Electrical and Computer Engineering
Undergraduate Advising Handbook
for
ECE Undergraduate Students\footnote{Revision Date: March 12, 2018}
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Electrical and Computer Engineering Faculty List
Introduction

The School of Electrical and Computer Engineering (ECE) has compiled this advising handbook for undergraduate students to assist them with the selection of their courses. Students will receive advice throughout their stay at OSU from both faculty and staff. Pre-Professional School students will receive advice from the Pre-Professional School Advisor in CEAT Student Services. Professional School students will receive advice from the ECE Professional School Advisor and from ECE faculty. That advice along with this handbook will help students to complete their degree in a timely and orderly fashion. This handbook is not intended to replace or supersede the official degree sheets for the Bachelor of Science (BS) in Electrical Engineering (BSEE) or the BS in Computer Engineering (BSCpE) degree programs. The student is expected to meet all requirements listed on the official Degree Requirement Sheet corresponding to the year of matriculation.

Each Professional School student is assigned for advisement to an ECE faculty member. That assignment can be found using Banner (https://my.okstate.edu). Students are strongly encouraged to discuss all aspects of the curriculum, career, and technologies of electrical engineering or computer engineering with their faculty adviser. The ECE Professional School Advisor will assist students with non-ECE course selections, prerequisite compliance, degree audit, and other nuances associated with the ECE programs.

Students pursuing the BS degree in Electrical Engineering are required, prior to graduation, to have taken a set of area courses in a single sub-discipline in ECE. Sub-disciplines include a) communications (Com), control systems, and digital signal processing (DSP), b) power and energy, c) computer and digital, and d) electronics and solid state. The set of area courses is listed in this handbook and includes one 3000 level prerequisite course and three 4000 level depth courses. Students are encouraged to select an area that is closely aligned with their career goals. ECE faculty can provide advice about the alignment of career goals with any given area. To facilitate a conversation between BSEE students and faculty, the following list provides a brief overview of each area:

- Communications: wireless technologies, internet, information theory, data networks, encryption, security, digital and analog modulation, encoding and decoding, noise, telecommunications, GPS
- Digital Signal Processing: Machine vision, pattern and voice recognition, speech synthesis, video and image processing, digital filters, analog/digital interfaces, data mining, graphical processors
- Power and Energy: Generation, transmission, electric machines, protection, smart and micro-grids, power electronics, electric drives, electro-mechanical transducers,
sustainability, renewable energy, energy storage, reliability, batteries, energy conversion and transformation

- Computers and Digital: Computer architectures, VLSI design, central and graphical processing units, networking, memory and storage devices, software engineering and coding, embedded controllers, computer arithmetic, internet-of-things, sequential and combinational logic, peripherals
- Electronics and Solid State: Transistors, diodes, semiconductors, microelectronics, transmitters, receivers, amplifiers, mixers, detectors, regulators, mixed-signal devices, filters, operational amplifiers, oscillators, instrumentation, high speed and low power devices, systems-on-a-chip
- Electromagnetics: TBD

Students pursuing the BS degree in Computer Engineering are by default taking a set of area courses in Computers and Digital along with additional topics in computer science, including discrete mathematics, programming, data structures, and operating systems.

Students also have the option to pursue a dual degree in electrical engineering and computer engineering. This dual degree program requires 136 credit hours to complete (i.e., 12 credit hours beyond the BScpE program). In principle, it can be completed in four years by taking approximately 17 credit hours each semester.

In addition to the dual degree program, the School also offers a “4+1” program that combines the BSEE or BScpE program with the School’s Master of Engineering in Electrical Engineering (MEngEE) program. Effectively, this program adds 24 credit hours of graduate courses to the BSEE/BScpE programs to obtain a BSEE/BScpE degree and MEngEE degree, thus suggesting that the program requires four years to complete the BSEE/BScpE degree and one year to complete the MEngEE degree (i.e., “4+1”). Specific details of the “4+1” program can be found on the web in the “Memorandum to Graduate Students”; see https://ece.okstate.edu/.

Students are highly encouraged to discuss the dual and “4+1” programs with their faculty, pre-professional school, and professional school advisers. These value-added programs have been devised to provide students a competitive edge in the workforce by giving them broader and deeper knowledge of the electrical and computer engineering disciplines.

Course advising sheets for the BSEE program, BScpE program, and the dual degree program are available in this Handbook. Flow charts are also provided to show the flow of all courses for the BS degrees in electrical engineering or computer engineering.
This handbook also lists the 2000, 3000, and 4000 level courses offered by the School along with their corresponding course catalog entries. In most cases, the ECEN course numbering scheme adheres to the following guidelines: ECEN ABXY:

- \(A = 1\) → Freshman Course
- \(A = 2\) → Sophomore Course
- \(A = 3\) → Junior Course
- \(A = 4\) → Senior Course
- \(A = 5\) → Graduate Course
- \(A = 6\) → PhD Course
- \(B = 1\) → Power and Energy
- \(B = 2\) → Computers and Digital Electronics
- \(B = 3\) → Analog Electronics and Solid State
- \(B = 4\) → Control Systems
- \(B = 5\) → Communications
- \(B = 6\) → Electromagnetics
- \(B = 7\) → Signal Processing
- \(B = 8\) → THz & Optics
- \(X = 1, 2, \ldots, 9\) for any given course in an area
- \(Y = \) Number of credit hours (CH)

For example, ECEN 4613 is a three credit hour, senior level course in the area of electromagnetics.

A list of the ECE faculty is also provided in this handbook along with their general area of specialization. In general, all faculty will be able to advise any undergraduate student, irrespective of the area of specialization selected by the student. However, students are encouraged to contact any faculty member to get detailed information about any area.
Electrical Engineering (123 CH): Course Advising Sheet

Ia. Pre-Professional School Core Requirement (13 CH): ECEN 2714, ECEN 3233, ENSC 2113, ENSC 3213

Ib. Pre-Professional School Computer Science Requirement (6 CH): CS1113 and either CS 2133 or CS 2433

II. Junior Breadth Requirement (14 CH): ECEN 3314, ECEN 3513, ECEN 3613, ECEN 3714.

III. Area Requirement (12 CH): Choose a set of area courses from columns A, B, C, OR D in the table below. Substitutions are allowed with ECE approval.

