Code #EN11 (2014)

**Bulletin Change Transmittal Form**

**Undergraduate Curriculum Council** - Print 1 copy for signatures and save 1 electronic copy.

**Graduate Council** - Print 1 copy for signatures and send 1 electronic copy to [pheath@astate.edu](mailto:pheath@astate.edu)

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| **Bulletin Change** Please attach a copy of all catalogue pages requiring editorial changes. |

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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **COPE Chair (if applicable)** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Department Chair:** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **General Education Committee Chair (If applicable)** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Undergraduate Curriculum Council Chair** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **College Dean** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Graduate Curriculum Committee Chair** |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Vice Chancellor for Academic Affairs** |

**1.Contact Person** (Name, Email Address, Phone Number)

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**2.Proposed Change**

Course title change from EE 3353 Continuous and Analog Systems to EE 3353 Signals and Systems and update of course description.

**3.Effective Date**

8/1/2015

**4.Justification**

This course deals with various discrete and periodic signals, discrete time systems, Fourier series representation of periodic signals, sampling, Laplace transforms, etc. It is commonly referred to as Signals and Systems, and it covers a wide variety of signals and linear time invariant and time variant systems.

**From the most current electronic version of the bulletin, copy all bulletin pages that this proposal affects and paste it to the end of this proposal.**

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**Area of Concentration: Electrical Engineering**

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| **Electrical Engineering:**  Electives denoted with an asterisk (\*) may be selected from any courses within the desig­nated elective group; subject to a program advisor’s approval. They must make a rational contribution to the student’s personal and professional education goals. | **Sem. Hrs.** |
| CHEM 1023, General Chemistry II | 3 |
| CS 2114, Structured Programming | 4 |
| EE 3401, Electronics I Laboratory | 1 |
| EE 3403, Electronics I | 3 |
| EE 3313, Electric Circuits II | 3 |
| EE 3333, Digital Electronics I | 3 |
| EE 3343, Engineering Fields and Waves I | 3 |
| EE 3353, ~~Continuous and Analog Systems~~ Signals and Systems | 3 |
| EE 3383, Principles and Practices in Electrical Engineering | 3 |
| EE 4323, Electrical Machinery **OR**  EE 4353, Power Systems | 3 |
| EE 4373, Electronics II **OR**  EE 3363, Semiconductor Matl and Devices I | 3 |
| EE 4773, Intermediate Electrical Engineering Laboratory **OR**  EE 3303, Semiconductor and Optoelectronic Materials and Devices I Laboratory | 3 |
| EE 4383, Digital Electronics II **OR**  EE 4313, Control Systems | 3 |
| ENGR 4413, Engineering Problem Solving | 3 |
| \*Engineering Electives | 2 |
| \*Approved Electives | 3 |
| **Total Required Hours:** | **46** |

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**Major in Electrical Engineering**

**Bachelor of Science in Electrical Engineering**

A complete 8-semester degree plan is available at http://registrar.astate.edu/.

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| **University Requirements:** | |
| See University General Requirements for Baccalaureate degrees (p. 41) | |
| **First Year Making Connections Course:** | **Sem. Hrs.** |
| ENGR 1402, Concepts of Engineering (See College of Engineering Core Courses) | **-** |
| **General Education Requirements:** | **Sem. Hrs.** |
| See General Education Curriculum for College of Engineering | **38** |
| **Additional Support Courses:** | **Sem. Hrs.** |
| Refer to Additional Support Courses for College of Engineering | **7** |
| **College of Engineering Core Courses:** | **Sem. Hrs.** |
| Refer to College of Engineering Core Courses | **34** |
| **Major Requirements:**  Electives denoted with an asterisk (\*) may be selected from any courses within the desig­nated elective group; subject to a program advisor’s approval. They must make a rational contribution to the student’s personal and professional education goals.  In addition to the University requirements for all Baccalaureate Degrees, a Bachelor of Science in Electrical Engineering requires that one of the two following conditions be met:  1. “C” or better in each course in the 49-hour major courses; **OR**  2. 2.5 (or greater) grade point average in the 49-hour major courses listed below. | **Sem. Hrs.** |
| CHEM 1023, General Chemistry II | 3 |
| CS 2114, Structured Programming | 4 |
| EE 3401, Electronics I Laboratory | 1 |
| EE 3403, Electronics I | 3 |
| EE 3313, Electric Circuits II | 3 |
| EE 3333, Digital Electronics I | 3 |
| EE 3343, Engineering Fields and Waves I | 3 |
| EE 3353, ~~Continuous and Analog Systems~~ Signals and Systems | 3 |
| EE 3383, Principles and Practices in Electrical Engineering | 3 |
| EE 4323, Electrical Machinery **OR**  EE 4353, Power Systems | 3 |
| EE 4333, Communications Theory | 3 |
| EE 4373, Electronics II **OR**  EE 3363, Semiconductor Materials and Devices I | 3 |
| EE 4773, Intermediate EE Lab **OR**  EE 3303, Semiconductor and Optoelectronics Matl and Devices I Lab | 3 |
| EE 4383, Digital Electronics II **OR**  EE 4313, Control Systems | 3 |
| ENGR 4413, Engineering Problem Solving | 3 |
| \*Engineering Electives | 2 |
| \*Approved Electives | 3 |
| **Sub-total** | **49** |
| **Total Required Hours:** | **128** |

