part time certificate programs

Admissions, Transfer Information and Requirements
Certificates
- Computer Assisted Manufacturing
- Computer Engineering Technology
- Contemporary Communications
- Database Management Technologies
- Data/Telecommunications
- Electronics Technology
- Graphic Design & Digital Imaging
- Information Technology
- Land Surveying
- Manufacturing Technology
- Multimedia Applications
- Nutrition
- Paralegal Studies
- Plastics Engineering Technology
- Security Management & Homeland Security
- Spanish and Latin American
- Technical Writing
- UNIX
- Wastewater Treatment
- Water Treatment
- Website Design & Development
Certificate Programs: Admissions, Transfer Information and Requirements

Certificate Programs
UMass Lowell offers a wide variety of credit certificate programs which allow students to obtain marketable skills within a concentrated time frame. These short-term certificate programs consist of a series of courses which, when taken together, demonstrate expertise in a specific area. A wide range of certificate programs are available online - see http://continuinged.uml.edu/online for details.

These certificate programs have been developed through extensive research, and the curricula are reviewed and approved by an advisory board of experts. In most cases, certificate program courses may be applied to a related degree program. To remain abreast of rapidly changing technology, we continuously update these programs to ensure that our students have an opportunity to develop skills that are in high demand in the workplace. Check our website for the most up-to-date information on all of our programs and courses: http://continuinged.uml.edu/.

Admissions into Certificate Programs
Students are welcome to take certificate program courses on an individual basis, but must formally apply into the certificate program and complete all of the required courses and electives with a C or better in order to receive the certificate. To be considered for acceptance into a certificate program, students must hold a high school diploma or GED.

Transfer Information for Certificate Programs
Only one course may be transferred from another institution of higher education into an undergraduate certificate program. Official transcripts must be sent directly from the transferring institution to the Division of Continuing Studies. Credit will be accepted if it is equivalent to University of Massachusetts Lowell instruction, if it is applicable to the intended program, and if the student has received a grade equivalent to a C- (1.700 on a 4.00 scale) or better. See pages 23-26 for additional information.

General Requirements for Certificates
All certificate candidates are required to earn a 2.00 (C) cumulative average in their total course of study, to complete the requisite number of course credits, to conform to the general regulations and requirements of the University, and to satisfy the regulations and academic standards of the colleges which exercise jurisdiction over the certificates for which they are matriculating.

Certificate Completion
After successful completion of all certificate requirements, including a grade-point average of 2.00, a student should submit to the Division of Continuing Studies a completed “Petition for the Awarding of a Certificate.” The petition should be accompanied by an official high school transcript or GED and a college transcript if the student is planning to transfer a course. Upon verification of documentation and within 4-6 weeks, the student will be mailed the certificate by U.S. first-class mail. The receipt of the certificate will be noted formally on the student’s transcript with an award date of October, February, or June.

REQUIRED:

☞ Select your desired certificate program and complete the certificate program application for admission. To view a complete list of the degrees we offer on a part-time, evening basis, visit (http://continuinged.uml.edu/certificates/index.htm)

☞ Fax the application to (978) 934-4006 or Mail the application to:
University of Massachusetts Lowell
Enrollment Services/Continuing Studies and Corporate Education
Dugan Hall, Room 104
883 Broadway Street
Lowell MA 01854-5104

☞ Contact the high school or college where you most recently took courses and ask them to send official transcripts directly to Continuing Studies & Corporate Education at the address above.
*International Students must have their transcripts evaluated by the Center for Educational Documentation. (http://www.cedevaluations.com)

☞ Register for courses (http://continuinged.uml.edu)

☞ Once your application and transcripts have been received, you will receive a confirmation letter from Continuing Studies and Corporate Education.

RECOMMENDED:

☞ Attend Open House/Orientation (http://continuinged.uml.edu).

☞ Speak with an academic Faculty and Student Support Specialist to review certificate requirements (http://continuinged.uml.edu/general/advising.htm).

