Syllabus
Engineering Technology
University of North Texas
Course Title: SENIOR DESIGN II,
Course Prefix and Course Number:
ELET 4790
Semester: Spring 2019

The Engineering Technology Department, in cooperation with the Office of Disability Accommodation, complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request to the instructor prior to the fourth day.

SAFETY CATEGORY: 1
DATE PREPARED: January 7, 2019
PREPARED BY: Elias Kougianos

COURSE NUMBER, TITLE, CREDIT HOURS:
ELET 4790. Senior Design II; 3 credit hours (2,3).

DESCRIPTION:
Implement, test and demonstrate a product or process. Oral and written documentation required. Projects to be supplied by local industry whenever possible.

PREREQUISITES:
ELET 4720, ELET 4770 and ELET 4780.

REQUIRED TEXTBOOKS:
No Required Text

SUPPLEMENTAL TEXTS AND MATERIALS:
Use of all texts and material from prior ETEC, technical writing and presentations courses.

COURSE OBJECTIVES: ABET/IEEE Program Outcomes and Program Educational Objectives supported.
1. Understand the product development cycle from initial design to a test model as used in an industrial setting. (a, b, f, k)
2. Appreciate team effort in product development. (c, e, g, i)
3. Prepare a formal technical document covering the actual design. (b, c, f, g)
4. Learn the process of utilizing catalogs, specification sheets and vendor documents in the final design process. (a, c, f)
5. Appreciate the requirements and techniques of an oral presentation covering a group effort. (g, j)
6. Appreciate the free market system. (g, h, i, j, k)

STUDENT LEARNING OUTCOMES: (Course Objectives Supported)
At the conclusion of this course student will be able to:
a) Prepare a formal project report in response to either an RFP or a group-initiated concept. (3, 4)
b) Design the concept using appropriate electrical and mechanical principles. (1, 2, 4)
c) Apply the breadth of the major engineering technology courses to the completion of the final design model. (1, 4)
d) Present an oral report on the design and its applications. (4, 5)
e) Write a formal report on the project. (3, 4)
f) Work in a small group design environment. (2, 5, 6)
g) Develop and prepare a working model with a marketing plan (1, 2, 4).
APPROPRIATE PROGRAM OUTCOMES:

a. An appropriate mastery of the knowledge and adapt to emerging applications of disciplines,
b. An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology,
c. An ability to conduct, analyze and interpret experiments and apply experimental results to improve,
d. An ability to apply creativity in the designing of systems, components or processes appropriate to program objectives,
e. An ability to function effectively on teams,
f. An ability to identify, analyze and solve technical problems,
g. An ability to communicate effectively,
h. A recognition of the need for, and an ability to engage in lifelong learning,
i. An ability to understand professional, ethical and social responsibilities,
j. A respect for diversity and a knowledge of contemporary professional,
k. A commitment to quality, timeliness, and continuous improvement.
l. Graduates must demonstrate knowledge and hands-on competencies in the application of the following to the building, testing, operation, and maintenance of electrical/electronic systems:
   circuit analysis and design,
   computer programming,
   associated software,
   analog and digital electronics, and
   microcomputers.
m. Graduates must demonstrate knowledge and hands-on competence in the application of physics or chemistry to electrical/electronics circuits in a rigorous mathematical environment at or above the level of algebra and trigonometry.
n. Graduates must demonstrate the ability to analyze, design and implement:
   control,
   instrumentation,
   communication,
   computer, or
   power systems.
o. Graduates must demonstrate the ability to apply project management techniques to electrical/electronics systems.
p. Graduates must demonstrate the ability to utilize the following in support of electrical/electronic systems:
   Statistics/probability transform method,
   discrete mathematics, or
   applied differential equations.

