

Updated 07/18/2023



WACO, TEXAS

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**COURSE SYLLABUS  
AND  
INSTRUCTOR PLAN**

**ENGINEERING MECHANICS 1: STATICS**

**ENGR 2301 H001**

**DR. APRIL K. ANDREAS**

**NOTE: This is a 16-week Hyflex course.**

# ENGINEERING MECHANICS 1: STATICS

ENGR 2301 H001

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## **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. Semester hours 3 (3 lec, 1 lab/recitation)

## **Prerequisites and/or Corequisites:**

Students must have a C or better in PHYS 2425 – Principles of Physics I. Also concurrent enrollment in or previous completion of MATH 2414 – Calculus II

## **Instructor Information:**

Instructor Name:	Dr. April K. Andreas
MCC E-mail:	<a href="mailto:aandreas@mcclennan.edu">aandreas@mcclennan.edu</a>
Contact information:	254-299-8130, Science 221
Office Hours:	<a href="https://calendly.com/akandreas">https://calendly.com/akandreas</a>
Department Website:	<a href="http://www.mcclennan.edu/engr/">http://www.mcclennan.edu/engr/</a>

## **Required Text & Materials:**

- ModifiedMasteringEngineering Access Code for Statics & Dynamics 15e and *any* hard copy Statics or Statics & Dynamics Textbook
- A scientific calculator. TI-89s are great!

## **Additional requirements:**

*MCC Engineering uses Slack for communication. All major course announcements will be posted in Slack – failure to check Slack will result in you missing important information. Also, anything we hear about jobs, scholarships, speakers, etc., will also be posted to Slack in the #general channel.*

Slack is free and used in the professional community as a workflow management system, so it is good to gain experience with the tool. All “general questions” like “I’m stuck on problem 5” will be directed to Slack, which will allow you and your classmates to support each other, especially in “time-crunch” situations. (Your classmates are a lot more likely to be up at 3 am

doing homework than I am going to be checking email.) Always be respectful and professional in your participation.

Please bear in mind that Slack is an open communication tool. Please do not ask for or reveal personal information through the tool. Note that anything you post in Slack in channels will be viewable by other channel participants. Do not post anything about personal grades, due dates, or personal issues. Do not post your own correct solutions to assignments, but you can post incorrect work and ask if anyone can see where you went wrong.

Slack can be used on both a desktop computer and as an app. For more information about Slack in general, visit <https://slack.com/>. You will be invited to our class channel via your MCC student account. Detailed guidelines for Slack are on Brightspace and on Slack itself.

Campus Carry Reminder: According to our new campus carry policy on concealed handguns: “A license holder may carry a handgun in a manner such that it must be close enough to the license holder that he or she can grasp it without materially changing position.” Keep this in mind on exam days, during group work, or at other times when moving about the classroom. During exams, you will have to put all backpacks, purses, etc., away from you and against the wall of the classroom for the duration of the exam.

**MCC Bookstore Website:** <http://www.mclennan.edu/bookstore/>

**Methods of Teaching and Learning:**

Students will learn through lecture and reading, as well as through work on homework, labs, and, exams. Additional methods may be used as opportunities present themselves.

This class is all about productive frustration! I expect you to learn by staring at problems and messing around with them and trying a million things until something works. Guess. If that doesn't work, guess again. Repeat this process.

**Course Objectives and/or Competencies:**

Upon successful completion of this course, students will be able to:

1. State the fundamental principles used in the study of mechanics. (*all course work*)
2. Define magnitude and directions of forces and moments and identify associated scalar and vector products. (*Chapter 2*)

3. Draw free body diagrams for two- and three-dimensional force systems. (*Chapter 2*)
4. Solve problems using the equations of static equilibrium. (*Chapter 3*)
5. Compute the moment of force about a specified point or line. (*Chapter 3*)
6. Replace a system of forces by an equivalent simplified system. (*Chapter 4*)
7. Analyze the forces and couples acting on a variety of objects. (*all course work*)
8. Determine unknown forces and couples acting on objects in equilibrium. (*Chapters 4-5*)
9. Analyze simple trusses using the method of joints or the method of sections. (*Chapter 6*)
10. Determine the location of the centroid and the center of mass for a system of discrete particles and for objects of arbitrary shape. (*Chapter 9*)
11. Analyze structures with a distributed load. (*Chapter 7*)
12. Calculate moments of inertia for lines, areas, and volumes. (*Chapter 10*)
13. Apply the parallel axis theorem to compute moments of inertia for composite regions. (*Chapter 10*)
14. Solve problems involving equilibrium of rigid bodies subjected to a system of forces and moments that include friction. (*Chapter 8*)
15. Solve problems involving dry sliding friction, including problems with wedges and belts. (*Chapter 8*)

