

Students choosing a Biological Sciences concentration receive a strong foundation in biology, chemistry, and mathematics. This foundation helps qualified students transfer to a four-year institution at the junior class level with a major in biology and/or a variety of health-related programs, including pre-medical, pre-veterinary, pre-dental, pharmacy, and nutrition. Students who seek employment after completing this program may qualify for entry-level positions such as a laboratory technician in a college or university environment, research laboratory, or pharmaceutical company. NOTE: When selecting Humanities Electives, be aware that many four-year colleges require two semesters of foreign language study. For more information about this program, contact the Science Department, Room 401, Academic Building.

## First Semester

<u>Course Number</u>	<u>Course</u>	<u>Prerequisites</u>	<u>Credits</u>
ACS 100	College Survival Seminar		1
ENG 101	English Composition I	Pre-College Writing (ENG 099) or placement	3
CIS 141	Microcomputer Applications	Dev Read & Writing II (ENG 097)	3
SCI 103	Biology I	General Science (SCI 099); Introductory Algebra (MAT 098); English Comp I (ENG 101)	4
General Elective*			3
SSI	Social Science Elective (Group I)		3

## Second Semester

ENG 102	English Composition II	English Comp I (ENG 101)	3
MAT 103	Pre-Calculus or	Intermediate Algebra (MAT 099) or placement	3
MAT 120	Introduction to Statistics	Intermediate Algebra (MAT 099) or placement	3
SCI 104	Biology II	Biology I (SCI 103)	4
HUM	Humanities Elective		3
SSI	Social Science Elective (Group II)		3

## Third Semester

SCI 123	Principles of Chemistry I	Intermediate Algebra (MAT 099); English Comp I (ENG 101)	4
SSI	Laboratory Science Elective**		4
ENG	Literature Elective		3
SSI	Social Science Elective (Group III)		3

## Fourth Semester

SCI 124	Principles of Chemistry II	Princ of Chem I (SCI 123)	4
SCI	Laboratory Science Elective*		4
HUM	Humanities Elective		3
General Elective*			3
<b>Total:</b>			<b>61</b>

\*Recommended general electives: MAT 120, Statistics; SCI 105, Nutrition.  
 Lab Science electives: SCI 111, Botany; SCI 201, Anatomy & Physiology I;  
 SCI 202, A & P II; SCI 204, Microbiology; SCI 141, Physics I, SCI 142, Physics II;  
 SCI 143, Principles of Physics I; SCI 144, Principles of Physics II  
 SSI Group I: Anthropology, psychology, sociology  
 SSI Group II: Economics, political science, community organizing  
 SSI Group III: History

### Joint Admissions Options

UMass Amherst into Natural Science & Math, Food & Natural Resources  
 UMass Boston into College of Arts and Sciences  
 UMass Dartmouth into College of Arts and Sciences  
 UMass Lowell into College of Arts and Sciences  
 Bridgewater State into All Majors  
 (except Aviation Science, Education, Social Work, Athletic Training)  
 Fitchburg State into Biology  
 Framingham State into Biology  
 Mass. College of Liberal Arts into Biology  
 Salem State into Biology

Westfield State  
Worcester State into Biology; Natural Science

### **Transfer Articulation Options**

UMASS Lowell (Clinical Lab)  
UMASS Lowell (Medical Technology)  
MA College of Liberal Arts (Biology, Pre-Med, Medical Technology)

Biotechnology and bioscience industries are among the most rapidly expanding fields in Massachusetts. The Biotechnology/Bioscience certificate program is designed for the student who wishes to learn about the field of biotechnology or who may already have a scientific background but desires to study the details of this burgeoning field in the hope of gaining an entry level position at one of the many biotechnology companies, hospitals, clinics, or labs in the greater Boston areas: research assistants, lab technicians, manufacturing technicians, quality control technicians, documentation coordinator, and instrumentation calibration coordinator are examples of such careers.

