

Proposal Status: Workflow not started

FULL PROPOSAL: Substantive Change(s) to a Program of Study

*Note: New courses included in a program of study change require submission of the **Substantive Change to a Course** proposal.*

Title of proposal (must begin with department abbreviation): ENEE - Electrical Eng Program Changes

Place an X next to the ones that apply:

<input checked="" type="checkbox"/>	Alteration of requirements for any program of study including majors, minors, concentrations and certificates
<input checked="" type="checkbox"/>	Creating a new program or concentration
<input type="checkbox"/>	Changing admission requirements into a program

Effective date: Fall 2015

Contact information:

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Faculty of the originating department approved this proposal on 10/27/2014 (date) by a vote of 6 aye votes; 0 nay votes; 0 abstentions; 0 eligible voting members absent

1. Description of proposed changes

Proposal for Curriculum Modifications

1. Remove "Intro to Design" (ENGR 1850, 2hrs).
2. Replace "Calc II" (MATH 1920, 3hrs) with "Calc II" (MATH 1960, 4hrs)
3. Replace "Calc III" (MATH 2550, 3 hrs) with "Calc III" (MATH 2560, 4hrs)
4. Replace "Mechanics" (ENGR 2460) or "Dynamics" (ENGR 2480) with a Career Elective
5. Making "Power System Analysis" (ENEE 4720) a required focus class for the "Power System Focus" area.
6. Making "Analog and Digital Communications" (ENEE 4750) a required focus class for the "Communication and Signal Processing Focus" area.
7. Making "Microprocessor Apps (Embedded Systems)" (ENEE 4700) a required focus class for the "Microelectronics and Computer Systems Focus" area.
8. "Electronic Instrumentation" (ENEE 4800) moved to the junior year spring semester.

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9. Making “Linear Controls & Drives Lab” (ENEE 4790) an EE Focus Lab elective.
 10. Replace “Circuits II lab” (ENEE2720L) with an EE Elective Lab.
 11. Replace “Thermo-Fluids” (ENGR 3050) with a Technical Elective.
2. Rationale for requested change
Include data from the annual institutional effectiveness cycle or outcomes assessment; information on changes in disciplinary field(s); national, community and workforce development trends; and address any impact on enrollment trends.

Rationale for Curriculum Modifications

1. Removing “Intro to Design” (ENGR 1850) I frees 2 credit hours for MATH. This gives the Math department room to teach material needed by EE students, line with 18 hrs adoption of most Tennessee schools, and meets Tennessee Promise requirements in Math.
2. Replace “Calc II” (MATH 1920, 3 hrs) with “Calc II” (MATH 1960, 4 hrs). See 1 above.
3. Replace “Calc III” (MATH 2550, 3hrs) with “Calc III” (MATH 2560, 4 hrs). See 1 above.
4. Replace “Mechanics” (ENGR 2460) or “Dynamics” (ENGR 2480) with a Career Elective. This increases scheduling flexibility and gives EE students better multidisciplinary background.
5. Making “Power System Analysis” (ENEE 4720) a required focus class for the “Power System Focus” area. This is the main course to distinguish the “Power System Focus”. With the addition of more focus areas it becomes important to help student select courses to suit their career plans.
6. Making “Analog and Digital Communications” (ENEE 4750) a required focus class for the “Communication and Signal Processing Focus” area. This is the main course to distinguish the “Communication and Signal Processing Focus” focus area. With the addition of more focus areas it becomes important to help student select courses to suit their career plans.
7. Making “Microprocessor Apps (Embedded Systems)” (ENEE 4700) a required focus class for the “Microelectronics and Computer Systems Focus” area. This is the main course to distinguish the “Microelectronics and Computer Systems Focus”. With the addition of more focus areas it becomes important to help student select courses to suit their career plans.
8. “Electronic Instrumentation” (ENEE 4800) can be moved to the junior year spring semester adding scheduling flexibility.
9. Making “Linear Controls & Drives Lab” (ENEE 4790) an EE Focus Lab elective. This facilitates the structuring of focus area courses and increases flexibility for students.

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10. Replacing “Circuits II lab” (ENEE2720L) is well advised since all content is covered by either ENEE 3710L or ENEE 3800L. This frees hours for an EE Elective Lab.

11. Replace “Thermo-Fluids” (ENGR 3050) with a Technical Elective. This increases scheduling flexibility and gives EE students better multidisciplinary background.

