Engineering 112.001 & 112.021 – Spring 2019

Foundations of Engineering I

Department of Physics, Engineering and Astronomy, Stephen F. Austin State University

Instructor: Mr. Collin Timmons
Email: timmonscj@sfasu.edu
Office: 207H Cole STEM Building
Phone: 936-468-5188
Office Hours: MW: 2-3 PM, T: 2-5 PM, R: 2-4 PM, or by appointment
Class Meetings: MW 3:00 PM – 4:40 PM, Room 111 Cole STEM Building
Course Home Page: https://D2L.sfasu.edu

Course Description
This course is an introduction to logic processing, accounting, and conservation principles in engineering. The topics will include thermodynamics, rate processes, SI system of units, unit conversion, statics, dynamics, and conservation of mass, linear momentum, angular momentum, energy, entropy, and money. The course will stress the development of skills in problem solving, design, analysis, estimation and teamwork. Software used: CAD, Windows, Office, and the Internet. (3 semester hours; 2 hours lecture and 2 hours lab per week)

Text and Materials
The text for this course is *Thinking Like an Engineer*, by Stephan, Bowman, Park, Sill, Ohland, Pearson (3rd Edition). The readings indicated in the Course Outline correspond to chapters from this text and should be read prior to discussion of the material in class. CAD exercises will be provided as PDF files. Homework and handouts will be provided throughout the semester.

Grading Policy
Each major exam will be graded on a 100-point scale. The course grade will be computed as shown below.

\[
\text{Course Average} = (0.60E + 0.15H + 0.10T + 0.15A)
\]

where

- E = Exam Average
- H = Average of Homework
- T = Average of Team Projects
- A = Average of In-Class Activities

Letter grades are based on the ranges below.

A 90.0 - 100  B 80.0 - 89.9  C 70.0 - 79.9  D 60.0 - 69.9  F < 60.0
Attendance Policy
Attendance will be taken at the beginning of class electronically, on paper, or visually. If you have 3 unexcused absences then your final grade will be reduced one letter grade. If you have 4, or more, unexcused absences, you will receive an “F” in the course. A written and signed notice is required for an excused absence within three class days of the absence. To make sure that you are going to arrive to class on time you can set your watch here: http://www.time.gov. Being late in excess of 15 minutes is considered an absence.

Students who miss class without approval of their instructor will receive a grade of zero on the missed assignment. Authorized absences must be approved by your instructor in advance of the absence, unless you have an emergency or illness. Make-up work must be completed outside of normal class hours within one week following an excused absence. It is your responsibility to see your instructor and make arrangements for make-up work if you have an excused absence.

Course Requirements
Exams
There will be four major exams, each covering a limited amount of lecture and text material. The final exam will not be comprehensive. The dates of these exams are listed in the course outline attached to this page. Students will have one week after each exam to review the exams and discuss the grades. No make-up exams will be given except in the case of an excused absence. An official written notice is required for an excused absence within three days of the exam. Any makeup exam must be taken within three days of the missed exam.

Homework Assignments
All homework assignments are due on date and time indicated on each handout unless otherwise stated. Some homework will be turned in online. All homework should be neat and complete in pencil. All homework will be turned in for evaluation periodically during the semester. No late homework will be accepted unless you have an excused absence. Failure to submit 3, or more, homework assignments to D2L will result in an “F” in the course.

Team Grades
The TEAM must insure that all members of the team contribute to and understand the contents of team submissions. All team members who participate in an assignment will receive equal credit for that team submission. A grade of zero will be assigned to any member not signing a team submission. Team grades may include team efforts.

In Class Assignments
All in class assignments must be completed by the end of the class period. It is the discretion of the individual instructor to grant additional time if deemed necessary.

Email Communication
All official course communication will be made using your SFA email account. You must use your SFA email account for all communications. You will be notified via your SFA email account about grades and attendance. You can look up your SFA email account or setup email forwarding using this link: http://www.sfasu.edu/mysfa/o365/forwarding-email/

It is important to practice good email communications in college courses. Use “Engineering” as part of the subject of your email messages. Use complete sentences and capitalization when appropriate. The body of your email messages should begin with your instructor’s name and end with your name.

Extra Credit
Extra credit may be offered throughout the semester. The maximum extra credit any student can receive for EGR112 during the semester is 20 pts.
Classroom Policies
For the benefit of your fellow students and your instructor, you are expected to practice common courtesy with regard to all course interactions. For example:

- Be considerate toward your classmates and instructor and arrive to class on time.
- Do not leave class early and do not rustle papers in preparation to leave before class is dismissed.
- Avoid classroom distractions. Be attentive in class: stay awake, do not read newspapers, etc.
- If you are late to class or must leave early please inform your instructor in advance (enter or leave quietly, don’t walk across the front of the classroom (use the side aisles) and don’t walk in front of the projector).
- Cell phones, pagers and other communication devices must be turned off during class.
- Play well with others. Be kind and respectful to your fellow students and your teachers.
- Use of cell phones in class or causing other classroom distractions can count as one unexcused absence.

