Course Title: Senior Design and Professionalism II
Course Prefix: CHEG  Course No.: 4482  Section No.: P01 & P81

Department of | Chemical Engineering | College of | Engineering

Instructor Name: Dr. Lealon L. Martin
Office Location: C.L. Wilson 201F
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Fax: 936-261-9419
Email Address: llmartin@pvamu.edu

Office Hours: TWR 1:00-2:00 p.m. (or by appointment)
Virtual Office Hours: None

Course Location: New Electrical Engineering Bldg. 137 (T) & S.R. Collins Engineering Building 224 (R)
Class Meeting Days & Times: T 3:30 pm – 4:20 pm & R 3:30 pm – 5:50 pm.
Catalog Description: (1-4) Credit 2 semester hours. A continuation of CHEG 4472 with required design modifications of the team projects necessary to complete the designs initiated in Senior Design and Professionalism I. Design results are presented in a formal, final oral presentation as well as a final report. professionalism elements reinforce the importance of professional ethics, corporate culture, life-long learning, and globalization.

Prerequisites: CHEG 4472.
Co-requisites:

Required Text: None

Recommended Text/Readings:

6. “Senior Project Manual” by Prairie View A & M University College of Engineering

Access to Learning Resources: PVAMU Library:
phone: (936) 261-1500;
web: http://www.tamu.edu/pvamu/library/
University Bookstore:
phone: (936) 261-1990;
web: https://www.bkstr.com/Home/10001-10734-1?demoKey=d

Course Goals or Overview:
The goal of this course is to provide a capstone design experience for chemical engineering students who have completed all of their design coursework at the junior level and below.

**Course Outcomes/Objectives**
At the end of this course, the student will have achieved and demonstrated the following outcomes.

1. Be able to design a system, component, or process to meet desired needs within constraints.
2. Be able to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
3. Be able to communicate effectively with a range of audiences (both oral and written).

**Course Requirements & Evaluation Methods**
This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course. Continuous assessment of students’ homework assignments, oral presentations and written design reports will be used to evaluate their competence in ABET student outcomes 2 (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), and 5 (ability to (i) function effectively on a team whose members together (ii) provide leadership, create a collaborative and inclusive environment, (iii) establish goals, plan tasks, and meet objectives).

- **Presentation** – oral presentations, some of which are graded, to develop and demonstrate an ability to communicate effectively in oral mode.
- **Homework Exercises** – written assignments, often in letter report format, designed to supplement and reinforce course material. The letter report format serves to develop and demonstrate an ability to communicate effectively in written mode.
- **Project Report** – the central feature of this course is an open ended design project on a relevant, contemporary, technical problem in the student’s discipline. The report is the medium by which design accomplishments are demonstrated and also serves to develop and demonstrate an ability to communicate effectively in written mode.
- **Class Participation** – daily attendance and participation in class discussions

**Grading Matrix** *(points will vary according to instructor's grading system)*

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework Assignments</td>
<td>5%</td>
</tr>
<tr>
<td>Midterm progress report</td>
<td>5%</td>
</tr>
<tr>
<td>Final presentation</td>
<td>70%</td>
</tr>
<tr>
<td>Final project report</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
</tr>
<tr>
<td>Discount for lack of participation</td>
<td>-10%</td>
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</tbody>
</table>

**Extra credit (as assigned by instructor)**

**Grade Determination:**
- A = 100 – 90pts;
- B = 89 – 80pts;
- C = 70 – 79pts;
- D = 60 – 69pts;
- F = 59pts or below

**Course Procedures**
**Textbook Policy**
Students must acquire the textbook that is listed as “required” on the course syllabus. The textbook must be acquired by the 10th class day. Students are not allowed to share textbooks with other students who are currently registered in the same class. Failure to acquire (or show proof of purchase) the required textbook by the 10th class day will result in the student being administratively dropped from the course. The University will assess financial obligations for the course to the student as with any other dropped class according to the fee schedule. In addition, your financial aid may be affected by the subsequent registration action(s).