☞ If you’re a veteran, senior citizen, or your employer provides tuition assistance, check your eligibility for tuition waivers/remission. (http://continuinged.uml.edu - click on “Tuition and Fees”)

☞ Become familiar with University policies and regulations in our catalog.

☞ Contact our staff with any questions at (978) 934-2474, email: Continuing_Education@uml.edu or drop by Southwick Hall Room 202 on UMass Lowell North Monday through Thursday from 8:30 a.m. to 8:00pm and Friday from 8:30am to 5:00 p.m.
CERTIFICATE IN COMPUTER-ASSISTED MANUFACTURING

As the United States focuses on the challenges of global economic competition, one of the key tools for sharpening our competitive edge is the use of the computer as an aid to engineering and manufacturing.

The Certificate Program in Computer-Assisted Manufacturing is designed to provide engineers, technicians, managers and those working in a manufacturing environment with an introduction to the computer as used to enhance industrial competitiveness. Students will apply various popular software packages and work with personal computers.

REQUIRED COURSES (6)

23.101 Engineering Graphics
23.200 Computer Aided Drafting (CADrf)
23.419 Computer Aided Manufacturing
23.480 Computer Aided Design (CADes)
23.484 Intro Pro-E OR
23.485 Intro to SolidWorks
CERTIFICATE IN COMPUTER ENGINEERING TECHNOLOGY

The Certificate Program in Computer Engineering Technology is designed to provide students with a broad-based knowledge of digital electronics, microprocessors and advanced digital technologies. Students enrolled in the program must complete the seven courses listed below. The curriculum includes engineering science and design courses that provide a balanced view of hardware, software, application trade-offs and the basic modeling techniques used in computer engineering. All the courses in this certificate program can be applied towards the B.S. degree in Electronic Engineering Technology.

REQUIRED COURSES (7)
17.341 Logic Design I and Lab
17.342 Logic Design II and Lab
17.353 Digital Electronics
17.383 Microprocessors A
17.384 Microprocessors B
90.267 C Programming
90.268 C++ Programming
CERTIFICATE IN CONTEMPORARY COMMUNICATIONS
Available on campus or online
The Contemporary Communications Certificate is intended as an introductory certificate to prepare students for work in a rapidly changing, information-driven workplace. Students will develop skills in research, analysis, writing, graphic presentation of material, and the use of technology as a tool for communication.

This certificate program is interdisciplinary and draws upon the expertise and knowledge of several departments within the University. Many of the courses in this certificate can also be applied towards several other certificates and degrees offered by UMass Lowell.

REQUIRED COURSES (4 plus 2 electives)

Written Communication - Choose 1:
42.221 Writing for Interactive Media
42.224 Business Writing
42.226 Technical and Scientific Communication
42.300 Journalism

Computer-Based Communications - Choose 1:
90.160 Introduction to Information Systems
90.238 Website Development: FrontPage®
90.291 Introduction to DHTML
91.113 Exploring the Internet

Strategic Thinking and Effective Communication - Choose 1:
45.202 Introduction to Logic
46.210 Media and Politics
62.201 Marketing Principles
90.250 E-Commerce on the Web
90.460 Computer Ethics

Multimedia/Graphic Design and Development - Choose 1:
70.291 Introduction to Graphic Design
90.230 Introduction to Multimedia
90.231 Graphics for Multimedia and the World Wide Web
90.232 Desktop Video Production

ELECTIVES (Choose 2 not already taken):
42.221 Writing for Interactive Media
42.224 Business Writing
42.226 Technical and Scientific Communication
42.300 Journalism
45.202 Introduction to Logic
45.205 Argumentation and Rhetoric
45.207 Corporate Communications
45.356 The History, Theory, and Practice of Rhetoric
46.210 Media and Politics
46.316 Politics and Film
62.201 Marketing Principles
70.291 Introduction to Graphic Design
90.160 Introduction to Information Systems
90.230 Introduction to Multimedia
90.231 Graphics for Multimedia and the World Wide Web
90.232 Desktop Video Production
90.238 Website Development: FrontPage®
90.291 Introduction to DHTML
90.460 Computer Ethics
91.113 Exploring the Internet
CERTIFICATE IN DATABASE MANAGEMENT TECHNOLOGIES