INSTRUCTIONAL OBJECTIVES
This is a design course whereby the students are placed in a simulated industrial environment. Divided into teams they are responsible for designing a project, fabricating
and testing a final working model. They must submit weekly progress reports, a project proposal and an initial design, all of which must be approved by the instructor who functions as a CEO. The course meets formally once each week for lecture/discussion. Lab time is used for creating a hardware model from an initial visual concept. Lectures and discussions will include: job searching, career paths, and graduate school.

LEARNING STRATEGIES:
Class members will be divided into companies of normally up to 4 students. Each company is assigned to the course instructor who will function as Chief Engineer. The company will be responsible for:
- Development of an initial concept
- Fabricating a working model.
- Preparation of a cost analysis
- Development of a market plan – or Response to a specific RFP.
- Preparation and updating of a weekly time schedule
- Mid-semester oral update reports on the project status.
- Weekly logs (written progress reports)
- Mandatory attendance at weekly lectures and company progress sessions.
- Preparation of a formal written report covering the design, development and fabrication of the semester project.
- Formal oral presentation by all members of the company on the semester project.
- Submission of an engineering journal documenting lessons learned throughout the project.

COURSE OUTLINE:
1. Follow-up to initial design
2. Continuation of design activities
3. Mid-term presentation
4. Final presentation to faculty
5. Project demonstration
6. Final project presentation and demo to invited personnel

Major Milestones for Senior Design II:

<table>
<thead>
<tr>
<th>Event</th>
<th>Date/Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly reports</td>
<td>Every Sunday by 5:00PM via Canvas</td>
</tr>
<tr>
<td>Oral Presentation 1</td>
<td>Tuesday, February 5, 2019 (Teams 1 and 2), and Tuesday February 12, 2019 (Teams 3 and 4).</td>
</tr>
<tr>
<td>Oral Presentation 2</td>
<td>Tuesday, April 2, 2019 (Teams 1 and 2), and Tuesday, April 9, 2019 (Teams 3 and 4)</td>
</tr>
<tr>
<td>Formal Oral Presentation (Design Day)</td>
<td>Friday, April 26, 2019</td>
</tr>
</tbody>
</table>
LABORATORY OUTLINE:

The lab will be utilized for a weekly status meeting with the instructor. Each company will be responsible for arranging a 20-minute time slot for the weekly meeting – same time each week. The remainder of lab time is available for students to design, fabricate and test their product using the equipment and facilities provided by the department.

COMPUTER USAGE:

Students have the opportunity to utilize software packages supported by the department for the completion of their project, e.g. Microsoft Project, Word, Excel, MatLab, SPICE, etc.

ORAL COMMUNICATION USAGE:

See Learning Strategies.

WRITTEN COMMUNICATION USAGE:

See Learning Strategies.

COURSE EVALUATION:

The Student Perceptions of Teaching (SPOT) is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider the SPOT to be an important part of your participation in this class.
PRESENTATION GRADING GUIDE:

PRESENTOR NAME ____________________ COURSE NAME __________________

SEMESTER _______ PROJECT TITLE ______________________________________

<table>
<thead>
<tr>
<th>EVALUATION TOPIC</th>
<th>POSSIBLE POINTS</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Subject Introduction</td>
<td>0 1 2</td>
<td></td>
</tr>
<tr>
<td>2. Organization of Topics</td>
<td>0 1 2 3</td>
<td></td>
</tr>
<tr>
<td>3. Clear Descriptions</td>
<td>0 1 2 3</td>
<td></td>
</tr>
<tr>
<td>4. Emphasized Pertinent Information</td>
<td>0 1 2</td>
<td></td>
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<tr>
<td>5. Quality and Effective Use of Visual Aids</td>
<td>0 1 2 3</td>
<td></td>
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<tr>
<td>6. Effective Conclusion</td>
<td>0 1 2 3</td>
<td></td>
</tr>
<tr>
<td>7. Composure and Speaking</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td>8. Effective Demonstration with a working model</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td>9. Project Technical Content</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
<td></td>
</tr>
<tr>
<td>10. Subjective Evaluation</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
</tbody>
</table>

