Engineering 3344 & 3044 – Fall 2023
Microcomputer Interfacing
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: MTR: 2-4 PM, or by appointment
Class Meetings: MW 11:00 – 12:00 PM, Room 108 Cole STEM Building
Lab Meeting: W 1:00 – 3:50 PM
Course Home Page: https://D2L.sfasu.edu

Course Description:
Microprocessor architecture, programming and interfacing. Introduction to assembly language programming, microcomputers, microcontrollers, instruction set, chip interfacing, addressing modes, interrupts, input/output and communication. Prerequisite: (EGR 3343 or PHY 3343) and CSC 1302.

Text and Materials:
Devices Datasheets

Course Calendar:
On average, for EGR3344, each student should spend 6 hours per week completing homework and labs, reading material, and studying.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug 28</td>
<td>Microprocessor Architecture, and Assembly</td>
</tr>
<tr>
<td>2</td>
<td>Sep. 4</td>
<td>PIC Architecture, I/O Ports, and Programming</td>
</tr>
<tr>
<td>3</td>
<td>Sep 11</td>
<td>Timer, and LCD</td>
</tr>
<tr>
<td>4</td>
<td>Sep 18</td>
<td>Motors, Servos, LEDs, and PWM (ABET Site Visit)</td>
</tr>
<tr>
<td>5</td>
<td>Sep 25</td>
<td>Motors, Servos, LEDs, and PWM Exam 1 (Weeks 1-3)</td>
</tr>
<tr>
<td>6</td>
<td>Oct. 2</td>
<td>Programming the PIC using C++</td>
</tr>
<tr>
<td>7</td>
<td>Oct 9</td>
<td>Analog-to-Digital Conversion</td>
</tr>
<tr>
<td>8</td>
<td>Oct 16</td>
<td>Analog-to-Digital Conversion</td>
</tr>
<tr>
<td>9</td>
<td>Oct 23</td>
<td>Interrupts</td>
</tr>
<tr>
<td>10</td>
<td>Oct 30</td>
<td>Interrupts Exam 2 (Weeks 5-8)</td>
</tr>
<tr>
<td>11</td>
<td>Nov 6</td>
<td>I2C</td>
</tr>
<tr>
<td>12</td>
<td>Nov 13</td>
<td>SPI</td>
</tr>
<tr>
<td>13</td>
<td>Nov 20</td>
<td>Thanksgiving</td>
</tr>
<tr>
<td>14</td>
<td>Nov 27</td>
<td>I2C/SPI Exam 3 (I2C/SPI)</td>
</tr>
<tr>
<td>15</td>
<td>Dec 4</td>
<td>I2C/SPI</td>
</tr>
<tr>
<td>16</td>
<td>Dec. 11</td>
<td>Finish Project 2</td>
</tr>
</tbody>
</table>
Assignments:
The assignments will consist of the laboratory experiments. The student has a whole week to have a functional system capable of producing the expected output. The System is due at the beginning of the next laboratory. The students will be required to complete the following:
- Submit the code using D2L dropbox
- Demonstrate the functionality of the system
In order to know how these assignments will be graded, please refer to the laboratory procedure grading rubric.

To encourage students to debug their work before asking the instructor for help, a penalty of 2% pts will be applied if the instructor finds the bug in under 2 min. The instructor reserves the right to wave the debug penalty depending on the specific bug.

Quizzes:
Quizzes will be posted on D2L. The idea is to reinforce knowledge from lecture, and laboratories.

Exams:
There will be a total of three regular exams during the semester. The exams will be based on the assignments, and the materials covered during the lecture.

Laboratory Reports:
Two laboratory reports will be required during the semester. The first will be at the beginning of the semester, and the last at the end of the semester. The reports will be written based on the results from the laboratory procedures.

Grading Policy:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>35%</td>
</tr>
<tr>
<td>Lab Reports</td>
<td>20%</td>
</tr>
<tr>
<td>Attendance</td>
<td>5%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>20%</td>
</tr>
<tr>
<td>Exams</td>
<td>20%</td>
</tr>
</tbody>
</table>

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>Late</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>than 2 hours</td>
<td>5</td>
</tr>
<tr>
<td>than 2 hours less than 12</td>
<td>10</td>
</tr>
<tr>
<td>than 12 hours less than 24</td>
<td>20</td>
</tr>
<tr>
<td>than 24 hours less than 48</td>
<td>50</td>
</tr>
<tr>
<td>than 48 hours</td>
<td>100</td>
</tr>
</tbody>
</table>

Laboratory Safety Quiz
All students enrolled in this lab must pass the Lab Safety Quiz that is available on D2L. At the beginning of the second week of lab, any student who has not completed and passed the Lab Safety Quiz will be prohibited from performing the lab.
Homework Guidelines
As engineers you should learn how to be organized, you will need to present reports and results to your superiors and these need to be professional. For that reason, you will need to start learning how to be organized. The homework should be returned complying with the following format:

1. Use clean paper that will scan properly
2. Name should be on the top left corner
3. Pages should be numbered on the top right corner using the following format “3/10”
4. Problems should be organized and in order
5. Problem number should be clear and readable

Failing to comply with any of these will result in a 10 point deduction.

Attendance Policy:
Attendance will be taken at the beginning of each class. Five points had been allocated for attendance. I understand that things happen, and you are not able to attend class a couple of times. Therefore, you are allowed to miss only 3 lectures without deduction.

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 (4.1)

The Code of Student Conduct and Academic Integrity outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.

Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession and/or use during a test of materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.

Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course or degree requirements.

Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the
purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially.

Withheld Grades Semester Grades Policy (5.5)

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
936.468.7249
dos@sfasu.edu

SFA Human Services Counseling Clinic Human Services, Room 202
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
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