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<td>Prereq.</td>
<td>ECEN 3723</td>
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<tr>
<td>Area</td>
<td>ECEN 4523 or</td>
<td>ECEN 4133</td>
<td>ECEN 4243</td>
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<td>ECEN 4533</td>
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<tr>
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<tr>
<td>Depth</td>
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IV. Senior Breadth Requirement (6 CH): Choose any two ECEN 4000 level courses. Exclusions or with ECE approval: ECEN 4010, ECEN 4030. (Other courses, 3000 level or above, in engineering, engineering science, math, physics, chemistry, computer science, or statistics may be allowed with ECE approval.)

V. Controlled Elective (3 CH): Choose a) ENSC 2123, ENSC 2143, or ENSC 2213, b) any ENSC or ENGR course that is 3000 level or above, OR, c) choose any course, 3000 level or above, from ECEN, BAE, MAE, CIVE, IEM, PHYS, MATH, CHEM, STAT, or CS. Exclusions or with ECE approval (and in some cases, approval from other departments):

- ECEN 4030
- BAE 4001, BAE 4012, BAE 4400
- CHEM 4990
- CIVE 4010, CIVE 4041, CIVE 4043
- CS 3570, CS 4570, CS 4993
- IEM 4010, IEM 4020, IEM 4913, IEM 4931
- MAE 4010, MAE 4342, MAE 4344, MAE 4353, MAE 4354, MAE 4363, MAE 4374
- MATH 3403, MATH 3603, MATH 3910, MATH 3933, MATH 4033, MATH 4590, MATH 4900, MATH 4910
- PHYS 4010, PHYS 4712, PHYS 4993
- STAT 4053, STAT 4063, STAT 4910, STAT 4981, STAT 4991, STAT 4993

VI. Professional School Advanced Engineering Math and Design Requirements (10 CH): ECEN 4503, ECEN 4013, ECEN 4024.
Suggested Course Plan

The anticipation at OSU and most institutions of higher education is that for one semester credit hour (SCH) the student spends one hour per week in lecture (two for lab courses) and two hours studying outside of class (one for lab courses). A three credit hour class requires, on average, about nine hours per week. This study plan is recommended for students who will devote full time to university studies and do not have excessive extracurricular activities or other obligations.

**NOTES:**
1) CHEM 1515 may be substituted for CHEM 1414 and should be taken by all students considering medical school.
2) Students with less than a “B” in ENGL 1113 or 1313 must take ENGL 1213 or 1413 prior to ENGL 3323.
3) A total of at least 6 hours designated “H” and 6 hours designated “S” is required. Of these, 3 hrs must meet the International Dimension “I” component and 3 hrs must meet the Diversity “D” component.
4) ECEN 2714 replaces ENSC 2613 effective fall 2018.
5) CS 2433 may be taken instead of CS 2133.
6) General Physics I and II are key prerequisites and should be taken at the earliest possible time.
7) Must be at least 3 SCH.
8) 3 SCH chosen from the Area (Prereq) Requirement on the EE Course Advising Sheet.
9) 9 SCH during the senior year to meet Area (Depth) Requirement on the EE Course Advising Sheet.
10) 6 SCH during the senior year to meet the Senior Breadth requirement on the EE Course Advising Sheet.
11) 3 SCH during the senior year to meet the Controlled Elective requirement on the EE Course Advising Sheet.
Professional School Entry Requirements:
• Completion of at least 60 college level semester credit hours (SCH).
• Completion of at least 12 SCH from OSU.
• Completion of MATH 2144, 2153, 2163, 2233; PHYS 2014 and 2114; CHEM 1414; ENGR 1111; ENSC 2113, 3213; ECEN 2714, 3233; ENGL 1113 or 1313; CS 1113, 2133 or 2433.
• A grade of "C" or better in each of those courses listed above.
• GPA Requirements for Professional School: Technical GPA: 2.70, OSU GPA: 2.60, OSU Technical GPA: 2.70.

• This flowchart is only an advising instrument. When conflicts occur, the official 2018-2019 Degree Requirement Sheet takes precedence. Always check for the most current version of this flowchart.
• Admission to Professional School is required to take upper level ECEN-prefix courses. Please refer to the OSU Catalog corresponding to your matriculation date for detailed admission requirements.
Computer Engineering (124 CH): Course Advising Sheet

Ia. Pre-Professional School Core Requirement (10 CH): ECEN 2714, ECEN 3233, ENSC 3213.

Ib. Pre-Professional School Computer Science Requirement (7 CH): CS1113, CS 2133, CS 2351

II. Junior Breadth Requirement (14 CH): ECEN 3314, ECEN 3513, ECEN 3613, ECEN 3714.

III. Area Requirement (18 CH): ECEN 4213, ECEN 4243, ECEN 4303, CS 3353, CS 3653, CS 4323.

IV. Senior Breadth Requirement (3 CH): Choose one of the following courses: ECEN 4233, ECEN 4273, ECEN 4283.

V. Controlled Elective (3 CH): Choose a) ENSC 2113, ENSC 2123, ENSC 2143, or ENSC 2213, b) any ENSC or ENGR course that is 3000 level or above, OR, c) choose any course, 3000 level or above, from ECEN, BAE, MAE, CIVE, IEM, PHYS, MATH, CHEM, STAT, or CS. Exclusions or with ECE approval (and in some cases, approval from other departments):

- ECEN 4030
- BAE 4001, BAE 4012, BAE 4400
- CHEM 4990
- CIVE 4010, CIVE 4041, CIVE 4043
- CS 3570, CS 4570, CS 4993
- IEM 4010, IEM 4020, IEM 4913, IEM 4931
- MAE 4010, MAE 4342, MAE 4344, MAE 4353, MAE 4354, MAE 4363, MAE 4374
- MATH 3403, MATH 3603, MATH 3910, MATH 3933, MATH 4033, MATH 4590, MATH 4900, MATH 4910
- PHYS 4010, PHYS 4712, PHYS 4993
- STAT 4053, STAT 4063, STAT 4910, STAT 4981, STAT 4991, STAT 4993

VI. Professional School Advanced Engineering Math and Design Requirements (10 CH): ECEN 4503, ECEN 4013, ECEN 4024.
Suggested Course Plan

The anticipation at OSU and most institutions of higher education is that for one semester credit hour (SCH) the student spends one hour per week in lecture (two for lab courses) and two hours studying outside of class (one for lab courses). A three credit hour class requires, on average, about nine hours per week. This study plan is recommended for students who will devote full time to university studies and do not have excessive extracurricular activities or other obligations.

