

GEORGE MASON UNIVERSITY
THE VOLGENAU SCHOOL OF ENGINEERING
B.S. DEGREE IN ELECTRICAL ENGINEERING (3100 Nguyen Engineering Building, 703-993-1569)
<https://ece.gmu.edu/undergraduate-studies/bachelors-programs/bs-computer-engineering>
2018 - 2019 CATALOG

Department(s) & Course #(s)	Completed/ Grade(s)	Needed
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MASON CORE REQUIREMENTS (24)

- | | | |
|---|-------|-------|
| a. Written Communication: ENGH 101 (100), ENGH 302 – Natural Science or Tech Sections Only (C or better) (3,3) | | |
| b. Oral Communication: COMM 100 or 101 (please circle choice) (3) | _____ | _____ |
| c. Quantitative Reasoning (satisfied by MATH 113) | | |
| d. Literature (3) | _____ | _____ |
| e. Arts (3) | _____ | _____ |
| f. Western Civilization (HIST 100, 125, or acceptable transfer course) | _____ | _____ |
| g. ECON 103 (3) | _____ | _____ |
| i. Natural Science (satisfied by PHYS 160/161 and 260/261) | | |
| j. Global Understanding (3) | _____ | _____ |
| k. Information Technology (satisfied by ENGR 107 and CS 112) | | |
| l. Synthesis (satisfied by ECE 492, 493) | | |

Go to: <http://catalog.gmu.edu/mason-core/> to link to information on Mason Core requirements.

MATHEMATICS AND BASIC SCIENCES (32 hours required)

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|------------------------|----------|-------|
| a. MATH 113, 114 (4,4) | a. _____ | _____ |
| b. MATH 213, 214 (3,3) | b. _____ | _____ |
| c. MATH 203 (3) | c. _____ | _____ |
| d. STAT 346 (3) | d. _____ | _____ |
| e. PHYS 160, 161 (3,1) | e. _____ | _____ |
| f. PHYS 260, 261 (3,1) | f. _____ | _____ |
| g. PHYS 262, 263 (3,1) | g. _____ | _____ |

ENGINEERING AND COMPUTER SCIENCES (65 hours required)

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| a. ENGR 107 (2) | a. _____ | _____ |
| b. CS 112 (4) | b. _____ | _____ |
| c. CS 222 (3) | c. _____ | _____ |
| d. ECE 101, ECE 201 (3,3) | d. _____ | _____ |
| e. ECE 220, *ECE 285, *ECE 286 (3,3,3) | e. _____ | _____ |
| f. ECE 305 (3) | f. _____ | _____ |
| g. ECE 331, ECE 332 (3,1) | g. _____ | _____ |
| h. ECE 333 (writing intensive course), ECE 334 (3,1) | h. _____ | _____ |
| i. ECE 421, ECE 433 (3,3) | i. _____ | _____ |
| j. ECE 445 (writing intensive course), ECE 460 (3,3) | j. _____ | _____ |
| k. Advanced Engineering Labs (list courses) (2) | | |
| 1. _____ 2. _____ | k. _____ | _____ |
| l. Senior technical electives (list courses) (12) | | |
| 1. _____ 2. _____ | l. _____ | _____ |
| 3. _____ 4. _____ | m. _____ | _____ |
| m. ECE 491 (writing intensive course), ECE 492, ECE 493 (1,1, 2) | n. _____ | _____ |

Concentrations are available in the following areas: Bioengineering, Communications and Signal Processing, Computer Engineering, Control Systems, and Electronics; see Catalog for more information.

***Note that ECE 285/ECE 286 courses taken at Mason prior to fall 2013 or transferred to Mason prior to fall 2014 do NOT meet the circuit analysis requirement. Students who fit in either category need to contact the department as soon as possible to discuss their options**

Students must present a C or better in all ECE, BENG, ENGR, CS, MATH, PHYS, and STAT courses presented as part of the 121 credits hours needed for the degree.

MINIMUM 121 HOURS (including Minimum 45 UPPER DIVISION HOURS) to GRADUATE

This planning form is intended to be used in consultation with your academic advisor and reflects the requirements for the 2018 - 2019 Catalog; the University Catalog is the official reference for program requirements.



Volgenau School of Engineering

ELECTRICAL ENGINEERING, B.S. 2018- 2019

The field of electrical engineering plays a major role in everyone's life. Electrical engineers are involved in research, development, design, production and operation of a wide variety of products ranging from devices as small as a billionth of a meter, to systems of communication networks spanning large geographical areas and serving millions of people. Electrical engineering efforts show up in such products and processes as personal computers, tablets, cell phones, high-definition television, mobile radios, environmental control systems, digital signal processing, communications and computer networks, and integrated circuit chip design. In health care facilities, electrical engineering technology is found within sophisticated instruments for monitoring patient status, extensive computerized data handling, CAT scan and MRI machines and fiber optic imaging devices for internal examinations. In transportation systems, applications include smart traffic control signals for automobiles, GPS, navigation systems for aircraft and ships and a variety of electronic sensors as well as microprocessors for automotive engine control. Career opportunities exist in the areas of basic research, product design, software engineering, project engineering, engineering management, engineering consultancy, technical sales and many others.

