, CHEM-1225C, BIOL-1110. CHEM-3250C and CHEM-4420C are a co-requisite.*

CHEM 3500C (4) Food and Chemistry with Lab
Food and chemistry of cooking will teach the basics of essential food preparation that is connected with the chemistry principles attached. This course is purely designed based on the chemical concepts that the students learned from the other chemistry courses. The lab activities were connected with the chemistry experiments where it will be paired with the food preparations. *Prerequisite: A grade C or higher in CHEM-1217C & CHEM-1225C, CHEM 286, CHEM-2130C, or permission of instructor.*

CHEM 3545 (4) Mathematical & Computational Methods in Chemistry
Mathematical & Computational Methods in Chemistry is designed to promote the integration and application of computational methods for students with little to no background in computational chemistry. This course provides a broad overview of modern computational methods in pure and applied Chemistry and other STEM fields. Students will have the opportunity to explore different state-of-art computational packages including visualization software. The program is interdisciplinary in its focus, and students are required to complete course work in chemistry, mathematics, computer science, biology, and engineering. A computational biology track is available for students interested in premedical and biomedical applications. Topics covered will include Statistical Mechanics, Monte Carlo and Molecular Dynamics simulations, concepts of atomic and molecular structure, spectroscopy from computational perspective, chemical bonding, Quantum Chemistry, Electronic Structure Theory, and Computational Methods in Chemistry & Biology. Lab work will involve introductory scientific programming and application of commercially available scientific/molecular modeling software in biology, materials science, and engineering. *Prerequisite: A grade C or higher in Physical Chemistry, PHYS-1310C, CHEM-3545, CHEM-1217C & CHEM-1225C, MATH-1220 or permission of instructor.*

CHEM 3620C (4) Physical Chemistry I with Lab
Physical chemistry is the study of how matter behaves on a molecular and atomic level and how chemical reactions take place. In physical chemistry, mastery of a concept is exhibited by the ability to solve problems. A degree in physical chemistry prepares students for a career in materials science, engineering, industry, and government labs. Physical chemists often work closely with materials scientists to research and develop potential uses for new functional materials. Many people trained as physical chemists ultimately work as analytical chemists, where they work to understand the fundamental process involved in analytical techniques. *Prerequisite: A grade C- or better in CHEM-1217C, CHEM-1225C, CHEM-3545, PHYS-1310C, MATH-1220, CHEME-222, or permission of instructor.*

CHEM 4110 (4) Instrumental Analysis
The course will cover different instrumental methods of measurements, as applied to modern chemical analysis. Using a combination of problem-based learning approaches and lectures, students will develop critical thinking and logical analysis skills in the areas of instrument selection, data interpretation and analysis. The purpose of this course is to teach principles of chemical instrumentation and application in the areas of optical spectroscopy, mass spectrometry, electroanalytical techniques, and separations. Students will understand the basics of experimental design and the use of statistical analysis to evaluate measurement data. You will gain an understanding of the chemical principles behind the instrumental techniques, a working knowledge of instrument operation, and applications of instrumental analysis. Given the rapid growth in the type and complexity of chemical instrumentation, it would be difficult to cover every technique available. The course will consist of lecture/discussion sessions along with problem sets and exams. My goal is to provide students an interesting learning experience that provide a strong foundation to Instrumental Analysis. *Prerequisite: A grade C or higher in CHEM-1120C, CHEM-1225C, BIOL-1110. CHEM-3620C and CHEM-4420C are a co-requisite.*

CHEM 4225C Industrial and Polymer Chemistry with Lab
Through this course the properties, synthesis, and reactions of major industrial chemicals; synthetic plastics, soaps and detergents; petrochemicals; paints and pigments; dyes; pharmaceutical and nuclear industries; mechanism of polymerization;

copolymerization; physical and chemical properties of polymers; polymer characterization; advances in polymer techniques will be studied in detail. *Prerequisite: A grade C or higher in CHEM-1217C & CHEM-1225C, CHEM 286, CHEM-3620C, CHEM-2135C, or permission of instructor.*

CHEM 4330C (4) Analytical Chemistry with Lab
Analytical chemistry is the science of obtaining, processing, and communicating information about the composition and structure of matter. In other words, it is determining what matter is and how much of it exists. As a preparation for premedical school, CHEM-3250C is a combined lecture/laboratory course that is an introduction to analytical chemistry. The lectures will begin with a discussion of experimental error, including the use of statistical analysis. Other topics include fundamentals of chemical measurement in chemistry, tools of analytical chemistry, chemical equilibria, acid-base equilibria, oxidation-reduction equilibria, and quantitative laboratory technique. Electrochemistry will be covered in connection with the discussion of oxidation-reduction equilibria and applications of oxidation/reduction titrations. The lecture will be followed by discussion, problem-solving, quizzes, and lab. The laboratory component of the course will help students familiarize with different instrumental methods, provide instruction in the use of instruments that they will encounter in the laboratory as undergraduates, and later in the work environment or advanced study programs. Lecture and Lab, 4 credits. *Prerequisite: A grade C or higher in CHEM-1120C, CHEM-1225C, BIOL-1110. CHEM-3620C and CHEM-4420C are a co-requisite.*