NOTES:
1) CHE 1515 may be substituted for CHEM 1414 and should be taken by all students considering medical school.
2) Students with less than a "B" in ENGL 1113 or 1313 must take ENGL 1213 or 1413 prior to ENGL 3323.
3) A total of at least 6 hours designated “H” and 6 hours designated “S” are required. Of these, 3 hrs must meet the International Dimension “I” component and 3 hrs must meet the Diversity “D” component.
4) ECEN 2714 replaces ENSC 2613 effective fall 2018.
5) General Physics I and II are key prerequisites and should be taken at the earliest possible time.
6) Choose from courses specified on the CpE Course Advising Sheet, section IV.
7) Must be at least 3 SCH.
8) 3 SCH during the senior year to meet the Controlled Elective requirement on the CpE Course Advising Sheet, section V.
Professional School Entry Requirements:
• Completion of at least 60 college level semester credit hours (SCH).
• Completion of at least 12 SCH from OSU.
• Completion of MATH 2144, 2153, 2163, 2233; PHYS 2014 and 2114; CHEM 1414; ENGR 1111; ENSC 3213; ECEN 2714, 3233; ECEN 3314, 3513; ENGL 1113 or 1313; CS 1113, 2133, 2351.
• A grade of "C" or better in each of those courses listed above.
• An overall GPA of 2.6 or better at OSU.
• GPA Requirements for Professional School: Technical GPA: 2.70, OSU GPA: 2.60, OSU Technical GPA: 2.70.

• This flowchart is only an advising instrument. When conflicts occur, the official 2018-2019 Degree Requirement Sheet takes precedence. Always check for the most current version of this flowchart.
• Admission to Professional School is required to take upper level ECEN-prefix courses. Please refer to the OSU Catalog corresponding to your matriculation date for detailed admission requirements.
Computer Engineering and Electrical Engineering Dual Degree (136 CH)
Course Advising Sheet

Ia. Pre-Professional School Core Requirement (13 CH): ECEN 2714, ECEN 3233, ENSC 2113, ENSC 3213

Ib. Pre-Professional School Computer Science Requirement (7 CH): CS 1113, CS 2133, CS 2351

II. Junior Breadth Requirement (14 CH): ECEN 3314, ECEN 3513, ECEN 3613, ECEN 3714.


IIIb. Electrical Engineering Area Requirement (12 CH): Choose any four area courses from columns A, B, OR, D in the table below. Substitutions, except ECEN 32XX and ECEN 42XX (i.e., computer engineering courses), are allowed with ECE approval.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Com/Controls/DSP</td>
<td>Power/Energy</td>
<td>Computer/Digital</td>
<td>Electronics/Solid State</td>
</tr>
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<td>Area Prereq.</td>
<td>ECEN 3723</td>
<td>N/A</td>
<td>ECEN 3913</td>
</tr>
<tr>
<td>Area Depth</td>
<td>ECEN 4413</td>
<td>N/A</td>
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</tr>
<tr>
<td>Area Depth</td>
<td>ECEN 4523 or ECEN 4533</td>
<td>N/A</td>
<td>ECEN 4353</td>
</tr>
<tr>
<td>Area Depth</td>
<td>ECEN 4763</td>
<td>N/A</td>
<td>ECEN 4413</td>
</tr>
</tbody>
</table>

IVa. Computer Engineering Senior Breadth Requirement (3 CH): Choose one of the following courses: ECEN 4233, ECEN 4273, ECEN 4283.

IVb. Electrical Engineering Senior Breadth Requirement (6 CH): This requirement is automatically satisfied by the requirements listed in Section IIIa.
Va. Computer Engineering Controlled Elective (3 CH): This requirement is automatically satisfied by the requirements listed in Section Ia (i.e., ENSC 2113).

Vb. Electrical Engineering Controlled Elective (3 CH): This requirement is automatically satisfied by the requirements listed in Section IIIa or IVa.

VI. Professional School Advanced Engineering Math and Design Requirements (10 CH): ECEN 4503, ECEN 4013, ECEN 4024.
ECEN Courses for the BSEE and BScPE Degrees

- ECEN 2714 - Fundamentals of Electric Circuits
- ECEN 3113 - Energy, Environment and Economics
- ECEN 3233 - Digital Logic Design
- ECEN 3314 - Electronic Devices and Applications
- ECEN 3513 - Signal Analysis
- ECEN 3613 - Electromagnetic Fields
- ECEN 3623 - Mathematical Foundations of Electromagnetics and Photonics
- ECEN 3714 - Network Analysis
- ECEN 3723 - Systems I
- ECEN 3903 - Introduction to Semiconductor Devices
- ECEN 3913 - Solid State Electronic Devices
- ECEN 4013 - Design of Engineering Systems
- ECEN 4024 - Capstone Design
- ECEN 4133 - Power Electronics
- ECEN 4153 - Power System Analysis and Design
- ECEN 4213 - Embedded Computer Systems Design
- ECEN 4233 - High Speed Computer Arithmetic
- ECEN 4243 - Computer Architecture
- ECEN 4273 - Software Engineering
- ECEN 4283 - Computer Networks
- ECEN 4303 - Digital Integrated Circuit Design
- ECEN 4313 - Linear Electronics Circuit Design
- ECEN 4353 - Communication Electronics
- ECEN 4413 - Automatic Control Systems
- ECEN 4503 - Random Signals and Noise
- ECEN 4523 - Communication Theory
- ECEN 4533 - Data Communications
- ECEN 4613 - Microwave Engineering
- ECEN 4703 - Active Filter Design
- ECEN 4743 - Introduction to Biomedical Engineering Modeling and Systems
- ECEN 4763 - Introduction to Digital Signal Processing
- ECEN 4773 - Real Time Digital Signal Processing
- ECEN 4823 - Design of Optical Systems
- ECEN 4843 - Design of Lasers and Systems
Catalog Entries

Select the Course Number to get further detail on the course. Select the desired Schedule Type to find available classes for the course.

