

# McLennan C O M M U N I T Y C O L L E G E

WACO, TEXAS

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## **COURSE SYLLABUS AND INSTRUCTOR PLAN**

**Introduction to Engineering**

**ENGR – 1201 – 50**

**Dr. April K. Andreas**

**NOTE: This is a 16-week, blended course.**

### **COVID 19 Notice:**

McLennan Community College is committed to providing you with every resource you need to reach your academic goals including your safety. We will continue to monitor the evolving situation with COVID 19 and adjust our safety guidelines to make sure we offer a safe environment for you and our faculty. Please make sure to consult your faculty and the MCC website at <https://www.mclennan.edu/crisis-management/coronavirus-updates/index.html> on any changes to these guidelines.

# INTRODUCTION TO ENGINEERING

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### **Course Description:**

An introduction to the engineering profession with emphasis on technical communication and team-based engineering design. Introduces the field of engineering as a career to help students answer the question, "Do I want to be an engineer?" and to help students be successful academically and professionally in the engineering field. Semester Hours 2 (2 lec)

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

Prerequisite: Math 1314 with a minimum grade of C.

### **Instructor Information:**

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

In the event that I am not able to be physically present in class, I will often provide videos for students to watch or assign reading or other activities so we do not get behind in the schedule. In such cases, students are expected to complete these activities just as they would be expected to complete activities and participate in lecture were the material being covered face-to-face. Other graded material (tests, quizzes, labs, etc.) will continue to be due as indicated in the syllabus, unless I let the class know otherwise.

### **Required Text & Materials:**

- *An Introduction to Engineering* by April Andreas & Bernard Smith
- A scientific or graphing calculator that does exponents, logs, and trig functions.

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

### **Course Notes, Instructor and 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

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be directed to Slack, which will allow you and your classmates to support each other, especially in “time-crunch” situations. 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.

#### **Methods of Teaching and Learning:**

Students will learn through lectures and reading the textbook, as well as through independent research, and work on homework, quizzes, exams, lab exercises, a mock interview, group projects which include a written paper and formal presentation, and the development of an engineering portfolio. Additional methods may be used as opportunities present themselves.

#### **Course Objectives and/or Competencies:**

An introduction to the engineering profession with emphasis on technical communication and team-based engineering design. Upon successful completion of this course, students will be able to:

1. Describe the engineering profession and engineering ethics, including professional practice and licensure.
2. Use technical communication skills to explain the analysis and results of introductory laboratory exercises in engineering and computer science.
3. Explain the engineering analysis and design process.
4. Analyze data collected during laboratory exercises designed to expose students to the different engineering disciplines.
5. Describe the impact engineering has had on the modern world.
6. As part of a team, design a simple engineering device, write a design report, and present the design.
7. Demonstrate computer literacy.

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

You are responsible for everything listed in the detailed calendar below. This calendar is subject to change. In the event that I need to make changes to the schedule, I will notify you via Slack and Brightspace as soon as I possibly can.

