Electrical Engineering

University Requirements (23-24)
- Writing – American Thought and Language (ATL) 4
- Integrative Studies in Humanities (IAH) 8
- Integrative Studies in Social Sciences (ISS) 8
- Bioscience (one of the following):
  - BS 110, BS 111, ENT 205, MMG 205, MMG 301, PLB 105, PSL 250, ZOL 141 3-4

Integrative Studies in Social Sciences (ISS) 8

College Requirements (30)
- CEM 141 General Chemistry 4
- CSE 231 Introduction to Programming I 4
- MTH 132 Calculus I 3
- MTH 133 Calculus II 4
- MTH 234 Multivariable Calculus 4
- MTH 235 Differential Equations 3
- \(^1\)PHY 183 Physics for Scientists & Engineers I 4
- \(^1\)PHY 184 Physics for Scientists & Engineers II 4

Major Requirements (40)
- CEM 161 Chemistry Laboratory I 1
- OR
  - PHY 191 Physics Laboratory for Scientists I 1
  - ECE 201 Circuits and Systems I 3
  - ECE 202 Circuits and Systems II 3
  - ECE 230 Digital Logic Fundamentals 3
  - ECE 302 Electronic Circuits 3
  - ECE 303 Electronics Laboratory 1
  - ECE 305 Electromagnetic Fields & Waves I 4
  - ECE 313 Control Systems 3
  - ECE 320 Energy Conversion and Power Electronics 3
  - ECE 331 Microprocessors and Digital Systems 4
  - ECE 366 Introduction to Signal Processing 3
  - ECE 480 Senior Design 5
  - ME 201 Thermodynamics
- OR
  - ME 221 Statics 3
  - STT 351 Probability and Statistics for Engineering 3

Major Electives (18-24)
- A minimum of six courses totaling 18 to 24 credits, selected from at least four different areas. A laboratory must be included.

Electromagnetics
- ECE 405 Electromagnetic Fields and Waves II 4
- ECE 407 Electromagnetic Compatibility 4

Power
- ECE 421 Power System Analysis (L) 4

Integrated Circuits/VLSI
- ECE 410 VLSI Design (L) 4
- ECE 411 Electronic Design Automation (L) 4
- ECE 418 Algorithms of Circuit Design 3
- ECE 484 Applications of Analog Integrated Circuits (L) 4

Solid-State Electronics/Electro-optics
- ECE 474 Principles of Electronic Devices 3
- ECE 476 Electro-Optics (L) 4
- ECE 477 Microelectronic Fabrication (L) 3

Communications/Signal Processing
- ECE 457 Communication Systems 3
- ECE 458 Communication Systems Laboratory 1
- ECE 466 Digital Signal Processing & Filter Design 3

Control/Robotics
- ECE 415 Computer Aided Manufacturing 3
- ECE 485 Digital Control & Robotics (L) 4

Other Electives (Variable)

Total Credits Required for Degree 128

The requirements listed above apply to students admitted to the major of Electrical Engineering in the Department of Electrical and Computer Engineering beginning Fall, 2003. The Department of Electrical and Computer Engineering (ECE) constantly reviews program requirements and reserves the right to make changes as necessary. Consequently, each student is strongly encouraged to consult with his/her advisor to obtain assistance in planning an appropriate schedule of courses. Students who have questions about Electrical Engineering should contact the Electrical and Computer Engineering Department Advising Office, 2212 Engineering Building, phone (517)355-5242.

Some courses may have prerequisites, which are not otherwise required in the program. Students should check course descriptions to ensure they are aware of prerequisites.

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1 If PHY 231 is taken in place of PHY 183, PHY 233B must also be completed. If PHY 232 is taken in place of PHY 184, PHY 234B must also be completed.

Last revised March, 2003
### Electrical Engineering Sample Program

#### Freshman Year

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<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
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<td>ATL 1XX or ISS 2XX</td>
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Total 14/15

#### Sophomore Year

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Total 16

#### Junior Year

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Total 17

#### Senior Year

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Total 16

### Program Objectives

The electrical engineering program provides its graduates with a solid foundation on which they can build successful and sustainable careers. Within the first several years following graduation, graduates of the electrical engineering program will:

1. **have accrued an understanding of the discipline**, built on an exposure to a broad range of electrical engineering topics including the latest and emerging techniques and technologies.

2. **have established expertise within the discipline** originating with in-depth study in selected curricular areas emphasizing the solution to engineering problems using proper tools, practical approaches, and creative problem solving.

3. **be engaged in lifelong learning** in electrical engineering, based on a strong foundation in the core sciences and mathematics.

4. **have an appreciation for the global and societal impact of the discipline** through an exposure to contemporary issues, and a knowledge and respect for ethical standards and professional responsibilities.

5. **have successfully utilized essential professional skills** such as teamwork and communications, both oral and written, within the context of engineering problem solving and design.

*Last revised May, 2003*