Composite Score __________

EVALUATOR COMMENTS _______________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
WRITTEN GRADING GUIDE:

<table>
<thead>
<tr>
<th>EVALUATION TOPIC</th>
<th>POSSIBLE POINTS</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Objective</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>2. Diagrams</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>3. Expected Results</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>4. Original Data Sheets</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>5. Analysis of Results</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>6. Conclusions</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>7. Supportive Data</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>8. Comments</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>9. Professionalism signature</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Composite Score: __________

Professionalism Signature (TA verifies the student performed the experiment, that the position computer is logged of and position is clean):  

_____________________________________ Date Completed: ______________________

EVALUATOR COMMENTS ________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
LIBRARY USAGE:

See Learning Strategies

GRADING ELEMENTS AND WEIGHTS:

<table>
<thead>
<tr>
<th>Item</th>
<th>Individual(s) Responsible</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal Written Reports</td>
<td>CEO with input form Chief Engineer</td>
<td>30%</td>
</tr>
<tr>
<td>Proposal – (Prepared as part of ELET 4780)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial Design – (Prepared as part of ELET 4780)</td>
<td></td>
<td></td>
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<tr>
<td>Formal final Report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral Presentations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid term</td>
<td>CEO with input from Chief Engineer &amp; Evaluators</td>
<td>30%</td>
</tr>
<tr>
<td>Formal Final</td>
<td>CEO with input from Chief Engineer &amp; Evaluators</td>
<td></td>
</tr>
<tr>
<td>Final Working Model</td>
<td>Chief Engineers</td>
<td>25%</td>
</tr>
<tr>
<td>Weekly Progress Reports</td>
<td>Chief Engineers &amp; CEO</td>
<td>10%</td>
</tr>
<tr>
<td>Class Attendance &amp; Participation</td>
<td>CEO (Input from Chief Engineers)</td>
<td>5%</td>
</tr>
</tbody>
</table>

Total 100%

Grading Scale:
A............100-90
B.........89-80
C...........79-70
D............69-60
F..............59-0

GRADING POLICIES:

1. The student is required to attend all scheduled lectures class times. The student shall be dropped from the course for three (3) unexcused lecture absences. An excused absence can only be guaranteed by obtaining, in advance, instructor authorization. A student shall be considered absent if twenty or more minutes late to class.
2. The student is required to submit a weekly report via email to elias.kougianos@unt.edu on his/her activities the previous week. The report will be due on Sunday by 5:00PM and will follow the format provided by the instructor. The schedule for the report submission is provided below. Time will be determined by the time indicated in the header of the email. One unexcused late or missed report will incur a penalty of 5% of the total grade. Two unexcused late or missed reports will incur a penalty of 11% of the total grade. In this case the maximum grade earned can only be a “B”. **Three unexcused late or missed weekly reports will result in the student being dropped from the class.**

3. **An unexcused late or missed mid-semester presentation will result in the student being dropped from the class.**

4. **An unexcused late or missed final presentation will result in the student receiving a grade of “F”.**