Conduct:
1. Students will conduct themselves in a manner that is respectful to their fellow classmates and the instructor at all times.
2. **Cell phones, ipads and smart phones or similar electronic devices MUST** be turned off and stowed away during class time. Students are **NOT** allowed to leave class to answer cell phones or use these devices.
3. Students caught using ipads and smart phones or similar electronic devices during exams will receive **ZERO** for the exam and be subject to sanctions as stipulated under **Academic Misconduct**.
4. Students should be prepared to stay in the classroom for the duration of the exam. Students who have any condition that may require them to leave the exam room should make prior arrangements with the Instructor. Students who decide to leave the exam room for any other reason must handover their exam paper and consider the exam over for them.
5. Programmable calculators are **NOT** allowed in class.
6. Students should dress professionally and are **NOT** allowed to wear caps/hats in class.
7. Students are **NOT** allowed to bring food to the classroom or eat in class.
8. Arrive to class prepared to discuss lesson with your project binder.

Submission of Assignments:
There will be project assignments, reports and presentations. All presentations will be team presentations and each student is required to contribute to the success of the team. It is recommended that a member of the group be assigned the duty of recorder, and maintain the minutes of meetings (with listing of attendees) and a notebook with pertinent information. Individual reports are to be submitted at mid term and at the end of the semester detailing the contribution of each team member. A team report is to be submitted at midterm and a final report is to be submitted at the end of the semester. In the event that it becomes necessary to remove a member from a team, the following procedure must be followed:
- The team minus the affected member, must meet to discuss the action to be taken.
- The team must then meet with the affected student and discuss the action to be taken.
- A letter must be submitted to the instructor giving justification for the action to be taken. The letter must be signed by all team members and a copy must be sent to the affected student.
- The instructor will then schedule a meeting with the team members and the affected student for final discussion and appropriate action.

All homework assignments are due directly to the Instructor, prior to the start of class or the assignment will not be accepted. All homework assignments and exams should be written on one side of the page only, and should use the appropriate cover sheet, with the name, assignment title and date. All pages should be numbered. Failure to use the correct cover sheet will result in the assignment grade being reduced by 20%.

Formatting Documents:
Microsoft Word is the standard word processing tool used at PVAMU. If you’re using other word processors, be sure to use the “save as” tool and save the document in either the Microsoft Word, Rich-Text, or plain text format.

Exam Policy
Exams should be taken as scheduled. No makeup examinations will be allowed except under documented emergencies (See Student Handbook).

Professional Organizations and Journals
As directed by instructor.

References
As directed by instructor.

16 WEEK CALENDAR

**Week One:** Topic
Course overview & Manual: Meeting Agreement; Review of group dynamics

Chapter (s):
Reading: Group dynamics

Assignment (s):

**Week Two:** Topic
Project constraints, tasks and GANTT chart

Chapter (s):

Assignment (s):
Homework 1: Group dynamics and GANTT chart
<table>
<thead>
<tr>
<th>Week Three: Topic</th>
<th>Finalized Material/Energy balances and updated literature review</th>
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</thead>
<tbody>
<tr>
<td>Chapter (s):</td>
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<tr>
<td>Assignment (s):</td>
<td>Homework 2</td>
</tr>
<tr>
<td>Week Four: Topic</td>
<td>Process design: Process simulation using HYSYS/ASPEN and Safety Review; Hazards, operability and inherent safety (HAZOP analysis)</td>
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<td>Chapter (s):</td>
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<tr>
<td>Assignment (s):</td>
<td>Homework 3</td>
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<tr>
<td>Week Five: Topic</td>
<td>Design of major equipment, codes and standards and HAZOP analysis</td>
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<tr>
<td>Chapter (s):</td>
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<tr>
<td>Assignment (s):</td>
<td>Reading: Design equations and heuristics, codes and standards</td>
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<tr>
<td>Week Six: Topic</td>
<td>Design of major equipment, HAZOP analysis</td>
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<td>Chapter (s):</td>
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<tr>
<td>Assignment (s):</td>
<td>Homework 4</td>
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<tr>
<td>Week Seven: Topic</td>
<td>Design of major equipment</td>
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<tr>
<td>Chapter (s):</td>
<td></td>
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<tr>
<td>Assignment (s):</td>
<td>Reading: Codes and standards</td>
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<tr>
<td>Week Eight: Topic</td>
<td>Design of major equipment</td>
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<td>Chapter (s):</td>
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<tr>
<td>Assignment (s):</td>
<td><strong>Mid Term</strong></td>
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<tr>
<td>Week Nine: Topic</td>
<td>Spring Break</td>
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<tr>
<td>Chapter (s):</td>
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<td>Assignment (s):</td>
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<tr>
<td>Week Ten: Topic</td>
<td>Process Design and analysis: Materials selection</td>
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<td>Chapter (s):</td>
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<tr>
<td>Assignment (s):</td>
<td>Reading: Materials selection</td>
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<tr>
<td>Week Eleven: Topic</td>
<td>Process Design and analysis: Equipment specification</td>
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<tr>
<td>Chapter (s):</td>
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<tr>
<td>Assignment (s):</td>
<td>Reading: Mechanical engineering design and Plant layout</td>
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<tr>
<td>Week Twelve: Topic</td>
<td>Process Design and analysis: Process control; final safety review  and HAZOP analysis</td>
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<tr>
<td>Chapter (s):</td>
<td></td>
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<tr>
<td>Assignment (s):</td>
<td>Reading: Process control and instrumentation</td>
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<tr>
<td>Week Thirteen: Topic</td>
<td>Process Design and analysis: Economic Evaluation</td>
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<tr>
<td>Chapter (s):</td>
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<tr>
<td>Assignment (s):</td>
<td>Capital costs, operating costs and return on investment</td>
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<tr>
<td>Week Fourteen: Topic</td>
<td>Process Design and Analysis: Outline of project presentation</td>
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<td>Chapter (s):</td>
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<tr>
<td>Assignment (s):</td>
<td>Completion of detailed plant design</td>
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<tr>
<td>Week Fifteen: Topic</td>
<td>Course Review</td>
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<td>Chapter (s):</td>
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<tr>
<td>Assignment (s):</td>
<td>Final draft of project report due</td>
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<tr>
<td>Week Sixteen</td>
<td>Final Presentation; Final Report due</td>
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University Rules and Procedures