For more information about this program, please call the Division of Math, Science and Technology, room 401 Academic Building, 617-541-5211 or 617-541-5317

<u>Course Number</u>	<u>Course</u>	<u>Prerequisites</u>	<u>Credits</u>
SCI 103	Biology I	General Science (SCI 099); Introductory Algebra (MAT 098); English Comp I (ENG 101)	4
SCI 121	Principles of Chemistry I	Introductory Algebra (MAT 098); English Comp I (ENG 101)	4
SCI 204	Microbiology	Princ of Chem I (SCI 123) or General Chem I (SCI 121); Biology I (SCI 103)	4
	Introduction to Biotechnology I		4
	Introduction to Biotechnology II		4
	Mathematics for Technology		3
ENG 101	English Composition I	Pre-College Writing (ENG 099) or placement	3
	Biotechnology Internship		3
		<b>Total:</b>	<u>29</u>

This exciting program is designed for students who wish to begin a career in broadcasting, radio or TV. In addition to learning the latest in digital editing technology, students will use state-of-the-art equipment and develop, produce and direct a short video project. Other techniques taught include synchronization, audio mixing, lighting, dubbing and special effects production.

## First Semester

<u>Course Number</u>	<u>Course</u>	<u>Prerequisites</u>	<u>Credits</u>
ACS 100	College Survival Seminar		1
ENG 101	English Composition I	Pre-College Writing (ENG 099) or placement	3
SCI	Laboratory Science sequence		4
MAT	100 level or higher	Intermediate Algebra (MAT 099) or placement	3
BMT 100	Intro. To Producing and Directing		3
BMT 120	Video Techniques		3

## Second Semester

ENG 102	English Composition II	English Comp I (ENG 101)	3
SSI 123	Introduction to Sociology	Dev Read & Writing II (ENG 097)	3
BMT 110	Television Production	Video Techniques (BMT 120) or Intro Prod & Directing (BMT 100)	3
HUM 518	Photography I (recommended) or Humanities Elective		3
ENG	Literature Elective		3

## Third Semester

HUM 412	Acting for Stage & TV (recommended) or Humanities Elective		3
ENG 251	Journalism I	English Comp I (ENG 101)	3
SSI 122	General Psychology	English Comp I (ENG 101) or Concurrent	3
BMT 230	Intro to Video Editing	Video Techniques (BMT 120)	3
BMT 298	Internship I	Three BMT courses	3

## Fourth Semester

SSI 105	U.S. History II (recommended) or Social Science Group III elective		3
SCI	Laboratory Science elective		4
BMT 210	Advanced Television Production	Intro TV Production (BMT 110)	3
BMT 235	Advanced Video Editing	Intro to Video Editing (BMT 230)	3
BMT 299	Internship II	Internship I (BMT 298)	3

**Total:** 63

# Engineering Design: AutoCAD

# Certificate

This program provides the basic fundamentals in the rapidly expanding field of computer-aided design (CAD). It is intense yet prepares students for rewarding careers in engineering design: architectural and mechanical drafters, and CAD operators. It is especially useful for individuals currently working or looking for entry-level positions within the manufacturing engineering field. Students enrolled in this certificate program get hands-on computer training using the latest AutoCAD software as well as some of the most up-to-date computer equipment in the industry.

For information about this program, call the Division of Math, Science and Technology, room 401, Academic Building or call 617-541-5219 or 617-541-5317.

<u>Course Number</u>	<u>Course</u>	<u>Prerequisites</u>	<u>Credits</u>
ENG 101	English Composition I	Pre-College Writing (ENG 099) or placement	3
TEC 118	Introduction to Engineering Design I	Introductory Algebra (MAT 098); Dev Read & Writing II (ENG 097)	4
TEC 120	Introduction to Engineering Design II	Intro Engineer Graph (TEC 118)	4
TEC 130	Architectural and Civil Drafting	Intro Engineer Graph (TEC 118)	4
TEC 230	Advanced Architectural Design	Arch'al/Civ Drafting (TEC 130); English Comp I (ENG 101)	4
TEC 260	Engineering Design Project Management		4
MAT	100 level or higher	Intermediate Algebra (MAT 099)	3
		<b>Total:</b>	<u>26</u>

