Navajo Technical University http://navajotech.edu

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ME 345 Statics
3 Credits Spring 2022

Instructor: Dr.Osama Fakron
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Office Location: Nursing Building 214, **Office Phone:** N/A
Class Location: Tech Building 322

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

Textbook: Beer, F. and E. Johnston. Vector Mechanics for Engineers: Statics, 9th Edition.

McGraw-Hill, Boston, 2009. ISBN-10: 007727556X; ISBN-13: 978-0077275563.

Course Description

Units: 3 Prerequisite: MATH 1230

Analysis of forces acting on particles and rigid bodies in static equilibrium; equivalent systems of forces; friction; centroids and moments of inertia; introduction to energy methods.

The subject of Statics deals with forces acting on rigid bodies at rest covering coplanar and noncoplanar forces, concurrent and non-concurrent forces, friction forces, centroid, and moments of inertia. Much time will be spent finding resultant forces for a variety of force systems, as well as analyzing forces acting on bodies to find the reacting forces supporting those bodies. Students will develop critical thinking skills necessary to formulate appropriate approaches to problem solutions.

Course Objectives

Throughout the semester students will develop an understanding of and demonstrate their proficiency in the following concepts and principles pertaining to vector mechanics, statics.

1. Components of a force and the resultant force for a system of forces

2. Moment caused by a force acting on a rigid body

3. Principle of transmissibility and the line of action

4. Moment due to several concurrent forces

5. Force and moment reactions at the supports and connections of a rigid body

6. Force in members of a truss using the Method of Joints and the Method of Sections

7. Centroid and center of gravity for an area and a rigid body

8. Moment of inertia and radius of gyration of a composite area

Instructor Objectives

1. Provide the best learning environment and concepts and technical education needed to achieve the above indicated student objectives and for a career in engineering

2. Emphasize the understanding of societal implications of engineering decisions

3. Encourage class participation, questions and class related discussions

4. Incite critical analysis in the solution of a problem and application to engineering

5. Keep students informed of their progress during the semester

6. Provide support inside and outside the classroom.

7. Demonstrate fairness in grading

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.