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Week	Topic 1	Topic 2	What's Due Sunday @ 11:59pm
Week 1 1/10 – 1/16	• Introduction	• Careers in Engineering	HW 1: Exploring Engineering
Week 2 1/17 – 1/23	• Significant Digits • Rounding	• Scientific Notation	HW 2: Rounding, Sig Figs, and Sci Notation
Week 3 1/24 – 1/30	• Unit Prefixes • Unit Conversions	• Resumes and Behavioral Interviewing • <i>Names Quiz #1</i>	HW 3: Units and Conversions HW 4: Interview Prep
Week 4 1/31 – 2/6	• Solid Geometry • Right Triangles	• Trigonometry • Polar Coordinates	HW 5: Geometry and Right Triangles HW 6: Polar and Trig
Week 5 2/7 – 2/13	• Matrices • Systems of Equations	• Success in Academia	HW 7: Matrices and Systems of Equations HW 8: Success Portfolio
Week 6 2/14 – 2/20	<b>Test 1: Math Skills</b>	Introduction to Vectors	HW 9: Introduction to Vectors HW 10: Teamwork Survey
Week 7 2/21 – 2/27	• Doing More with Vectors	• Forces	HW 11: More Vectors HW 12: Force
Week 8 2/28 – 3/6	• Free Body Diagrams	• Current and Voltage	HW 13: Free Body Diagrams HW 14: Current and Voltage
<i>Spring Break March 7 - 11</i>			
Week 9 3/14 – 3/20	• Resistors	• Engineering Ethics • <i>Names Quiz #2</i>	HW 15: Resistors HW 16: Ethics <i>Interviews Complete by Mar 18</i>
Week 10 3/21 – 3/27	<b>Test 2: Physics Skills</b>	• Introduction to the Group Project	HW 17: Create Your Team Identity <i>Portfolio: First Submission</i>
Week 11 3/28 – 4/3	• Work Day 1 • Microsoft Word	• Work Day 2 • Microsoft Excel	HW 18: Basics of Word HW 19: GPA Calculator (Excel) <i>Group Project: First Draft (Sec 2 - 5) + Evals</i>
Week 12 4/4 – 4/10	• Work Day 3 • Excel: Grade Calculator	• Work Day 4 • Plotting in Excel • <i>Names Quiz #3</i>	HW 20: Grade Calculator HW 21: Plotting in Excel
Week 13 4/11 – 4/17	• Work Day 5 • Normalizing Data in Excel	• Word Day 6 • A Case Study in Excel	HW 22: Normalizing Data in Excel HW 23: A Case Study in Excel <i>Group Project: Final Paper + Evals</i>
Week 14 4/18 – 4/24	• Professional Engineering	• <b>Prototype Mini-Presentations</b>	HW 24: Professional Engineering <i>Portfolio: Final Submission</i>
Week 15 4/25 – 5/1	• <b>Group Presentations</b>	• Final Exam Review	<i>Final Team Evals due</i>
----- <b>Final on Physics &amp; Math: Wednesday, May 4 from 6 pm to 8 pm in S 214</b> -----			

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### **Course Grading Information:**

<b>Grade distribution</b>	
Quizzes	5%
Homework	20%
Portfolio	15%
Professional Interview	5%
Group Project	20%
Tests	35%
<b>Total</b>	<b>100%</b>

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

**Quizzes (5%):** There will be “names quizzes” every so often (see schedule), which are closed-notes, closed-book. You will be expected to know first and last names (and do your best on spelling). There may be “pop” quizzes every so often, in addition to the names quizzes. Pop quizzes will be open-notes, closed book. If you are not in class for a quiz (including arriving late or leaving early) for any reason, you will get a zero for that quiz.

**Homework (20%):** All homework assignments are available on Brightspace. In general, homework assignments are due every Sunday at 11:59pm. The schedule shows the due dates for each assignment.

**Engineering Success Portfolio (15%):** The purpose of this project is to help you get experience in a variety of ways that should be useful to you as you work toward becoming an engineer. You have a great deal of flexibility in what you choose to do – make this an assignment that matters. All relevant information can be found on Brightspace.

**Professional Interview (5%):** The Professional Interview is designed to prepare students for job interviews when pursuing an engineering career. Students will be responsible for scheduling the interview with the instructor ahead of time. Students will need to be prepared and dressed professionally. All interviews must be completed by the date listed in the schedule. More details will be given in class and on Brightspace.

**Group Design Project (20%):** You will need to complete a design project with a team. There will be a series of work days to work on your project with your group in class. You are expected to be present for the entire class period on these days. More details will be provided in class and on Brightspace.

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**Tests (35%):** There will be three in-class formal exams covering material related to math and physics. The tests will be closed-notes, closed-book, and portions of the test may need to be completed without a calculator. Internet capable devices (phones, tablets, etc) will not be allowed. Two tests will be given during the regular semester and one will be given during the final exam time. The lowest test grade will be dropped.

#### **Places to go for help:**

- 1. Engineering & Physics Club:** The Engineering & Physics club has regularly scheduled HW nights to assist students who need help in their engineering coursework. Free tutoring will be provided. Zoom and in-person options will be available. HW nights will be held from 5-7:30pm every Tuesday and Thursday on the 2<sup>nd</sup> floor balcony in the Science building. In the event of bad weather, it will be moved to an indoor location. The Zoom link will be posted in the #random Slack channel a few minutes before the start of each meeting. You can also follow #random and #engr\_and\_phys\_club in Slack for any other updates to the homework nights.
- 2. Math Lab:** Any student enrolled in this class has free access to the Math Lab, located in MATH 225. Hours of operation are usually Monday – Thursday 8:00 am – 7:30 pm and Friday 8:00 am – 2:00 pm. Call (254) 299-8878 to confirm for particular days.
- 3. SmarThinking:** This is your 24/7 online tutor, provided free by MCC. You can access to Smarthinking through Brightspace. They will help you with math, science, and writing, among other subjects. (Writing analysis will take 24 hours, so be sure to contact them with plenty of time!)
- 4. Slack:** Post all your questions on the class channel on Slack – help each other with things you're stuck on. I often will be able to reply to the Slack class channel sooner than with regular email, or someone else in class may have already figured it out.

