

ELEN499 16

STUDENT WARNING: This course syllabus is from a previous semester archive and serves only as a preparatory reference. Please use this syllabus as a reference only until the professor opens the classroom and you have access to the updated course syllabus. Please do NOT purchase any books or start any work based on this syllabus; this syllabus may NOT be the one that your individual instructor uses for a course that has not yet started. If you need to verify course textbooks, please refer to the online course description through your student portal. This syllabus is proprietary material of APUS.

Course Summary

Course : ELEN499 **Title :** Senior Seminar Project

Length of Course : 16

Prerequisites : ELEN498 **Credit Hours :** 3

Description

Course Description: After completing the design of their approved project in ELEN498 - Senior Seminar Design, students will implement that design into a working prototype and write a senior thesis. The senior thesis will be completed and an oral defense presented. Selected senior papers will be retained in our library. The student is further encouraged to submit work to peer reviewed journals, conference proceedings, and/or senior design competitions. NOTE: This course requires the student to purchase additional materials that are not covered by the book grant. Please refer to the Course Materials section for additional details.

Prerequisite: ELEN498

Course Scope:

This course will serve as the culmination of the concepts learned throughout the student's course of study within the Electrical Engineering program and the continuum of the Senior Seminar Design course (ELEN498). After the project is proposed and approved in the preceding Senior Seminar Design course, the students will begin execution of the proposed design, which will include: a project schedule, design specification, concept drawings and evaluation, schematics, risk assessment and PCB layouts, a test and verification plan, and working prototype. The issues presented, discussed, and analyzed in this Senior Seminar Project course will be those most students will encounter as they enter their respective fields and careers. Students will demonstrate organization and planning through maintaining an engineering notebook to capture aspects of design and execution of project. They will utilize critical thinking skills and formal writing skills to express their scientifically based thoughts and opinions through case studies, discussion boards, and a final research paper. A working prototype that demonstrates goals and objectives from students proposed design is the final requirement in addition to a formal written report, poster board and oral presentation for this course.

Objectives

After completing the course, the student should be able to accomplish these Course Objectives (CO):

1. Apply the engineering design process.
2. Analyze reasoned positions on a specific chosen engineering design
3. Discuss system engineering attributes, properties and characteristics

4. Evaluate the identification and collection of engineering experimental data
 5. Execute testing and failure analysis on designs
 6. Demonstrate a working prototype that achieves goals and objectives from proposed design
 7. Prepare technical information through oral presentation, reports, and logbooks
 8. Evaluate and optimize team organization, relationships, and working dynamics
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Outline

Week 1: Kickoff Meeting

Learning Objective(s)

Apply engineering design process by updating/review of roles, responsibilities, problem statement, Bill of Materials; Prepare technical information through reports, and logbooks; Evaluate and optimize team organization, relationships, and working dynamics

(CO-1, CO-7, CO-8)

Readings

Review Chapters 1-8 (Stadmler textbook)

Assignment(s)

Week 1 Forum: Introduction

1. Roles and Responsibility Summary
2. Problem Statement Review /Update
3. Bill of Materials Review/Update
4. Order Confirmation Paperwork
5. Week 1 Memo

Week 2: Kickoff Meeting (contd.)

Learning Objective(s)

Apply engineering design process by updating Gantt- and flow- charts; Evaluate and optimize team organization, relationships, and working dynamics. Discuss system engineering attributes, properties and characteristics.

(CO-1, CO-3, CO-7, CO-8)

Readings

Chapter 1 (Wasson textbook)

Assignment(s)

6. Gantt Chart Review/Update
7. Flowchart Review/Update
8. Week 2 Memo

Week 3: Preliminary Design

Learning Objective(s)

Prepare technical information through reports, and logbooks; Evaluate and optimize team organization, relationships, and working dynamics. Discuss system engineering attributes, properties and characteristics.

Analyze reasoned positions on a specific chosen engineering design (CO-2, CO-3, CO-7, CO-8)

Readings

Chapter 8 (Stadmilller textbook)

Assignment(s)

Week 3 Forum: Design Considerations and Concerns

9. Week 3 Memo

Week 4: Preliminary Design (contd.)

