Special Problems
EGR 475

Instructor: Mr. Collin Timmons
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Office: 207H Cole STEM Building
Phone: 936-468-5188
Office Hours: MW: 1-3 PM, TR: 12 PM – 2 PM, or by appointment
Department: Department of Physics, Engineering, and Astronomy
Class meeting time and place: M: 1-3 PM

Course Description:
One to four hours. Experimental or theoretical independent study in research. Not available for graduate credit. Prerequisite: 12 semester hours of engineering or physics.

Text and Materials:
There are no textbooks required for this independent study course.

Course Requirements:
The student will design and manufacture a USB hand paddle for use with the 18” and 41” telescopes at the SFA Observatory. To do this they will use the Eagle PCB design software package to create and test a custom made circuit board. They will also use Solidworks CAD software to design the housing of the hand paddle. Lastly they will construct 2 hand paddles.

The student is expected to spend 4 hours a week working on this project outside of the schedule meeting time.

Course Calendar:

<table>
<thead>
<tr>
<th>Week(s)</th>
<th>Milestone or Event</th>
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<tbody>
<tr>
<td>1</td>
<td>Learn EAGLE and create a GANNT chart</td>
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<tr>
<td>2-3</td>
<td>Design PCB in the EAGLE software</td>
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<tr>
<td>4</td>
<td>Create BOM and purchase necessary parts</td>
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<tr>
<td>5</td>
<td>Print PCB, begin first remote (housing) prototype</td>
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<td>6</td>
<td>Begin assembly of PCB</td>
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<td>7</td>
<td>Print first prototype</td>
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<td>8</td>
<td>Assemble first prototype, test with PCB</td>
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<tr>
<td>9</td>
<td>Design improved prototype</td>
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<tr>
<td>10</td>
<td>Print improved prototype and assemble with PCB</td>
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<tr>
<td>11</td>
<td>Test PCB functionality with second prototype at the observatory</td>
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<tr>
<td>12</td>
<td>Design Improvements/tests</td>
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<tr>
<td>13</td>
<td>Print final prototype and make improvements, begin detailed design report</td>
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<tr>
<td>14</td>
<td>Thanksgiving</td>
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<tr>
<td>15</td>
<td>Final tests at observatory, design improvements</td>
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<tr>
<td>16</td>
<td>Have detailed design report completed, final prototype working and ready</td>
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Grading Policy:
The grade will be determined by percentage of the milestones completed.
Letter grades are based on the following ranges:
A: 90.0 – 100, B: 80.0 - 89.9, C: 70.0 - 79.9, D: 60.0 - 69.9, F: 0 - 59.9.

Attendance Policy:
Attendance will be taken at the beginning of each class. If you have 3 unexcused absences, then your final grade will be reduced by one letter grade. If you have 4 unexcused absences, you will receive an “F” in the course. To receive an excused absence a written and signed notice is required within three class days of the absence. If you miss class without approval of your instructor you 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 and within one week following an excused absence. It is your responsibility to see your instructor and make arrangements for make-up work.

Program Learning Outcomes (PLO)
Graduates of the program will have:
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 judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal 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

Student Learning Outcomes (SLO)
There are no SLOs for this course

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 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/.