**The University of Texas Pan-American**

**College of Science and Engineering**

**Department of Mechanical Engineering**

**Upgraded June 1, 2015**

**Course Number** MECE 4362

**Course Title** Senior Design Project II

**Course Time/Place** F 1:10 – 6:30pm, Engr. 1.236

**Instructor** Dr. Kamal Sarkar

**Office/Phone** 3.243 Engineering Building / (956) 665-2682

**Group Meeting:** MTWR 1:00-5:00 PM by scheduling

 Each group will meet for 45 minutes Every Week

**Email** ksarkar@utpa.edu

**Website** [www.engr.panam.edu/](http://www.engr.panam.edu/)undergraduate/Senior\_Design

**Pre-requisites** Undergraduate level MECE 4361, Minimum Grade of C

# Course Description This course is a continuation of MECE 4361. Students will conduct a comprehensive engineering design of the concept generated in MECE 4361, and report on the results. Synthesis using past coursework and outside reference material will be expected. Each team of students are required to build a working model and collect/analyze data from the model. Periodic progress reports and final oral and written reports will be required. Students may not receive credit for both MECE 4362 and ENGR 4362. Prerequisite: MECE 4361

**Text** None

**References:** Course andFaculty Advisors will identify appropriate references.

**Equipment:** Permanently bound lab notebook for individuals and three ring binder for

 the team.

# Course Requirements: Even if there is a lot of emphasis on team work, individual work will be recognized and rewarded. Grade has three major components, namely, Faculty Advisor (FA), Course Advisor (CA), and Final Presentation (FP). Your immediate task is to form your team that has a common interest to complete a specific project that interests you the most. Once you have the team, identify the project and corresponding Faculty Advisor (FA). Remember that it is a commitment for two semesters. It is your responsibility to identify the team and faculty advisor to complete the project. If you have issues, you are encouraged to discuss your problem with your instructor ASAP.

# Here are some guidelines for three components (FA, CA, and final Presentation) of your grade:

 **Faculty Advisor:** Meet your FA ASAP to discuss the resources and time that will be necessary to complete the project in an effective manner. Develop a realistic Gantt Chart to solve the problem. You must follow the Gantt Chart as closely as possible. At the end of this course you are expected to develop multiple solutions for a realistic problem, develop tools to rank them, and finally identify the most optimum solution that will be pursued in the following Semester. Meet with your FA at least half an hour a week that is convenient for everybody. Here are some guidelines:

**a**. Individual attendance.

**b.** Develop appropriate Gantt chart .

**c.** A logbook in which you document your progress - signed and dated.

**d.** Group member evaluation of self and other group members.

e. All the parts and resources need be ordered before Thanksgiving Day (November 24) to ensure completion of the project, data collection, and analysis by next semester.

**Weekly Meeting with Course Advisor:** Meet your CAat least 45 minutes a week to monitor progress, identify issues, and resolve old issues. While you will be guided to solve general engineering problems, it is your responsibility to make sure that you have taken advantage of the resources to solve your individual team problem. You are responsible for

1. Individual attendance.
2. Following the Gantt Chart as closely as possible.
3. Recording all issues and achievements in team binder.
4. Documenting all ideas related to the problem
5. Maintaining your team binder for future references.
6. Your own development as a professional

**Final Presentation:** All presentations will be judged based on technical content, visual effectiveness, communication skill, Q&A effectiveness, professional attire, among others. Note that there will be five zero credit "technical update / progress report" presentations and one zero credit “dress rehearsal” during the term at times to be announced.

**Note: Your Faculty and Course Advisors will collaborate to determine your grade.**

**Grading Scheme:**

Course Advisor …. ……..40%

Faculty Advisor ….……..40%

Department Faculty …… 20%

**Mechanical Engineering Department Classroom Policies**

**Attendance**

1. Attendance will be taken every time the class meets. Any student arriving to class **5 minutes** after the class has started will not be allowed in class. Students will be allowed a **maximum** of 5 absences for the whole semester for classes meeting three times a week, 3 absences for classes meeting twice a week, and 2 absences for classes meeting once a week. A **point** will be deducted from the total (100%) for each **unexcused** absence exceeding the maximum allowable.
2. Students **will not** be permitted to leave the classroom during lectures and exams except for **extreme emergencies**.

**Homework and Exams**

**There is no Home Work or Exam in this course.**

**There are weekly presentations!**

**Plagiarism**

Any instance of cheating or plagiarism will result in **loss of credit** for the work, and will be reported to the Chair of the ME Department and/or the Dean of Students for appropriate action which may include **loss of credit** for the course or **dismissal** from the University.

