ENGR 2301 – Engineering Mechanics I: Statics

Course Syllabus: Fall 2017

"Northeast Texas Community College exists to provide personal, dynamic learning experiences empowering students to succeed."

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Office Hours	Monday	Tuesday	Wednesday	Thursday	Friday	Online
	By email	By email	By email	By email	By email	By email

This syllabus serves as the documentation for all course policies and requirements, assignments, and instructor/student responsibilities.

Information relative to the delivery of the content contained in this syllabus is subject to change. Should that happen, the student will be notified.

Course Description: Basic theory of engineering mechanics, using calculus, involving the description of forces, moments, and couples acting on stationary engineering structures; equilibrium in two and three dimensions; free-body diagrams; friction; centroids; centers of gravity; and moments of inertia. Three hours of college credit.

Prerequisite(s): PHYS 2301 and MATH 2414 (Prerequisite or concurrent enrollment)

Student Learning Outcomes:

2301.1 Describe the engineering profession and engineering ethics including professional practice and licensure.

2301.2 Use technical communication skills to explain the analysis and the results of laboratory exercises in engineering and computer science.

2301.3 Explain the engineering analysis and design process.

2301.4 Analyze data collected during laboratory exercises designed to expose students to the different engineering disciplines.

2301.5 Describe the impact that engineering has had on the modern world.

2301.6 Work with a student team to design a simple engineering device, write a design report, and present the design.

Program Student Learning Outcomes:

Critical Thinking Skills

CT.1 Students will demonstrate the ability to 1) analyze complex issues, 2) synthesize information, and 3) evaluate the logic, validity, and relevance of data.

Communication Skills

CS.1 Students will effectively develop, interpret and express ideas through written communication.

Empirical and Quantitative Skills

EQS.1 Students will manipulate numerical data or observable facts by organizing and converting relevant information into mathematical or empirical form

EQS.2 Students will analyze numerical data or observable facts by processing information with correct calculations, explicit notations, and appropriate technology.

EQS.3 Students will draw informed conclusions from numerical data or observable facts that are accurate, complete, and relevant to the investigation.

Teamwork

TW.2 Students will work with others to support and accomplish a shared goal.

Evaluation/Grading Policy: In class and Final exam, Homework and Quizzes,
A = 90-100%, B = 80-89%, C = 70-79%, D = 60-69%, F = 0-59%

Required Textbook: Engineering Mechanics: Statics & Dynamics (14th Ed.), R. C. Hibbeler, 2016

Publisher: Pearson **ISBN Number:** 9780133915426

Optional Instructional Materials: None.

Minimum Technology Requirements: A scientific graphing calculator is required for this course.

Required Computer Literacy Skills: Should be able to use online instruction material.

Course Structure and Overview:

Section #	Topic	Week
Ch 1 2.1-2.2 2.3	Introduction Scalars & Vectors Vector Addition of Forces	1
2.4 2.5-2.6 2.7-2.8	Addition of Coplanar Forces Cartesian Vectors Position Vectors, Force along a Line	2
2.9 3.1-3.2 3.3	Dot Product Equilibrium of a Particle & Free-Body Diagrams Coplanar Force Systems	3

3.4 4.1-4.2	Three-Dimensional Force Systems Moment of a Force (Scalar Formulation) and Cross Product	4
4.3-4.4 4.5 4.6	Moment of a Force (Vector Formulation) and Principle of Moments Moment of a Force about a Specified Axis Moment of a Couple	5
4.7 4.9 5.1-5.2 5.3	Simplification of a Force and Couple Systems Reduction of a Simple Distributed Loading Conditions for Rigid-Body Equilibrium and FBD Equations of Equilibrium (2-Dimensions)	6
5.3, 5.4 5.5-5.6	Equations of Equilibrium and Two and Three-force Members FBD and Equations of Equilibrium (3-Dimensions)	7
5.6 6.1- 6.2 6.2, 6.3	Equations of Equilibrium (3-Dimensions) Simple Trusses and the Method of Joints The Method of Joints and Zero-Force Members	8
6.4 6.6	The Method of Sections Frames and Machines	9
6.6 7.1	Frames and Machines Internal Forces Developed in Structural Members	10
7.2	Shear and Moment Equations and Diagrams	11
8.1 8.2	Characteristics of Dry Friction Problems Involving Dry Friction	12
8.2 9.1 9.2	Problems Involving Dry Friction (continued) Center of Gravity, Center of Mass, and the Centroid of a Body (No Applications) Composite Bodies	13
9.2 10.1-10.2 10.4	Composite Bodies (continued) Definition of Moment of Inertia for Areas and Parallel-Axis Theorem for an Area Moment of Inertia for Composite Areas	14
10.4	Moment of Inertia for Composite Areas (continued) Review	15

Communications: By email

Institutional/Course Policy: All lectures will be online. The exams will be arranged by NTCC.

Alternate Operations During Campus Closure and/or Alternate Course Delivery Requirements
In the event of an emergency or announced campus closure due to a natural disaster or pandemic, it may be necessary for Northeast Texas Community College to move to altered operations. During this time, Northeast Texas Community College may opt to continue delivery of instruction through methods that include, but are not limited to, online through the Blackboard Learning Management System, online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor NTCC's website (http://www.ntcc.edu/) for instructions about continuing courses remotely, Blackboard for each class for course-specific communication, and NTCC email for important general information.

Additionally, there may be instances where a course may not be able to be continued in the same delivery format as it originates (face-to-face, fully online, live remote, or hybrid). Should this be the case, every effort will be made to continue instruction in an alternative delivery format. Students will be informed of any changes of this nature through email messaging and/or the Blackboard course site.

NTCC Academic Honesty/Ethics Statement:
NTCC upholds the highest standards of academic integrity. The college expects all students to engage in their academic pursuits in an honest manner that is beyond reproach using their intellect and resources designated as allowable by the course instructor. Students are responsible for addressing questions about allowable resources with the course instructor. Academic dishonesty such as cheating, plagiarism, and collusion is unacceptable and may result in disciplinary action. This course will follow the NTCC Academic Honesty and Academic Ethics policies stated in the Student Handbook. Refer to the student handbook for more information on these subjects.

ADA Statement:
It is the policy of NTCC to provide reasonable accommodations for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to request accommodations. An appointment can be made with the Academic Advisor/Coordinator of Special Populations located in Student Services and can be reached at 903-434-8264. For more information and to obtain a copy of the Request for Accommodations, please refer to the special populations page on the NTCC website.

Family Educational Rights and Privacy Act (FERPA):
The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. FERPA gives parents certain rights with respect to their children's educational records. These rights transfer to the student when he or she attends a school beyond the high school level. Students to whom the rights have transferred are considered "eligible students." In essence, a parent has no legal right to obtain information concerning the child's college records without the written consent of the student. In compliance with FERPA, information classified as "directory information" may be released to the general public without the written consent of the student unless the student makes a request in writing. Directory information is defined as: the student's name, permanent address and/or local address, telephone listing, dates of attendance, most recent previous education institution attended, other information including major, field of study, degrees, awards received, and participation in officially recognized activities/sports.

Tentative Course Timeline (*note* instructor reserves the right to make adjustments to this timeline at any point in the term):