Learning Objective(s)

Prepare technical information through reports; Evaluate and optimize team organization, relationships, and working dynamics. Discuss system engineering attributes, properties and characteristics.

Analyze reasoned positions on a specific chosen engineering design (CO-2, CO-3, CO-7, CO-8)

Readings

Chapter 8 (Stadmilller textbook)

Assignment(s)

10. Preliminary Design Report

11. Week 4 Memo

Week 5: Presentation Skills

Learning Objective(s)

Gain key knowledge and understanding of best practices for preparing presentations

(CO-7, CO-8)

Readings

Presentation Skills Article

Assignment(s)

Week 5 Forum: Do's and Don'ts of Presentations

12. Week 5 Memo

Week 6: Critical Design Review

Learning Objective(s)

Both students and faculty will review chosen engineering design.

(CO-7, CO-8)

Readings

Chapter 2 (Wasson textbook)

Assignment(s)

13. Final Design Review PowerPoint Presentation (Live Adobe Connect Session)

14. Week 6 Memo

Week 7: Prototype Development

Learning Objective(s)

Provide overall progress on all aspects of project development.

(CO-7, CO-8)

Readings

Provide overall progress on all aspects of project development.

(CO-7, CO-8)

Assignment(s)

Week 7 Forum: Career Services at APUS

15. Week 7 Memo

Week 8: Prototype Development (contd.)

Learning Objective(s)

Provide overall progress on all aspects of project development.

(CO-7, CO-8)

Readings

Chapters 11 (Stadmilller)

Assignment(s)

16. Week 8 Memo

Week 9: Prototype Development (contd.)

Learning Objective(s)

Provide overall progress on all aspects of project development.

(CO-7, CO-8)

Readings

Chapter 12 (Wasson)

Assignment(s)

Week 9 Forum: Preparation for Engineering Job Interviews

17. Week 9 Memo

Week 10: Experimental Data Collection and Analysis

Learning Objective(s)

Compile collection of data and analysis through tables, graphs and written summary

(CO-4, CO-7, CO-8)

Readings

Chapter 11 (Wasson)

Assignment(s)

18. Report of experimental data analysis

19. Week 10 Memo

Week 11: Design Verification

Learning Objective(s)

Execute test plan and validate proposed design results

(CO-5, CO-7, CO-8)

Readings

Chapter 12

(Stadmler)

Chapter 13 (Wasson)

Assignment(s)

Week 11 Forum: Importance of Verifying Results

20. Report of Test Plan Validation Results

21. Week 11 Memo

Week 12: Final Paper Preparation

Learning Objective(s)

Submission of formal research report with detailed findings, conclusions, and recommendations for further work

(CO-7, CO-8)

Readings

Chapter 17 (Wasson)

Assignment(s)

22. Final Paper Outline

23. Complete team evaluation peer-review forms

24. Week 12 Memo

Week 13: Final Paper Preparation

Learning Objective(s)

Submission of formal research report with detailed findings, conclusions, and recommendations for further work

(CO-7, CO-8)

Readings

Chapter 17 (Wasson)

Assignment(s)

Week 13 Forum: Career Plans

25. PowerPoint presentation completed by end of week

26. Week 13 Memo

Week 14: Prototype Demonstration

Learning Objective(s)

Present live demonstration of working prototype

(CO-6, CO-7, CO-8)

Readings

Assignment(s)

Live Review of prototype demonstrations via Adobe Connect

27. Week 14 Memo

Week 15: Review and wrap-up

Learning Objective(s)

Review of research paper, revisions submitted as required by instructors, submission to APUS library for

archiving, consideration of publication possibilities

(LO-6, LO-7, CO-8)

Readings
Assignment(s)

Week 15 Forum: Engineering Job Market

28. Submit final poster presentations

29. Week 15 Memo

Week 16: Review and wrap-up (cont'd)

Learning Objective(s)

Review of research paper, revisions submitted as required by instructors, submission to APUS library for archiving, consideration of publication possibilities (cont'd)

(CO-6, CO-7, CO-8)

Readings
Assignment(s)

Week 16 Forum: Course Evaluation

30. Completed revisions and submission of final project report due end of week.

31. Week 16 Memo

Evaluation

Instructor announcements: Weekly announcements will appear on Monday of each week in the online classroom. This announcement will also be e-mailed to each student. The announcement will discuss the assignments for the week along with any other pertinent information for the week.