The Mathematics concentration provides students with the equivalent of the first two years of a mathematics program of study in a four-year college or university. In addition, courses in the Mathematics Department offer a strong foundation in mathematics that is advantageous to students interested in many other fields of study and particularly helpful for those individuals with little or no previous exposure to or success in mathematics. Students who complete the mathematics concentration generally transfer to a college or university program in mathematics or education, or to a related area such as computer science, engineering, or physical science. For more information, contact the Mathematics Department, Room 501, Academic Building.

## First Semester

<u>Course Number</u>	<u>Course</u>	<u>Prerequisites</u>	<u>Credits</u>
ACS 100	College Survival Seminar		1
ENG 101	English Composition I	Pre-College Writing (ENG 099) or placement	3
MAT 103	Pre-Calculus	Intermediate Algebra (MAT 099) or placement	3
SSI 122	General Psychology (Group I)	English Comp I (ENG 101) or Concurrent	3
General Elective			3
HUM 501	Logic for Everyday Use	Dev Read & Writing II (ENG 097)	3

## Second Semester

ENG 102	English Composition II	English Comp I (ENG 101)	3
MAT 201	Calculus I (with applications)	Pre-Calculus (MAT 103)	4
SSI	Social Science Elective (Group II)		3
HUM	Humanities Elective		3

## Third Semester

MAT 120	Introductory Statistics	Intermediate Algebra (MAT 099) or placement	3
MAT 203	Calculus II (with applications)	Calculus I (w/applc) (MAT 201)	4
SCI	Laboratory Science Elective*		4
ENG	Literature Elective		3
SSI	Social Science Elective (Group III)		3

## Fourth Semester

MAT 205	Calculus III	Calculus II (w/appl) (MAT 203)	4
SCI	Laboratory Science Elective*		4
HUM	Humanities Elective		3
General Elective			3
<b>Total:</b>			<u>60</u>

\*Recommended lab science electives: SCI 141, Physics I, SCI 142, Physics II,

SCI 143, Principles of Physics I; SCI 144, Principles of Physics II

SSI Group I: Anthropology, psychology, sociology

SSI Group II: Economics, political science, community organizing

SSI Group III: History

## Joint Admissions Options

UMass Amherst into Natural Science & Math

UMass Boston into College of Arts and Sciences

UMass Dartmouth into College of Arts and Sciences

UMass Lowell into College of Arts and Sciences

Bridgewater State into All Majors (except Aviation Science, Education, Social Work, Athletic Training)

Fitchburg State into Math

Framingham State into Mathematics

Mass. College of Liberal Arts into Math

Salem State into Arts and Sciences

Westfield State into Mathematics

Worcester State into Mathematics

Students choosing the Physical Science concentration receive a strong foundation in chemistry, physics, and mathematics qualifying them to enter the junior year of a science/math program of study at a four-year college or university. Students who complete the Physical Science concentration usually transfer to a college or university program in physics, chemistry, mathematics, or a related major such as computer science or engineering. For more information contact the Science Department, Room 401, Academic Building.

## First Semester

<u>Course Number</u>	<u>Course</u>	<u>Prerequisites</u>	<u>Credits</u>
ACS 100	College Survival Seminar		1
ENG 101	English Composition I	Pre-College Writing (ENG 099) or placement	3
CIS 141	Microcomputer Applications	Dev Read & Writing II (ENG 097)	3
SCI 123	Principles of Chemistry I	Intermediate Algebra (MAT 099); English Comp I (ENG 101)	4
MAT 103	Pre-Calculus	Intermediate Algebra (MAT 099) or placement	3

## Second Semester

ENG 102	English Composition II	English Comp I (ENG 101)	3
MAT 201	Calculus I (with applications)	Pre-Calculus (MAT 103)	4
SCI 124	Principles of Chemistry II	Princ of Chem I (SCI 123)	4
SSI	Social Science Elective (Group I)		3
HUM	Humanities Elective		3

