Engineering 111.001 & 111.020 – Fall 2017
Foundations of Engineering I
Department of Physics, Engineering, and Astronomy, Stephen F. Austin State University

Instructor: Mr. Collin Timmons
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Office: 315A Miller Science
Phone: 936-468-5188
Office Hours: MW: 3-5pm; TR: 11am-12pm, 1-2pm; or by appointment
Class Meetings: Mon & Wed 1:19-3:00 PM, Room 334 Science Building
Course Home Page: https://D2L.sfasu.edu

Course Description
This course is an introduction to the engineering profession, ethics and disciplines. The course will stress the development of skills in teamwork, problem solving, logic processing, algorithm development, estimation, design, and drawing. There will be an emphasis on computer applications and programming, digital logic, Computer Aided Drafting (CAD) tools, and communication. Topics include Newton's laws, unit conversions, statistics, computers, Excel, basic graphics skills, visualization, and orthographic drawings. 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.

\[ \text{Course Average} = (0.60E + 0.25H + 0.15T) \]

where 
E = Exam Average
H = Average of Homework and In-Class Assignments
T = Average of Team Projects

Letter grades are based on the ranges below.

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<th>Grade</th>
<th>Range</th>
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<tr>
<td>A</td>
<td>90.0 - 100</td>
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<td>B</td>
<td>80.0 - 89.9</td>
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<td>C</td>
<td>70.0 - 79.9</td>
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<td>D</td>
<td>60.0 - 69.9</td>
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<td>F</td>
<td>&lt; 60.0</td>
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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/.

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 at end of day (5pm) on the Friday specified unless otherwise stated. Homework will be electronically submitted for grading via D2L. Furthermore, the hardcopy of the homework should be neatly completed in pencil. Hardcopies of the 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 Jacks account. You must use your SFA email account for all communications. You will be notified via your SFA Jacks email account about grades and attendance.

It is important to practice good email communications in college courses. Use "EGR111" in 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
All students will receive extra credit toward exams for attending Engineering Student Organization (ESO) meetings and projects meetings. Students will receive 1 percentage point per ESO meeting (7 meetings total), and 1 percentage point per project meeting per week (13 weeks). The maximum extra credit any student can receive for EGR111 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.
Academic Integrity (A-9.1)
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

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.

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.

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
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. Describe the variety of collegiate and career opportunities of an engineering discipline. (PLO-j)
2. Evaluate ethical issues related to engineering; formulate and justify position on these issues. (PLO-f)
3. Demonstrate an ability to function on multidisciplinary teams. (PLO-d)
4. Compose clear and concise oral presentations and written descriptions of experiments and projects. (PLO-g)
5. Identify process variability and measurement uncertainty associated with an experimental procedure, and interpret the validity of experimental results. (PLO-b)
6. Demonstrate the ability to solve problems by using a standardized approach. (PLO-e)
7. State observations in appropriate units and perform conversions when necessary. (PLO-a)
8. Apply principles from the physical sciences to analyze and solve engineering problems. (PLO-a)
9. Convert units for physical and chemical parameters as required for different system of units. (PLO-a)
10. Identify when a quantity is dimensionless. (PLO-a)
11. Use a graph of dimensionless groups to extract information from the plot about the physical system. (PLO-k)
12. Apply Rayleigh’s Method to determine the appropriate dimensionless groups. (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 111.001
Fall 2017

Tentative

EXAM I
Chapter 1  Everyday Engineering
Chapter 2  Ethics
Chapter 3  Design and Teamwork

EXAM II
Chapter 4  Engineering Communication
Chapter 6  Problem Solving

EXAM III
Chapter 5  Estimation
Chapter 7  Fundamental Dimension and Base Units
Chapter 8  Universal Units

FINAL EXAM
Chapter 9  Dimensionless Numbers
Chapter 10 Excel Workbooks

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Thanksgiving Break

Fundamental Dimension and Base Units
Universal Units
Course Description:
Introduction to the engineering profession, ethics and disciplines; development of skills in teamwork, problem solving, logic processing, algorithm development, estimation, design and drawing; emphasis on computer applications and design.

Prerequisites: None

Co-Requisites: EGR 111L

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

Instructor: Collin J. Timmons


Supplemental Materials: None

Topics Covered:
Engineering Ethics, Teamwork, Engineering Communication, Estimation, Problem Solving, Fundamental Dimensions, Base Units, Excel, CAD, and MATLAB

Course Learning Outcomes
By the end of the course, a successful student will be able to:
13. Describe the variety of collegiate and career opportunities of an engineering discipline. (SO-j)
14. Evaluate ethical issues related to engineering; formulate and justify position on these issues. (SO-f)
15. Demonstrate an ability to function on multidisciplinary teams. (SO-d)
16. Compose clear and concise oral presentations and written descriptions of experiments and projects. (SO-g)
17. Identify process variability and measurement uncertainty associated with an experimental procedure, and interpret the validity of experimental results. (SO-b)
18. Demonstrate the ability to solve problems by using a standardized approach. (SO-e)
19. State observations in appropriate units and perform conversions when necessary. (SO-a)
20. Apply principles from the physical sciences to analyze and solve engineering problems. (SO-a)
21. Convert units for physical and chemical parameters as required for different system of units. (SO-a)
22. Identify when a quantity is dimensionless. (SO-a)
23. Use a graph of dimensionless groups to extract information from the plot about the physical system. (SO-k)
24. Apply Rayleigh’s Method to determine the appropriate dimensionless groups. (SO-k)

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