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**CE 4253. Soil Mechanics** Physical properties of soils as used in design, specific gravity, grain size distribution, plasticity, permeability, compressibility, consolidation and shear strength. Corequisites, ENGR 3473 and CE 4251. Dual listed as CE 5253. Spring.

**CE 4263. Water and Waste Treatment** Design of physical, chemical and biological unit processes for treatment of water, wastewater and sludges. Advanced wastewater treatment processes are presented. Student papers on selected waste treatment applications are required. Prerequisites, C or better in CE 3253 and 3263. Dual listed as CE 5263. Spring.

**CE 4283. Structural Steel Design** Analysis and design of tension members, beams, columns, and beam-columns. Prerequisite, C or better in CE 3213. Dual listed as CE 5283. Spring.

**CE 429V. Special Problems in Civil Engineering** Individually directed problems in civil engi­neering for juniors and seniors. A course outline and project summary listing the goals and expected outcomes must be approved by the student advisor and the program director. Prerequisites are dependent on the nature of the special problem. Demand.

**ELECTRICAL ENGINEERING PROGRAM**

**Electrical Engineering (EE)**

**EE 3303. Semiconductor and Optoelectronic Materials and Devices I Laboratory** E x ­perimentation and demonstrations in semiconductor growth and deposition, material analysis and characterization, doping, and processing. Fabrication of simple devices. Metallization, etching, and other manufacturing processes. Lecture one to two hours, laboratory four to five hours per week. Prerequisite, C or better in CHEM 1011, PHYS 2034, and EE 3401. Corequisite, EE 3363. Spring, even.

**EE 3313. Electric Circuits II** Transient analysis, average power, RMS values, mutual inductance, resonance, network theorems and principles, polyphase networks, complex power. Prerequisite, C or better in MATH 2214 and ENGR 2423. Spring.

**EE 3331. Digital Electronics I Laboratory** Experimentation and design with digital electronic and computer components and circuits including logic gates, flip flops, counters, and registers. Practical applications in timing and control. Logic families such as TTL, ECL, and CMOS. Prereq­uisite, C or better in ENGR 2421. Corequisite, EE 3333. Demand.

**EE 3333. Digital Electronics I** Introduction to the analysis and design of digital and computer circuits, Boolean algebra, binary arithmetic, combinational logic, sequential logic, registers, counters, adders, comparators, and computer organization. Prerequisite, C or better in either CS 2114 or ENGR 2423. Fall.

**EE 3343. Engineering Fields and Waves I** Study of time invariant electric and magnetic fields in free space and in materials, electrical current flow as a function of electric field, magnetic flux, interaction of magnetic fields with electrical current and voltage, electrical and magnetic potentials, time changing electric and magnetic fields, and introduction to Maxwell’s Equations. Prerequisites, C or better in MATH 3254 and EE 3313. Fall.

**EE 3353. Signals and Systems** Methods of analysis of continuous and analog systems and associated synthesis, simulation and design, system response in the time and frequency domains, Laplace transforms, Fourier series and transforms, Z-transforms, transfer functions and convolution. Prerequisite, C or better in EE 3313. Corequisite, MATH 4403. Fall.

**EE 3363. Semiconductor Materials and Devices I** Semiconductor materials and theory of solid state electronic devices. Semiconductor growth and processing techniques. Semiconductor parameters such as bandgap, mobility, carrier densities, diffusion length, carrier lifetime, and en­ergy level distribution. Pn junctions and Schottky barriers. Constraints and limitations on practical devices. Prerequisite, C or better in CHEM 1013, PHYS 2034, and C or better in EE 3403 and ENGR 3443. Spring