

Electrical Electives (EE) and Technical Electives (TE) for the Electrical Engineering Option

Guideline for electives selection for Electrical Engineering option:

1. FOUR Electrical Electives are to be selected from list 1.1.
2. Any TWO Technical Electives are to be selected from list 1.2.
3. One Science Math and Engineering elective (any Science, Math, or Engineering course above 200 level)
4. One general elective (any course 200 level and above)
5. Two lower level Hum/Soc electives, and two upper level Hum/Soc electives. For more info on humanity electives, see <http://soe.rutgers.edu/oa/electives>
6. Each 4-credit Computer Science (Livingston College) course constitutes one elective course.
7. Students with a cumulative average of 3.2 or better may take a graduate level course as a Technical or Electrical Elective with the approval of their advisor, instructor of the course, and the Dean's office.

LIST 1.1: ELECTRICAL ELECTIVES

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| 14:332:322 | Principles of Communication Systems |
| 14:332:351 | Programming Methodology II (The course 198:213 or 198:214 can be taken in place of 332:351) |
| 14:332:376 | Virtual Reality (14:332:378 is a corequisite) |
| 14:332:382 | Electromagnetic Fields |
| 14:332:402 | Sustainable Energy: Choosing among options |
| 14:332:411 | Electrical Energy Conversion |
| 14:332:415 | Introduction to Automatic Control Theory |
| 14:332:417 | Introduction to Control System Design |
| 14:332:421 | Wireless Communication Systems |
| 14:332:423 | Computer and Communication Networks |
| 14:332:424 | Introduction to Information and Network Security |
| 14:332:427 | Communication System Design |
| 14:332:434 | Introduction to Computer Systems |
| 14:332:435 | Topics in Electrical and Computer Engineering |
| 14:332:436 | Topics in Electrical and Computer Engineering |
| 14:332:437 | Digital System Design |
| 14:332:445 | Topics in Electrical and Computer Engineering |
| 14:332:446 | Topics in Electrical and Computer Engineering |
| 14:332:447 | Digital Signal Processing Design |
| 14:332:451 | Introduction to Parallel and Distributed Programming |
| 14:332:452 | Software Engineering |
| 14:332:453 | Mobile App Engineering and User Experience |
| 14:332:456 | Network-Centric Programming (Usually offered only in alternate years) |
| 14:332:460 | Power Electronics |
| 14:332:463 | Analog Electronics |
| 14:332:464 | RF Integrated Circuits |
| 14:332:465 | Physical Electronics |
| 14:332:466 | Opto-Electronic Devices |
| 14:332:467 | Microelectronic Processing |
| 14:332:472 | Robotics and Computer Vision |
| 14:332:474 | Introduction to Computer Graphics (The course 198:428 can be taken in place) |
| 14:332:479 | VLSI Design |

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| 14:332:481 | Electromagnetic Waves |
| 14:332:482 | Deep Submicron VLSI Design for Electrical and Computer Engineering |
| 14:332:491/2 | Special Problems/Independent Study (not open to students on academic probation) |
| 14:332:493 | Topics in Electrical and Computer Engineering |
| 14:332:494 | Topics in Electrical and Computer Engineering |

LIST 1.2: TECHNICAL ELECTIVES

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|---------------------|--|
| 14:xxx:xxx | SOE 200+ level courses from other departments are accepted as technical electives (where "xxx" is a departmental code and course code) |
| 14:332:491/2 | Special Problems/Independent Study (not open to students on academic probation) |
| <u>14:332:496/7</u> | Co-Op and Internship (not open to students on academic probation) |
| 01:198:314 | Principles of Programming Languages |
| 01:198:323* | Numerical Analysis and Computing |
| 01:198:334 | Introduction to Imaging and Multimedia |
| 01:198:336 | Principles of Information and Data Management |
| 01:198:344 | Design and Analysis of Computer Algorithms |
| 01:198:417 | Distributed Systems: Concepts and Design |
| 01:198:424 | Modeling and Simulation of Continuous Systems |
| 01:198:440 | Introduction to Artificial Intelligence |
| 01:198:442 | Topics in Computer Science |
| 01:198:443 | Topics in Computer Science |
| 01:198:444 | Topics in Computer Science |
| 01:198:445 | Topics in Computer Science |
| 01:198:440 | Introduction to Artificial Intelligence |
| <u>01:198:452</u> | Formal Languages and Automata |
| 01:640:250 | Introductory Linear Algebra |
| 01:640:311 | Advanced Calculus I |
| 01:640:312 | Advanced Calculus II (640:421 Advanced Calculus for Engineers is not acceptable as this duplicate 332:345 Linear Systems and Signals) |
| 01:640:350 | Linear Algebra |
| 01:640:351 | Introduction to Abstract Algebra I |
| 01:640:352 | Introduction to Abstract Algebra II |
| 01:640:354 | Linear Optimization |
| 01:640:357 | Topics in Applied Algebra |
| 01:640:373* | Numerical Analysis I |
| 01:640:374* | Numerical Analysis II |
| 01:640:403 | Introduction to Theory of Functions of a Complex Variable |
| 01:640:423 | Elementary Partial Differential Equations (01:640:421 is not acceptable) |
| 01:640:424 | Stochastic Models in Operations Research |
| 01:640:428 | Graph Theory |
| 01:640:454 | Combinatorics |
| <u>01:640:478</u> | Mathematical Theory of Probability II |
| 01:750:313 | Modern Physics I |
| 01:750:314 | Modern Physics II |
| 01:750:351** | Thermal Physics I |
| 01:750:352 | Thermal Physics II |
| 01:750:406 | Introductory Solid State Physics |
| 01:750:417 | Intermediate Quantum Mechanics |
| 01:750:421 | Fluid and Plasma Phenomena |
| <u>01:750:464</u> | Mathematical Physics |
| 01:960:463 | Regression Methods |

01:960:467 Applied Multivariate Analysis
01:960:484 Basic Applied Statistics
01:160:307 Organic Chemistry I
01:160:308 Organic Chemistry II
01:160:316 Honors Organic Chemistry II

Independent Study/Special Problems (491, 492), other than 332, are not, in general, considered as electives.

NOTES:

- * Credit not given for both 01:198:323-324 and 01:640:373-374
- ** Credit not given for both 01:750:351 and 14:650:351
- *** **Credit will not be given to 01:198:416**