ENVE 4420C (4) Physical Chemistry II with Lab
Physical chemistry is the study of how matter behaves on a molecular and atomic level and how chemical reactions take place. In physical chemistry, mastery of a concept is exhibited by the ability to solve problems. A degree in physical chemistry prepares students for a career in materials science, engineering, industry, and government labs. Physical chemists often work closely with materials scientists to research and develop potential uses for new functional materials. Many people trained as physical chemists ultimately work as analytical chemists, where they work to understand the fundamental process involved in analytical techniques. *Prerequisite: C- or better in CHEM-1217C, CHEM-1225C, CHEM-3620C, PHYS-1310C, CHEME-222 or permission of instructor.*

CHEM 4445 (1) Seminar in Chemistry
The purpose of the Seminar in Chemistry course is to engage students in research advancements in chemistry and STEM fields to help develop oral and written presentation skills that are essential in scientific research, and learn the skills in scientific literature review. Seminar in Chemistry, which is a 1 credit course will consist of a series of presentations given by students and also by researchers from other universities, and industrial sectors. This will help students gain broader knowledge of different subfields of chemistry. This will be assessed using Q&A sessions and discussions where the students should try to display their understanding of research, methodologies used, and results for each seminar.

CHEM 4500C (4) Introduction to Forensic Chemistry
An introduction to forensic chemistry is essential for the undergraduate chemistry students. This course will cover all of the core material necessary to provide an understanding of the forensic science, and the chemistry of drug molecules. Also, the chromatographic methods of analysis, and medicinal chemistry will be studied in detail. *Prerequisite: A grade C or higher in CHEM-1217C & CHEM-1225C, CHEM 286, CHEM-3620C, CHEM-2135C, or permission of instructor.*

CHEM 4530C (4) Inorganic Chemistry II with Lab
Advanced Inorganic Chemistry course will expose you to the basics of inorganic chemistry, giving you a theoretical framework to understand the structures, bonding, and reactions of inorganic compounds. We will apply the concepts of molecular symmetry and group theory to electronic and spectroscopic properties of inorganic compounds. My goal will be to help students understand the concepts of molecular symmetry, group theory, crystal field theory, generate qualitative bonding descriptions for inorganic chemical compounds, explore connections between chemical composition, geometric structure, bonding, and reactivity. Important sub-disciplines of inorganic chemistry will be introduced, such as coordination chemistry, solid-state chemistry, organometallic chemistry, and bioinorganic chemistry. *Prerequisite: A grade C or higher in CHEM-1217C & CHEM-1225C, CHEM 286, CHEM-3620C, CHEM-4420C, CHEM-2130C, or permission of instructor.*

CHEM 4640C (4) Pharmaceutical Chemistry with Lab
An introduction to pharmaceutical chemistry is essential for the undergraduate chemistry students. This course will cover all of the core material necessary to provide an understanding of the basic chemistry of drug molecules. Also, the chromatographic methods of analysis, and medicinal chemistry will be studied in detail. *Prerequisite: A grade C or higher in CHEM-1217C & CHEM-1225C,*

CHEM 286, CHEM-3620C, CHEM-2135C, or permission of instructor.

CHEM 4820A (3) Chemistry Research Project I
The purpose of the chemistry project I (capstone) is to train chemistry students to learn, develop and fix the essential problems in the scientific research. Chemistry research project is classified as Project I and II and covered through two semester time periods, which will give students enough time to select the research title, complete the work, and also possible research publications.

CHEM 4820A (3) Chemistry Research Project I
The purpose of the chemistry project II (capstone) is to train chemistry students to learn, develop and fix the essential problems in the scientific research. Chemistry research project is classified as Project I and II and covered through two semester time periods, which will give students enough time to select the research title, complete the work, and also possible research publications.

CHEM 4935C (4) Advanced Electrochemistry Studies and Energy Storage Research
This course introduces principles and models of electrochemical sensors, biosensors, energy conversion and storage. Students study equivalent circuits, thermodynamics, reaction kinetics, transport phenomena, electrostatics, porous media, electrocatalysts, and phase transformations. In addition, this course includes applications to batteries, fuel cells, supercapacitors, and electro kinetics. Interfacing biology with electronics for sensing and therapeutics, and understanding biological processes. *Prerequisite: A grade C or higher in CHEM-1217C & CHEM-1225C, CHEM 286, CHEM-3620C, CHEM-2135C, or permission of instructor.*

CHEM 4950C (4) Advanced Topics in Organic Chemistry
Topics presented in this course are reaction mechanisms, modern synthetic methodology, and the application of molecular modelling computational methods to organic chemistry. The laboratory work includes syntheses illustrative of special techniques, experiments concerned with the determination of reaction mechanisms, use of molecular modelling and molecular orbital computational programs, and research simulation. *Prerequisite: A grade C or higher in CHEM-1217C & CHEM-1225C, CHEM 286, CHEM-3620C, CHEM-2135C, or permission of instructor.*

