

Information Technology— Programmer / Analyst

Associate in Applied Science Degree

Information Technology Program Cluster

Center for Agriscience and Technologies

Program offered at Madison Campuses

For information call: (608) 246-6800 or
(800) 322-6282 Ext. 6800

About the Program

This two-year program meets the specific skills and knowledge requirements of technical and professional jobs within the Information Technology field for an entry-level web programmer/analyst working in a small to medium size organization. Training blends general educational development with required IT technical skills. Additional education and job experience lead to work in website design and management.

Requirement for Admission

High school diploma, HSED, or GED with a minimum grade point average of 2.0 or equivalent

General knowledge of Microsoft Windows

Program Courses

10-107-111 Careers in IT 1 credit

Introduces students to the various careers available in the vast field of Information Technology and examines the Network Specialist, Programmer/Analyst, Web Programmer/Analyst, Computer Systems Administration Specialist, and Security Specialist career paths. Students create an individualized career path plan as the capstone project for the course. Prerequisite: Working knowledge of Microsoft Windows (computer literacy, proficiency with a mouse, file management).

10-107-175 Job Search Preparation 1 credit

Introduction to planning and organizing a job search in Information Technology. Activities include the development of a personalized job search plan, correspondence and portfolio. Prerequisite: Grade of C or better in 10-107-111 and students must have completed all IT courses in the first two semesters.

10-152-101 Introduction to Visual Basic.Net Programming 3 credits

Teaches the basic concepts of VB.NET programming. Topics include Visual Studio Integrated Development Environment, program logic constructs, event-driven programming techniques and development in an object-oriented context. Prerequisite: 10-107-111 and 10-152-119.

10-152-102 Advanced Visual Basic.NET 3 credits

This course provides students with a comprehensive understanding of object-oriented system development. It examines and uses the prewritten .NET Framework classes and explores the MSDN help facility. Topics include: collections, exception handling, interfaces and advanced development techniques such as XML and database programming using ADO.NET. Prerequisite: 10-152-101 and 10-152-124.

Curriculum

FIRST YEAR

First Semester	Credits	Hrs/week Lec-Lab
10-107-111 Careers in IT	1	1-0
10-150-160 IT Security Awareness.....	1	1-0
10-152-119 Introduction to Programming with JavaScript.....	3	2-2
10-152-120 Website Development-XHTML.....	3	2-2
10-152-124 Introduction to Database	3	2-2
10-801-195 Written Communication	3	3-0
10-804-144 Math of Finance.....	3	3-0
Semester Total	17	

Second Semester

10-152-125 SQL Database Programming	3	2-2
10-152-130 Object-Oriented Design with UML.....	3	2-2
10-152-166 PHP Web Development with MySQL OR	3	2-2
10-152-101 Intro to Visual Basic.NET Programming.....	(3)	(2-2)
10-154-189 Computer Hardware Essentials.....	3	2-2
10-801-196 Oral/Interpersonal Communication.....	3	3-0
10-809-199 Psychology of Human Relations	3	3-0
Semester Total	18	

SECOND YEAR

First Semester

10-107-175 Job Search Preparation.....	1	1-0
10-152-121 Advanced Website Development-XML	3	2-2
10-152-131 Object-Oriented Systems Analysis*	3	2-2
10-152-167 PHP & MySQL Advanced Web Development* OR	3	2-2
10-152-102 Advanced Visual Basic.NET*	(3)	(2-2)
10-801-197 Technical Reporting.....	3	2-2
10-809-197 Contemporary American Society.....	3	3-0
Semester Total	16	

Second Semester

10-152-168 AJAX and JavaScript Web Development**	3	2-2
10-152-174 IT Programmer/Analyst Internship**	3	2-2
10-152-187 Professional PHP Web Applications** OR	3	2-2
10-152-103 Web Application Development **	(3)	(2-2)
10-809-166 Introduction to Ethics: Theory and Application.....	3	2-2
Elective	6	E
Semester Total	18	

Graduation Requirement

All Prerequisite courses require the grade of C or better in prerequisite in Information Technology (150-, 152-, 154-, 107-) course(s). All Information Technology courses require a grade of C or better in order to graduate

Note: Students are assessed for correct placement in English or mathematics courses based on their scores on the COMPASS test or on completion of the appropriate prerequisite/s. Additionally, there may be courses in other subject areas that may use COMPASS scores as prerequisites when reading, writing, math, or critical thinking competencies are required.

Recommended Electives

Electives must be associate degree (100 level) or college transfer (200 level) courses.

10-152-111 Introduction to Java Programming	3
10-152-141 C# Programming in Visual Studio.NET**	3
10-152-143 iPhone Applications Development*	3
10-152-153 Advanced iPhone Applications Development**	3
10-152-157 Ruby on Rails Development**	3
10-154-190 Linux Server	3

*Offered fall semester only

**Offered spring semester only

Program Courses (continued)

10-152-103 Web Application Development 3 credits
Students learn to develop Microsoft ASP.NET applications that deliver dynamic content to the web. An emphasis is placed on server-side programming and the role of ASP.NET plays. As part of the class, students create web forms with server controls, display dynamic data from a database using Microsoft ADO.NET, read XML configuration files, and learn to debug ASP.NET web pages. Prerequisite: 10-152-102 and 10-152-120.

10-152-119 Introduction to Programming with JavaScript 3 credits
Teaches the basic concepts of programming using the JavaScript language. Topics include: embedding JavaScript in HTML, event-driven programming techniques, program control logic, and an introduction to object-oriented programming. Prerequisite: Concurrent enrollment in 10-152-120.

