

ELEN100 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 : ELEN100 **Title :** Introduction to Electrical Engineering

Length of Course : 16

Prerequisites : N/A **Credit Hours :** 3

Description

Course Description: This is an introductory course that incorporates labs and project based learning. The course uses the IEEE Code of Ethics to apply ethics to engineering scenarios, as well as research the Electrical Engineering field and apply engineering design principles that will be used in Electrical Engineering courses. Students will examine and explore various electrical engineering concepts and components and use them to build working projects that sense temperature, read switches, write data to displays, drive LEDs, and generate audio signals. Students will use graphical system software to verify project performance. 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:

This course covers the fundamentals of electrical engineering. LabVIEW and the myRIO are both used for labs. The content of the class also serves as an introduction of LabVIEW programming. The labs in the class coincide with course content and objectives.

Objectives

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

CO-1: Describe the engineering profession and engineering ethics.

CO-2: Explain the engineering design process.

CO-3: Apply the fundamental concepts of Electrical Engineering.

CO-4: Identify the fundamental components of Electrical Engineering.

CO-5: Develop practical Electrical Engineering projects using dataflow graphical programming.

CO-6: Describe the architecture of reconfigurable input/output devices.

CO-7: Integrate sensors and input devices (e.g., switches, accelerators, temperature sensors, light sensors, and microphones) into electronic projects.

CO-8: Integrate electronic components and output devices (e.g., light emitting diodes, speakers, and displays) into electronic projects.

CO-9: Prepare effective communication material using technical data.

Outline

Week 1: Engineering and LabVIEW Basics

Course Objective(s)

CO-1, CO-5, CO-6

Readings

Chapter 1

Assignment(s)

Week 1 Forum: Introduction Yourself

Tutorial 1: Software Installation Tutorial

Week 2: Engineering and myRIO

Course Objective(s)

CO-1, CO-5, CO-6

Readings

Chapter 2

Assignment(s)

Week 1 Forum: Responses

Tutorial 2: Configure myRIO

Week 3: Design Process

Course Objective(s)

CO-2, CO-3, CO-7

Readings

Chapter 3

Assignment(s)

Week 3 Forum: Applications of Ohm's Law

Tutorial 3: Driving LEDs

Research Paper: Engineer Interview and Career Path

Week 4: Design Process

Course Objective(s)

CO-2, CO-3

Readings

Chapter 3

Assignment(s)

Week 3 Forum: Responses

Tutorial 4: Reading Thermistor

Week 5: Project Management

Course Objective(s)

CO-5, CO-7, CO-8

Readings

Chapter 4

Assignment(s)

Week 5 Forum: Applications of Pulse Width Modulation

Lab 1: Temperature Gauge

Week 6: Project Management

Course Objective(s)

CO-5, CO-7

Readings

Chapter 4

Assignment(s)

Week 5 Forum: Responses

Tutorial 5: Reading Switches

Research Paper: Electrical Engineering Components

Week 7: Engineering Calculations

Course Objective(s)

CO-3, CO-4, CO-7

Readings

Chapter 5

Assignment(s)

Week 7 Forum: LabVIEW Applications

Tutorial 6: Seven Segment Display

Week 8: Engineering Calculations

Course Objective(s)

CO-3, CO-4, CO-7, CO-8

Readings

Chapter 5

Assignment(s)

Week 7 Forum: Responses

Lab 2: Digital Dice Game

Week 9: Ergonomics

Course Objective(s)

CO-2, CO-7

Readings

Chapter 6

Assignment(s)

Week 9 Forum: Sensors

Tutorial 7: Speakers

Week 10: Ergonomics

Course Objective(s)

CO-2, CO-7

Readings

Chapter 6

Assignment(s)

Week 9 Forum: Responses

Tutorial 8: Microphone

Research Paper: Design Improvement

Week 11: Continuous Improvement

Course Objective(s)

CO-2, CO-7, CO-8

Readings

Chapter 7

Assignment(s)

Week 11 Forum: Electromechanical Devices

Lab 3: Hearing Test

Week 12: Continuous Improvement

Course Objective(s)

CO-2, CO-7

Readings

Chapter 7

Assignment(s)

