

Application for a New Course v10.5

Course ID <i>Subject and Number</i>	ENGR 355
Date APPROVED	
Date DENIED	

I. Systems and Catalog Information Complete each item.

1	Course Developer	Darby Hewitt
2	Course Teacher	An Engineering and Physics faculty member
3	Course Title	Electronic Devices
4	Course Abbreviation (if title is over 30 characters)	
5	College	Arts and Sciences
6	Department	Engineering and Physics
7	Number of Credit Hours	3
8	Is the course Fixed Credit or Variable Credit?	Fixed
9	Is the course repeatable?	No
10	Maximum number of times course may be repeated	0
11	Maximum number of hours credit	3
12	Explanation for variable credit	N/A
13a	Course contact hours - LEC	3
13b	Course contact hours - Lab	0
13c	Course contact hours - Practicum	0
13d	Course contact hours - Seminar	0
13e	Course contact hours - Studio	0
13f	Course contact hours - Online	0
13g	Course contact hours - Colloquium	0
13h	Course contact hours – Field Experience	0
13j	Course contact hours - Internship	0
13k	Course contact hours - Research	0
13m	Course contact hours - Workshop	0
13n	Course contact hours – Other (specify)	0
14	Instructor Workload	3
15	Grade Mode (check all appropriate):	☒ _X_ Standard ☐ Credit/No Credit (undergrad only)
16	Maximum Enrollment	20
17	Catalog Description (50 words or less)	Basic physics of semiconductors, pn junctions, diode circuits, bipolar junction transistors, field effect transistors, small-signal and power amplifiers, ideal and non-ideal op amps, oscillators. Must be taken concurrently with

		ENGR 356 (Electronic Devices Laboratory) Prerequisites: MATH 286 (Calculus II), ENGR 135 (Introduction to Electric Circuits); Recommended: PHYS 330 (Modern Physics)
18	List any prerequisites (course/s, test scores, class standing, major, etc.)	Grades of C or better in both ENGR 135 (Introduction to Electric Circuits) and Math 286 (Calculus II)
19	List any co-requisites	ENGR 356 (Electronic Devices Laboratory)
20	If the course is cross listed, specify the Course ID(s) MUST have signature in Section V off all Department Chairs	No
21	Does this course have any special student costs? Yes/No <i>Attach a <u>completed</u> "Request to Add or Change Course Fees" form. Describe in section IV-F.</i>	No
22a	How often will it be offered? Fall	As needed
22b	How often will it be offered? Spring	As needed
22c	How often will it be offered? Summer	As needed
23	Frequency? All, odd, or even years?	All
24	First semester this course will be offered <i>New courses may not be taught under their approved course ID until they appear in the catalog, therefore, no earlier than the coming fall.</i>	Spring 2016
25	List course/s that should be deleted, include the last semester for course/s being deleted <i>A course cannot be deleted when it is a requirement in a degree plan in any department.</i>	None
26	Is this course required for a degree/s? Yes/No <i>If "Yes," attach a revised degree plan(s) reflecting the placement of the new course.</i>	No, but it is a choice among many
27	Should the addition of this course be retroactively applied to the degree plan it supports? Yes/no and explain	No
28	Has this course been offered as a Special Topics course? Yes/No <i>If "Yes," specify the Course ID and enrollment for each term it was taught.</i> <i>(Note: New courses are NOT required to be taught as Special Topics courses prior to being approved. However, courses may be taught once as Special Topics before it is proposed. See the Course Descriptions section of the Catalog for details.)</i>	No

29	List any courses in which content overlaps the proposed course. (Course ID and Name) <i>Attach statement from instructor/dept chair of existing course justifying the new offering in Section IV-D.</i>	None
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II. Curriculum

1	Degree Plan Explanation of how this course affects degree requirements.	This course fits within the menu of engineering elective courses for the General Engineering BSE degree plan
2	Justification State the justification for adding this course to the current curriculum. Represent the need.	In this course, students will take part in advanced electronic circuit design. This is beneficial for the students in the General Engineering program who have an interest in electrical/electronic engineering, empowering them with a valuable, marketable skill. Additionally, the class will aid in meeting ABET requirements.