Academic Integrity (A-9.1)
Collaboration on examinations, in class assignments, and homework assignments is forbidden except where specifically specified as "Team" activities. For example, homework assignments are not team activities. In general, one team may not collaborate with another team on "Team" activities. Students violating this policy will be subject to procedures described in the Stephen F. Austin State University Policies and Procedures Manual.

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp

Penalties may include no credit or failure in the course.

Withheld Grades - Semester Grades Policy (A-54)
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.
The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

**Students with Disabilities**

To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to [http://www.sfasu.edu/disabilityservices](http://www.sfasu.edu/disabilityservices).

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**Student Counseling Center**

Rusk Building 3rd Floor -- (936) 468-2401 -- Email: counseling@sfasu.edu

The Student Counseling Center is available free of charge to students and is staffed with professional therapists to meet a variety of needs. All interactions with the Student Counseling Center are guaranteed confidential. Licensed Counselors are available from 8:00am-5:00pm Monday-Friday. The department is closed on certain holidays, Spring Break and Winter Break when the university is closed. If you are in need of assistance after hours or on the weekend please call: University Police: (936)468-2608 or MHMR Crisis Line: (800)392 -8343. If the situation is life threatening please dial 911. Counseling Services can assist SFA students in overcoming obstacles to their personal and academic goals. Counseling Services is located on the 3rd floor of the Rusk Building, which is located directly across the patio from the Baker Pattillo Student Center. You may also call them for an appointment at (936) 468-2401.

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**Acceptable Student Behavior**

Classroom behavior should not interfere with the instructor's ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed. [http://www.sfasu.edu/policies/student_conduct_code.asp](http://www.sfasu.edu/policies/student_conduct_code.asp)
Program Learning Outcomes (PLO)
Graduates of the program will:
(a) an ability to apply knowledge of mathematics, science and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability
(d) an ability to function on multidisciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Student Learning Outcomes (SLO)
By the end of the course, a successful student will be able to:
1. Demonstrate an ability to use graphical techniques to create plots, sketch functions, and determine graphical solutions.(PLO-a)
2. Given a graph, determine the type of trendline shown and interpret the physical parameters of the experimental system.(PLO-b)
3. Use Microsoft Excel to model experimental data.(PLO-k)
4. Apply basic concepts of statistics to experimental data.(PLO-a)
5. Define the scope of a problem and create a written or graphical algorithm to solve the problem.(PLO-e)
6. Demonstrate the ability to perform basic matrix operations.(PLO-a)
7. Write MATLAB programs and/or functions to solve engineering problems.(PLO-k)
8. Write input and output statements to interact with MATLAB.(PLO-k)
9. Demonstrate the ability to use conditional statements to automate decision making.(PLO-k)
10. Demonstrate the ability to use looping structures to eliminate large blocks of repetitive code.(PLO-k)

General Education Core Curriculum Objectives/Outcomes (EEO)
This course is not included in the general education core curriculum. Therefore, please see the learning outcomes above rather than any Exemplary Educational Objectives (EEOs).
# Engineering 112.001

**Spring 2019**

## EXAM I

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## FINAL EXAM

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Course Description:
This course is an introduction to logic processing, accounting, and conservation principles in engineering. The topics will include thermodynamics, rate processes, SI system of units, unit conversion, statics, dynamics, and conservation of mass, linear momentum, angular momentum, energy, entropy, and money. The course will stress the development of skills in problem solving, design, analysis, estimation and teamwork. Software used: CAD, Windows, Office, and the Internet.

Prerequisites: None  Co-Requisites: EGR 112L

Credits: 3 Hours  (Lecture: 2 Hours, Laboratory: 2 Hours)

Instructor: Mr. Collin J Timmons


Supplemental Materials: None

Topics Covered:

Course Learning Outcomes
By the end of the course, a successful student will be able to:

11. Demonstrate an ability to use graphical techniques to create plots, sketch functions, and determine graphical solutions.(SO-a)

12. Given a graph, determine the type of trendline shown and interpret the physical parameters of the experimental system.(SO-b)

13. Use Microsoft Excel to model experimental data.(SO-k)

14. Apply basic concepts of statistics to experimental data.(SO-a)

15. Define the scope of a problem and create a written or graphical algorithm to solve the problem.(SO-e)

16. Demonstrate the ability to perform basic matrix operations.(SO-a)

17. Write MATLAB programs and/or functions to solve engineering problems.(SO-k)

18. Write input and output statements to interact with MATLAB.(SO-k)

19. Demonstrate the ability to use conditional statements to automate decision making.(SO-k)
20. Demonstrate the ability to use looping structures to eliminate large blocks of repetitive code.

**Student Outcomes**
Graduates of the program will:

(l) an ability to apply knowledge of mathematics, science and engineering
(m) an ability to design and conduct experiments, as well as to analyze and interpret data
(n) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability
(o) an ability to function on multidisciplinary teams
(p) an ability to identify, formulate, and solve engineering problems
(q) an understanding of professional and ethical responsibility
(r) an ability to communicate effectively
(s) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
(t) a recognition of the need for, and an ability to engage in life-long learning
(u) a knowledge of contemporary issues
(v) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice