# Electrical Engineering, BS
## Energy Concentration

**Plan of Study 2017-2018 Academic Year**

- **Electrical Engineering, BS**
- **Energy Concentration**

**Fall Quarter**

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Pre-major</th>
<th>Math 124 Calc I (5)</th>
<th>FWS</th>
<th>MATH 125 Calc II (5)</th>
<th>FWS</th>
<th>MATH 204 Elem Linear Alg (4)</th>
<th>FWS</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>PHYS 161 Phys w/ Calc I (5)</td>
<td>FW</td>
<td>PHYS 162 Phys w/ Calc II (5)</td>
<td>WS</td>
<td>PHYS 163 Phys w/ Calc III (5)</td>
<td>FS</td>
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<tr>
<td></td>
<td>CHEM 121 Gen. Chemistry (5)</td>
<td>FWS</td>
<td>EE 110 Into to Electrical Eng (2)</td>
<td>W</td>
<td>EE 111 Circuits Analysis I (4)</td>
<td>S</td>
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<td></td>
<td>CSCI 140/141 Programming Fund (4)</td>
<td>FWS</td>
<td>GUR: B/CCOM</td>
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EE Pre-majors apply to the major at the end of Spring quarter. Courses above in BOLD are the minimum requirements to apply.

**Winter Quarter**

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Major</th>
<th>EE210 Circuit Analysis II (4)</th>
<th>F</th>
<th>EE 220 Electronics I (4)</th>
<th>W</th>
<th>EE 310 Continuous Systems (4)</th>
<th>S</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>EE233 Digital Electronics (4)</td>
<td>F</td>
<td>EE 244 Embedded Microcontrollers (4)</td>
<td>W</td>
<td>ECON206 Microeconomics (4)</td>
<td>FWS</td>
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<td></td>
<td>MATH 224 Mult Calc &amp; Geo (5)</td>
<td>FWS</td>
<td>MATH 331 Differential Equations (4)</td>
<td>FWS</td>
<td>MATH 345 Engineering Stats (4)</td>
<td>F</td>
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<td>ENRG 380 Energy &amp; Environment(3)</td>
<td>FWS</td>
<td>GUR: ACOM</td>
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<td>GUR: HUM</td>
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**Spring Quarter**

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<thead>
<tr>
<th>Year 3</th>
<th>Major</th>
<th>EE372 Electromechanical Devices (4)</th>
<th>F</th>
<th>EE 360 Communications Systems (4)</th>
<th>W</th>
<th>EE 361 Signal Propagation (4)</th>
<th>S</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>EE 344 Embedded Microcont II (4)</td>
<td>F</td>
<td>EE 374 Energy Processing (4)</td>
<td>W</td>
<td>EE 378 Smart &amp; Renewable Power (4)</td>
<td>S</td>
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<tr>
<td></td>
<td>EE 320 Electronics II (4)</td>
<td>F</td>
<td>EE 444 Embedded Systems (4)</td>
<td>W</td>
<td>ENRG386 Economics of Elect Mkts (4)</td>
<td>S</td>
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<td></td>
<td>GUR: HUM</td>
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**Year 4**

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<tr>
<td></td>
<td>ENG 302 Technical Writing (WP) (5)</td>
<td>FWS</td>
<td>Technical Elective</td>
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<td></td>
<td>EE 480 Control Systems (4)</td>
<td>F</td>
<td>GUR: ACGM</td>
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<td>GUR: BCGM</td>
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<td>GUR: SSC</td>
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**NOTES:**

1. EE courses are offered once per year and have a strong prerequisite structure. Not following the sequence may delay graduation.
2. Students not enrolled in MATH 125 and PHYS 162 by Winter of Year 1 will not be able to complete the degree in four years.
3. All EE courses in years 2, 3, and 4 require admission to the EE Major (see reverse).
4. The EE program satisfies the SCI/LSCI, QSR, and Writing Proficiency (WP) General University Requirements (GURs). The GUR categories listed on this Planning Guide are what a student would need to complete beyond what the Major fulfills. Refer to the WWU Degree Planning Guide for further information and a list of GUR course options. [http://www.wwu.edu/depts/registrar/gurs.shtml](http://www.wwu.edu/depts/registrar/gurs.shtml)

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Admissions—

Program Admissions: Admission to the Electrical Engineering major is a two-phase process. When students initially declare, they are designated as pre-majors. Students must complete the courses listed below in order to apply to the major. Admission to full major status is determined by academic performance and other factors including an application questionnaire about the applicant’s experience, motivation, and goals. Admission to the major is competitive. Neither completion of the prerequisites nor attainment of any specific GPA guarantees admission.

Major Prerequisite courses: MATH 124, MATH 125, MATH 204, PHYS 161, PHYS 162, CSCI 140, EE 110, and EE 111. Students must obtain at least a C- in the above courses and an overall GPA in them of 2.0 or higher to be considered. AP scores are converted to GPA as follows: 5 = A; 4 = B; 3 = C. Decisions are based on cumulative GPA in the prerequisite courses, and other required Major courses, overall GPA, and questionnaire responses.