ECEN 2011 - Experimental Methods I
Basic electrical measurements and instrumentation techniques and devices. Use of voltmeters, ammeters, oscilloscopes, impedance bridges to study resistive, inductive, and capacitive circuit elements in steady state and transient operation. Reinforces ENSC 2613 and introduces design of instrumentation networks. Serves as introduction for non-majors. Previously offered as ECEN 3013. Prerequisite(s): PHYS 2114, Corequisite(s): ENSC 2614.
1.000 Credit hours
2.000 Lab hours

Levels: Undergraduate
Schedule Types: Lab

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Lower Division Requirement

ECEN 2714 - Fundamentals of Electric Circuits
Circuit analysis techniques including equivalent networks and mesh/mode formulation of network equations; operational amplifiers, RL, RC and RLC transient and steady-state circuit analysis; energy and power; electrical measurements and instrumentation. Prerequisite(s): MATH 2153 and PHYS 2114.
4.000 Credit hours
3.000 Lecture hours
2.000 Lab hours

Levels: Undergraduate
Schedule Types: Lab, Lecture, Combined lecture and lab

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Lower Division Requirement

ECEN 3020 - Supervised Research Project
Supervised research project for qualified students. May be repeated no more than three times for a total of three credit hours. Offered for variable credit, 1-3 credit hours, maximum of 3 credit hours. Prerequisite(s): Consent of Instructor and ECEN department head.
1.000 Credit hours
1.000 Other hours

Levels: Undergraduate
Schedule Types: Independent Study

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Upper Division Requirement

ECEN 3113 - Energy, Environment and Economics
Topics relevant to understanding the close relationship between energy use, its impact on the environment, and overall economic implications. Green energy technologies (wind, solar, hydro) will be considered along with conventional techniques. Both conventional and non-conventional energy technologies will be discussed. Prerequisite(s): ECEN 3714. degree program requires admission to Professional School prior to enrollment.
3.000 Credit hours
3.000 Lecture hours

Levels: Undergraduate
Schedule Types: Lecture

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Upper Division Requirement

ECEN 3233 - Digital Logic Design
3.000 Credit hours
2.000 Lecture hours
2.000 Lab hours

Levels: Undergraduate
Schedule Types: Lab, Lecture, Combined lecture and lab

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Upper Division Requirement

**ECEN 3314 - Electronic Devices and Applications**

Semiconductor electronic components including MOSFETs, BJTs, JFETs, and OpAmps. Emphasis on device models and use of solid state electronic devices to analyze, synthesize and design amplifiers and switching circuits. SPICE simulations are extensively utilized. Basic building blocks for analog and digital applications. Theoretical concepts and methods are demonstrated and reinforced through laboratory exercises. Course previously offered as ECEN 3313. Prerequisite(s): ECEN 2714. Degree program requires admission to Professional School prior to enrollment.

4.000 Credit hours
3.000 Lecture hours
2.000 Lab hours

**Levels:** Undergraduate  
**Schedule Types:** Lab, Lecture, Combined lecture and lab  

Elec & Computer Engr Department

**Course Attributes:**  
College of Eng Arch & Tech, Upper Division Requirement

**ECEN 3513 - Signal Analysis**

Degree program requires admission to Professional School prior to enrollment. Deterministic signals, Fourier series and Fourier transforms, Impulse response, convolution and correlation. Sampling theorem. Analog modulation techniques. Prerequisite(s): ECEN 2714

3.000 Credit hours
3.000 Lecture hours

**Levels:** Undergraduate  
**Schedule Types:** Lecture  

Elec & Computer Engr Department

**Course Attributes:**  
College of Eng Arch & Tech, Upper Division Requirement

**ECEN 3613 - Electromagnetic Fields**

Time-harmonic and transient response of transmission lines. Maxwell's equations and their applications to engineering problems in electrostatics, magnetostatics, time-harmonic fields and plane wave propagation. Prerequisite(s): ENSC 2714 with a minimum grade of "C" or better, MATH 2163 and MATH 2233.

3.000 Credit hours
3.000 Lecture hours

**Levels:** Undergraduate  
**Schedule Types:** Lecture  

Elec & Computer Engr Department

**Course Attributes:**  
College of Eng Arch & Tech, Upper Division Requirement

**ECEN 3623 - Mathematical Foundations of Electromagnetics and Photonics**

Mathematical and computational treatment of fundamental electromagnetic theory, with applications to microwave engineering, photonics and semiconductor design. Energy and power, Laplace and Poisson equations; wave equation, including reflection, refraction, and diffraction; and classical electromagnetic radiation at macroscopic and microscopic levels. Prerequisite(s): ECEN 3613 and degree program requires admission to Professional School prior to enrollment.

3.000 Credit hours
2.000 Lecture hours
2.000 Lab hours

**Levels:** Undergraduate  
**Schedule Types:** Lab, Lecture, Combined lecture and lab  

Elec & Computer Engr Department

**Course Attributes:**  
College of Eng Arch & Tech, Upper Division Requirement

**ECEN 3714 - Network Analysis**

Laplace transform, transfer functions, magnetically coupled circuits and two-port networks. Theoretical concepts and methods are demonstrated and reinforced through laboratory exercises. Course previously offered as ECEN 3713. Prerequisite(s): ECEN 2714 with a minimum grade of "C" or better and MATH 2233.

4.000 Credit hours
3.000 Lecture hours
2.000 Lab hours

**Levels:** Undergraduate  
**Schedule Types:** Lab, Lecture, Combined lecture and lab  

Elec & Computer Engr Department

**Course Attributes:**  
College of Eng Arch & Tech, Upper Division Requirement

**ECEN 3723 - Systems I**

Physical and mathematical modeling of electrical and mechanical dynamic systems. Transient response of first and second order systems. Laplace transform techniques for solving differential equations, transfer functions, frequency response and resonance. Course previously offered as ECEN 3413. Prerequisite(s): ENSC 2113 and ENSC 2714 with a minimum grade of "C" or better, and MATH 2233.

