

ELECTRICAL ENGINEERING (BS) - PREMED TRACK

Degree Requirements

| Code | Title | Hours |
|--|---|-----------|
| General Education Requirements | | 74 |
| Major Requirements | | |
| <i>Electrical Engineering Major Core</i> | | |
| Complete the following: | | |
| EG 101 | Intro to Engineering & Design (or EG 201 for LINK students) | 2 |
| BMD 321 | Biochemistry I-Molecular Biol | 3 |
| BMD 322 | Biochemistry II-Metabolism | 3 |
| BLY 350 | Human Physiology (recommended, but not required for the PreMed track) | 0-3 |
| CPE 260 | Intro to C++ Programming | 3 |
| EG 231 | Intro to Ethics and Economics | 3 |
| EE 220 | Circuit Analysis I | 3 |
| EE 223 | Network Analysis | 3 |
| EE 227 | Circuits and Devices Lab | 1 |
| EE 263 | Digital Logic Design | 3 |
| EE 264 | Microprocessor Sys-Interfacing | 3 |
| EE 268 | Digital Logic Design Lab | 1 |
| EE 321 | Signals, Systems & Transforms | 3 |
| EE 322 | Prob, Rand Sigs & Stat Anlys | 3 |
| EE 328 | Feedback Control Systems | 3 |
| EE 331 | Physical Electronics | 3 |
| EE 334 | Digital Electronics | 3 |
| EE 368 | Microprocessor Sys Interf Lab | 1 |
| EE 372 | Introduction to Communications | 3 |
| EE 401 | Intro Elec and CpE Design - W | 1 |
| EE 404 | Electrical and Computer Engineering Design | 3 |
| EE 431 | Analog Electronics | 3 |
| EE 437 | Electronics Lab | 1 |
| EE 465 | Digital Signal Processing | 3 |
| <i>Technical Electives</i> | | |
| Select one of the following concentrations with permission of student's advisor. | | 6 |
| A. Control Systems: | | |
| EE 422 | Adv Feedback Control Systems | |
| EE 423 | Modern Control Theory | |
| EE 424 | Nonlinear Control Systems | |
| EE 427 | Digital Control Systems | |
| EE 438 | Virtual Instrumentation | |
| EE 468 | Programmable Logic Controllers | |
| B. Communications and Networks: | | |
| EE 441 | Computer Networks | |
| EE 444 | Wireless Networks | |
| EE 453 | Antenna Theory and Design | |
| EE 471 | Wireless Communication | |
| EE 473 | Advanced Communication Systems | |

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| C. Digital Systems: | | |
| EE 438 | Virtual Instrumentation | |
| EE 440 | HDL Logic Synthesis ¹ | |
| EE 441 | Computer Networks | |
| EE 443 | HDL Logic Simulation ¹ | |
| EE 454 | Digital Computer Architecture | |
| EE 457 | Embedded System Design | |
| EE 468 | Programmable Logic Controllers | |
| EE 469 | Signal Integrity | |
| D. Electromagnetics and Optics: | | |
| EE 450 | Fundamentals of Fourier Optics | |
| EE 452 | Microwave Engineering | |
| EE 453 | Antenna Theory and Design | |
| EE 455 | Optoelectronics | |
| EE 456 | Fiber Optic Communication Sys | |
| EE 458 | Radar Systems | |
| EE 488 | Illumination Engineering | |
| E. Electronics: | | |
| EE 430 | Power Semiconductor Dev | |
| EE 432 | Microelectronic Devices | |
| EE 438 | Virtual Instrumentation | |
| EE 439 | VSLI Technology-Fabrication | |
| EE 455 | Optoelectronics | |
| EE 470 | Synth Active-Passive Networks | |
| EE 482 | Switch Mode Power Conversion | |
| EE 486 | Power Electronics | |
| F. Power Systems: | | |
| EE 430 | Power Semiconductor Dev | |
| EE 481 | Electrical Machines | |
| EE 482 | Switch Mode Power Conversion | |
| EE 483 | Power Systems I | |
| EE 484 | Power Systems II | |
| EE 485 | Power Distrib and Utilization | |
| EE 486 | Power Electronics | |
| EE 488 | Illumination Engineering | |
| EE 489 | Renewable Energy | |
| Senior Lab Elective | | |
| EE 446 | Embedded System Design Lab | 1 |
| or EE 447 | Programmable Logic Devices Lab | |
| Minor Requirements | | |
| A minor is not required for this degree program | | 0 |
| Total Hours | | 139-142 |

¹ Credit for both EE 440 & EE 443 is not allowed.

Notes:

- Grade C or higher is required in all prerequisite courses for admission to Medical School.
- All Electrical and Computer Engineering undergraduates must complete two designated writing credit (W) courses, at least one of

which must be in the student's major. Courses carrying this credit are identified in the University Bulletin by W after the course title.

- Appropriate software tools will be utilized in almost all EE courses.

General Education Requirements

| Code | Title | Hours |
|---|---|-------|
| Area I – Written Composition | | |
| Complete the following: | | |
| EH 101 | English Composition I (Students who earn an English ACT score of 27, or a written SAT score of 610, can opt out of EH 101.) | 3 |
| EH 102 or EH 105 | English Composition II Honors Composition - H | 3 |
| Area II – Humanities & Fine Arts | | |
| CA 110 | Public Speaking | 3 |
| A. Select one of the following: 3 | | |
| EH 215 | Brit Lit before 1785 | |
| EH 216 | Brit Lit after 1785 | |
| EH 225 | Am Lit before 1865 | |
| EH 226 | Am Lit after 1865 | |
| EH 235 | World Lit before 1650 | |
| EH 236 | World Lit after 1650 | |
| B. Select one of the following: 3 | | |
| ARH 100 | Survey of Art | |
| ARH 103 | Art History I | |
| ARH 123 | Art History II | |
| ARS 101 | Art Appreciation | |
| DRA 110 | Introduction to Theatre | |
| MUL 101 | Introduction to Music | |
| Area III – Natural Sciences & Mathematics | | |
| Complete the following: | | |
| MA 125 | Calculus I | 4 |
| BLY 121 & 121L | General Biology I and General Biology I Lab | 4 |
| BLY 122 & 122L | General Biology II and General Biology II Laboratory | 4 |
| CH 131 & 131L | General Chemistry I and General Chemistry I Lab | 4 |
| CH 132 & 132L | General Chemistry II and General Chemistry II Lab | 4 |
| PH 201 & 201L | Calculus-Based Physics I and Calculus-Based Physics I Lab | 4 |
| PH 202 & 202L | Calculus-Based Physics II and Calculus-Based Physics II Lab | 4 |
| Area IV – History, Social & Behavioral Sciences (3 Courses, 9 Hours) | | |
| A. Select one of the following: 3 | | |
| HY 101 | HY of Western Civilization I | |
| HY 102 | HY of Western Civilization II | |
| HY 135 | US History to 1877 | |
| HY 136 | US History since 1877 | |
| B. Select one of the following: 3 | | |
| AN 100 | Intro to Cultural Anthropology | |
| AN 101 | Intro Archaeology-Bio Anthro | |
| CA 100 | Intro to Communication | |

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| CA 211 | Interpersonal Comm | |
| ECO 215 | Prin of Microeconomics | |
| ECO 216 | Prin of Macroeconomics | |
| GEO 114 | People, Places, Environment | |
| GEO 115 | World Regional Geography | |
| GS 101 | Intro to Gender Studies | |
| IS 100 | Global Issues | |
| IST 201 | Seasons of Life | |
| PSC 130 | Intro to US Government | |
| PSY 120 | Introduction to Psychology (recommended for MCAT) ¹ | |
| PSY 250 | Life Span Development | |
| SY 109 | Introductory Sociology (recommended for MCAT) ¹ | |
| SY 112 | Social Problems | |
| C. Select one additional course from either List A or List B above in Area IV | | 3 |
| Area V - Pre-Professional, Major, Elective Courses | | |
| Complete the following: | | |
| MA 126 | Calculus II | 4 |
| MA 227 | Calculus III | 4 |
| MA 237 | Linear Algebra I | 3 |
| MA 238 | Differential Equations I | 3 |
| CH 201 & 201L | Organic Chemistry I and Organic Chemistry I Lab | 4 |
| CH 202 & 202L | Organic Chemistry II and Organic Chemistry II Lab | 4 |
| Total Hours | | 74 |

¹ Courses PSY 120 and SY 109 (electives in Area IV.B of General Education Requirements) are not required for graduation, but are recommended to prepare for the Medical College Admission Test (MCAT) that is required for admission to most Medical Schools.

Professional Component Standing (PCS)

PCS is required to be eligible to take EE 300-level and EE 400-level courses. PCS is awarded when the student meets the following requirements:

- Courses: MA 125, MA 126, CH 131, CH 131L, PH 201, CPE 260, EE 220, EE 263, EH 101, EH 102 or EH 105
- Grade C or higher is required in all PCS courses
- Minimum Grade Point Average: 2.00 USA GPA

Students who fail to maintain at least a 2.00 GPA overall at the University of South Alabama will lose PCS and may be required to take or repeat appropriate courses as specified by the Department Chair to correct their deficiencies and may not be permitted to continue in 300- and 400-level engineering courses.

