MASSBAY COMMUNITY COLLEGE

Division of Science, Technology, Engineering and Mathematics

Associate in Science in Biotechnology

This program prepares students to gain employment in a research and development division of a biotechnology company or manufacturing setting, or transfer to a four-year institution. Successful completion of this program provides students the opportunity to participate in relevant, hypothesis-driven research, providing students with both the scientific and practical research skills they will use in the workplace. Students graduating from the Associate in Science in Biotechnology program will achieve proficiency in the college-wide learning outcomes.

Successful graduates of the program will be able to:

1. Establish and maintain different mammalian cell lines, as well as monitor growth and viability using different techniques;
2. Perform different techniques using cellular models including transformation and selection, cell fractioning, fluorescence staining, and immunofluorescence;
3. Extract and purify nucleic acids and proteins;
4. Perform different molecular techniques related to analysis of gene expression like gel electrophoresis, cDNA synthesis, PCR and real-time PCR;
5. Analyze data and graphs produced by different automated systems, image capture devices, spectrophotometry and fluorescence;
6. Prepare specimens and related samples for observation and analysis using light and fluorescence microscopy;
7. Practice biochemical methodologies such as HPLC, column chromatography, in-vitro inhibition assays, membrane dialysis, large-scale buffer preparation, ultra-pure buffer preparation;
8. Maintain an orderly, well-formatted laboratory notebook from which data analysis, project decisions, project presentations, and successive experimental designs are readily and speedily derived or achieved;
9. Communicate project information with diverse colleagues and collaborators appropriately including the presentation of data and findings;
10. Adjust experimental strategies to effectively carry out tasks in ambiguous and uncertain circumstances;
11. Work effectively with others by sharing ideas, and soliciting input.