

# ELEN498 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.

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## Course Summary

### Description

**Course Description:** This seminar is a senior-level course designed to allow the student to review, analyze and integrate the work the student has completed toward a degree in electrical engineering. The student will design an approved project that demonstrates mastery of their program of study in a meaningful culmination of their learning and to assess their level of mastery of the stated outcomes of their degree requirements. Prerequisite: Student must have Senior standing in our Engineering program and Program Director approval to register. 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.

### Course Scope:

Within the Electrical Engineering program, this course will serve as the culmination of the concepts learned throughout the student's course of study. The issues presented, discussed, and analyzed in this Senior Seminar course will be those most students will encounter as they enter their respective fields and careers. Student 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. Once a project is proposed and approved, the students will be assigned much like industry, these will include: a project schedule, design specification, concept drawings and evaluation, schematics, PCB layouts, a test plan, and working prototype. The project will require a formal written and oral report.

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### Objectives

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

CO-1: Describe the engineering design process.

CO-2: Apply professional engineering ethics standards.

CO-3: Apply project management tools to an engineering project.

CO-4: Integrate engineering principles used throughout the Electrical Engineering curriculum to a design project.

CO-5: Apply the engineering problem solving process to a design project.

CO-6: Analyze engineering literature in researching an engineering project.

CO-7: Prepare effective communication material using technical data.

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### Outline

## **Week 1: Project Environment Math Review**

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Learning Objective(s)

LO-1, LO-2

Readings

Chapter 1

Assignment(s)

Week 1 Forum

Quiz 1

## **Week 2: Managing Projects Probability and Statistics Review**

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Learning Objective(s)

LO-1, LO-2

Readings

Chapter 2

Assignment(s)

Week 2 Forum

Quiz 2

## **Week 3: Approval Agencies Engineering Economics Review**

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Learning Objective(s)

LO-1, LO-2

Readings

Chapter 3

Assignment(s)

Week 3 Forum

Quiz 3

## **Week 4: Problem Solving Properties of Electronic Mater**

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Learning Objective(s)

LO-1, LO-2, LO-6

Readings

Chapter 4

Assignment(s)

Week 4 Forum  
Quiz 4

## **Week 5: Problem Solving Engineering Science**

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Learning Objective(s)

LO-1, LO-2, LO-6

Readings

Chapter 4

Assignment(s)

Week 5 Forum

Quiz 5

Problem Statement

## **Week 6: Research DC and AC**

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Learning Objective(s)

LO-3, LO-4, LO-5, LO-6

Readings

Chapter 5

Assignment(s)

Week 6 Forum

Quiz 6

## **Week 7: Information Gathering Linear Systems Signal Processing**

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Learning Objective(s)

LO-3, LO-4, LO-5, LO-6

Readings

Chapter 5

Assignment(s)

Week 7 Forum

Quiz 7

Deliverables

## **Week 8: Defining a Problem Electronics**

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Learning Objective(s)

LO-1, LO-2, LO-6

Readings

Chapter 6

Assignment(s)

Week 8 Forum

Quiz 8

### **Week 9: Specifications Power**

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Learning Objective(s)

LO-1, LO-2, LO-6

Readings

Chapter 6

Assignment(s)

Week 9 Forum

Quiz 9

Specifications

### **Week 10: Scheduling Electromagnetics**

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Learning Objective(s)

LO-1, LO-2, LO-6

Readings

Chapter 7

Assignment(s)

Week 10 Forum

Quiz 10

### **Week 11: Scheduling Control Systems**

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Learning Objective(s)

LO-1, LO-2, LO-6

Readings

Chapter 7

Assignment(s)

Week 11 Forum

Quiz 11

Gantt Chart

### **Week 12: Bill of Materials Communications and Networking**

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Learning Objective(s)

LO-1, LO-2, LO-6

Readings

None

Assignment(s)

Week 12 Forum

Quiz 12

Bill of Materials

### **Week 13: Flowcharts Block Diagrams Digital**

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Learning Objective(s)

LO-1, LO-2, LO-6

Readings

None

Assignment(s)

Week 13 Forum

Quiz 13

Flowcharts

Block Diagrams

### **Week 14: Test Plan Computer Systems Software**

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Learning Objective(s)

LO-3, LO-4, LO-5, LO-6

Readings

None

Assignment(s)

Week 14 Forum

Quiz 14

Test plan

### **Week 15: Ethics**

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Learning Objective(s)

LO-1, LO-2, LO-3, LO-4, LO-5, LO-6

Readings

None

Assignment(s)

Week 15 Forum

Quiz 15

Project Proposal

## **Week 16: Introduction into ELEN 499**

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Learning Objective(s)

None

Readings

None

Assignment(s)

Week 16 Forum

Final Exam

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## **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 (20% of your total grade), assignments (20% of your grade), quizzes (20% of your total grade), a final exam (20% of your grade), and a project proposal (20% of your final 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 words (a requirement) and include the following information.