Graduation Plan

(139 Total Hours)

The Sample 4-year plan is designed as a guide for students preparing for their course selections. This information provides only a suggested schedule. Actual course selections should be made in consultation

with an advisor. Courses listed as Milestones are required to obtain Professional Component Standing (PCS).

| Course | Title | Hours |
|--|--|-----------|
| First Year | | |
| Fall | | |
| MA 125 | Calculus I ¹ | 4 |
| CH 131 & 131L | General Chemistry I and General Chemistry I Lab ¹ | 4 |
| EH 101 | English Composition I ¹ | 3 |
| EG 101 | Intro to Engineering & Design | 2 |
| Social & Behavioral Elective | PSY 120 recommended | 3 |
| CA 110 | Public Speaking | 3 |
| Milestones | | |
| Must complete at least 12 hours with a 2.0 or higher GPA | | |
| Hours | | 19 |
| Spring | | |
| MA 126 | Calculus II ¹ | 4 |
| CH 132 & 132L | General Chemistry II and General Chemistry II Lab | 4 |
| PH 201 & 201L | Calculus-Based Physics I and Calculus-Based Physics I Lab ¹ | 4 |
| CPE 260 | Intro to C++ Programming ¹ | 3 |
| EH 102 | English Composition II (or EH 105) ¹ | 3 |
| Milestones | | |
| MA 125 | Calculus I | |
| CH 131 & 131L | General Chemistry I and General Chemistry I Lab | |
| EH 101 | English Composition I | |
| Hours | | 18 |
| Second Year | | |
| Fall | | |
| MA 227 | Calculus III | 4 |
| PH 202 & 202L | Calculus-Based Physics II and Calculus-Based Physics II Lab | 4 |
| EE 263 | Digital Logic Design ¹ | 3 |
| EE 220 | Circuit Analysis I ¹ | 3 |
| CH 201 & 201L | Organic Chemistry I and Organic Chemistry I Lab | 4 |
| Milestones | | |
| PH 201 & 201L | Calculus-Based Physics I and Calculus-Based Physics I Lab | |
| MA 126 | Calculus II | |
| CPE 260 | Intro to C++ Programming | |
| Hours | | 18 |
| Spring | | |
| EE 223 | Network Analysis | 3 |
| EE 268 | Digital Logic Design Lab | 1 |
| CH 202 & 202L | Organic Chemistry II and Organic Chemistry II Lab | 4 |
| BLY 121 & 121L | General Biology I and General Biology I Lab | 4 |
| MA 237 | Linear Algebra I | 3 |
| MA 238 | Differential Equations I | 3 |
| Milestones | | |
| EE 220 | Circuit Analysis I | |
| EE 263 | Digital Logic Design | |
| EH 102 or EH 105 | English Composition II or Honors Composition - H | |
| Obtain PCS | | |
| Hours | | 18 |

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| Third Year | | |
| Fall | | |
| EE 227 | Circuits and Devices Lab | 1 |
| EE 264 | Microprocessor Sys-Interfacing | 3 |
| EE 321 | Signals, Systems & Transforms | 3 |
| EE 331 | Physical Electronics | 3 |
| BMD 321 | Biochemistry I-Molecular Biol | 3 |
| BLY 122 & 122L | General Biology II and General Biology II Laboratory | 4 |
| Hours | | 17 |
| Spring | | |
| EE 322 | Prob, Rand Sigs & Stat Anlys | 3 |
| EE 334 | Digital Electronics | 3 |
| BMD 322 | Biochemistry II-Metabolism | 3 |
| EE 328 | Feedback Control Systems | 3 |
| EE 368 | Microprocessor Sys Interf Lab | 1 |
| History/Humanities & Fine Arts Elective | Area II or IV.A | 3 |
| Social & Behavioral Elective | SY 109 recommended | 3 |
| Hours | | 19 |
| Fourth Year | | |
| Fall | | |
| EE 372 | Introduction to Communications | 3 |
| EE 401 | Intro Elec and CpE Design - W (only taught in Fall semester) | 1 |
| EG 231 | Intro to Ethics and Economics | 3 |
| EE 465 | Digital Signal Processing | 3 |
| EE 431 | Analog Electronics | 3 |
| EE 446 or EE 447 | Senior Lab Elective | 1 |
| BLY 350 | Human Physiology (recommended but not required for the PreMed Track) | |
| Milestones | | |
| Apply for graduation | | |
| Hours | | 14 |
| Spring | | |
| EE 404 | Electrical and Computer Engineering Design (only taught in Spring semester) | 3 |
| EE 437 | Electronics Lab | 1 |
| EE 4XX | Electrical Engineering Technical Elective ² | 3 |
| EE 4XX | Electrical Engineering Technical Elective ² | 3 |
| History/Humanities & Fine Arts Elective | Area II or IV.A | 3 |
| History/Humanities & Fine Arts Elective | Area II or IV.A | 3 |
| Hours | | 16 |
| Total Hours | | 139 |

¹ These courses are required for Professional Component Standing (PCS). Grade C or better in each course is required to obtain PCS in the Electrical Engineering Program. No 300-level courses can be taken without PCS.

² EE Technical electives must be selected from EE courses at 400-level and must include a two-course concentration from the approved list with permission of the student's advisor.

Note: Students not Term 1-Calculus ready will exceed the number of hours required for this degree. If math is not started prior to Fall of Year 1, it is likely that the four-year graduation timetable will be extended. Students with ACT Math scores 21 and below should begin math courses in the summer before Fall of Year 1.