



ENGR 230 Advanced Engineering Graphics **3 Credits Spring 2022**

Instructor: Dr. Osama Fakron

Email: fakron@navajotech.edu

Office Location: Nursing Building 214,

Office Phone: N/A

Class Location: Tech Building 322

Office hours: MWF 4:00- 5:00 PM & By appointment.

COURSE OBJECTIVES

- Introduce advanced techniques for creating, manipulating, and editing solid models.
- Refine solid modeling, assembly modeling, and engineering drawing skills using commercial software.
- Introduce computer animation as a technical presentation method.

DESIRED COURSE OUTCOMES

Upon completion of the course, students shall be able to:

- Create and export complex computer generated solid models using a variety of software tools.
- Create and export computer-generated animations showing the assembly and operation of a moderately complex mechanical device.

TOPICS COVERED

- Working with a 2-dimensional parametric sketching tool
- Dimensional and geometric, hard and soft constraints
- Extruded and rotated features
- Holes, rounds, chamfers, shell, and other features
- Supplementary reference planes
- Sweeps and blends
- Duplicating features
- Assembly modeling
- Extracting drawing from models
- Creating and editing geometry with a surface modeler
- Basic animation techniques, storyboarding, keyframing
- Creating the appearance of materials, cosmetic features
- Parent child relationships between objects
- Advanced keyframing, motion controllers

Methods of Evaluation

Category	Percentage
Assignments	25%
Class work and participation	25%
Final Exam Test	20%
Final Project	30%
Total	100%

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 will 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 or 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; modifying academic work to obtain additional credit in the same or another class unless approved in advance by the instructor, failure to observe rules of academic integrity established by the instructor may result in student being dropped 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 College 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.