



Division of Science, Technology, Engineering, and Mathematics

Manufacturing Innovation Certificate

This program prepares students to demonstrate an array of MassBay Community College graduation competencies and be prepared to open a small Manufacturing business or gain employment in the operational positions in an Advanced Manufacturing Industry. By completing all program requirements, the program provides students with skills to use CAD/CAM equipment as well as develop their own products.

Successful graduates will be able to:

1. Apply knowledge of mathematics, science, and engineering, to decide how to approach problems and implement solutions in the advanced manufacturing field and in everyday life.
2. Gather, analyze, and interpret data, using scientific instruments appropriately and safely.
3. Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability, with the awareness of the need to attend to diverse local laws, regulations, technical standards, and cultural expectations.
4. Function on multidisciplinary teams to meet the needs of diverse clients.
5. Identify, formulate, and solve engineering problems, using the engineering design approach to research, brainstorm, design, and test solutions.
6. Understand professional and ethical responsibility, including the need to meet applicable standards and codes.
7. Communicate effectively, explain, discuss, and evaluate designs, and engage productively in peer review.
8. Create a business plan, including developing a product line and managing its lifecycle.
9. Recognize the need for, and be able to engage in lifelong learning, and understand concepts of quality, timeliness, and continuous improvement.
10. Identify and discuss contemporary issues related to engineering challenges facing the world.
11. Use the techniques, skills, and modern engineering tools necessary for engineering practice, design, and manufacturing, including scientific instruments and modeling and simulation software.