Disability statement (See Student Handbook):
Students with disabilities, including learning disabilities, who wish to request accommodations in class should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

Academic misconduct (See Student Handbook):
You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

Forms of academic dishonesty:
1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.
2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.
3. Fabrication: use of invented information or falsified research.
4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else’s words, ideas, or data as one’s own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one’s own work also constitutes plagiarism.

Nonacademic misconduct (See Student Handbook)
The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor’s ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

Sexual misconduct (See Student Handbook):
Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

Attendance Policy:
Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student’s course grade being reduced or in assignment of a grade of “F”. Absences are accumulated beginning with the first day of class.

Student Academic Appeals Process
Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.
Technical Considerations for Online and Web-Assist Courses

Minimum Hardware and Software Requirements:
- Pentium with Windows XP or PowerMac with OS 9
- 56K modem or network access
- Internet provider with SLIP or PPP
- 8X or greater CD-ROM
- 64MB RAM
- Hard drive with 40MB available space
- 15” monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Netscape Communicator ver. 4.61 or Microsoft Internet Explorer ver. 5.0 /plug-ins
- Participants should have a basic proficiency of the following computer skills:
  · Sending and receiving email
  · A working knowledge of the Internet
  · Proficiency in Microsoft Word
  · Proficiency in the Acrobat PDF Reader
  · Basic knowledge of Windows or Mac O.S.

Netiquette (online etiquette): students are expected to participate in all discussions and virtual classroom chats when directed to do so. Students are to be respectful and courteous to others in the discussions. Foul or abusive language will not be tolerated. When referring to information from books, websites or articles, please use APA standards to reference sources.

Technical Support: Students should call the Prairie View A&M University Helpdesk at 936-261-2525 for technical issues with accessing your online course. The helpdesk is available 24 hours a day/7 days a week. For other technical questions regarding your online course, call the Office of Distance Learning at 936-261-3290 or 936-261-3282

Communication Expectations and Standards:
All emails or discussion postings will receive a response from the instructor within 48 hours.

You can send email anytime that is convenient to you, but I check my email messages continuously during the day throughout the work-week (Monday through Friday). I will respond to email messages during the work-week by the close of business (5:00 pm) on the day following my receipt of them. Emails that I receive on Friday will be responded to by the close of business on the following Monday.

Submission of Assignments:
Assignments, Papers, Exercises, and Projects will distributed and submitted through your online course. Directions for accessing your online course will be provided. Additional assistance can be obtained from the Office of Distance Learning.

Discussion Requirement:
Because this is an online course, there will be no required face to face meetings on campus. However, we will participate in conversations about the readings, lectures, materials, and other aspects of the course in a true seminar fashion. We will accomplish this by use of the discussion board.

Students are required to log-on to the course website often to participate in discussion. It is strongly advised that you check the discussion area daily to keep abreast of discussions. When a topic is posted, everyone is required to participate. The exact use of discussion will be determined by the instructor.

It is strongly suggested that students type their discussion postings in a word processing application and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, it should be copied and pasted to the discussion board.