10-152-120 Website Development-XHTML 3 credits
Teaches the fundamentals and techniques of developing business websites using XHTML-compliant HTML. Topics include webpage design, tables, image manipulation, image maps, forms, cascading style sheets (CSS) and an introduction to JavaScript. All work is done directly with XHTML. Prerequisite: working knowledge of Microsoft Windows (computer literacy, proficiency with a mouse, file management).

10-152-121 Advanced Website Development-XML 3 credits
Provides the student with experience in the design and implementation of business Internet Websites using advanced command syntax. Topics include: JavaScript, browser object models, dynamic HTML, advanced cascading style sheets (CSS), XML, document type definitions, extensible stylesheet language transformations (XSLT), and XML schemas. Prerequisite: 10-152-120.

10-152-124 Introduction to Database 3 credits
Introduces the student to relational database concepts using the MS Access database environment. Students learn to use various software tools to use queries, forms and reports in developing comprehensive business applications using MS/Access. Prerequisite: Working knowledge of Microsoft Windows (computer literacy, proficiency with a mouse, file management).

10-152-125 SQL Database Programming 3 credits
Presents relational database concepts and teaches beginning to intermediate Structured Query Language (SQL) using an Oracle database. Students learn to create and maintain database objects and to store, retrieve, and manipulate data. Demonstrations and hands-on practice reinforce the fundamental concepts. Prerequisite: 10-152-124 and completion of or concurrent enrollment in 10-152-130.

10-152-130 Object-Oriented Design with UML 3 credits
Practical, introductory-level systems analysis experience. Emphasis is on the physical system elements: data design (record, file, database and entity-relationship diagrams), object-oriented design (use case, class and sequence diagrams), user interface design (screen and report) and system interface design (platforms and factoring). The use of CASE tools is integrated throughout the course. Prerequisite: 10-152-119 and 10-152-124.

10-152-131 Object-Oriented Systems Analysis 3 credits
Introduction to the methodologies of systems analysis and design. Emphasizes developing interviewing skills, identifying organizational problems and objectives, analyzing and documenting systems, physical modeling and design. Students gain experience in the creation of UML diagrams, a project repository, entity-relationship diagrams, database design, data normalization and data flow modeling. Focuses on problem solving skills, business-client relations, project analysis, team dynamics and communication skills. Prerequisite: 10-152-130.

10-152-166 PHP Web Development with MySQL 3 credits

This course introduces the student to dynamic web page development using the PHP programming language. Students will learn how PHP works, how to effectively use many of its powerful features, and how to design and build their own PHP web applications. The popular MySQL open source database management software (DBMS) will also be introduced as a powerful backend for PHP websites. Prerequisite: 10-152-119 and 10-152-120.

10-152-167 PHP and MySQL Advanced Web Development 3 credits

This course prepares the student to implement professional PHP and MySQL web applications. Students will learn advanced techniques for session management, validation, and authentication. Advanced web application features such as shopping carts, content management using Drupal, web forums and connecting to web services are discussed. Installation and customization of open source PHP web applications is also covered. Prerequisite: 10-152-125 and 10-152-166.

10-152-168 AJAX and JavaScript Web Development 3 credits

AJAX turns static web pages into interactive applications, allowing you to deploy rich-client applications. Course covers the basics of DHTML, JavaScript, and the XMLHttpRequest call. Students learn how to add JavaScript and AJAX to existing programs, and design new applications to exploit the power of Web 2.0. Students learn the three layers of AJAX framework, and when (and how) to use each. Students learn how to create rich clients, use visual effects, add client-side validation, and handle forms. Prerequisite: 10-152-121 and one of the following: 10-152-102, 10-152-112 or 10-152-167.

10-152-187 Professional PHP Web Applications 3 credits

In this course students will implement a professional-grade PHP and MySQL web application. Students will practice advanced techniques for session management, validation, and authentication. Students will implement applications using frameworks, source code management software, and industry standard security practices. Prerequisite: 10-152-167.

10-152-174 IT Programmer/Analyst Internship 3 credits

Opportunities for students to learn and practice programming and analysis techniques through activities and experiences in a group project at MATC, or in an actual information systems department. Objectives commensurate with student's background and experience. Activities include designing and testing new programs, designing and modifying existing programs, systems analysis and design, and sharing experiences with other interns. Prerequisite: 10-107-175, 10-152-121, 10-152-131, and one of the following: 10-152-102 or 10-152-167.

10-154-189 Computer Hardware Essentials 3 credits

This course presents a comprehensive overview of computer fundamentals and an introduction to operating systems. Students completing through hands-on activities and labs, this course will be able to work with internal components of a computer, assemble a computer system, work with the basics of an operating system and get exposure to computer tasks such as installation, configuration, diagnosing, preventive maintenance and basic networking and operating systems. CompTIA's A+ Certification is a widely accepted IT industry standard certification for PC technology. This course prepares students for CompTIA's A+ Essentials exam (CompTIA A+ exam 220-601). Prerequisite: Working knowledge of Microsoft Windows (computer literacy, proficiency with a mouse, file management).

Career Potential:

- Web Application Developer
- Programmer/Analyst

With additional education and/or work experience, graduates may find employment as:

- Systems Analyst
- Systems Programmer
- Database Programmer
- Database Administrator
- Project Manager
- Information Systems Department Manager

More detailed and updated information on this program may be available at: matcmadison.edu. The college reserves the right to make changes in the regulations and courses announced in this publication without notice.

Madison Area Technical College provides equal opportunity in education and employment.

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