- a. Your name
- b. Your university major or program
- c. Your academic and career goals
- d. 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 20% of your final grade,

**Assignments:** There will be assignments during the course worth a total of 20% of your total grade. Each

assignment will cover one or more parts of your final proposal.

**Quizzes:** There will be weekly quizzes on the review content of the week. The quizzes will be open book and open notes. The quizzes will be taken without a proctor.

**Exams:** There a final exam worth 20% of your final grade. You will be able to use the FE Reference Handbook on the exam. The exam will be proctored. Students must complete the exam by the end of the course.

**Project Proposal:** You will present your proposal to a panel of faculty members at APUS as well as the program director for approval. A rubric for the proposal is in the Assignment tab of the course. In order to pass the course, your project proposal must be approved.

### Grading:

Name	Grade %
Assignment	20.00 %
Week 5 Assignment - Problem Statement and Curriculum Checklist	2.86 %
Week 9 Assignment - Specifications and Curriculum Checklist	2.86 %
Week 11 Assignment - Gantt Chart and Curriculum Checklist	2.86 %
Week 12 Assignment - Bill of Materials	2.86 %
Week 13 Assignment - Block Diagram and Curriculum Checklist	2.86 %
Week 14 Assignment - Test Plan	2.86 %
Week 15 Assignment - Project Proposal	2.86 %
Forum	20.00 %
Week 1 - Introduction Forum	1.25 %
Week 2 Forum - Project Interests	1.25 %
Week 3 Forum - Approval Agencies	1.25 %
Week 4 Forum - Problem Solving	1.25 %
Week 5 Forum - Problem Statement Review	1.25 %
Week 6 Forum - Credible Research	1.25 %
Week 7 Forum - Deliverables Review	1.25 %
Week 8 Forum - Math Review	1.25 %
Week 9 Forum - Specification Review	1.25 %
Week 10 Forum - Electrical Engineering Review	1.25 %
Week 11 Forum - Gantt Chart Review	1.25 %
Week 12 Forum - Electrical Engineering Specialized Topics Review	1.25 %
Week 13 Forum - Block Diagram Review	1.25 %
Week 14 Forum - Project Proposal Status Update	1.25 %
Week 15 Forum - Ethics in Your Project	1.25 %
Week 16 Forum - Course Wrap-Up	1.25 %
Quiz	20.00 %

Week 1 Quiz	1.33 %
Week 2 Quiz	1.33 %
Week 3 Quiz	1.33 %
Week 4 Quiz	1.33 %
Week 5 Quiz	1.33 %
Week 6 Quiz	1.33 %
Week 7 Quiz	1.33 %
Week 8 Quiz	1.33 %
Week 9 Quiz	1.33 %
Week 10 Quiz	1.33 %
Week 11 Quiz	1.33 %
Week 12 Quiz	1.33 %
Week 13 Quiz	1.33 %
Week 14 Quiz	1.33 %
Week 15 Quiz	1.33 %
Test	20.00 %
Final Exam	20.00 %
Proposal Presentation	20.00 %
Project Proposal	20.00 %

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## Materials

**Book Title:** NI Student Software Suite - this item is not covered by the APUS Book Grant

**Author:** National Instruments

**Publication Info:** National Instruments

**ISBN:** 779252-3501

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**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

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**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

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**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

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**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

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**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

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**Book Title:** Electronics: Project Management and Design, 2nd ed.

**Author:** Stadtmiller

**Publication Info:** Pearson

**ISBN:** 9780131111363

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**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

### **Selected Bibliography**

There are numerous online resources to help you in better understanding the objectives outlined in this course. Please see the APUS Online Library, which has several engineering and project management textbooks available online.

Atesmen, M. Kemal. (2008). Global engineering project management. [Books24x7 version] Available from <http://common.books24x7.com.ezproxy1.apus.edu/toc.aspx?bookid=26426>.

Dinsmore, P. C., & Cabanis-Brewin, J. (2014). AMA Handbook of Project Management (4th Edition). Saranac Lake, NY, USA: AMACOM Books. Retrieved from <http://www.ebrary.com>

Eisner, H. (2008). Essentials of project and systems engineering management. New York: John Wiley and Sons.

Lester, Albert. (2014). Project management, planning and control: managing engineering, construction, and manufacturing projects to pmi, apm, and bsi standards, sixth edition. [Books24x7 version] Available from <http://common.books24x7.com.ezproxy1.apus.edu/toc.aspx?bookid=58804>.

## 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](http://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 20% 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.
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## University Policies

### [Student Handbook](#)

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

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