New! Oracle 10g Courses-

The Database Management Technologies Certificate program, as part of Oracle Corporation’s Academic Initiative (OAI), prepares students for the requirements and rigors of becoming an in-demand Database Administrator or Developer. Centered on the industry-leading Oracle 10g/11i™ product suite, students engage in a progressive learning experience. Hands-on skill building throughout the program will prepare students for challenging and highly rewarding positions in today’s data-driven industry. In addition to preparing for Oracle Professional Certification, students may apply all courses towards a degree in Information Technology. Whether pursuing an academic degree, a certificate or both, our Oracle-certified faculty will help students gain valuable technical skills as a marketable enhancement to their overall academic program of study. Students choose three electives from either the Developer or Administrator Tracks, depending upon their specific area of interest.

REQUIRED COURSES (4)
90.450 Database Administration I: Introduction to Oracle 10g
90.453 Database Administration II: Advanced Oracle 10g
90.454 Oracle 10g SQL Development
90.459 PL/SQL I: Introduction to Oracle 10g PL/SQL

Note: Students with experience equivalent to any of the required courses may substitute up to two electives for the required courses, with prior approval of the program coordinator.

CHOOSE 3 ELECTIVES FROM EITHER OF THE FOLLOWING TWO TRACKS:*

DEVELOPER TRACK ELECTIVES (CHOOSE 3)
90.448 Oracle 10g Portal Development
90.449 Oracle 10g Forms and Reports
90.467 PL/SQL II: Advanced Oracle 10g PL/SQL
90.474 Relational Database Concepts

ADMINISTRATOR TRACK ELECTIVES (CHOOSE 3)
90.443 Introduction to Client/Server Computing
90.455 Database Administration III: Oracle 10g Projects
90.466 Oracle 10g Data Warehousing
90.479 Oracle 11i Applications DBA

*Note: If you would like to, you may choose one elective course from one of the tracks and two elective courses from the other track, as long as you take a total of three elective courses in addition to the required courses above.
CERTIFICATE IN DATA/TELECOMMUNICATIONS

Available on campus or online

The Certificate Program in Data/Telecommunications trains participants for positions as entry-level network administrators, LAN technicians, and system analysts responsible for networking functions in large or small companies. Many of the courses in this certificate program can be applied towards the A.S. or B.S. Degree in Information Technology.

REQUIRED COURSES (5)

90.267  C Programming
90.461  LAN/WAN Technologies
90.462  TCP/IP and Network Architecture
90.457  Network Security
90.464  Network Management
CERTIFICATE IN ELECTRONICS TECHNOLOGY

The Certificate Program in Electronics Technology is designed to provide the students with a broad-based knowledge of circuit theory and electronics, with laboratory work included to ensure that good hands-on experience is acquired along with the deep understanding of fundamental and changing technologies. All the computer courses in this certificate program can be applied towards the A.S. or B.S. degree in Electronic Engineering Technology.

REQUIRED COURSES (8)

17213 Circuits I
17214 Circuits II and Laboratory
17215 Circuits III and Laboratory
17216 Circuits IV
17355 Electronics I & Laboratory
17356 Electronics II & Laboratory
17357 Electronics III & Laboratory
17358 Electronics IV & Laboratory
CERTIFICATE IN GRAPHIC DESIGN AND
DIGITAL IMAGING

Over the past decade the graphics industry has moved from pre-
dominantly design-for-print to an overwhelming mix of design-for-
print, interactive design for CD-ROM, and design for the World
Wide Web. To succeed in this rapidly changing field, graphics
professionals need more than a strong foundation in graphic
design principles - they need the technical know-how to incorpo-
rate their designs into today’s media.

The Certificate Program in Graphic Design and Digital Imaging
offers students interested in breaking into the field of graphic
design and electronic publishing an innovative mix of traditional
design courses along with several courses in multimedia, web-
site development, desktop publishing, and more. Students will
complete numerous portfolio pieces geared towards the profes-
sional market.