3. Current program requirements as listed in the Catalog (current Catalog copy—include all current required courses)

Program Requirements

- CHEM 1110 - General Chemistry I and
- CHEM 1110L - General Chemistry I Laboratory
-
- MATH 1950 - Calculus with Analytic Geometry I #
- MATH 1920 - Calculus II
- MATH 2200 - Elementary Linear Algebra
- MATH 2450 - Introduction to Differential and Difference Equations
- MATH 2550 - Multivariable Calculus
-
- PHYS 2310 - Principles of Physics - Electricity and Magnetism and
- PHYS 2310L - Principles of Physics Laboratory - Electricity and Magnetism

Engineering Fundamentals:

- ENGR 1011 - Introduction to Two- and Three-Dimensional Modeling
- ENGR 1030 - Basic Engineering Science
- ENGR 1030L - Freshman Engineering Laboratory
- ENGR 1040 - Vector Statics
- ENGR 1850 - Introduction to Engineering Design
- ENGR 2220 - Probability and Statistics for Engineering #
-
- ENGR 2460 - Mechanics of Materials
- or
- ENGR 2480 - Dynamics
-
- ENGR 3850 - Interdisciplinary Design Project I

Program and Related Courses

- ENGL 2810 - Technical Writing
- or
- ENGL 2880 - Professional Writing

Engineering Fundamentals:

- ENEE 2250 - Engineering Programming
- ENEE 2700 - Electrical Circuits I
- ENEE 2700L - Electrical Circuits I Laboratory
- ENGR 3050 - Thermo-Fluids

Electrical Engineering:

- ENEE 2720 - Electrical Circuits II
- ENEE 2720L - Electrical Circuits II Laboratory

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- ENEE 2740 - Digital Electronics
- ENEE 3250 - Signals and Systems
- ENEE 3720 - Analog Electronics
- ENEE 3720L - Analog Electronics Laboratory
- ENEE 3750 - Electromagnetic Fields and Waves
- ENEE 3790 - Modern Control Systems Analysis and Design
-
- Select one:
- ENEE 3770 - Advanced Electronics
- or
- ENEE 4600 - Power Electronics
-
- ENEE 3800 - Electrical Energy Conversion
- ENEE 3800L - Electrical Machinery Laboratory
- ENEE 4500 - Electrical Engineering Design Project
- ENEE 4700 - Microprocessors Applications
- ENEE 4720 - Power System Analysis and Design
- ENEE 4750 - Analog and Digital Communications
- ENEE 4790 - Linear Controls and Drives Laboratory
- ENEE 4800 - Electronic Instrumentation
- ENEE 4900 - Fundamentals of Engineering and Professionalism
-
- Note: For qualified students, ENGR 4995r, Departmental Thesis (4 hours) may substitute for ENEE 4500 (3 hours).

Electrical Engineering Electives:

- One 3-hour 3000-level or 4000-level electrical engineering course
- One 1-hour 3000-level or 4000-level electrical engineering laboratory

Technical Elective:

- One 3-hour 3000-level or 4000-level engineering (ENGR, ENME, ENCE, ENCH, ENIE, ENNE, ENEV, or ENEE) or advisor-approved course

4. Proposed new description and program requirements to be listed in the Catalog (**current Catalog copy—include all current required courses**)

Program Requirements

- CHEM 1110 - General Chemistry I and
- CHEM 1110L - General Chemistry I Laboratory

- MATH 1950 - Calculus with Analytic Geometry I #
- MATH 1960 - Calculus with Analytic Geometry II
- MATH 2200 - Elementary Linear Algebra
- MATH 2450 - Introduction to Differential and Difference Equations
- MATH 2560 - Calculus with Analytic Geometry III

- PHYS 2310 - Principles of Physics - Electricity and Magnetism and
- PHYS 2310L - Principles of Physics Laboratory - Electricity and Magnetism

Engineering Fundamentals:

- ENGR 1011 - Introduction to Two- and Three-Dimensional Modeling
- ENGR 1030 - Basic Engineering Science
- ENGR 1030L - Freshman Engineering Laboratory

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- ENGR 1040 - Vector Statics
- ENGR 2220 - Probability and Statistics for Engineering #
- ENGR 3850 - Interdisciplinary Design Project I

Program and Related Courses

- ENGL 2810 - Technical Writing

Engineering Fundamentals:

- ENEE 2250 - Engineering Programming
- ENEE 2700 - Electrical Circuits I
- ENEE 2710L - Electrical Circuits Laboratory

Electrical Engineering:

- ENEE 2720 - Electrical Circuits II
- ENEE 2740 - Digital Electronics
- ENEE 3250 - Signals and Systems
- ENEE 3720 - Analog Electronics
- ENEE 3720L - Analog Electronics Laboratory
- ENEE 3750 - Electromagnetic Fields and Waves
- ENEE 3790 - Modern Control Systems Analysis and Design

Select one:

- ENEE 3770 - Advanced Electronics
- or
- ENEE 4600 - Power Electronics

- ENEE 3800 - Electrical Energy Conversion
- ENEE 3800L - Electrical Machinery Laboratory
- ENEE 4500 - Electrical Engineering Design Project
- ENEE 4800 - Electronic Instrumentation
- ENEE 4900 - Fundamentals of Engineering and Professionalism

• Note: For qualified students, ENGR 4995r, Departmental Thesis (4 hours) may substitute for ENEE 4500 (3 hours).