Spring Quarter: Applications are due by Noon on the Friday of Dead Week to ET 204. Only complete, on-time applications will be considered. Applicants will be notified by the end of the week following finals week. Students who are accepted must register for Fall quarter EE courses before the end of Phase I registration. Students who do not register by the end of Phase I registration may lose their major status.

Fall Quarter: Applications are also accepted at the beginning of Fall quarter on a space available basis. In order to be considered, applications are due to ET 204 by Noon on the Friday before the start of classes. Accepted students will be notified by the start of Phase III registration.

Transfer Students: A transfer student that will be transferring into Fall quarter, Year 2, will be designated as a pre-major and will need to follow the standard application process above except for EE 110, which must be taken at the first opportunity on-campus. A transfer student that has previous coursework that can be transferred to EE core courses and will be entering the program sequence after Fall quarter, Year 2, may apply at any time. Acceptance will be based on space availability and academic performance. Transfer students who are interested in pursuing the EE program should contact the department Pre-major Advisor early to discuss their options.

Approved Technical Electives (6 credits total required): Other courses may be accepted; see program advisor.

- BIOL 204, 205, or 206 INTRODUCTORY SERIES (4)
- BIOL 348 HUMAN ANATOMY AND PHYSIOLOGY (5)
- CHEM 122, 123 GENERAL CHEMISTRY II, III (5, 4)
- CSCI 145 COMPUTER PROGRAM. & LINEAR DATA STRUCT. (4)
- CSCI 247 COMPUTER SYSTEMS I (5)
- CSCI 241 DATA STRUCTURES (4)
- CSCI 3XX
- EE 300 DIRECTED INDEPENDENT STUDY
- EE 311 DISCREET SYSTEMS (4)
- EE 333 DIGITAL SYSTEM DESIGN (4)
- EE 400 DIRECTED INDEPENDENT STUDY
- EE 433 DIGITAL SIGNAL PROCESSING (4)
- EE 495 DIRECTED RESEARCH (1-3)
- ENRG 420 ENERGY SCIENCE II (3)
- ENRG 480 APPLICATIONS ENERGY PRODUCTION (4)
- ENGR 170 INTRO TO MATERIALS SCIENCE & ENGR (4)
- ENGR 214 STATICS (4)
- ENGR 225 MECHANICS OF MATERIALS (5)
- MATH 225 MULTIVARIABLE CALCULUS & GEOM. II (4)
- MATH 226 LIMITS AND INFINITE SERIES (4)
- MATH 304 LINEAR ALGEBRA (4)
- MATH 307 MATHEMATICAL COMPUTING (4)
- MATH 309 INTRO TO PROOF DISCRETE MATH (4)
- MATH 324 STATISTICAL METHODS I (4)
- MATH 343 STATISTICAL METHODS II (4)
- MATH 344 HONORS PROBABILITY AND STATS (4)
- MATH 401 MATHEMATICAL MODELING (4)
- MATH 430 FOURIER SERIES/DIFFEQNS (4)
- MATH 432 SYSTEMS OF LINEAR EQUATIONS (4)
- MATH 441 PROBABILITY (4)
- MATH 458 STOCHASTIC PROCESSES (4)
- MATH 459 STOCHASTIC PROCESSES (4)
- MATH 473 NUMERICAL LINEAR ALGEBRA (4)
- M/CS 335/375 LINEAR OPTIMIZATION/ NUMERICAL COMPUTATION (4)
- M/CS 435, 475 NONLINEAR OPTIMIZATION/NUMERICAL ANALYSIS (4)
- MFGE 341 QUALITY ASSURANCE (4)
- MFGE 342 DESIGN OF EXPERIMENTS (4)
- MFGE 453 INDUSTRIAL ROBOTICS (4)
- OPS 360, 460 OPERATIONS MANAGEMENT/DESIGNING OPS (4)
- OPS 461, 463 PROJECT MANAGEMENT (4)
- OPS 463 ENTERPRISE RESOURCE PLANNING SYSTEMS (4)
- PHYS 224 MODERN PHYSICS I (4)
- PHYS 225 MODERN PHYSICS II (3)
- PHYS 339 OPTICS (3)
- PHYS 350 ENGINEERING THERMODYNAMICS (3)
- PHYS 368 ELECTROMAGNETISM I (3)
- PHYS 369 ELECTROMAGNETISM II (3)

Contact Information for Electrical Engineering professors:
- Todd Morton, Professor & EE Program Director: Todd.Morton@wwu.edu; 360.650.2918; ET 204/206
- Xichen Jiang, Assistant Professor: Xichen.Jiang@wwu.edu; 360.650.7766; ET 268
- Andy Klein, Associate Professor: Andy.Klein@wwu.edu; 360.650.2709; ET 270
- Ying Lin, Associate Professor: Ying.Lin@wwu.edu; 360.650.2703; ET 271
- John Lund, Assistant Professor: John.Lund@wwu.edu; 360.650.2601; ET 274