3.000 Credit hours
3.000 Lecture hours

**Levels:** Undergraduate  
**Schedule Types:** Lecture  

Elec & Computer Engr Department

**Course Attributes:**
College of Eng Arch & Tech, Upper Division Requirement

ECEN 3903 - Introduction to Semiconductor Devices

Crystal structure, the quantum theory of solids. The physics of semiconductor materials and the p-n junction, with an emphasis on applications to semiconductor devices. Same course as PHYS 3313.

Prerequisite(s): PHYS 2114 or equivalent.

3.000 Credit hours
3.000 Lecture hours

Levels: Undergraduate
Schedule Types: Lecture

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Upper Division Requirement

ECEN 3913 - Solid State Electronic Devices


Prerequisite(s): UCEN 2714 with a minimum grade of "C" or better and either PHYS 3313 or ECEN 3903. Degree program requires admission to Professional School prior to enrollment.

3.000 Credit hours
3.000 Lecture hours

Levels: Undergraduate
Schedule Types: Lecture

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4010 - Technical Problems and Engineering Design

Individual independent study projects selected in consultation with the instructor. Analysis or design problems, literature searches and computer simulations may be involved. Offered for variable credit, 1-12 credit hours, maximum of 12 credit hours. Prerequisite(s): Consent of instructor.

1.000 TO 12.000 Credit hours
1.000 TO 12.000 Other hours

Levels: Graduate, Undergraduate
Schedule Types: Independent Study

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4013 - Design of Engineering Systems

Complete design cycle for several small design projects, each including establishing objectives, synthesis, analysis, construction, testing and evaluation. Use of modern lab equipment and fabrication techniques. Development of communication skills. Prerequisite(s): ECEN 3913, ECEN 3714, ECEN 3314, ECEN 3333 and ENSC 3213. ENGI 3323 as corequisites. Degree program requires admission to professional school prior to enrollment.

3.000 Credit hours
1.000 Lecture hours
4.000 Lab hours

Levels: Undergraduate
Schedule Types: Lab, Lecture, Combined lecture and lab

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4024 - Capstone Design

Continuation of ECEN 4013. Student project teams design, build, test and present results for realistic projects from university and industrial sponsors. Formulation of specifications, consideration of alternative solutions, feasibility considerations, detailed system descriptions, economic factors, safety, reliability, aesthetics, ethics and social impact. Course previously offered as ECEN 4024. Prerequisite(s): ECEN 4013; degree program requires admission to Professional School prior to enrollment.

4.000 Credit hours
3.000 Lecture hours
2.000 Lab hours

Levels: Undergraduate
Schedule Types: Lab, Lecture, Combined lecture and lab

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4030 - Undergraduate Professional Practice

Experience in application of electrical engineering principles to typical problems encountered in industry. Solutions to the problems by student participation in the role of engineer or engineering intern. Offered for variable credit, 1-8 credit hours, maximum of 8 credit hours. Prerequisite(s): Approval of ECEN department head.

1.000 TO 8.000 Credit hours
1.000 TO 8.000 Other hours

Levels: Undergraduate
Schedule Types: Independent Study

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Internship or Practicum, Eligible for SAW, Upper Division Requirement
ECEN 4133 - Power Electronics

Power electronic devices, components, and their characteristics: DC to AC conversion; fundamentals of inverters and waveshaping devices; application aspects; control aspects; characteristics and state of the art of advanced power inverter and power conditioning topologies. Prerequisite(s): Degree program requires admission to Professional School prior to enrollment.
3.000 Credit hours
3.000 Lecture hours
Levels: Graduate, Undergraduate
Schedule Types: Lecture
Elec & Computer Engr. Department
Course Attributes: College of Eng Arch & Tech, Upper Division Requirement

ECEN 4153 - Power System Analysis and Design

Power system component models from circuit theory. Formulation and design of the load flow model and the optimum economic generator allocation problem utilizing computer methods. Prerequisite(s): Degree program requires admission to Professional School prior to enrollment.
3.000 Credit hours
3.000 Lecture hours
Levels: Graduate, Undergraduate
Schedule Types: Lecture
Elec & Computer Engr. Department
Course Attributes: College of Eng Arch & Tech, Upper Division Requirement

ECEN 4213 - Embedded Computer Systems Design

Degree program requires admission to Professional School prior to enrollment. Design of microprocessor-based systems through proper integration of hardware and software. Serial and parallel communications, sensor interfacing, computer control of external devices, and color graphics hardware. Design of PASCAL and assembly language modules for optimum real-time system performance. Prerequisite(s): ENSC 3213 and CS 1113
3.000 Credit hours
2.000 Lecture hours
2.000 Lab hours
Levels: Graduate, Undergraduate
Schedule Types: Lab, Lecture, Combined lecture and lab
Elec & Computer Engr. Department
Course Attributes: College of Eng Arch & Tech, Upper Division Requirement

ECEN 4233 - High Speed Computer Arithmetic

Course covers computer arithmetic as applied to general purpose and application-specific processors. Focus is on developing high-speed arithmetic algorithms and understanding their implementation in VLSI technology at the gate level. Prerequisite(s): ECEN 3233; degree program requires admission to Professional School prior to enrollment.
3.000 Credit hours
3.000 Lecture hours
Levels: Graduate, Undergraduate
Schedule Types: Lecture
Elec & Computer Engr. Department
Course Attributes: College of Eng Arch & Tech, Upper Division Requirement

ECEN 4243 - Computer Architecture

Degree program requires admission to Professional School prior to enrollment. Functional organization and hardware design of digital computer systems with emphasis on microprocessor-based systems. CPU organization, features of microprocessors including advanced 32-bit CPUs, memory system design including cache, virtual memory, error detection and correction, I/O operations, including direct memory access and peripheral interface design. Prerequisite(s): ENSC 3213 and ECEN 3233.
3.000 Credit hours
2.000 Lecture hours
2.000 Lab hours
Levels: Graduate, Undergraduate
Schedule Types: Lab, Lecture, Combined lecture and lab
Elec & Computer Engr. Department
Course Attributes: College of Eng Arch & Tech, Upper Division Requirement