Electrical Engineering Focus Areas: Choose One Category (7 Hours):

Power Systems

- ENEE 4720 - Power System Analysis and Design
- ENEE 4720L – Power Simulation Laboratory

Select one course:

- ENEE 4620 – Protective Relaying
- ENEE 4670 – Smart Power Distribution

Communications

- ENEE 4750 – Analog Communications
- ENEE 4750L – Analog Communications Laboratory

Select one course:

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- ENEE 4760 – Digital Communication
- ENEE 4820 – Digital Signal Processing

Microelectronics

- ENEE 3770 - Advanced Electronics
- ENEE 3770L – Advanced Electronics Laboratory

Select one course:

- ENEE 4710 – Embedded Systems
- ENEE 4600 - Power Electronics

Electrical Engineering Electives:

- Two 3-hour 3000-level or 4000-level electrical engineering course
- Two 1-hour 3000-level or 4000-level electrical engineering laboratory

Technical Elective:

- Two 3-hour 3000-level or 4000-level engineering (ENGR, ENME, ENCE, ENCH, ENIE, ENNE, ENEV, or ENEE) or advisor-approved course

Professional Elective:

- One 3-hour Math, Science (ASTR, BIOL, CHEM or PHYS), Business (ACC, BUS, MGT, ECON, FIN or MKT) or other related areas and must be approved by department.

5. Outline the student learning outcomes—a statement of the minimum expectations of students as they complete the program. You must list at least three outcomes.
 1. Gain ability to apply knowledge of mathematics, science, and engineering,
 2. Gain ability to design and conduct experiments, as well as to analyze and interpret data,
 3. Gain ability to identify, formulate, and solve engineering problems,
 4. Gain ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
6. How will students be assessed on the program learning outcomes?
Through regular course evaluation techniques such as exams, quizzes, projects, reports etc.
7. Attach a curriculum map for the new program/concentration.
Please see the direction at the end of this proposal for how to upload your curriculum map document.
8. Does this change require new resources from the originating department or other departments (including the library)? If yes, please explain.
No
9. Will the proposed changes impact the ability of students to complete degree requirements in a timely manner? How will the proposed changes impact requirements in other departments or programs?

Impact for Curriculum Modifications

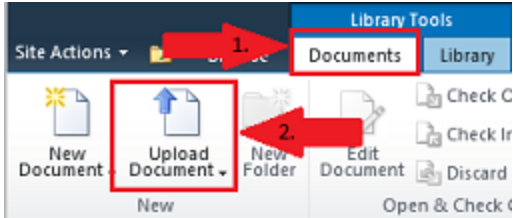
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1. Removing “Intro to Design” (ENGR 1850) affects ENGR and EE departments. but the effect is not a concern since
 2. Replacing “Calc II” (MATH 1920) with “Calc II” (MATH 1960) only impacts EE and Math departments..
 3. Replacing “Calc III” (MATH 2550) with “Calc III” (MATH 2560) Only impacts EE and Math Department.
 4. Replacing “Mechanics” (ENGR 2460) or “Dynamics” (ENGR 2480) with a Career Elective has no impact on any other department.
 5. Making “Power System Analysis” (ENEE 4720) a required focus class for the “Power System Focus” area has no impact on any other department.
 6. Making “Analog and Digital Communications” (ENEE 4750) a required focus class for the “Communication and Signal Processing Focus” area no impact on any other department..
 7. Making “Microprocessor Applications (Embedded Systems)” (ENEE 4700) a required focus class for the “Microelectronics Systems Focus” area has no impact on any other department..
 8. “Electronic Instrumentation” (ENEE 4800) can be moved to the junior year with no impact on any other department.
 9. Making “Linear Controls & Drives Lab” (ENEE 4790) an EE Focus Lab elective has no impact on any other department.
 10. Replacing “Circuits II lab” (ENEE2720L) has a minimal impact on some transfer students.
 11. Replacing “Thermo-Fluids” (ENGR 3050) with a Technical Elective Elective has no impact on any other department.
10. Attach a Clear Path Showcase for the new program/concentration.
Please see the directions at the end of this proposal for how to upload your clear path document.

Direction for uploading supporting documents:

1. To upload your model syllabus to the folder for your proposal go to <https://spaces.utc.edu/sites/UndergraduateProposal>.
2. Next, click on the name of your proposal under “My Proposals”.
3. Click the “Documents” tab and then click the “Upload Document” tab.

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Important: After completing your proposal you must start the *Curriculum Proposal Workflow*.

To begin workflow:

1. Click on the name of your proposal below.
2. Next, click the "Document Set Manage" tab in the ribbon at the top of the page and select the "Workflows" button.



3. Under "Start a New Workflow" click "Curriculum Proposal Workflow" and then click the "Start" button.

Workflow Sequence for Full Proposal –Program Changes

1. Department Head
2. College Curriculum Committee
3. College Dean
4. Other Areas Affected (If any)
5. Records Office
6. Associate Provost
7. Provost (if a fee will be assessed)
8. Faculty Senate Curriculum Committee
9. Faculty Senate