COMPUTER SCIENCE

CS 300 (3) Computer Networks
This course is an introduction to the working of computer communication networks. Topics such as local and wide area networks are covered; as well as communication protocols and bridging and routing. *Offered: Fall. Prerequisite: CS 251*

CS 375 (3) Principles of Computer Architecture
Computer Architecture deals with the interaction between software and hardware of a computer system. This course will cover architectural characteristics, such as performance, instruction sets, assemblers, data paths, and pipelining. *Offered: Fall. Prerequisite: CS 175*

CS 380 (3) Principles of Operating Systems
An Operating System is software that acts as an interface between user/processes and computer hardware. This course will cover some important functions of operating systems, such as file management, memory management, protection and security, as well as process scheduling. *Offered: Spring. Prerequisite: CS 375*

CS 385 (3) Applied Cryptography
This course will introduce students to encryption and network security. Topics covered include symmetric key encryption, public key encryption, digital signatures, transport-level security, wireless security, and electronic mail security. *Offered: Spring.*

CS 390 (3) Software Engineering
This course integrates many ideas and concepts from previous classes to apply them to developing software systems. Students will work in groups and work all together to develop software. This course will be offered only if there are a sufficient number of students registered for the class. *Offered: Spring.*

CS 399 (4) CS Internship
Students will work for a minimum of 8 weeks, 40 hours per week, as a student intern in a position related to computer science. A faculty member in computer science must approve the internship. The internship may be on-campus or off-campus, yet off-campus internships are preferred. A REU position obtained by students constitutes an internship. Upon completion of the internship, students must give a presentation of their internship, submit a written document about their internship experience, and provide a letter of the intern's supervisor. *Offered: Summer. Prerequisite: Junior Standing*

CS 400 (3) Parallel and Distributed Computing
This course provides an introduction to parallel and distributed computing. Students will learn about asynchronous computing, threading, and computing on an HPC cluster. If time admits, computing in the cloud will also be covered. This course includes programming assignments. *Offered: Fall. Prerequisite: CS 300*

CS 420 (3) Capstone I
Students in this course will select a two-semester project according to their interest. The project must be selected in the first two weeks of class and must be related to computer science. A computer science faculty member must approve projects. In case, students cannot select their own project, one will be assigned to them. Projects may be in groups or individual. Students will report weekly on progress of the project. A written document must be submitted at the end of the course. *Offered: Fall*. *Prerequisite: Senior Standing*

CS 421 (3) Capstone II
This course is a continuation of CS 420 (Capstone I). Students work on the same project as in CS 420. Projects must be carried out in the same group as in CS 420 or individually. Students will report weekly on progress of the project. A written document must be submitted at the end of the course. *Offered: Spring*. *Prerequisite: CS 420*

CS 450 (3) Data Science I
This is an introductory course in Data Science. It deals essentially with making meaningful predictions about collected data. Topics such as data collection (scraping), regression, k-nearest neighbors, visualization, classification, over- and under-fitting will be covered in this course. As part of this course, some Python modules, e.g., Numpy and sklearn, used extensively in data science will be discussed. *Offered*: *Spring*. *Prerequisite: MTH 410, ENGR 236, CS 251*

CS 451 (3) Data Science II
This course is a continuation of CS 450 (Data Science I). Topics covered are dealing with missing data; PCA (Principal Component Analysis); decision trees; bagging and random forests. The last part of this course will be dedicated to neural networks. *Offered: Spring. Prerequisite: CS 450*

CS 470 (4) Automata Theory
This course covers some fundamental concepts in computing and mathematical models. Finite state machines, pushdown automata, and Turing Machines are covered. These are theoretical classes of machines listed in increasing computational power. The course will also cover regular expressions, context-free languages, and argue that Turing machines are the equivalent of modern computers. (The latter is known as the Turing Thesis or as the Church-Turing thesis.) *Offered*: *Fall*. *Prerequisite: MTH 205, CS 251*

CS 475 (3) Ethics in Data Science
The impact of data science increases continuously in our society. This course addresses ethical questions about applications of data science. Topics such as bias, fairness, discrimination, and algorithmic challenges will be discussed. Material for this course will be taken from published articles, controversies related to data science, and current events. Offered: Spring. Prerequisite: CS 450

CS 480 (4) Algorithms and Complexity
This class covers algorithms and algorithmic techniques not covered in the data structures courses CS 202 and CS 252. In addition, space and time efficiency of algorithms will be discussed. Students will learn to distinguish polynomial time algorithms from exponential time algorithms and why this distinction has profound applications in computer science. *Offered: Spring*. *Prerequisite: MTH 410. ENGR 236, CS 251*

CS 490 (3) Topics in Computer Science
Topics vary by year. They are generally different from other topics in the computer science curriculum, but it is possible to dive deeper into material that has been offered in another course. *Offered: Spring*. *Prerequisite: Senior Standing*