ECEN 4273 - Software Engineering

Degree program requires admission to Professional School prior to enrollment. Functional organization and hardware design of digital computer systems with emphasis on microprocessor-based systems. CPU organization, features of microprocessors including advanced 32-bit CPU's memory system design including cache, virtual memory, error detection and correction, I/O operations, including direct memory access and peripheral interface design. Same course as CS 4273. Prerequisite(s): ENSC 3213 or CS 1113, CS 3443.
3.000 Credit hours
3.000 Lecture hours
Levels: Graduate, Undergraduate
Schedule Types: Lecture
Elec & Computer Engr. Department
Course Attributes: College of Eng Arch & Tech, Upper Division Requirement
ECEN 4283 - Computer Networks

Degree program requires admission to Professional School prior to enrollment. Computer networks, distributed systems and their systematic design. Introduction to the use, structure, and architecture of computer networks. Networking experiments to describe network topology, OSI reference model. Some course as CS 4263. Prerequisite(s): ENSC 3213 or CS 3463.

3:000 Credit hours
3:000 Lecture hours

Levels: Graduate, Undergraduate
Schedule Types: Lecture

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4303 - Digital Integrated Circuit Design

Theory of digital and electronics circuits. Digital logic families TTL, ICL, NMOS, CMOS, GaAs. Large signal models for transistors. Implementation at RAM and ROM. Circuit design for LS- and VLSI. Prerequisite(s): ECEN 3233 and ECEN 3314; degree program requires admission to Professional School prior to enrollment.

3:000 Credit hours
3:000 Lecture hours

Levels: Graduate, Undergraduate
Schedule Types: Lecture

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4313 - Linear Electronics Circuit Design

Class A and B small-signal, push-pull power, complementary symmetry, differential and operational amplifiers. Utilizing feedback transistors, bipolar transistors, tunnel diodes and integrated circuits. Emphasis on amplification in electronic devices, design and analysis of wide-band amplifier circuits. Prerequisite(s): ECEN 3314; degree program requires admission to Professional School prior to enrollment.

3:000 Credit hours
3:000 Lecture hours

Levels: Graduate, Undergraduate
Schedule Types: Lecture

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4353 - Communication Electronics

Design of tuned voltage and power amplifiers, oscillators and mixers, modulation and detection, and parametric amplifiers. Prerequisite(s): ECEN 3314; degree program requires admission to Professional School prior to enrollment.

3:000 Credit hours
3:000 Lecture hours

Levels: Graduate, Undergraduate
Schedule Types: Lecture

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4413 - Automatic Control Systems

Properties of feedback control systems, mathematical models of basic components, state-variable models of feedback systems, time-domain analysis, stability, transform analysis, frequency-domain techniques, root locus design of single input single output systems and single compensation techniques. Same course as MAE 4093. Prerequisite(s): ECEN 3722 or MAE 3722; degree program requires admission to Professional School prior to enrollment.

3:000 Credit hours
3:000 Lecture hours

Levels: Graduate, Undergraduate
Schedule Types: Lecture

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4503 - Random Signals and Noise

Analysis of electrical systems using elementary concepts of probability, random variables and random processes. Frequency and time domain response of linear systems driven by random inputs. Statistical properties of electrical noise. Analysis and design of optimum linear systems. Prerequisite(s): ECEN 3513, ECEN 3714, degree program requires admission to Professional School prior to enrollment.

3:000 Credit hours
3:000 Lecture hours

Levels: Graduate, Undergraduate
Schedule Types: Lecture

Elec & Computer Engr Department

Course Attributes:
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4523 - Communication Theory
Noise in modulation systems. Digital data transmission. Design of optimal receivers. Introduction to information theory. Prerequisite(s): ECEN 3513 and ECEN 4503. Degree program requires admission to Professional School prior to enrollment.

3.000 Credit hours  
3.000 Lecture hours

Level: Graduate, Undergraduate  
Schedule Type: Lecture  
Elect & Computer Engr Department

Course Attributes:  
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4533 - Data Communications

Degree program requires admission to Professional School prior to enrollment. Signal detection in noise. Tradeoffs between bandwidth signal-to-noise ratio and rate of information transfer. Transmission multiplexing and error handling. Elements of computer network design. Data link protocols. Prerequisite(s): ECEN 4503 as co-requisite.

3.000 Credit hours  
3.000 Lecture hours

Level: Graduate, Undergraduate  
Schedule Type: Lecture  
Elect & Computer Engr Department

Course Attributes:  
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4613 - Microwave Engineering

Aspects of propagation, transmission, and radiation of microwave energy. Plane wave propagation; lossless and lossy media, reflection, refraction, and polarization. Transmission line theory; lumped element model, characteristic impedance, impedance matching, and transient response. Theory of waveguides and cavity resonators. Microwave network theory and S-parameters. Introduction to radiating systems. Prerequisite(s): ECEN 3513; degree program requires admission to Professional School prior to enrollment.

3.000 Credit hours  
3.000 Lecture hours

Level: Graduate, Undergraduate  
Schedule Type: Lecture  
Elect & Computer Engr Department

Course Attributes:  
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4703 - Active Filter Design

Introduction to passive filters; operational amplifiers as network elements; filter specifications; design of active filters. Laboratory design projects and computer simulations. Prerequisite(s): ECEN 3613; degree program requires admission to Professional School prior to enrollment.

3.000 Credit hours  
3.000 Lecture hours

Level: Graduate, Undergraduate  
Schedule Type: Lecture  
Elect & Computer Engr Department

Course Attributes:  
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4743 - Introduction to Biomedical Engineering Modeling and Systems

An overview of the field of biomedical engineering and an introduction of the modeling approaches implemented in biomedical engineering. Topics include bio-electronics, biomechanics, compartmental modeling, bio-signal processing, biomedical optics, etc. The course will demonstrate a few of major fields of activity in which biomedical engineers are engaged and modeling approaches are implemented. Prerequisite(s): ECEN 3714, ECEN 4743; degree program requires admission to Professional School prior to enrollment.