**Course Attendance/Participation Guidelines:**

Since this course is Hyflex, you have three options for daily attendance (not including test days):

- **In Person.** Come to class, as you would for any other class.
- **Zoom.** Log into Zoom using the link provided on Brightspace.
- **Online, on your own time.**

*For test and project days (including Scholar Day), all students must either be in the classroom or have made alternative arrangements at least two weeks in advance.*

If a student is not in attendance in accordance with the policies/guidelines of the class as outlined in the course syllabus as of the course census date, faculty are required to drop students from their class roster prior to certifying the respective class roster. A student's financial aid will be re-evaluated accordingly and the student will only receive funding for those courses attended as of the course census date.

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Before the 60% point of the semester, a student who is absent for 25% or more of a course will be withdrawn from the course with a grade of W. A student may also request to be withdrawn with a grade of W before the 60% point of the semester. After the 60% point of the semester, the student may request to be withdrawn if the student is passing, or be assigned the final grade earned at the end of the semester after grades have been updated to reflect missing work.

For this purpose, if you have a non-zero grade for any grade item for that week, you are considered Present. The 25% mark for this class is four weeks. If you have exceeded the maximum number of withdraws by state law, you will remain in the class and be assigned the final grade as earned.

If you wish to withdraw from this class, you must email me from your MCC student account before 5 pm on the last day for student-initiated withdrawals, with the request "Please withdraw me from COURSE ID and SECTION NUMBER." If the email does not come from your student account, or if the request is verbal, I cannot withdraw you. Otherwise, you will stay on the roster for the rest of the semester and be awarded the grade earned. Withdrawing past the 60% date is only done in documented, extreme, life-crisis circumstances, which usually involve withdrawing from school entirely.

### **Course Outline or Schedule:**

You are responsible for everything listed in the detailed calendar below. Refer to the Course Objectives above to see how they relate to assessments and assignments. Any changes in this schedule will be announced in class, on Slack, or through email.

Note the test and presentation dates, including Scholar Day. All tests and presentations will be 11:10 am to 1 pm. Scholar Day is at the time provided in the calendar. The expectation is that you can clear out these specific dates/times since we're giving them to you at the beginning of the semester, but if you know you cannot make these, you must let me know at least two weeks in advance to make other arrangements. ADA accommodations will of course be honored, and other MCC-approved absence policies will apply.

If we have to change the calendar below, I will give you at least one full week's notice to make sure you can re-arrange your schedule.

## ENGINEERING MECHANICS 1: STATICS

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<b>Week Starting</b>	<b>Tuesday</b>	<b>Thursday</b>	<b>Due Friday</b>	<b>Due Monday</b>
Mon, Aug 21	Sections 1.1 – 1.6	Sections 2.1 – 2.3	<i>Visualization Test</i>	HW 1, 2
Mon, Aug 28	Sections 2.4 – 2.6	Sections 2.7– 2.9		HW 3, 4
Mon, Sep 4	Sections 3.1 – 3.3	Section 3.4, 4.1		HW 5, 6
Mon, Sep 11	<b>Test on Chapter 1 – 2</b>	Sections 4.2 – 4.4	<i>Visualization Remediation</i>	HW 7
Mon, Sep 18	<b>Steps 1 – 3 Presentation</b>	Sections 4.5 – 4.7		HW 8
Mon, Sep 25	Sections 4.8 – 4.9	Sections 5.1 – 5.2		HW 9, 10
Mon, Oct 2	<b>Test on Chapters 3 – 4</b>	Sections 5.3 – 5.4		HW 11
Mon, Oct 9	Sections 5.5 – 5.7	Section 6.1 - 6.3		HW 12, 13
Mon, Oct 16	Sections 6.4 & 6.6	<b>Steps 1 – 6 Presentation</b>		HW 14
Mon, Oct 23	Section 7.1	Sections 7.2 – 7.3		HW 15, 16
Mon, Oct 30	<b>Test on Chapters 5 – 6</b>	Sections 8.1 – 8.2		HW 17
Mon, Nov 6	Sections 8.3 – 8.5	Sections 9.1 – 9.2		HW 18,19
Mon, Nov 13	Sections 10.1 – 10.3	<b>Steps 1 – 10 Presentation</b>	<i>Scholar Day, 9 am to 1 pm</i>	HW 20
Mon, Nov 21	Sections 10.4, 10.8	<i>No class - Thanksgiving</i>	<i>Statics Concept Inventory</i>	HW 21
Mon, Nov 28	<b>Test on Chapters 7 – 10</b>	Final Exam Review		