5. **Late submission of the final report will result in an 11% grade penalty.**

6. **Failure to submit the final report will result in a class grade of “F”.**

**WEEKLY REPORT SUBMISSION SCHEDULE**

<table>
<thead>
<tr>
<th>Report</th>
<th>Date/Time Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sunday Jan. 20, 5:00 PM</td>
</tr>
<tr>
<td>2</td>
<td>Sunday Jan. 27, 5:00PM</td>
</tr>
<tr>
<td>3</td>
<td>Sunday Feb. 3, 5:00PM</td>
</tr>
<tr>
<td>4</td>
<td>Sunday Feb. 10, 5:00PM</td>
</tr>
<tr>
<td>5</td>
<td>Sunday Feb. 17, 5:00PM</td>
</tr>
<tr>
<td>6</td>
<td>Sunday Feb. 24, 5:00PM</td>
</tr>
<tr>
<td>7</td>
<td>Sunday Mar. 3, 5:00PM</td>
</tr>
<tr>
<td>8</td>
<td>Sunday Mar. 10, 5:00PM</td>
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<tr>
<td>9</td>
<td>Sunday Mar. 24, 5:00PM</td>
</tr>
<tr>
<td>10</td>
<td>Sunday Mar. 31, 5:00PM</td>
</tr>
<tr>
<td>11</td>
<td>Sunday Apr. 7, 5:00PM</td>
</tr>
<tr>
<td>12</td>
<td>Sunday Apr. 14, 5:00PM</td>
</tr>
<tr>
<td>13</td>
<td>Sunday Apr. 21, 5:00PM</td>
</tr>
</tbody>
</table>

**CLASS POLICIES:**

1. All rules relating to academic dishonesty will be enforced in accordance with University policies. Cheating on quizzes, examinations and laboratory assignments, and plagiarism on various papers and reports are types of disciplinary misconduct for which penalties are assessed under the UNT Code of Student Conduct and Discipline.
Major responsibility for implementing the University's policy on scholastic dishonesty rests with the faculty. Be advised that the instructor of this course supports and fully implements this policy. The following actions will be taken when evidence of such misconduct is observed. The student will be presented with the evidence of misconduct and given an opportunity to explain same. Based on the outcome of this private conference, the matter will be either dropped or the student will be given a grade of "F" in the course and be referred to the Dean of Students for further counseling and/or disciplinary action.

2. State common law and federal copyright laws protect my lectures. They are my own original expression and I record them at the same time that I deliver them in order to secure protection. Whereas you are authorized to take notes in class thereby creating a derivative work from my lecture, the authorization extends only to making one set of notes for your own personal use and no other use. You are not authorized to record my lectures, to provide your notes to anyone else or to make any commercial use of them without expressed prior permission from me.

3. During the course, handouts will be provided to enhance the presentation of certain concepts. These materials are provided strictly for instructional purposes and may otherwise be restricted. There is no authorization for further reproduction of distribution of handout materials beyond that intended to teach the course.

4. This syllabus is subject to change at any time during the semester with changes to be announced in class.

5. Students should schedule at least one hour per lecture hour for study outside class.

6. Grades are based, in part, on the student's ability to communicate. Well written English is expected in all course work.

7. Each student should retain graded lecture notes, pop quizzes, homework, tests, software-generated files, and laboratory reports to document errors in recorded grades.

8. Requests for review of graded work must be submitted during the lecture in which such work is returned to the students. The request should be accompanied by a written justification of the request including any supporting data.

9. The UNT Catalog procedures on cheating and plagiarism will be vigorously enforced. It is the duty of all students to protect their work so it is not available to others for submission as their efforts. This is especially true of files that are generated on the computer. Students who knowingly allow others to use their work are partners in this unethical behavior.

10. Challenges to the course grade must be presented within 60 days of receipt of grade notices mailed by the university. This will insure that instructor’s records are still
available to allow a review of the assigned grade. You should first discuss your complaint with the instructor. If you wish to carry it further, contact the Program Coordinator by calling (940) 565-2022. To further pursue your complaint, contact the Department Chair at (940) 565-2022, but ONLY after first discussing your concern with the previous two individuals.

11. If appropriate, Material Safety Data Sheets (MSDS) are maintained on file in the department for your review. Access to these documents may be provided by the:
   - instructor of this course,
   - Program Coordinator, or
   - Department Secretary.
   Seek initial access through the instructor or Coordinator rather than the secretary.

12. An I (incomplete) grade is given only for extenuating circumstances and in accordance with University and Departmental Policies.

13. To comply with FERPA policies, I will communicate via email (email me at elias.kougianos@unt.edu) but I will only respond to UNT email accounts.