Certain courses in this program may also be applied towards the
certificates in Multimedia Applications, Website Design &
Development, Interactive Game Design, and Technical Writing.

REQUIRED COURSES (6)
70.291 Introduction to Graphic Design
70.240 Fundamentals of Typography
70.245 Desktop Publishing: Layout and Production
70.262 Digital Imaging and Photography: Photoshop
70.391 Advanced Graphic Design
70.400 Portfolio Production Seminar

ELECTIVES (CHOOSE 3)
70.264 Computer Graphics & Illustration
70.362 Advanced Digital Imaging
70.376 3D Computer Animation
70.377 Advanced Animation: After Effects
70.379 Website Design
70.384 Advanced Website Design & Development
70.392 Design for Advertising
90.230 Introduction to Multimedia
90.231 Graphics for Multimedia and the World Wide Web
90.233 Multimedia Authoring Software: Using Macromedia
   Director
90.238 Website Development: FrontPage
90.247 Web Authoring: Flash MX
CERTIFICATE IN INFORMATION TECHNOLOGY
Available on campus or online
The need for professionals with a strong information technology background will continue to increase as business, government, schools, and other organizations seek new applications for computers and networks in the workplace. This certificate is designed as an introductory program for those who want to explore a broad range of electives in different information technology subject areas before deciding on an area of specialization. This program will serve as a gateway to the other, more specialized certificate programs in information technology.

You can earn the Certificate in Fundamentals of Information Technology entirely online, on campus, or by taking a combination of online and on campus courses. For more details, please see our online course website at http://continuinged.uml.edu/online.

REQUIRED COURSES (2)
90.160 Introduction to Information Systems
90.202 Introduction to Personal Computing and Microsoft Office*

ELECTIVES (CHOOSE 4)**

Programming Electives
90.211 Introduction to Programming with C, Part I
90.212 Introduction to Programming with C, Part II
90.220 Visual Basic
90.267 C Programming
90.268 C++ Programming
90.269 Advanced C++
90.270 Visual C++
90.364 Problem Solving with C

Database Electives
90.171 Applications Software: Access
90.342 Web-Enabled Database Development
90.474 Relational Database Concepts

Multimedia/Web Electives
90.230 Introduction to Multimedia
91.113 Exploring the Internet

Additional Electives
90.311 Introduction to the UNIX Operating System
90.312 Shell Scripting
90.461 LAN/WAN Technologies

*Students with spreadsheet and database experience can replace the required courses with any of the elective courses.

**Note: This is a partial list of computer elective courses. For the complete list of courses that may be applied as electives to this program, see the Continuing Studies Course Catalog for computer courses with the 90. prefix, or contact the Faculty and Student Support Center at (978) 934-2474.
CERTIFICATE IN LAND SURVEYING

Land surveyors manage one or more survey parties who measure distances, directions, and angles between points and elevations of points, lines, and contours on the earth’s surface. They research legal records and look for evidence of previous boundaries. They record the results of the survey, verify the accuracy of data, and prepare plans, maps, and reports. Surveyors who establish official boundaries must be licensed by the state in which they work.

New technology and government regulations are changing the nature of work of surveyors and survey technicians. Surveyors will need to upgrade their knowledge and skills in these new regulations and technologies and become familiar with environmental regulations on the local, state, and federal levels.

The Certificate in Land Surveying can prepare students for licensure in Massachusetts, when combined with additional state requirements. Many of the courses may be applied to the A.S. Degree in Civil Engineering Technology: Surveying Option and/or to the B.S. Degree in Civil Engineering Technology.