**Drop Policy**

Students can withdraw from a course through the *Office of Records and Registration* on or prior to:

* January 18, 2016: Monday, MLK Day, No Class
* January 19, 2016, Tuesday, First Day of Class
* February 3, 2016, Wednesday, Census Day
* Spring Break: March 14-18, 2013
* April 13, 2016, Wednesday, last day to drop/withdraw a course
* May 5 & 6, Thursday & Friday, 2016, Senior Design II Presentation Days

For further details and clarifications, students are encouraged to contact the *Office of Records and Registration at 665-2481*.

**Other important days for this course**

March 25, Friday, 2016, Easter Holiday

**American Disabilities Act Statement**

If you have a documented disability which will make it difficult for you to carry out the work as I have outlined and/or if you need special accommodations/assistance due to the disability, please contact Disability Services, University Center 305A, (956) 381-2659. Appropriate arrangements/accommodations can be arranged.

**Tentative Course Schedule (Spring 2016)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *Day* | *Date* | *Activity: All in Engr. 1.236 unless notified* | *Time* |
|  |  |  |  |  |
| 1 | Fri | Jan 22 | Organizational Meeting | 1:10pm |
| 2 | Fri | Jan 29 | Class Review | 1:10pm |
| 3 | Fri | Feb 5 | **Technical Update #1A** | **1:10pm** |
| 4 | Fri | Feb 12 | **Technical Update #1B** | 1:10pm |
| 5 | Fri | Feb 19 | Class Review | **1:10pm** |
| 6 | Fri | Feb 26 | **Technical Update #2A** | 1:10pm |
| 7 | Fri | Mar 4 | **Technical Update #2B** | **1:10pm** |
| 8 | Fri | Mar 11 | Class Review | 1:10pm |
| **9** | **Fri** | **Mar** **14-18** | **3/10-15: SPRING BREAK *YEAH!!!*** |  |
| 10 | Fri | Mar 25 | **Easter Holiday, No Classes!** | **1:10pm** |
| **11** | **Fri** | **Apr 1** | **Technical Update #3A** |  |
| 12 | Fri | Apr 8 | **Technical Update #3B** | **4pm** |
| 13 | Fri | Apr 15 | **Week of Dress Rehearsals** | **1 PM** |
|  | Sat | Apr 16 | **Week of Dress Rehearsals (Continued)** | **10 AM** |
|  | **Sun** | **Apr 17** | **Senior Design Lab is closed!** |  |
| 14 | **Mon** | **Apr 18** | **Draft of Final Report Due** | **12 Noon** |
| 15 | Mon | Apr 25 | **Final Report Due****Hard Deadline no Extensions** | **12 Noon** |
| 16 | Thurs | May 5 | **Formal Presentations** | **9am – 5pm** |
|  | Fri | May 6 | **Formal Presentations** | **9am – 5pm** |
|  |  |  |  |  |

Mechanical Engineering Program Educational Objectives

The Educational Objectives of the Mechanical Engineering Program at The University of Texas - Pan American are to produce graduates who:

1. have the knowledge and technical skills required to be and to remain productive in the field of mechanical engineering.
2. have an understanding of the importance of professionalism, ethics, safety and socioeconomics concerns in resolving technical problems.
3. are capable of functioning in diverse environments.

Senior Design II Course Outcomes

At the end of the course the students will be able to:

1. have a basic understanding problem solving skills using scientific and engineering principles
2. be able to apply the fundamental principles of engineering to the analysis and solution of real life problems
3. identify, formulate, and solve engineering problems using modern tools and techniques
4. develop abilities to implement theoretical understanding into workable solutions and generate information therefrom to validate and/or invalidate initial assumptions
5. understand the challenges of contemporary issues and use them to engage in life-long learning
6. communicate effectively both verbally and in-writing to wide range of audiences like engineers, professionals, and general public, alike.

**Course outcomes and assessment**

The course is structured according to ABET definitions and requirements. Evaluation rubrics have been developed based on these requirements. Every faculty will use these rubrics to evaluate the performances of each team and individuals alike. They are available to all the students to ensure that they prepare themselves accordingly.

In SDII we specifically address following ABET outcomes marked **bold blue font**.

**ABET Outcomes (11) to match Student Learning Outcomes for Various Courses**

1. Ability to apply knowledge of mathematics, science, and engineering
2. **Ability to design and conduct experiments, as well as to analyze and interpret data**
3. 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
4. **Ability to function on multidisciplinary teams**
5. **Ability to identify, formulate, and solve engineering problems**
6. Understanding of professional and ethical responsibility
7. **Ability to communicate effectively**
8. **Broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context**
9. **Recognition of the need for, and an ability to engage in life-long learning**
10. Knowledge of contemporary issues
11. **Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.**