



**Navajo Technical University**

**<http://navajotech.edu>**

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## **Introduction to Engineering**

**3 Credits**

**ENGR 103**

**Spring 2022**

Instructor: Harry S. Whiting II, Email: [hwhiting@navajotech.edu](mailto:hwhiting@navajotech.edu)  
PE

Office Information: **Tech 323** Office Phone: (505) 387-7421  
Home or Cell: N/A

Class Location: Tech Building 325

Meeting Times: Tuesday and Thursday 9:30 AM – 10:50 AM

### **Required Materials:**

**Text:** Exploring Engineering, An Introduction to Engineering and Design by Kosky, Balmer & Wise 5th Edition ISBN: 978-0-12-815073-3 Academic Press

**Tools:** Jump drive & access to Word, Excel and PowerPoint.

**Lab Fee:** None

### **Course Description:**

In this course Students develop 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: MATH1220.*

**Course Objectives:**

- 1) Students will be introduced to the engineering design process.
- 2) Students will be introduced to ethical considerations in engineering and technology.
- 3) Students will be able to identify some engineering disciplines and the main problems that they solve.
- 4) Students will be able to solve simple engineering problems.
- 5) Students will be introduced to the use of the Design Notebook, Engineering Journal and Project Notebook.

COURSE OUTCOMES	COURSE MEASUREMENTS
5a Recognizes participant roles in a team setting and fulfills appropriate roles to assure team success	Assessment will be by problems presented in homework, quizzes, the project & tests.
5b Integrates input from all team members and makes decisions in relation to objective criteria	
5c Improves communication among teammates and asks for feedback and uses suggestions	
4a Able to evaluate ethical and professional responsibilities of a problem in the discipline	

**Grading Plan:**

Homework	20%
Attendance	5%
Participation	5%
Weekly quizzes	20%
Midterm	20%
Final	20%
Project	10%
Total	100%
Portfolio (Extra Credit)	Up to 5 Points on Final Grade

**(A) 90-100; (B) 80-89; (C) 70-79; (D) 60-69; (F) 0-59**

## **Grading Notes:**

Homework will be assigned weekly and graded on a scale of 1-10. The top ten scoring homework assignments as turned in by the student will be used in calculating final grade. Homework is due one week after assignment for full credit, may still be turned in the next week for 75% credit and no credit thereafter. Homework will always be computer print outs except if a handout is given as an assignment. Weekly quizzes will be given at the beginning of the second class period of the week and graded on a scale of 1-10. The top ten quiz grades will be used in calculating final grades. Students who miss quizzes or tests will not be allowed a makeup (unless a legitimate written excuse is provided) and Midterm and Final grades will be curved according to raising the highest objective grade in class to a '100' with all other student grades raised by the same number of points **only if there are six or more students in the class**. Attendance will be graded based on the student's arrival on time. Participation is predicated on a student's questions or answers given during the class period. **Students with three unexcused absences may be dropped**. Projects must be completed to pass the class; those not finishing and presenting class projects will be given an incomplete.

## **Course Policies:**

Please turn off Cell Phones during lectures. Please, be courteous to others around you and treat each other with professionalism. Feel free to work together to help others with their questions on homework. Quizzes and tests will be done without help or input from others.

Students are expected to spend two hours studying course materials for every hour in the class.

## **Attendance Policy:**

You are expected to attend every class session and participate. Your primary job or employment is as a student. After you are absent, it is your responsibility to complete missed assignments. Attendance will account for 5% of the final grade. **Students are subject to being dropped after three (3) unexcused absences.**

## **Academic Integrity:**

Integrity (honesty) is expected of every student in all academic work and every scientist and engineer working professionally. The guiding principle of academic integrity is that a student's submitted work must be the student's own. Students who engage in academic dishonesty diminish their education and bring discredit to the college

community. Avoid situations likely to compromise academic integrity such as: cheating, facilitating academic dishonesty, and plagiarism or modifying academic work to obtain additional credit in the same class unless approved in advance by the instructor. Failure to observe rules of academic integrity established by the instructor can lead to expulsion from class.

### **Diné Philosophy of Learning:**

From the culture of the proud people of this land, derived from the wisdom of generations, the Dine” philosophy of learning is expressed through these words: nitsahakees-thinking, your increased skills, nahata-planning to meet these goals, iina-implement the work required to learn, practice your new skills, sihasin-evaluate your skills, use them. Each exercise includes these processes of THINKING, PLANNING, IMPLEMENTING, and REFLECTION.

### **Students with Disabilities:**

The Navajo Technical University and the Industrial Engineering Program are committed to serving all enrolled students in a non-discriminatory and accommodating manner. Any student who feels he/she may need an accommodation based on the impact of disability, or needs special accommodations should inform the instructor privately of such so that accommodations arrangement can be made. Students who need an accommodation should also contact the Vocational Rehabilitation Counselor, Virginia Edgewater (505) 387-7396.