REQUIRED COURSES (6)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>92.123</td>
<td>Precalculus Mathematics II</td>
</tr>
<tr>
<td>23.101</td>
<td>Engineering Graphics</td>
</tr>
<tr>
<td>15.123</td>
<td>Surveying I</td>
</tr>
<tr>
<td>15.124</td>
<td>Surveying II</td>
</tr>
<tr>
<td>15.262</td>
<td>Legal Aspects of Land Surveying</td>
</tr>
<tr>
<td>15.299</td>
<td>Surveying III</td>
</tr>
</tbody>
</table>
CERTIFICATE IN MANUFACTURING TECHNOLOGY

The Certificate Program in Manufacturing Technology is designed for technical personnel, supervisors, and managers involved in the many manufacturing technology disciplines that require a broad understanding of manufacturing processes, automation methods, and environments. Focusing on the technology of manufacturing processes, the program is designed to correlate theoretical knowledge and the real-world environment of manufacturing technology.

Many of the courses in this certificate program can be applied towards the B.S. degree in Mechanical Engineering Technology: Manufacturing Option.

REQUIRED COURSES (7)

23.101 Engineering Graphics
23.200 Computer Aided Drafting (CADrf)
23.301 Manufacturing Technology Laboratory
23.305 Manufacturing Processes
23.314 Manufacturing Productivity
23.414 Engineering Economics
23.419 Computer Aided Manufacturing
CERTIFICATE IN MULTIMEDIA APPLICATIONS
Available on campus or online
Recent advances in digital technology and fiber optics have revolutionized the way we live and learn. Multimedia is used today in movies, education, entertainment, marketing, advertising, information services, teleconferencing, publishing, interactive television, and product demonstration. With the rapid transfer of information and the growing need to present this information in a powerful way, individuals with the skills and knowledge to communicate effectively will flourish in the multimedia industry.

The Multimedia Certificate Program at UMass Lowell is interdisciplinary and draws upon the expertise and knowledge of several departments, colleges, and centers within the University, as well as outside expertise from industry professionals.

You can now earn the Certificate in Multimedia Applications on campus or online! Fueled by popular demand and funded in part by a grant from the prestigious Alfred P. Sloan Foundation, the University of Massachusetts is pleased to announce the migration of its premier multimedia certificate program to an online format.

REQUIRED COURSES (4)
90.230 Introduction to Multimedia
90.231 Graphics for Multimedia and the World Wide Web
90.232 Desktop Video Production
90.247 Web Authoring: Flash MX

ELECTIVES (CHOOSE 2)
42.221 Writing for Interactive Media
70.262 Digital Imaging and Photography: Photoshop
70.264 Computer Graphics and Illustration
70.291 Introduction to Graphic Design
70.376 3D Computer Animation
70.377 Advanced Animation: After Effects
70.379 Website Design
70.384 Advanced Website Design and Development
70.385 Streaming Media for the Web
78.201 Introduction to Audio for Multimedia and the WWW
90.227 Developing Interactive Help Systems: Macromedia® RoboHelp®
90.233 Multimedia Authoring Software: Using Macromedia’s Director
90.234 Designing and Developing Interactive Media
90.236 Instructional Design for Interactive Media
90.238 Website Development: FrontPage
90.239 Multimedia Scripting Using Macromedia Director’s Lingo
90.249 Developing IT Training for the Web
90.250 E-Commerce on the Web
90.291 Introduction to DHTML
90.306 Introduction to XML
90.347 Rich Web Development with Flash MX (Advanced)
90.348 Developing Dynamic Websites with ColdFusion MX
CERTIFICATE IN NUTRITION

With the focus on health, fitness, and disease prevention, this certificate is designed to expand knowledge related to the body’s handling of nutrients and to enable students of other disciplines to relate this knowledge to their specific fields.

The Certificate Program in Nutrition serves four distinct audiences: 1) students in UMass Lowell’s School of Health and Environment who are not eligible to obtain a minor in a related field, 2) students with associate’s degrees in science or clinical areas, 3) students in science-related bachelor’s degree programs seeking employment opportunities in health-related industries and community-based programs, and 4) individuals with no previous experience who would like to use the certificate as a stepping stone towards a formal degree in nutrition, dietetics, or nutritional sciences.