This is an upper-level course; all students' work is to be presented as such in terms of quality and content. The grading system will be based on your participation in the forums (12.5% of your total grade), homework assignments (25% of your grade), lab work (25% of your total grade) and three exams (300 points or 37.5% of your grade).

Reading Assignments: Please refer to the Course Outline section of this syllabus for the weekly reading assignments.

Week 1 Introduction: Within 7 days of course start, each student must log into the classroom and introduce him- or herself to the class. This is a required assignment and your introduction is due by Sunday of Week 1. Your response must be 250-300 words (a requirement) and include the following information.

- a. Your name
- b. Your university major or program
- c. Where you are in the program of study
- d. Your academic goals, to include why you are taking this class
- e. Information that you would like to share about yourself

Forums: The weekly discussion forum is for students to post their questions on course content for that week. This forum should not be used to discuss specific test questions prior to receiving feedback from the

instructor (after the test is graded). If there is a question on a specific question, find a similar problem in the book and ask a question on that problem or concept. Asking specific questions on test questions creates an unfair advantage and defeats the purpose of the assessment tool. Specific topics will occur throughout the course and will require critical thought/research for your input – be sure to keep up with ongoing discussions! Discussion Board posting are graded at the end of the session and will constitute 12.5% of your final grade,

Homework Assignments: There will be homework assignments during the course worth a total of 25% of your total grade. Each assignment will cover one or more chapters in the book used in this course. For all problems requiring mathematical calculations, all work must be shown.

Lab: There will be lab work assigned throughout the course. Labs will count for a total of 25% of your grade.

Exams: There will be three exams worth 37.5% of your final grade. Each exam will be worth 100 points. Exams will be open book, open note tests. Exams will be administered without a proctor. Students must complete the numbered exam by the end of the week indicated in the schedule.

Late Assignments: Students are expected to submit classroom assignments by the posted due date and to complete the course according to the published class schedule. As adults, students, and working professionals, you must manage competing demands on your time. The policy for late exams is ten percentage points deducted for each day late. After five days late, no credit will be given. The third exam must be completed by the last day of the course. No assignments will be accepted after the end of the course unless a student has an approved extension (see extension policy). Should you need additional time to complete an assignment please contact me before the due date so we can discuss the situation and determine an acceptable resolution. Routine late submission of assignments will adversely affect your final course grade.

There is no extra credit or redo's allowed on work once submitted, and no extra credit or make-up assignments.

The points earned on the graded course assignments will determine the course grade. The final grade in the course will be based on total points.

Students' course grades will be posted as soon as the instructor receives and evaluates the last exam. Official grades will continue to be issued by the University on the grade report form. Instructors have 7 days from the end of the semester to submit their grades to the University.

Grading:

Name	Grade %
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Materials

Book Title: Additional required items are available to order from the APUS Bookstore. If you buy these items from other vendors, you may not receive all the parts you need for your course. These items (as noted) are not covered by the APUS Book Grant.

Author: N/A

Publication Info: N/A

ISBN: N/A

Book Title: NI Student Software Suite - access instructions provided inside the classroom

Author: National Instruments

Publication Info: National Instruments

ISBN: 779252-3501

Book Title: NI myRIO Starter Accessory Kit - this item is not covered by the APUS Book Grant

Author: National Instruments

Publication Info: National Instruments

ISBN: 783068-01

Book Title: myParts Kit from Texas Instruments - this item is not covered by the APUS Book Grant

Author: National Instruments

Publication Info: National Instruments

ISBN: 783752-01

Book Title: NI myRIO Embedded Systems Accessory Kit - this item is not covered by the APUS Book Grant

Author: National Instruments

Publication Info: National Instruments

ISBN: 783070-01

Book Title: Student Project - please contact professor for more information; this is not covered by the APUS Book Grant

Author: N/A

Publication Info: N/A

ISBN: N/A

Book Title: NI Elvis Kit - this item is not covered by the APUS Book Grant

Author: National Instruments

Publication Info: National Instruments

ISBN: 780381-02

Book Title: NI myRIO Embedded Student Design Device - this item is not covered by the APUS Book Grant

Author: National Instruments

Publication Info: National Instruments

ISBN: 782692-01

Book Title: Project Management for Engineering, Business and Technology, 5th ed. - e-book available in the APUS Online Library. Link also provided in the classroom Lessons section.