3.000 Credit hours  
3.000 Lecture hours

Level: Graduate, Undergraduate  
Schedule Type: Lecture  
Elect & Computer Engr Department

Course Attributes:  
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4763 - Introduction to Digital Signal Processing

Introduction to discrete linear systems using difference equations and z-transforms. Discrete Fourier analysis. Design of digital filters. Sampling theorem. Applications of digital signal processing. Prerequisite(s): ECEN 3513; degree program requires admission to Professional School prior to enrollment.

3.000 Credit hours  
3.000 Lecture hours

Level: Graduate, Undergraduate  
Schedule Type: Lecture  
Elect & Computer Engr Department

Course Attributes:  
College of Eng Arch & Tech, Upper Division Requirement

ECEN 4773 - Real Time Digital Signal Processing

DSP processor architectures and programming, A/D, D/A, polled and interrupt-driven I/O. Realtime implementation of FIR/IIR filters, the FFT, and other DSP algorithms on special purpose DSP hardware from Motorola, Texas Instruments and others. Link between DSP theory and practical implementation. Prerequisite(s): ECEN 4763 or equivalent; degree program requires admission to Professional School prior to enrollment.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECEN 4823</td>
<td>Design of Optical Systems</td>
<td>Introduction to optics through the design, construction, and characterization of optical systems. Emphasis on geometrical optics and spectroscopy. Course previously offered as ECEN 3873. Prerequisite(s): PHYS 2114; degree program requires admission to Professional School prior to enrollment.</td>
</tr>
<tr>
<td>ECEN 4843</td>
<td>Design of Lasers and Systems</td>
<td>Introduction to the design of lasers and optical systems based on lasers including the design, construction, and characterization of lasers. Gaussian beams and optics, laser gain materials, laser cavities, advanced optics. Course previously offered as ECEN 4813. Prerequisite(s): ECEN 3619; degree program requires admission to Professional School prior to enrollment.</td>
</tr>
<tr>
<td>Exam Date</td>
<td>Time</td>
<td>Day</td>
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</tr>
<tr>
<td>December 10</td>
<td>8:00-9:50am</td>
<td>Monday</td>
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<tr>
<td></td>
<td>10:00-11:50am</td>
<td>Tuesday</td>
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<td></td>
<td>12:00-1:50pm</td>
<td>Wednesday</td>
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<tr>
<td></td>
<td>2:00-3:50pm</td>
<td>Thursday</td>
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<tr>
<td></td>
<td>4:00-5:50pm</td>
<td>Friday</td>
</tr>
<tr>
<td></td>
<td>6:00-7:50pm</td>
<td>Saturday</td>
</tr>
<tr>
<td></td>
<td>8:00-9:50pm</td>
<td>Sunday</td>
</tr>
</tbody>
</table>

**Exam Dates**

- **First Day of Students' Thanksgiving Break**: November 22-23
- **Final exams**: Monday-Friday, December 10-14
- **Class work ends**: Friday, December 14
- **Final grades due electronically at noon from faculty**: Wednesday, December 19

**Academic Calendar**

- **Fall Dates to Remember**
  - **Deadline for file graduation application**: Thursday, November 1
  - **Deadline to file graduation application**: Thursday, November 1
  - **Last date to enroll**: August 27
  - **Last date to withdraw**: Friday, November 30
  - **Drop/Add and Withdraw Deadline Details**:
    - **100% Refund, Nonrestrictive Drop/Add Deadline**:
      - add a course (nonrestrictive)
      - drop a course with automatic grade of "W"
    - **Partial Refund, Restrictive Drop/Add Deadline**:
      - add a course (requires drop/add card with instructor and advisor signatures)
      - drop a course with partial refund and grade of "W"
    - **W Drop/Withdraw Deadline**:
      - drop a course with automatic grade of "W"
      - withdraw from all classes with automatic grades of "W" (requires completed Withdrawal Form)

**Graduation in December?** You must file a graduation application by Thursday, November 1 to have your name appear in the fall commencement program. Log in to my.okstate.edu, Self Service, and select **Apply to Graduate** from the Student Records menu.
**Registration and Enrollment**

1. Find your expected enrollment/registration date for the upcoming semester in this enrollment guide.
2. Schedule a meeting with your academic adviser to plan your class schedule. You won't be able to enroll until your adviser clears you for registration. Contact your adviser early, as advising appointments fill quickly.
3. From Student Self Service, check Prepare for Registration (under Registration) to see if you are eligible to register for classes. This site will notify you of factors that may prevent you from being eligible to register, such as holds. You can also view your registration time ticket details (once it's been assigned in early March) and registration permits/overrides that have been granted to you.
4. As you browse for classes, be sure to click the class title to access important prerequisites and other class restrictions that may prevent you from registering.
5. You can plan your schedule in Self Service using Plan Ahead under the Registration menu. Plans created here will be available when you register for classes (on the Plans tab).
6. If you register in a class with variable credit hours, it will default to the lowest number of credit hours. Use the Schedule and Options tab of Registration to change credit hours in a variable credit class.

**Course Schedule**

Students who wish to enroll in a course must enroll before the start of the course. Proportionate drop and withdraw dates are posted to block and short courses. Go to registrar.okstate.edu and click on "Short Courses with Unique Drop/Add Deadlines" link for these deadliness or to scan the QR code below.