REQUIRED COURSES (4)

- 35.206 Human Nutrition
- 35.207 Fitness and Nutrition OR 36.372 Obesity and Weight Control
- 36.371 Advanced Human Nutrition
- 36.481 Clinical Nutrition

ELECTIVES (CHOOSE 1)

- 35.207 Fitness and Nutrition OR 36.372 Obesity and Weight Control
- 36.350 Human Biochemistry
- 36.406 Biochemistry of Lipids
- 36.463 Vitamins & Minerals
- 36.472 Nutrition & Gene Expression
CERTIFICATE IN PARALEGAL STUDIES
Available on campus or online

The Certificate Program in Paralegal Studies offers a unique mix of legal theory and practical skills applications. One special feature of specific interest in the program is the Paralegal Practicum, which can provide students with real-world experience in research, drafting, ethics, and client interaction.

All of the courses in the certificate program may be applied to the B.S. degree in Criminal Justice, Paralegal Option.

REQUIRED COURSES (4)
41.103 Introduction to Paralegal Studies
41.370 Real Estate Law
41.387 Legal Research Methods
41.390 Litigation

ELECTIVES (CHOOSE 2)
41.363 Corporate and Property Law
41.367 Environmental Law
41.376 Family Law
41.381 Women and the Law
41.392 Wills, Trusts, and Estates
41.497 The Paralegal Practicum
CERTIFICATE IN PLASTICS ENGINEERING TECHNOLOGY

The Plastics Engineering Technology Certificate provides professional training in plastics industry theory and technology. Students are given practical instruction applicable to materials, processing, and design engineering. Courses are taught by the Department of Plastics Engineering’s staff of international experts.

This program is designed to serve students already working in positions in plastics or packaging who need formal education in their work areas. Some of the courses in this certificate can be applied towards the B.S. Degree in Mechanical Engineering Technology: Plastics Option.

REQUIRED COURSES (5)

27201  Plastics Material Science I (Commodity Thermoplastics)
27202  Plastics Material Science II (Engineering Thermoplastics)
27219  Introduction to Plastics Processing
27331  Injection Molding
27345  Principles of Extrusion

ELECTIVE COURSES

Choose 2 plastics engineering technology courses with a 27 prefix. See current course listings on our website or the current Continuing Studies Course Bulletin for a list of available 27.xxx courses.
CERTIFICATE IN SECURITY MANAGEMENT AND HOMELAND SECURITY

Available online*

Since September 11th, the U.S. Department of Labor has been predicting that the employment of security management personnel will grow faster than all other occupations due to the threat of terrorism. More than at any other time, corporations are upgrading their existing security systems or contracting with private firms to secure their facilities and provide worker protection. This need is not expected to be short term. Concerns with threats to property and persons in our country will continue to grow in the years ahead. Trends clearly demonstrate increased demand in all aspects of investigative services, perimeter safeguards, surveillance systems, risk management, and armored car services.

The University of Massachusetts Lowell is pleased to announce a new Certificate Program in Security Management and Homeland Security, offered under the auspices of the Criminal Justice Department in concert with Continuing Studies and Corporate Education.

This part-time certificate program is designed for personnel working in the areas of public safety, security management, and law enforcement; executives in corporations responsible for overseeing in-house security programs; and information technology professionals. Criminal justice students interested in enhancing their future career prospects may also benefit from this program by broadening their studies to encompass security within private industry.

All courses can be applied toward UMass Lowell’s part-time Bachelor’s Degree in Criminal Justice.

REQUIRED COURSES (4)
44.115 Introduction to Homeland Security
44.241 Physical Security
44.312 Security Management
90.385 Introduction to Information Security (Cyber Security)

ELECTIVES (CHOOSE 2)
44.212 Weapons of Mass Destruction
44.234 Criminal Law
44.248 Terrorism
44.326 Domestic Terrorism and Hate Crimes
44.342 Criminal Profiling
44.343 Forensic Psychology
44.380 Selected Issues in Criminal Justice

*Note: Some of these courses are also offered on campus. See our current course listings on this site or refer to the current Continuing Studies Course Bulletin for a list of available on campus courses.
CERTIFICATE IN SPANISH AND LATIN AMERICAN

The Certificate in Spanish and Latin American offers proficiency in the Spanish language as well as exposure to the literature and culture of Latin America and Spain. It is valuable to language teachers seeking additional language certification in Spanish, as well as to engineers, consultants, business people and others for whom language proficiency and cultural information are crucial for successful business operations in Spanish-speaking countries and the United States.