Author: Nicholas, John

Publication Info: Routledge

ISBN: 9781138937345

Course Guidelines

Citation and Reference Style

- Attention Please: Students will follow the APA Format as the sole citation and reference style used in

written work submitted as part of coursework to the University. Assignments completed in a narrative essay or composition format must follow the citation style cited in the APA Format.

Tutoring

- [Tutor.com](https://www.tutor.com) offers online homework help and learning resources by connecting students to certified tutors for one-on-one help. AMU and APU students are eligible for 10 free hours* of tutoring provided by APUS. Tutors are available 24/7 unless otherwise noted. Tutor.com also has a SkillCenter Resource Library offering educational resources, worksheets, videos, websites and career help. Accessing these resources does not count against tutoring hours and is also available 24/7. Please visit the APUS Library and search for 'Tutor' to create an account.

Late Assignments

- Students are expected to submit classroom assignments by the posted due date and to complete the course according to the published class schedule. The due date for each assignment is listed under each Assignment.
- Generally speaking, late work may result in a deduction up to 15% of the grade for each day late, not to exceed 5 days.
- As a working adult I know your time is limited and often out of your control. Faculty may be more flexible if they know ahead of time of any potential late assignments.

Turn It In

- Faculty may require assignments be submitted to Turnitin.com. Turnitin.com will analyze a paper and report instances of potential plagiarism for the student to edit before submitting it for a grade. In some cases professors may require students to use Turnitin.com. This is automatically processed through the Assignments area of the course.

Academic Dishonesty

- Academic Dishonesty incorporates more than plagiarism, which is using the work of others without citation. Academic dishonesty includes any use of content purchased or retrieved from web services such as CourseHero.com. Additionally, allowing your work to be placed on such web services is academic dishonesty, as it is enabling the dishonesty of others. The copy and pasting of content from any web page, without citation as a direct quote, is academic dishonesty. When in doubt, do not copy/paste, and always cite.

Submission Guidelines

- Some assignments may have very specific requirements for formatting (such as font, margins, etc) and submission file type (such as .docx, .pdf, etc) See the assignment instructions for details. In general, standard file types such as those associated with Microsoft Office are preferred, unless otherwise specified.

Disclaimer Statement

- Course content may vary from the outline to meet the needs of this particular group.

Communicating on the Forum

- Forums are the heart of the interaction in this course. The more engaged and lively the exchanges, the more interesting and fun the course will be. Only substantive comments will receive credit. Although there is a final posting time after which the instructor will grade comments, it is not sufficient to wait until the last day to contribute your comments/questions on the forum. The purpose of the forums is to actively participate in an on-going discussion about the assigned content.
- “Substantive” means comments that contribute something new and hopefully important to the discussion. Thus a message that simply says “I agree” is not substantive. A substantive comment contributes a new idea or perspective, a good follow-up question to a point made, offers a response to

a question, provides an example or illustration of a key point, points out an inconsistency in an argument, etc.

- As a class, if we run into conflicting view points, we must respect each individual's own opinion. Hateful and hurtful comments towards other individuals, students, groups, peoples, and/or societies will not be tolerated.

Identity Verification & Live Proctoring

- Faculty may require students to provide proof of identity when submitting assignments or completing assessments in this course. Verification may be in the form of a photograph and/or video of the student's face together with a valid photo ID, depending on the assignment format.
 - Faculty may require live proctoring when completing assessments in this course. Proctoring may include identity verification and continuous monitoring of the student by webcam and microphone during testing.
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University Policies

[Student Handbook](#)

- [Drop/Withdrawal policy](#)
- [Extension Requests](#)
- [Academic Probation](#)
- [Appeals](#)
- [Disability Accommodations](#)

The mission of American Public University System is to provide high quality higher education with emphasis on educating the nation's military and public service communities by offering respected, relevant, accessible, affordable, and student-focused online programs that prepare students for service and leadership in a diverse, global society.

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