Week 11 Forum: Responses

Week 13: Communication

Course Objective(s)

CO-7, CO-8, CO-9

Readings

Chapter 9

Assignment(s)

Week 13 Forum: Sharing Your Educational Goals

Lab 4: Autoplay Organ

Week 14: Communication

Course Objective(s)

CO-9

Readings

Chapter 9

Assignment(s)

Week 13 Forum: Responses

Week 15: Ethics

Course Objective(s)

CO-1

Readings

N/A

Assignment(s)

Review your assignments and complete any missing assignments

Week 16: Ethics

Course Objective(s)

CO-1, CO-9

Readings

Appendix B

Assignment(s)

Week 16 Forum: Course Summary Post

Final Project Presentation and Report

Research Paper: Ethics

Evaluation

This is a lower level course that establishes the foundation for your future BSEE courses. 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, assignments, tutorials, labs, quizzes, and test.

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

Week 1 Self-introductions: During Week 1 forum, each student must post a self-introduction (bio) to the class. This self-introduction is a requirement by the University, and is due by mid-night of Sunday of Week 1, along with two reply posts to other students. Your response must be at least 250 words (a requirement) and can include the following information:

- a. Your name
- b. Your major
- c. Where you live
- d. Professional aspirations

- e. Hobbies
- f. Family

Forums: There will be 7 forums (2.29% each), counting 16% of the final grade. The forums will consist of specific questions to be answered, broad questions to be discussed, or polls for students to post their questions on the topics covered in that week. In each forum, a student is required to contribute an initial post for the first week. Some forums require two reply posts to other students in class. In forums where reply posts are required, the initial post will be 60% of the grade and each reply post will be 20% of the grade.

Tutorials: There will be 8 tutorials (2% each), counting 16% of the final grade. Tutorials will introduce new software and hardware to the course and will require evidence of successful completion of the tutorial.

Labs: There will be 4 labs (4% each), counting 16% of the final grade. Labs will require a written lab report as well as evidence of successful completion of the lab.

Papers: There will be 5 papers (4% each), counting 20% of the final grade. Papers must be written in APA format

Final Project: There will be a final project that counts for 32% of the final grade. The project has a written report and a presentation component. The project requires a live or recorded video presentation which is in week 16 of the course.

Grading:

Name	Grade %
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Materials

Book Title: Learning with LabVIEW - the VitalSource e-book is provided inside the classroom

Author: Bishop

Publication Info: VS-Pearson

ISBN: 9780134022123

Book Title: NI Student Software Suite - free access provided inside the classroom; if DVD is needed, purchase instructions are available here: <https://apus.libanswers.com/coursematerials/faq/239701> (DVD not covered by the APUS Book Grant)

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; purchase instructions are available here: <https://apus.libanswers.com/coursematerials/faq/239701>

Author: National Instruments

Publication Info: National Instruments

ISBN: 783068-01

Book Title: NI myRIO Embedded Student Design Device - this item is not covered by the APUS Book Grant; purchase instructions are available here: <https://apus.libanswers.com/coursematerials/faq/239701>

Author: National Instruments

Publication Info: National Instruments

ISBN: 782693-01

Book Title: myParts Kit from Texas Instruments - this item is not covered by the APUS Book Grant; purchase instructions are available here: <https://apus.libanswers.com/coursematerials/faq/239701>

Author: National Instruments

Publication Info: National Instruments

ISBN: 783752-01

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 e related textbooks available online.

1. Rothwell, E. & Cloud, M. (2016). Engineering speaking by design. Boca Raton, FL: CRC Press.
 2. Rothwell, E. & Cloud, M. (2014). Engineering writing by design. Boca Raton, FL: CRC Press.
 3. Chen, W. (2005). The electrical engineering handbook. New York: Elsevier Academic Press.
 4. Heinz, S. (2007). Electrical engineering: a pocket reference. Boston: Artech House.
 5. Mallick, M. (2009). Basic electrical engineering. Lucknow, India: Word Press.
 6. Brockman, J. (2009). Introduction to engineering and problem solving. Hoboken, NJ: John Wiley & Sons.
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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.

University Policies

[Student Handbook](#)

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

- [Appeals](#)
- [Disability Accommodations](#)

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