



## **Division of Science, Technology, Engineering, and Mathematics**

### **Associates in Science in Electrical and Computer Engineering**

This program prepares students to demonstrate the full array of MassBay Community College graduation competencies and transfer to a four-year Electrical and Computer Engineering program or gain employment as an electronics technician.

Successful graduates will be able to:

1. Describe and utilize basic structures and operations of microprocessors and understand and apply knowledge of calculus and differential equations to create programming codes for electronic systems.
2. Collect current and voltage data from electrical circuits using industry standard measuring tools such as multimeters and oscilloscopes.
3. Construct and analyze solid-state, DC, AC, and digital logic circuits, consisting of elements such as diodes and transistors, and components such as gates and Integrated Circuits (IC) while considering constraints such as power consumption, size, cost, and frequency/speed.
4. Understand the needs of all team stakeholders and deliver requirements in a timely fashion while working on team projects.
5. Apply analytical reasoning, creative processes, and knowledge of electronics and digital systems to resolve design issues.
6. Understand and extrapolate data and specifications from technical resources and standards for application on electrical systems and project documentation.
7. Conduct laboratory experiments, analyze results and clearly communicate them using circuit schematics and scientific reports.
8. Consider safety, effectiveness, efficiency, and sustainability in all design solutions
9. Critically read and evaluate research about engineering innovation and application.
10. Identify and discuss contemporary issues related to engineering challenges facing the world.
11. Use professional software and programming languages such as OrCAD, Python, C++, and Matlab to design and test schematics, solve numerical problems and write algorithms.