The Electrical Engineering program prepares graduates either for direct entry into a career in engineering or for graduate study and is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. The curriculum provides a strong background in the fundamentals of electrical engineering and senior level coursework delivers in-depth knowledge in the important areas of Electronics, Communications and Networks, Computer Engineering, and Controls and robotics. The program culminates with a senior design project in the final year, where students work in teams to design and build a physical, functional device relying on knowledge and experience gained through the theoretical and laboratory based coursework.

Recent George Mason electrical engineering graduates have gone on to pursue graduate studies at highly competitive institutions such as MIT, Stanford, Cornell and California Institute of Technology, and as working engineers at high technology companies and government agencies such as BAE Systems, Boeing, General Electric, General Dynamics, IBM, INTEL, Lockheed-Martin, MITRE, NASA, Naval Research Lab, Northrop Grumman, Orbital Sciences and Raytheon.

Degree Requirements

The electrical engineering curriculum requires 121 total credit hours, which can be completed within eight semesters. At least 45 semester hours of the degree requirements must be level 300 or above. Students may wish to consider an extra semester or two for the purpose of lightening the course load (particularly for those with part-time employment); participating in Cooperative Education or work-study (with local industry); achieving a double major (for example with computer engineering, physics, mathematics or computer science); or adding a minor such as mechanical engineering, business, computer science, mathematics or physics.

ELECTRICAL ENGINEERING, B.S.

2018-2019 Sample Schedule for Undergraduate Electrical Engineering Majors

First Semester

CS 112 Intro to Computer Programming	4
ECON 103 Contemp. Microeconomic Prin.	3
ENGR 107 Intro to Engineering	2
*Mason Core	3
MATH 113 Analytic Geom. and Calculus I	4
Total Hours	16

Second Semester

CS 222 Computer Programming for Engineers	3
ECE 101 Intro to Electrical and Computer Engg	3
MATH 114 Analytic Geom. And Calculus II	4
PHYS 160 University Physics I	3
PHYS 161 University Physics I Lab	1
Total Hours	14

Third Semester

ECE 201 Intro. to Signal Analysis	3
MATH 213 Analytic Geom. and Calculus III	3
MATH 203 Linear Algebra	3
PHYS 260 University Physics II	3
PHYS 261 University Physics II Lab	1
*Mason Core	3
Total Hours	16

Fourth Semester

ECE 285 Electric Circuit Analysis I	3
ECE 220 Signals and Systems I	3
MATH 214 Elem. Differential Equations	3
ECE 331 Digital System Design	3
ECE 332 Digital Electr. and Logic Design Lab	1
*Mason Core	3
Total Hours	16

Fifth Semester

ECE 421 Classical Systems and Control Theory	3
ECE 286 Electric Circuit Analysis II	3
ECE 333 Linear Electronics I	3
ECE 334 Linear Electronics Lab I	1
STAT 346 Probability for Engineers	3
*Mason Core	3
Total Hours	16

Sixth Semester

Technical Elective	3
ECE 433 Linear Electronics II	3
ECE 445 Computer Organization	3
ECE 460 Comm. and Information Theory	3
**ENGH 302 Advanced Composition (Natural Science/ Tech section)	3
Total Hours	15

Seventh Semester

Advanced Engineering Lab	1
Technical Elective	3
*Mason Core	3
*Mason Core	3
ECE 305 Electromagnetic Theory	3
ECE 491 Engineering Seminar	1
ECE 492 Senior Advanced Design Project I	1
Total Hours	15

Eighth Semester

Advanced Engineering Lab	1
Technical Elective	3
Technical Elective	3
ECE 493 Senior Design Project II	2
PHYS 262 University Physics III	3
PHYS 263 University Physics III Lab	1
Total Hours	13

*Mason Core Categories: One course from each: Oral Communication, ENGH101, Arts, Global Understanding, Literature, Western Civilization/World History. List of approved courses is available on <http://catalog.gmu.edu/mason-core>
VSE students do not need to seek out Science, Math, and IT categories as they are built into the major curriculum.

**ENGH 101 and Mason Core-Literature must be completed before taking ENGH 302.

-The ECE technical electives should be selected from the department's list of approved courses.

-While students are encouraged to follow this schedule to ensure that course pre-requisites are met, please come and see the ECE Dept Academic Advisor for alternate schedules.

We invite requests for additional information.

Please contact:

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