**Examination Schedules in this guide are subject to change. Check registrar.okstate.edu/Exams**

### Evening Common Exam Schedule 5:30 pm - 6:30 pm

<table>
<thead>
<tr>
<th>Course</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1114</td>
<td>Sep 17, Oct 15, Nov 19</td>
</tr>
<tr>
<td>CHEM 1215</td>
<td>Sep 13, Oct 11, Nov 8</td>
</tr>
<tr>
<td>CHEM 1314</td>
<td>Sep 12, Oct 10, Nov 7</td>
</tr>
<tr>
<td>CHEM 1411</td>
<td>Sep 11, Oct 9, Nov 6</td>
</tr>
<tr>
<td>CHEM 1515</td>
<td>Sep 13, Oct 11, Nov 8</td>
</tr>
<tr>
<td>ENSC 2113</td>
<td>Sep 26, Oct 24, Nov 28</td>
</tr>
<tr>
<td>FIN 3113</td>
<td>Sep 27, Nov 1</td>
</tr>
<tr>
<td>GEOG 1114</td>
<td>Oct 4, Nov 29</td>
</tr>
<tr>
<td>MAE 2235</td>
<td>Sep 5, Oct 8, Nov 14</td>
</tr>
<tr>
<td>MATH 1483</td>
<td>Sep 13, Oct 18, Nov 15</td>
</tr>
<tr>
<td>MATH 1513</td>
<td>Sep 18, Oct 9, Nov 6, Nov 29</td>
</tr>
<tr>
<td>MATH 1613</td>
<td>Sep 19, Oct 17, Nov 14</td>
</tr>
<tr>
<td>MATH 2114</td>
<td>Sep 18, Oct 16, Nov 13</td>
</tr>
<tr>
<td>MSS 3225</td>
<td>Sep 25, Oct 30</td>
</tr>
<tr>
<td>PHYS 1114</td>
<td>Sep 18, Oct 16, Nov 13</td>
</tr>
<tr>
<td>PHYS 1214</td>
<td>Sep 20, Oct 18, Nov 15</td>
</tr>
<tr>
<td>PHYS 2114</td>
<td>Sep 17, Oct 15, Nov 12</td>
</tr>
<tr>
<td>PHYS 2115</td>
<td>Sep 19, Oct 17, Nov 14</td>
</tr>
</tbody>
</table>

Tulsa-based sections have a different common evening exam schedule. Please consult your instructor and syllabus for more information on your common evening exam date and time.

**NOTE:** If a common exam is cancelled due to the university closing for inclement weather or other unforeseen events, the exam may be rescheduled at the instructor’s and department’s request. Exams from 5:30 – 6:30 pm are likely time slots for rescheduled common exams.

**Examination Building Designs**

**Campus Map**

### Building Locations

- **AC** Athletic Center (Gallagher-Iba Arena)
- **AGR** Agriculture Hall
- **Air** Airport
- **Animal** Animal Science
- **AP** Agriculture
- **AR** Animal Science Area
- **ARR** Animal Research, Roy H. and Dorothy J. Smith Center
- **ART** Advanced Technology Research Center
- **BAC** Biological Agriculture Labs
- **BC** Bear Cultural Center
- **BH** Boswell Hall
- **BR** Bischoff Hall
- **CB** Conoco-Phillips Academic Center
- **CCE** Career Services Center
- **CER** Center for Environmental Research
- **CEC** Central Administration
- **DF** Dairy Facilities
- **DFG** Design and Manufacturing Lab
- **DI** Dairy Industry
- **ES** Equine Barn Hall
- **EC** Engineering
- **END** Engineering North
- **ESL** Engineering South
- **HFD** Health & Food Production Center
- **HPD** 4-H Youth Development Building (Priddy)
- **HS** Health Services
- **JH** Journalism Hall
- **JSRC** Juniper South Research Center
- **JP** Jay Pi
- **KSC** Kemper S. Conrad Center
- **LSE** Life Science East
- **LH** Life Science
- **MH** Math Hall
- **MERL** Mechanical Engineering Research Laboratory
- **MCS** Marine, Civil and Safety Engineering
- **MSU** Mathematical Sciences
- **MUR** Murray Hall
- **MCR** North Murray Hall
- **NRC** Noble Research Center
- **ODD** Oklahoma Diagnostic Laboratory
- **OL** Old Classroom Building
- **OP** Office of the Registrar
- **PBI** Paul Miller Journalism & Broadcasting
- **PH** Physics Hall
- **PIL** Parking Information
- **PL** Physical Science
- **PS** Petroleum Science Laboratory
- **PTC** Stiles Center for the Arts
- **SCV** Student Center for the Performing Arts
- **SCC** Student Center
- **SOOT** Student Outreach
- **SP** Student Planning
- **SU** Student Union
- **TEG** Telecommunications Center
- **TGR** Teaching Greenhouse
- **THH** Tandy Hall
- **T-BK** T-Bone Kitchen
- **T-BK** T-Bone Kitchen
- **T-HBC** Helmke Advanced Technology Research Center (Tulsa)
- **T-MSB** Main Classroom Bldg (Tulsa)
- **T-NCR** North Classroom Bldg (Tulsa)
- **VASS** Veterinary Services
- **VAA** Visual Arts Annex
- **VTH** David L. Boren Veterinary Medicine Teaching Hospital
- **WCF** Westem Wellness Center
- **WCR** Wellness Center
- **WH** WhitÕs Hall
- **WIL** Wilkson Hall
- **WNTZ** W.S. Wirtz Center
- **WPC** W.S. Wirtz Center for International Trade Development
ECE Faculty Contact List

Power and Energy

- Prof. Nishantha Ekneligoda (nishantha.ekneligoda@okstate.edu)
- Prof. Rama Ramakumar (rama.ramakumar@okstate.edu)
- Prof. Yuanxiong (Richard) Guo (richard.guo@okstate.edu)

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- Prof. Cal Latino (carl.latino@okstate.edu)
- Prof. James Stine (james.stine@okstate.edu)
- Prof. Weihua Sheng (weihua.sheng@okstate.edu)
- Prof. Yanmin Gong (yanmin.gong@okstate.edu)

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- Prof. Guoliang Fan (guoliang.fan@okstate.edu)
- Prof. Keith Teague (teague@okstate.edu)
- Prof. Sabit Ekin (sabit.ekin@okstate.edu)
- Prof. Subhash Kak (subhash.kak@okstate.edu)

Electromagnetics, Optics and THz Science

- Prof. Chuck Bunting (reverb@okstate.edu)
- Prof. Daqing Piao (daqing.piao@okstate.edu)
- Prof. John O’Hara (oharaj@okstate.edu)
- Prof. James West (jwest@okstate.edu)
- Prof. Jeffrey Young (jyoung@okstate.edu)
- Prof. Jerzy Krasinski (krasins@okstate.edu)
- Prof. Weili Zhang (wwzhang@okstate.edu)