Information Technology - Web and Software Developer
10-152-7 Associate Degree (two-year)  
Financial Aid Eligible

Program Overview
WITC's Information Technology - Web and Software Developer program includes training in a variety of programming languages. Students will gain hands-on experience and become skilled in developing Web, mobile, and native applications. Experienced instructors will help students develop and implement information technology solutions and improve interpersonal skills to be effective in the workplace.

The Information Technology - Web and Software Developer program offers students flexible course offerings, both on campus and online, to fit their life and learning style. The college continuously evolves program content based on recommendations from industry leaders, ensuring current expertise after graduation.

Financial Aid Eligible

Special Feature
The Information Technology - Web and Software Developer program is available online.

Admission Requirements
Students in this program must:
• Complete application form and submit with fee (fee waiver may apply if previously submitted)
• Complete Accuplacer entrance assessment to determine placement (waiver may apply with acceptable alternative test scores and/or postsecondary degree completion)
• Review and sign Functional Ability Statement of Understanding
• Complete admissions meeting with a WITC counselor (above requirements should be completed prior to meeting)

Program Outcomes
Employers will expect graduates of the program to be able to:
• Design software systems
• Integrate database technologies
• Develop software applications
• Develop technical documentation

Employability essentials and indicators will also be addressed to develop personal awareness, career effectiveness, and professionalism. See page 5 of the college catalog for a list of employability essentials and indicators.

Career Outlook
Businesses are experiencing growth in data-driven Web and mobile applications. Organizations will look for programmers who can support existing enterprise systems and implement electronic commerce strategies. The demand for programmers with object-oriented programming, database, and web development skills will continue to grow. Typical positions available after graduation include:
• Web Developer
• Software Developer
• Database Developer

Curriculum

<table>
<thead>
<tr>
<th>Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10152100</td>
<td>Database Concepts and SQL</td>
<td>3</td>
</tr>
<tr>
<td>10152101</td>
<td>Web Design and Development</td>
<td>3</td>
</tr>
<tr>
<td>10152102</td>
<td>Advanced Web Site Development</td>
<td>3</td>
</tr>
<tr>
<td>10152106</td>
<td>Java Programming - Beginning</td>
<td>3</td>
</tr>
<tr>
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<td>10152108</td>
<td>Enterprise Java Programming</td>
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</tr>
<tr>
<td>10152110</td>
<td>Programming in SQL</td>
<td>3</td>
</tr>
<tr>
<td>10152111</td>
<td>Systems Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>10152112</td>
<td>Server-Side Web Development</td>
<td>3</td>
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<tr>
<td>10152113</td>
<td>Applications Development</td>
<td>3</td>
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<tr>
<td>10152115</td>
<td>Beginning .NET Programming</td>
<td>3</td>
</tr>
<tr>
<td>10152116</td>
<td>Web Tools of the Trade</td>
<td>2</td>
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<tr>
<td>10152117</td>
<td>Advanced .NET Programming</td>
<td>3</td>
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<tr>
<td>10152118</td>
<td>Enterprise Programming in .NET</td>
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<tr>
<td>10152119</td>
<td>Development in Emerging Technologies</td>
<td>3</td>
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<tr>
<td>10152135</td>
<td>Program Logic</td>
<td>3</td>
</tr>
<tr>
<td>10801136</td>
<td>English Composition 1</td>
<td>3</td>
</tr>
<tr>
<td>10801196</td>
<td>Oral/Interpersonal Communication or</td>
<td>3</td>
</tr>
<tr>
<td>10801198</td>
<td>Speech</td>
<td>3</td>
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<tr>
<td>10801197</td>
<td>Technical Reporting</td>
<td>3</td>
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<tr>
<td>10804123</td>
<td>Math with Business Applications or</td>
<td>3</td>
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<tr>
<td>10804113</td>
<td>College Technical Mathematics 1A or</td>
<td>3</td>
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<tr>
<td>10804133</td>
<td>Mathematics and Logic</td>
<td>3</td>
</tr>
<tr>
<td>10809166</td>
<td>Introduction to Ethics: Theory and Application or</td>
<td>3</td>
</tr>
<tr>
<td>10809172</td>
<td>Introduction to Diversity Studies</td>
<td>3</td>
</tr>
<tr>
<td>10809195</td>
<td>Economics</td>
<td>3</td>
</tr>
<tr>
<td>10809198</td>
<td>Introduction to Psychology</td>
<td>3</td>
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</tbody>
</table>