**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, Attendance, and Make Up Work Policies:**

Late assignments will not be accepted. All homework is available online, so you may complete your homework ahead of time.

MCC allows for “excused” absences caused by (1) authorized participation in official College functions, (2) personal illness, (3) an illness or a death in the immediate family, or (4) the observance of a religious holy day. If you miss a test, quiz, or other assignment due in class for one of these four reasons, you must email me before the class period, and you must provide documentation in order for me to consider allowing you to make-up the affected assignment. If your absence is not for one of these reason, or you do not provide documentation, you will receive a zero on the assignment in question.

***If you think you may be sick, DO NOT come to class.***

If it turns out that you’re not actually documentably-sick:

- Watch all the videos for the lecture that day. Email me a picture of all your notes for the *before* next class period you will be in person, and I won’t count you absent. Your homework will still be due at the date and time listed in the syllabus.
- If this occurs during the group project: stay pro-active about keeping in touch with your group members so that you and your group stay on track.
- All other due dates (group project, portfolio, etc.) will still be due on the dates and times listed in the syllabus.
- If it’s a test day: Go to the doctor and get a note. Or go get a rapid Covid test (if that applies) and send me a screenshot of the results (even if it’s negative). Please black out/redact your personal medical information. For tests, I can’t schedule a makeup without documentation of some kind.

If you are actually sick and unable to complete work:

- Get documentation (doctor’s note, Covid test result, etc.)
- I will adjust due dates accordingly for anything you missed with the exception of the group project

Attendance is mandatory. ***Per MCC policy, you may be automatically dropped after missing 25% of class meetings, or 4 lectures.*** For this purpose, if you are not in class when roll is called, you are considered absent. You should still come to class even if you are going to be late, though, so as not to miss important information. If you are dropped before the official drop date, you will receive a grade of W. If you reach the maximum absences after the official drop date,

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you will not be dropped from the course. However, you will be ineligible to receive credit for the course, and you will receive an automatic grade of F.

If you wish to drop this class, you must email me from your MCC student account before 5 pm on the last day for student-initiated drops, with the request “Please drop me from COURSE ID and SECTION NUMBER.” An email that says something like, “I would like to drop...” or, “I was thinking about dropping...” or, “I was wondering if I should drop...” will ***not*** be considered a drop request. (*Just like saying, “I would like to get married,” does not mean anyone is going to automatically marry you.*) If the email does not come from your student account, or if the request is verbal, I cannot drop you. Alternatively, there is a form you can fill out and have me sign before 5 pm on the last day for student-initiated drops. (make an appointment to ensure I am on campus to provide the signature). After submitting your request, you must verify the drop was processed, notifying me in writing within 48 hours of your original request if it was not. Otherwise, you will stay on the roster for the rest of the semester and be awarded the grade earned. Drops past the drop date are only done in documented, extreme, life-crisis circumstances, which usually involve withdrawing from school entirely.

#### **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>)**

Click on the link above for the college policies on attendance and absences. Your instructor may have additional guidelines specific to this course.

***\*\*\*I reserve the right to change any term on this syllabus at any time during the semester\*\*\****

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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)

254-299-8122

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 Title IX Coordinator at [titleix@mclennan.edu](mailto:titleix@mclennan.edu) or by calling Dr. Drew Canham (Chief of Staff for Diversity, Equity & Inclusion/Title IX) at (254) 299-8645. Individuals also may contact the MCC Police Department at 299-8911 or the MCC Student Counseling Center at MCC 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/>

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 a Success Coach by calling (254) 299-8226 or emailing [SuccessCoach@mclennan.edu](mailto:SuccessCoach@mclennan.edu). Students may visit the Completion Center Monday-Friday from 8 a.m.-5 p.m. to schedule a meeting with a Success Coach and receive additional resources and support to help reach academic and personal goals. Paulanne's Pantry (MCC's food pantry) provides free food by appointment to students, faculty and staff based on household size. Text (254) 870-7573 to schedule a pantry appointment. The Completion Center and 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.

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

Go to <https://www.mclennan.edu/center-for-teaching-and-learning/Faculty-and-Staff-Commons/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.

**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.

**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.

**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.