REQUIRED COURSES (2)
54.211 Intermediate Conversational Spanish I or equivalent
54.212 Intermediate Conversational Spanish II or equivalent

ELECTIVES (CHOOSE 4)
54.310 Spanish Civilization and Culture
54.313 Fieldwork in the Spanish Community*
54.315 Latin American Civilization and Culture
54.320 Special Topics in Spanish Studies*
54.335 Spanish Women Writers
54.401 Selected Authors*
54.412 Short Story in Latin America

*Course may be repeated
CERTIFICATE IN TECHNICAL WRITING
Those with strong writing skills and an aptitude for computers are encouraged to enter this program. Taught by practicing professionals from the high tech industry, students learn to use the most current technologies and processes. Students enrolled in this certificate program can apply for scholarships sponsored by the Society for Technical Communication.

REQUIRED COURSES (4)
42.408 Principles of Technical Writing
42.412 Software Writing
42.413 Advanced Software Writing
90.306 Introduction to XML

ELECTIVES (CHOOSE 2)**
42.221 Writing for Interactive Media
90.227 Developing Interactive Help Systems
90.228 Introduction to Adobe® FrameMaker
90.291 Introduction to DHTML

*Note: This is a partial list of elective courses. For a complete list of courses that may be applied as electives to this program, see the Continuing Studies Undergraduate Course Catalog or check our online course listings for computer courses with a 90. OR 92. prefix. For assistance with your course selection, please contact the Faculty and Student Support Center at (978) 934-2474.
CERTIFICATE IN UNIX
Available on campus or online

More than 300,000 UNIX installations worldwide support over a million users. In comparison with other existing operating systems, UNIX offers more flexibility and a greater set of comprehensive services. Its powerful features permit many users to use one system, and the multitasking capacity allows users to perform several processes at the same time. Its support of open systems architecture and its unique multitasking features have made UNIX one of the most popular operating systems today.

The Certificate Program in UNIX is designed for those currently in the computer industry who want to upgrade their skills, and for those with basic computer literacy who want to enter this fast-growing field. The program curriculum combines theory and practical applications. Students learn skills that are immediately applicable in the workplace as well as C Programming, the language in which most networking software is written.

Many of the courses in the UNIX certificate program may be used to satisfy requirements in the Information Technology and Data/Telecommunications Certificate Programs, as well as the A.S. or B.S. Degrees in Information Technology. Note: The UNIX Certificate is available in accelerated and online formats. See the UMass Lowell online course website at http://continuinged.uml.edu/online for more information.

REQUIRED COURSES (4)
90.267 C Programming
90.311 Introduction to the UNIX Operating System
90.312 Shell Scripting
90.360 Introduction to Data Structures

ELECTIVES (CHOOSE 2)
90.268 C++ Programming
90.269 Advanced C++
90.313 UNIX Internals Overview
90.316 UNIX System Administration
90.318 Advanced UNIX Internals/Tuning
90.319 Introduction to Linux
90.321 Linux System Administration
CERTIFICATE IN WASTEWATER TREATMENT

The demand for municipal and industrial wastewater treatment plant operators is expected to increase well into the next decade. In response to the demand, UMass Lowell is offering the Certificate Program in Wastewater Treatment.

This certificate program prepares students for all levels of state certification required to manage and operate a modern wastewater treatment facility. The program consists of seven courses which, when taken together, demonstrate expertise in the area of wastewater treatment. The program is designed for individuals seeking to enter the field of wastewater treatment and for those in the field who want to upgrade their skills or achieve a higher level of state certification. Courses in the program cover both municipal (biological) plants and industrial (physical/chemical) treatment plant operations.