PROGRAM REQUIREMENTS 68

▲ Requires a prerequisite and/or corequisite that must be completed with a grade point of 2.0 or better.
▼ See pages 41-43 for course descriptions.
* Students must earn a grade point of 2.0 or better in 10152113 Applications Development
### Programs and Course Descriptions

(See pages 41-43 for General Studies course descriptions)

#### 10152100
**Database Concepts and SQL - Credits: 3**
This course is a comprehensive introduction to database concepts. The interaction between software applications and databases will be discussed. Database terminology will be introduced. Students will learn how to manage, design, and construct relational databases. Structured Query Language (SQL) will be used to define and access databases. Other topics include normalization, entity relationship diagrams, foreign key constraints, and indexes.

#### 10152101
**Web Design and Development - Credits: 3**
Students will plan and develop well-designed Web sites that combine effective navigation and a balanced use of text, images, and color. Emphasis will be placed on understanding the basics of HTML5, Cascading Style Sheets (CSS), and responsive Web design. Students will create Web sites that can be easily viewed across a wide range of devices.

#### 10152102
**Advanced Web Site Development - Credits: 3**
Students will gain hands-on experience with the design and implementation of dynamic business Internet Web sites. Topics include JavaScript, jQuery, Ajax, and APIs with which students will thoroughly explore event-driven techniques, data storage, accessing the DOM, and JSON. Students will create Websites that can be easily viewed across a wide range of devices. PREREQUISITE: 10152101 Web Design and Development and 10152115 Program Logic.

#### 10152106
**Java Programming - Beginning - Credits: 3**
This Java course will familiarize the student with the fundamentals of the Java language including data types, operators, expressions, event-driven programming, and conditional statements. Students will learn how to set up an environment for developing Java programs, define classes and utilize class objects. Object-oriented programming concepts including encapsulation and inheritance will be explored. Other topics include string manipulation, Collections, ArrayList, Exception Handling, and creating graphical user interfaces (GUI). Software architectural patterns, such as model-view-controller (MVC), will be introduced. Students will use the JDBC API to connect to a database. PREREQUISITE: 10152106 Java Programming - Beginning.

#### 10152107
**Java Programming - Advanced - Credits: 3**
This course will provide an in-depth look at how to apply some of the more advanced features of the Java language. It is intended for students with a solid grasp of Java language basics and object-oriented concepts. Students will create applications that connect to a database and continue to explore software architectural patterns. Students will transition into developing Java applications for the web using Java Server Pages (JSP) and Servlets. PREREQUISITE: 10152106 Java Programming - Beginning.

#### 10152108
**Enterprise Java Programming - Credits: 3**
The third class of the Java sequence explores advanced Java topics within the Java EE application platform. Topics include JSPs, Servlets, session management, Expression Language, JSTL, JavaBeans, asynchronous processing, and tag files. Other topics include working with HTTP requests and responses as well as security concepts. Students will develop an application that uses JDBC in order to access a database. PREREQUISITE: 10152107 Java Programming - Advanced.

#### 10152110
**Programming in SQL - Credits: 3**
The course covers database design techniques, database manipulation techniques, and database integrity techniques, views, stored procedures. The course will make use of Microsoft SQL Server, and Microsoft SQL Server Management Studio. Students will also learn management tasks and security features implemented by server administrators. PREREQUISITE: 10152100 Database Concepts and SQL.