## Third Semester

SCI 141	Principles of Physics I	Intermediate Algebra (MAT 099); English Comp I (ENG 101)	4
MAT 203	Calculus II (with applications)	Calculus I (w/applc) (MAT 201)	4
HUM	Humanities Elective		3
General Elective			3
SSI	Social Science Elective (Group II)		3

## Fourth Semester

SCI 142	Principles of Physics II	Physics I (SCI 141)	4
ENG	Literature Elective		3
SSI	Social Science Elective (Group III)		3
General Elective			3
General Elective			3

**Total:** 64

Recommended general elective: MAT 120.

Many 4 year colleges require 2 semesters of language other than English.

Recommended general elective, MAT 120, Statistics

SSI Group I: Anthropology, psychology, sociology

SSI Group II: Economics, political science, community organizing

SSI Group III: History

### Joint Admissions Options

UMass Amherst into Natural Science & Math, Food & Natural Resources

UMass Boston into College of Arts and Sciences

Bridgewater State into All Majors

(except Aviation Science, Education, Social Work, Athletic Training)

Framingham State into Biology, Chemistry, Math

Mass. College of Liberal Arts into Science

Salem State into Arts and Sciences

Westfield State into General Science

Worcester State into Natural Science

This program is designed to give students who are talented in the physical sciences a strong background in mathematics, chemistry, and physics. Students graduating with a Pre-Engineering concentration can gain employment as technicians at high-technology firms or can transfer to a four-year college or university to complete a baccalaureate degree. This program is excellent for students who want to be engineers. Our focus is on mathematical problem solving, which prepares you for a competitive career in industry. For more information, contact the Science Department or Mathematics Department, Room 401 or Room 501, respectively, in the Academic Building.

**First Semester**

<u>Course Number</u>	<u>Course</u>	<u>Prerequisites</u>	<u>Credits</u>
ENG 101	English Composition I	Pre-College Writing (ENG 099) or placement	3
MAT 103	Pre-Calculus	Intermediate Algebra (MAT 099) or placement	3
SCI 123	Principles Of Chemistry	Intermediate Algebra (MAT 099); English Comp I (ENG 101)	4
TEC 120	Introduction to Engineering Design II	Intro Engineer Graph (TEC 118)	4
ACS 100	College Survival Seminar		1

**Second Semester**

ENG 102	English Composition II	English Comp I (ENG 101)	3
MAT 201	Calculus I (With Applications)	Pre-Calculus (MAT 103)	4
SCI 124	Principles of Chemistry II	Princ of Chem I (SCI 123)	4
SSI	Social Science Elective		3
HUM	Humanities Elective		3

**Third Semester**

MAT 203	Calculus II	Calculus I (w/appl) (MAT 201)	4
SCI 143	Principles of Physics I	Calculus I (w/appl) (MAT 201); English Comp I (ENG 101)	4
CIS 141	Microcomputer Applications	Dev Read & Writing II (ENG 097)	3
SSI	Social Science Elective		3
HUM	Humanities Elective		3

**Fourth Semester**

MAT 205	Calculus III	Calculus II (w/appl) (MAT 203)	4
SCI 144	Principles of Physics II	Princ OF Physics I (SCI 143); Calculus II (w/appl) (MAT 203)	4
ENG	Literature Elective		3
SSI	Social Science Elective		3
	Engineering Elective		3

**Total:** 66

\*Engineering electives: TEC, any technology elective; CIS, computer programming elective;  
 SCI 130, Introduction to Materials Science  
 SSI Group I: Anthropology, psychology, sociology  
 SSI Group II: Economics, political science, community organizing  
 SSI Group III: History

**Joint Admissions Options**

UMass Amherst into Engineering, Natural Science & Math  
 UMass Dartmouth into Engineering  
 UMass Lowell into College of Engineering  
 Worcester State into Computer Science

**Transfer Articulation Options**

UMASS Lowell (Engineering)