*The Final Exam is on Thursday, Dec 7, 11:10 am - 1:10 pm*

**Important: IN ORDER TO PASS THE COURSE, YOU MUST HAVE A PASSING TEST AVERAGE (70.0% or higher). The test average will be calculated based on your four highest test grades. If your test average is 70.0% or higher, then your grade will be calculated based**

*on all of your work. If your test average is lower than 70.0%, then your grade in the class will be based on your test average, with a maximum grade of D.*

**Course Grading Information:**

Grade Distribution	
Homework	25%
Visualization	5%
Supplemental Instruction	15%
Project	20%
Tests	35%
<b>Total</b>	<b>100%</b>

**A: 90%+    B: 80% – 89%    C: 70% – 79%    D: 60% – 69%    F: 0% – 59%**

**It is your responsibility to confirm that your grades on Brightspace are correct. Any issues with grading, including what appears on Brightspace, must be addressed with me before the final exam.**

**Homework:** Specific problems will be posted on MasteringEngineering, along with additional requirements. There will usually be two homework assignments. *Homework will always be due on Mondays at 11:59 pm.*

**Visualization:** A Visualization skills assessment will be given the first week. Any student who passes the assessment will automatically earn 100% on this portion. Any student requiring remediation must complete the remediation activities before 11:59 pm on the date posted in the syllabus. Successful completion of remediation will earn 100%. Incomplete work will be awarded reduced points.

**Supplemental Instruction:** The purpose of supplemental instruction (SI) is to help you practice the basics required to be successful on the homework and exams. SI attendance is required. The SI will have three one-hour Zoom sessions per week and will work through preliminary and fundamental problems to help you prepare for the homework and solidify concepts. You must stay for the entire one-hour session, and are expected to attend at least once per week. *For credit, upload the notes you took and problems worked from the session by 11:59 pm each Monday. You cannot receive credit if you do not stay for the entire hour.*

The SI schedule for the spring semester will be posted on Slack. If you are not able to make any of the set times on a regular basis, you must email me by 5 pm on the second Friday of the semester so we can make adjustments; otherwise, it will be assumed you can make at least one of these times. Homework Night will be specifically for help with homework and test corrections, and will not count as SI.

**Project:** There will be a significant team project assigned for the semester. Details will be provided on Brightspace. Every team member will need to submit a team evaluation at every submission deadline, which is 11:59 pm the same day as the presentation or Scholar Day.

**Tests:** Five tests will be given during the semester (four during the regular semester and one during the final exam period). The lowest test grade will be dropped.

You must complete each test during the time given. If you are late for class, you forfeit that amount of time to work. Makeup exams will only be given in rare cases, following the policy outlined elsewhere in the syllabus.

If you are on the graduation list for this semester and want to take the final exam early, you must notify me by email before 5 pm on the second Friday in November. All students taking the final exam early must take it at the same time on Monday, the first day of final exams. The exact time will be established so as not to interfere with any other final exams, but may take place outside of “normal” classroom hours.

You may not use your textbook on the tests. ***You will need a scientific calculator (not on your phone) to complete the tests.*** Tests will focus on new material but may cover anything that we’ve covered in the class so far in the semester.

**Learning Lab.** The Learning Lab in the Science Building, room 135, has many reference books available, and you may find some success studying there. There are also five computers you can use to work on your homework.

**Academic Dishonesty.** Any student that is found guilty of academic dishonesty such as cheating, plagiarism, or collusion, will receive the zero grade on every test or assignment



involved. For repeated violations, a guilty student can be assigned a failing grade in this course and can be recommended for suspension from the McLennan Community College District.