Many of the courses in this certificate program can be applied towards the B.S. Degree in Civil Engineering Technology: Environmental Option.

REQUIRED COURSES (7)

15.131 Environmental Chemistry I
15.132 Environmental Chemistry II
15.261 Wastewater Treatment Plant Operations I
15.263 Wastewater Operations Lab I
15.280 Industrial Waste Treatment
15.361 Wastewater Treatment Plant Operations II
15.152 Water Biology
CERTIFICATE IN WATER TREATMENT

Due to the new EPA regulations, within the next decade numerous communities will be constructing and operating new drinking water facilities in Massachusetts. Personnel in charge of these facilities will need to be certified. The Certificate Program in Water Treatment provides the most effective way to prepare for the water treatment certification exams.

Courses in this program are intended to provide students with the technical knowledge to operate and maintain physical/chemical water treatment facilities and water distribution systems. The Certificate in Water Treatment is for individuals seeking to enter the field of water treatment and for those currently working in the area of water treatment and distribution. Many of the courses in this certificate program can be applied towards the B.S. Degree in Civil Engineering Technology: Environmental Option.

REQUIRED COURSES (7)

15.131 Environmental Chemistry I
15.132 Environmental Chemistry II
15.272 Water Supply & Treatment Operations I
15.274 Water Works Operations Lab I
15.355 Water Distribution Systems
15.372 Water Supply and Treatment Operations II
15.152 Water Biology
CERTIFICATE IN WEBSITE DESIGN AND DEVELOPMENT

In our rapidly-evolving, knowledge-based economy, workers are struggling to keep up with the latest technologies and skills. Specifically, in the area of Internet technology, local companies are actively pursuing employees with knowledge and skills in website design and development.

Note: Students participating in this program should have basic Mac OS and/or Windows familiarity. Not all of the courses in this program are available on both Mac and PC platforms or in the online format. Please refer to the current semester course listings to see whether a course is offered in a Mac or PC lab, or online.

WEB DESIGN TRACK

Note: Students pursuing this track should have basic familiarity with HTML. Those who do not have basic familiarity with HTML are encouraged to take 90.291 Intro to DHTML as one of their electives prior to taking the required courses in this track.

REQUIRED COURSES (4)
90.231 Graphics for Multimedia and the World Wide Web
70.379 Website Design
90.247 Web Authoring: Flash MX
70.384 Advanced Website Design and Development

ELECTIVES (CHOOSE 2)
70.262 Digital Imaging and Photography: Photoshop®
70.385 Streaming Media for the Web
78.201 Introduction to Audio for Multimedia and the WWW
90.230 Introduction to Multimedia
90.238 Website Development: FrontPage®
90.248 Website Database Implementation
90.250 E-Commerce on the Web
90.291 Introduction to DHTML
90.292 Advanced DHTML
90.306 Introduction to XML
90.347 Rich Web Development with Flash MX (Advanced)
90.348 Developing Dynamic Websites with ColdFusion MX

WEB DEVELOPMENT TRACK

REQUIRED COURSES (4)
90.291 Introduction to DHTML
90.238 Website Development: FrontPage®
90.248 Website Database Implementation
90.306 Introduction to XML

ELECTIVES (CHOOSE 2)
70.379 Website Design
70.394 Advanced Website Design and Development
70.385 Streaming Media for the Web
78.201 Introduction to Audio for Multimedia and the WWW
90.227 Developing Interactive Help Systems
90.245 Website Server Administration
90.246 Active Server Pages .NET
90.247 Web Authoring: Flash MX
90.249 Developing IT Training for the Web
90.250 E-Commerce on the Web
90.292 Advanced DHTML
90.301 Java Programming
90.302 JavaScript
90.305 Introduction to Perl
90.347 Rich Web Development with Flash MX (Advanced)
90.348 Developing Dynamic Websites with ColdFusion MX

*Note: Other 90.xxx courses may be substituted as electives for the Web Development Track with prior approval from the certificate program coordinator.