Environmental Technology Certificate
Geographic Information Systems

The Environmental Technology certificates are a collaborative partnership among Cape Cod Community College, Massachusetts Maritime Academy and University of Massachusetts - Dartmouth, for persons seeking to acquire skills and knowledge in eight environmental fields: Coastal Zone Management, Environmental Site Assessment, Geographic Information Systems, Photovoltaic Technology, Small Wind Technology, Solar Thermal Technology, Wastewater Management, and Water Supply. Students may need to travel to each of the three schools in order to complete all the courses in any certificate program.

Course #	Course Title	Credits	Prerequisites	Semester Offered	Semester Taken	Grade Earned
ENV118	Intro. to Environmental Science	4	(MAT020 or MAT025), ENL020 & ENL050 or satisfactory basic skills assessment scores	Fall, Spring, Summer		
ENV122	Process of Environmental Management & Decision Making	3	None	Fall, Spring		
ENV163	Geographic Information Systems I	3	ENV118	Fall, Spring		
ENV164	Geographic Information Systems II	3	ENV118 & ENV163	Spring		
ENV260	Environmental Technology Internship / Cooperative Experience (recommended)	3	ENV118 or ENV170 & permission of instructor (variable credit 1, 2, 3, or 4)	Fall, Spring, Summer		
Total Credits		**13**				

Overview
Geographic Information Systems (GIS) is a computer database management system which combines computer graphics, artificial intelligence, and high speed communication to store, retrieve, manipulate, analyze, and map geographic data. The technology is used to process complex geographic and environmental data for informed decision making by government, municipal and private industry. Originally used with environmental data, GIS has become a cross discipline analysis platform for analyzing and solving a variety of complex problems. Geographic information systems are incredibly adaptable and continue to be used in new ways to present various information visually and easily. The certificate introduces the student to concepts in geography, cartography and database management, and the analysis of systems and processes using GIS.

Career Outlook
Completion of the GIS certificate prepares a student to obtain a position as a GIS technician or to advance a career in a variety of disciplines such as regional and urban planning, environmental resource management, or economic development. The Department of Labor predicts that job opportunities in this field are expected to increase 11 to 22 percent for all occupations through the year 2022. The widespread availability and use of advanced technologies, such as GPS, GIS, and remote sensing continues to increase both the accuracy and productivity of these workers. Opportunities for technicians should be available in basic GIS-related data-entry work. This certificate is appropriate for students with advanced degrees that are looking for specific technical training.

Program Outcomes
Upon completion of the Geographic Information Systems Certificate, students are able to:

- Apply the concepts of geography, cartography and database management.
- Map spatial attributes and analyze systems and processes using GIS.
- Be prepared to work with environmental consulting companies, facilities management offices, and county, municipal, and town departments, such as a town planning department.