

## Electrical Engineering Bachelor of Science Degree Program Educational Objectives and Outcomes

### Electrical Engineering Educational Objectives

*Graduates of the Electrical Engineering program at the University of Virginia will have the knowledge, skills and attitudes that will allow them to make tangible contributions, meet new technical challenges, contribute effectively as team members, and be innovators in the analysis, design and implementation of electrical and electronic devices and systems. They will communicate effectively and interact responsibly with colleagues, clients, employers and society.*

### Electrical Engineering Program Outcomes

The **fundamental principles** and techniques of mathematics and science enables our graduates to contribute to an engineering effort. The graduated student will have:

- Outcome 1.a.** a knowledge of mathematics (including differential equations), science, and engineering fundamentals.
- Outcome 1.b.** an ability to identify, formulate, and solve engineering problems.
- Outcome 1.c.** an ability to design and conduct experiments, and analyze and interpret data.
- Outcome 1.d.** an ability to effectively communicate technical material.
- Outcome 1.e.** an ability to function as a member of a multidisciplinary team.

An **in-depth knowledge of electrical engineering** enables our graduates to contribute in their area of expertise. The graduated electrical engineering student will have:

- Outcome 2.a.** a a knowledge of the electrical engineering fundamental topics in circuits, fields, and digital logic.
- Outcome 2.b.** a knowledge of advanced topics in mathematics including vector calculus, transform calculus, complex variables and probability and statistics.
- Outcome 2.c.** to design systems containing both hardware and software elements..
- Outcome 2.d.** the ability to specify, design, analyze and test an electrical/electronic system to meet a set of desired goals, within the context of a broader system application.
- Outcome 2.e.** an understanding and awareness of technological advances in electronic devices, materials, computational and communications techniques.
- Outcome 2.f.** specialized knowledge in one or more of the topical areas of electrical engineering: controls, communications, electrophysics, digital systems, or microelectronics.
- Outcome 2.g.** preparation for graduate-level and advanced studies in electrical engineering.

An understanding of the Jeffersonian Principles of free enquiry, ethical awareness, creativity, and **professionalism** enables successful careers and responsible engineering practice. The graduated student will:

- Outcome 3.a.** recognize the need for and be capable of engaging in lifelong learning.
- Outcome 3.b.** receive a broad education in the humanities and social sciences, to gain an understanding of contemporary issues.
- Outcome 3.c.** understand the interrelationships between technology and contemporary society.
- Outcome 3.d.** understand the ethical and professional responsibilities of an engineering practitioner or researcher.