**Late Work and Make Up Work Policies:**

MCC allows for “excused” absences under these circumstances: authorized participation in official College functions; personal illness, or the illness of a dependent (such as a child) that requires the student to serve as a caretaker; an illness or a death in the immediate family; the observance of a religious holy day. Additionally, accommodations can be made for special circumstances related to military service, changes in immigration status, pregnancy and parenting protection under Title IX. It is your responsibility to let me know the reason for an absence the day you return to campus and provide sufficient documentation (doctor's note, email from coach, etc.).

Whether you are in class or not, you are expected to meet all deadlines, unless you have documentation of an MCC-approved absence. Work ahead to stay on top of things.

**Student Behavioral Expectations or Conduct Policy:**

Students are expected to maintain classroom decorum that includes respect for other students and the instructor, prompt and regular attendance, and an attitude that seeks to take full advantage of this educational opportunity.

**[Click Here for the MCC Attendance/Absences Policy](https://www.mclennan.edu/highlander-guide/policies.html)**

**(<https://www.mclennan.edu/highlander-guide/policies.html>)**

Pretend to click on the non-functioning link above for the college policies on attendance and absences. Your instructor may have additional guidelines specific to this course.

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## **ACADEMIC RESOURCES/POLICIES**

### **Accommodations/ADA Statement:**

Any student who is a qualified individual with a disability may request reasonable accommodations to assist with providing equal access to educational opportunities. Students should contact the Accommodations Coordinator as soon as possible to provide documentation and make necessary arrangements. Once that process is completed, appropriate verification will be provided to the student and instructor. Please note that instructors are not required to provide classroom accommodations to students until appropriate verification has been provided by the Accommodations Coordinator. For additional information, please visit [www.mclennan.edu/disability](http://www.mclennan.edu/disability).

Students with questions or who require assistance with disabilities involving physical, classroom, or testing accommodations should contact:

[disabilities@mclennan.edu](mailto:disabilities@mclennan.edu) 2542998122 Room  
319, Student Services Center

### **Title IX:**

We care about your safety, and value an environment where students and instructors can successfully teach and learn together. If you or someone you know experiences unwelcomed behavior, we are here to help. Individuals who would like to report an incident of sexual misconduct are encouraged to immediately contact the acting Title IX Coordinator at [titleix@mclennan.edu](mailto:titleix@mclennan.edu) or by calling, Dr. Claudette Jackson, (Accommodations/Title IX) at (254) 299-8465. MCC employees are mandatory reporters and must report incidents immediately to the Title IX Coordinator. Individuals may also contact the MCC Police Department at (254) 299-8911 or the MCC Student Counseling Center at (254) 299-8210. The MCC Student Counseling Center is a

confidential resource for students. Any student or employee may report sexual harassment anonymously by visiting <http://www.lighthouse-services.com/mclennan/>. Go to McLennan's Title IX webpage at [www.mclennan.edu/titleix/](http://www.mclennan.edu/titleix/). It contains more information about definitions, reporting, confidentiality, resources, and what to do if you or someone you know is a victim of sexual misconduct, gender-based violence or the crimes of rape, acquaintance rape, sexual assault, sexual harassment, stalking, dating violence, or domestic violence.

### **Student Support/Resources:**

MCC provides a variety of services to support student success in the classroom and in your academic pursuits to include counseling, tutors, technology help desk, advising, financial aid, etc. A listing of these and the many other services available to our students is available at <http://www.mclennan.edu/campus-resource-guide/>

Academic Support and Tutoring is here to help students with all their course-related needs. Specializing in one-on-one tutoring, developing study skills, and effectively writing essays. Academic Support and Tutoring can be found in the Library and main floor of the Learning Commons. This service is available to students in person or through Zoom. You can contact the Academic Support and Tutoring team via Zoom or email ([ast@mclennan.edu](mailto:ast@mclennan.edu)) by going to our website (<https://www.mclennan.edu/academic-support-and-tutoring/>).

