Foundations in Engineering I
ENGR 1301 & 1001

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Department: Department of Physics, Engineering and Astronomy
Class meeting time and place: Lecture: TR 2:00 – 3:40 pm / STEM 401

Course Description:
Introduction to the engineering profession, ethics and disciplines; development of skills in teamwork, communication, problem-solving and design; other topics included are Newton’s laws, unit conversion, orthographic drawings, CAD tools and spreadsheet software.

Text and Materials:

Course Calendar:

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug 28</td>
<td>The Engineering Profession</td>
<td>1</td>
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<tr>
<td>2</td>
<td>Sep 4</td>
<td>Education for Engineering Introduction to Engineering Design</td>
<td>2, 3</td>
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<tr>
<td>3</td>
<td>Sep 11</td>
<td>Introduction to Computer-Aided Design</td>
<td>CAD</td>
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<tr>
<td>4</td>
<td>Sep 18</td>
<td>Engineering Solutions</td>
<td>4</td>
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<tr>
<td>5</td>
<td>Sep 25</td>
<td>Representation of Technical Information Exam 1 (1, 2, 3, 4 + CAD)</td>
<td>5</td>
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<tr>
<td>6</td>
<td>Oct 2</td>
<td>Engineering Measurements and Estimations</td>
<td>6</td>
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<tr>
<td>7</td>
<td>Oct 9</td>
<td>Dimensions, Units, and Conversions</td>
<td>7</td>
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<tr>
<td>8</td>
<td>Oct 16</td>
<td>Statistics</td>
<td>10</td>
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<tr>
<td>9</td>
<td>Oct 23</td>
<td>Mechanics: Statics Exam 2 (5, 6, 7, 10)</td>
<td>12</td>
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<td>10</td>
<td>Oct 30</td>
<td>Mechanics: Strength of Materials Energy Sources and Alternatives</td>
<td>13, 15</td>
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<tr>
<td>11</td>
<td>Nov 6</td>
<td>Energy Sources and Alternatives Fundamental Energy Principles</td>
<td>15, 16</td>
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<tr>
<td>12</td>
<td>Nov 13</td>
<td>Fundamental Energy Principles</td>
<td>16</td>
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<tr>
<td>13</td>
<td>Nov 20</td>
<td>Electrical Theory Exam 3 (12, 13, 15, 16)</td>
<td>17</td>
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<td>14</td>
<td>Nov 27</td>
<td>Thanksgiving</td>
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<tr>
<td>15</td>
<td>Dec 4</td>
<td>Electrical Theory</td>
<td>17</td>
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<tr>
<td>16</td>
<td>Dec 11</td>
<td>Exam 4 (17) – 12/12 @ 1:00 - 3:00 pm</td>
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Grading Policy:

<table>
<thead>
<tr>
<th></th>
<th>Lecture</th>
<th>Homework</th>
<th>10%</th>
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</thead>
</table>

09/01/2023
Late Policy

Any assignment should be returned in time. In the case that the assignment is returned late, it will be affected by the following policy:

<table>
<thead>
<tr>
<th>Time Late</th>
<th>Deduction</th>
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<tbody>
<tr>
<td>Less than 2 hours</td>
<td>5</td>
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<tr>
<td>More than 2 hours less than 12</td>
<td>10</td>
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<tr>
<td>More than 12 hours, less than 24</td>
<td>20</td>
</tr>
<tr>
<td>More than 24 hours, less than 48</td>
<td>50</td>
</tr>
<tr>
<td>More than 48 hours</td>
<td>100</td>
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</tbody>
</table>

Homework (10%)

During the semester, you will be given several assignments. These assignments are due one week after they have been posted. Assignments will be submitted using D2L Dropbox. Keep in mind that the HW should be clean and organized.

In-Class Assignments (10%)

This class is designed using the active learning model. That means that during the semester, there will be multiple in-class assignments. These activities will be released on the day they will be implemented. In most cases, by the end of the lecture, the results from the in-class assignments must be submitted using the D2L Dropbox.

Attendance (5%)

Attendance will be taken at the beginning of the lecture. This ensures that you keep up with the material and the different activities that will be given during the semester. If you arrive late at any of the sessions, it is your responsibility to ensure that your attendance is recorded. Furthermore, your response to discussion forums will also be considered part of your attendance.