#### 10152111
**Systems Analysis and Design - Credits: 3**
This course covers the introduction to principles and techniques for analyzing and designing information systems. Included will be the definition of the problem, fact gathering, and evaluation of alternative solutions. A majority of the course will focus on the importance and techniques of gathering requirements for a project. Students will also have the opportunity to work with various design and project management software tools. PREREQUISITE: 10152107 Java Programming - Advanced.

#### 10152112
**Server-Side Web Development - Credits: 3**
This course will familiarize the student with techniques to create server-side scripts for building fully functional Web applications. Topics covered include the use of scripting objects, database interaction, and session management. Students will learn the fundamental programming concepts to build interactive database Web applications. PREREQUISITES: 10152110 Database Concepts and SQL.

#### 10152113
**Applications Development - Credits: 3**
The purpose of this capstone course is to provide the student with experience developing applications in a business environment. Students will apply design, programming, and analysis techniques to develop a fully functional software application. The project will progress through all the stages of the development process including planning, analysis, design, construction, testing, and deployment. PREREQUISITE: 10152118 Enterprise Programming in .NET, 10152107 Java Programming - Advanced, and COREQUISITE: 10152111 Systems Analysis and Design.

#### 10152115
**Beginning .NET Programming - Credits: 3**
Introduction to the concepts and techniques of programming in the .NET environment using the C# language. Topics covered include requirement analysis, program design, coding, and debugging. The majority of projects will be Windows form applications. COREQUISITE: 10152115 Program Logic.

#### 10152116
**Web Tools of the Trade - Credits: 2**
In Web Tools of the Trade, students will explore ways to make use of third-party Web tools, libraries, and APIs. Students will also be introduced to using tools with Web tools, students will also explore current events and hot topics in technology. PREREQUISITE: 10152102 Advanced Web Site Development.

#### 10152117
**Advanced .NET Programming - Credits: 3**
This course provides the student with an object-oriented view of the .NET development environment using C# and ASP.NET. Topics include classes, inheritance and error-handling methods. Windows forms and web forms will be created to present data both locally and web-based. Database connection will use ADO.NET objects. PREREQUISITE: 10152115 Beginning .NET Programming and 10152135 Program Logic.

#### 10152118
**Enterprise Programming in .NET - Credits: 3**
This course is designed to provide students with an enterprise view of the .NET development environment. The course will use Visual Studio development environment to create fully functional web sites using ASP.NET and C#. Multiple technologies will be used for database access. Students will start with web forms and move into the MVC model for development. PREREQUISITE: 10152117 Advanced .NET Programming.

#### 10152119
**Development in Emerging Technologies - Credits: 3**
This course focuses on the development of applications for mobile devices. Students will learn best practices for programming in this emerging environment. At the end of the course, students will be proficient in developing mobile applications and using device emulators for coding and testing. PREREQUISITES: 10152102 Advanced Web Site Development, 10152115 Beginning .NET Programming, and COREQUISITE: 10152107 Java Programming - Advanced.

#### 10152135
**Program Logic - Credits: 3**
In Program Logic, students will learn to develop clear consistent strategies to solve problems. The student will analyze problems, review requirements, and then create solutions. Students will learn to focus on understanding the logic behind each solution. Students will also learn how to properly use data types, decision and repetition structures, functions, modules, arrays, as well as, how to use variables and understand variable scope. Although this course emphasizes programming logic, students will develop working programs.

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### Graduate Employment Information

(WITC Graduate Survey Responses 2014-2015; for most recent data, go to wtc.edu)

<table>
<thead>
<tr>
<th>Number of graduates</th>
<th>Number employed</th>
<th>% employed in WITC district</th>
<th>Average yearly salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>8</td>
<td>17%</td>
<td>$20,798-$120,000</td>
</tr>
<tr>
<td>Number of responses</td>
<td>11</td>
<td>80%</td>
<td></td>
</tr>
<tr>
<td>Number available for employment</td>
<td>6</td>
<td>Average yearly salary $55,479</td>
<td></td>
</tr>
</tbody>
</table>

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