College personnel recognize that food, housing, and transportation are essential for student success. If you are having trouble securing these resources or want to explore strategies for balancing life and school, we encourage you to contact either MCC CREW – Campus Resources Education Web by calling (254) 299-8561 or by emailing [crew@mclennan.edu](mailto:crew@mclennan.edu) or a Success Coach by calling (254) 299-8226 or emailing [SuccessCoach@mclennan.edu](mailto:SuccessCoach@mclennan.edu). Both are located in the Completion Center located on the second floor of the Student Services Center (SSC) which is open Monday-Friday from 8 a.m.-5 p.m.

Paulanne's Pantry (MCC's food pantry) provides free food by appointment to students, faculty and staff. To schedule an appointment, go to [https://mclennan.co1.qualtrics.com/jfe/form/SV\\_07byXd7eB8iTqJg](https://mclennan.co1.qualtrics.com/jfe/form/SV_07byXd7eB8iTqJg). Both the Completion Center and Paulanne's Pantry are located on the second floor of the Student Services Center (SSC).

### **MCC Foundation Emergency Grant Fund:**

Unanticipated expenses, such as car repairs, medical bills, housing, or job loss can affect us all. Should an unexpected expense arise, the MCC Foundation has an emergency grant fund that may be able to assist you. Please go to

<https://www.mclennan.edu/foundation/scholarships-and-resources/emergencygrant.html>

to find out more about the emergency grant. The application can be found at

[https://www.mclennan.edu/foundation/docs/Emergency\\_Grant\\_Application.pdf](https://www.mclennan.edu/foundation/docs/Emergency_Grant_Application.pdf).

**MCC Academic Integrity Statement:**

Go to [www.mclennan.edu/academic-integrity](http://www.mclennan.edu/academic-integrity) for information about academic integrity, dishonesty, and cheating. The unauthorized use of artificial intelligence (AI) for classwork can be a violation of the College's General Conduct Policy. Whether AI is authorized in a course and the parameters in which AI can be used in a course will be outlined by each instructor.

**Minimum System Requirements to Utilize MCC's D2L|Brightspace:**

Go to <https://www.mclennan.edu/center-for-teachingandlearning/FacultyandStaffCommons/requirements.html> for information on the minimum system requirements needed to reliably access your courses in MCC's D2L|Brightspace learning management system.

**Minimum Technical Skills:**

Students should have basic computer skills, knowledge of word processing software, and a basic understanding of how to use search engines and common web browsers.

**Backup Plan for Technology:**

In the event MCC's technology systems are down, you will be notified via your MCC student email address. Please note that all assignments and activities will be due on the date specified in the Instructor Plan, unless otherwise noted by the instructor.

**Email Policy:**

McLennan Community College would like to remind you of the policy (<http://www.mclennan.edu/employees/policy-manual/docs/E-XXXI-B.pdf>) regarding college email. All students, faculty, and staff are encouraged to use their McLennan email addresses when conducting college business.

A student's McLennan email address is the preferred email address that college employees should use for official college information or business. Students are

expected to read and, if needed, respond in a timely manner to college emails. For more information about your student email account, go to [www.mclennan.edu/studentemail](http://www.mclennan.edu/studentemail).

**Instructional Uses of Email:**

Faculty members can determine classroom use of email or electronic communications. Faculty should expect and encourage students to check the college email on a regular basis. Faculty should inform students in the course syllabus if another communication method is to be used and of any special or unusual expectations for electronic communications.

If a faculty member prefers not to communicate by email with their students, it should be reflected in the course syllabus and information should be provided for the preferred form of communication.

**Email on Mobile Devices:**

The College recommends that you set up your mobile device to receive McLennan emails. If you need assistance with set-up, you may email [Helpdesk@mclennan.edu](mailto:Helpdesk@mclennan.edu) for help.

You can find help on the McLennan website about connecting your McLennan email account to your mobile device:

- [Email Setup for iPhones and iPads](#)
- [Email Setup for Androids](#)

**Forwarding Emails:**

You may forward emails that come to your McLennan address to alternate email addresses; however, the College will not be held responsible for emails forwarded to an alternate address that may be lost or placed in junk or spam filters.

For more helpful information about technology at MCC, go to [MCC's Tech Support Cheat Sheet](#) or email [helpdesk@mclennan.edu](mailto:helpdesk@mclennan.edu).

**Disclaimer:**

The resources and policies listed above are merely for informational purposes and are subject to change without notice or obligation. The College reserves the right to change policies and other requirements in compliance with State and Federal laws. The provisions of this document do not constitute a contract.