Quizzes (10%)

Quizzes will be posted on D2L. These are designed to gauge the level of understanding of the concepts covered at that point in time. These quizzes are typically released after the homework has been submitted.

Exams (50%)

During the semester, we will be having four regular exams. These will be based on the concepts covered in the lecture and homework. I will inform you in advance when it is time to take an exam.

Team Projects (15%)
During the semester, a few team projects will be assigned. The due date for these projects will vary according to their complexity. The results from the projects will be submitted using D2L Dropbox. A report template will be provided to facilitate reporting the results.

**Credit Hour Justification**
Meets 3 hrs/wk for 15 weeks, and also meets for a 2-hour final examination. This is a problem-oriented class and lab with homework problems. The lecture and lab combine for 5 hours and 20 minutes of contact time each week and the work outside of classes each week for the combined courses averages much more than 10 hours and 40 minutes in working homework problems, preparing and answering online quizzes, reading the book to understand the theories used in lecture and in homework problems and exams, reading the lab manual to prepare for the lab experiments done each week, writing up the lab experiments, writing formal laboratory reports, and studying for exams which include major exams and possibly short lecture quizzes.

**Student Learning Outcomes**
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. (SO - 4)
2. Evaluate ethical issues related to engineering; formulate and justify position on these issues. (SO - 4)
3. Demonstrate an ability to function on multidisciplinary teams. (SO - 5)
4. Compose clear and concise oral presentations and written descriptions of experiments and projects. (SO - 3)
5. Identify process variability and measurement uncertainty associated with an experimental procedure and interpret the validity of experimental results. (SO - 6)
6. Demonstrate the ability to solve problems by using a standardized approach. (SO - 1)
7. State observations in appropriate units and perform conversions when necessary. (SO - 1)
8. Apply principles from the physical sciences to analyze and solve engineering problems. (SO - 1)
9. Convert units for physical and chemical parameters as required for different system of units. (SO - 1)
10. Identify when a quantity is dimensionless. (SO - 1)

**Program Learning Outcomes**
Graduates of the program will:
1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental, and social contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

General Education Core Curriculum Objectives/Outcomes (EEO)
There are no specific general education core curriculum objectives in this course. This course is not a general education core curriculum course.

Academic Integrity (A-9.1)
Academic integrity is the responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways, including instruction on the components of academic honesty and 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/student-academic-dishonesty-4.1.pdf.

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 coursework 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 to compute the grade point average. For additional information, go to https://www.sfasu.edu/policies/course-grades-5.5.pdf.

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 promptly may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.

Student Wellness and Well-Being
SFA values students’ overall well-being, mental health and the role it plays in academic and overall student success. Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressure and challenges associated with relationships, emotional well-being, alcohol and other drugs, identities, finances, etc.
If you are experiencing concerns, seeking help, SFA provides a variety of resources to support students’ mental health and wellness. Many of these resources are free, and all of them are confidential.

**On-campus Resources:**
The Dean of Students Office (Rusk Building, 3rd floor lobby) [www.sfasu.edu/deanofstudents](http://www.sfasu.edu/deanofstudents)
936.468.7249 dos@sfasu.edu

**SFASU Human Services Counseling Clinic**
Human Services, Room 202 [www.sfasu.edu/humanservices/139.asp](http://www.sfasu.edu/humanservices/139.asp) 936.468.1041

**The Health and Wellness Hub**
“The Hub” Location: corner of E. College and Raguet St. To support the health and well-being of every Lumberjack, the Health and Wellness Hub offers comprehensive services that treat the whole person – mind, body and spirit. Services include:

- Health Services
- Counseling Services
- Student Outreach and Support
- Food Pantry
- Wellness Coaching
- Alcohol and Other Drug Education

[www.sfasu.edu/thehub](http://www.sfasu.edu/thehub)
936.468.4008 thehub@sfasu.edu

**Crisis Resources:**
Burke 24-hour crisis line: 1.800.392.8343 • National Suicide Crisis Prevention: 9-8-8 • Suicide Prevention Lifeline: 1.800.273.TALK (8255) • johCrisis Text Line: Text HELLO to 741-741