III. Course Design

1. Audience and Course Goal

1	Describe the intended audience, including prerequisite skills.	Any General Engineering student (BSE) or Physics student (BS) with an interest in electronic circuit design and an exposure to introductory circuit analysis through ENGR 135 and calculus up to MATH 286
2	State the overarching course goal(s) in performance terms.	Students will be able to recognize and analyze common amplifier circuits, as well as design linear amplifiers according to specifications

2. Competencies and Measurements

ABET Learning Objectives	Course Competencies	Measurement
3(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	Design DC power supplies to meet certain specifications	Homework, Test 1, Final Exam
	Design small-signal and power amplifiers using traditional biasing techniques with op-amps and transistors	Homework, Tests 1 and 2, Final Exam
	Design constant current sources for biasing amplifiers with active loads	Homework, Test 2, Final Exam
	Design electronic oscillator circuits	Homework, Test 2, Final Exam
3(e) an ability to identify, formulate, and solve engineering problems	Describe the physical properties of pn junctions under equilibrium, forward-bias, and reverse-bias conditions	Homework, Tests 1, Final Exam
	Differentiate between MOSFETs, JFETs and BJTs based on their device structures	Homework, Test 1, Final Exam
	Compare characteristics of basic amplifier configurations based on multiple transistor types	Homework, Tests 1 and 2, Final Exam
	Model amplifier behavior schematically using voltage-controlled sources	Homework, Tests 1 and 2, Final Exam
	Analyze frequency response in amplifiers	Homework, Test 2, Final Exam

3. Text and Resources

1. Give the full publication information of the textbook/s and other required resources and outside readings.

Text: *Microelectronics Circuit Analysis and Design* (4th Edition) by Donald A. Neamen, McGraw-Hill Higher Education, 2010, ISBN-13: 9780073380643.

2. For **combined undergraduate/graduate** courses, make two lists:
 - a. full publication information; label **Undergraduate**.
 - b. full publication information; label **Graduate**. Indicate number of pages required.

IV. Supporting Documentation

Supporting documents must accompany proposal prior to preliminary approval by chair and dean.

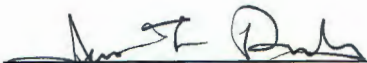
1	Library — Submit new course application and syllabus to the Dean of the Library. Consult with the director and establish a deadline for completion of the library report. Attach the signed copy of the Library report.
2	Instructional Design — The application and syllabus must be reviewed by the Adams Center. Attach a copy of the Adams Center Review Letter.
3	Content Overlap — Include one document for each course you listed in Section I-I. Attach statement from instructor/dept chair of existing course justifying the new offering.
4	Departmental Resources — List the resources that support the course and are available only through the department, if applicable. Attach the list of the holdings and the location/s.
5	Resources — List resources (other than library or departmental resources) that are needed to support this course (computers, lab equipment, other technology, etc.). Attach a complete list of all items and indicate possible sources or estimated cost of each. List the sources of any needed funds.
6	Expenses — List additional expenses needed to implement this course (full-time or part-time faculty, graduate or lab assistants, student employees, travel, special student costs, room renovation, storage facility, etc.). Attach a complete list of all items, the estimated cost of each and the source of the funds.
7	Justification — Attach all documents referred to in Section II-2
8	Syllabus — Attach the syllabus for the course based upon the anticipated first-semester offering.
9	Provide documentation for all additional attachments here

V. Preliminary Approvals

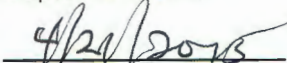
All supporting documentation has been assembled and attached to this application. I believe this course is ready to be presented to appropriate councils. We have a plan to fund this new course.

Course Number and Name ENGR 355 Electronic Devices

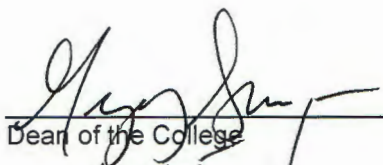
Primary Department



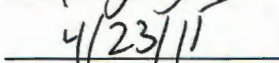
Department Chair



Date



Dean of the College



Date

Cross-listing Department *Add more lines if multiple departments are cross-listing*

Department Chair

Date

Dean of the College

Date

Cross-listing Department *Add more lines if multiple departments are cross-listing*

Department Chair

Date

Dean of the College

Date

VI. Actions *Place all actions on one page.*

Course ID: ENGR 355

Course Title: Electronic Devices

1. College Academic Council: (for all courses)

Note: Insert additional lines for College Academic Council action for each college involved in cross-listed courses.

Approved X Denied *Sydney Thompson* 4-23-15
College Dean or Director Date

Approved _____ Denied _____
College Dean or Director _____ Date _____

2. Graduate Council: (for graduate level courses)

Approved _____ Denied _____

 Dean of Graduate School Date _____

3. **Teacher Education Council:** (when applicable)

Approved _____ Denied _____
TEC Chair _____ Date _____

4. University General Education Council: (when applicable)

Approved _____ Denied _____
Provost's designee _____ Date _____

5. University Undergraduate Academic Council: (*undergraduate level courses*)

Approved _____ Denied _____

 Vice Provost _____ Date _____

6. Academic Provost: (for all courses)

Approved _____ Denied _____
Provost _____ Date _____

7. President of the University: (for all courses)

Approved _____ Denied _____
 _____ President _____ Date _____

Attach notes, comments, or conditions from appropriate councils: