

# SOFTWARE DEVELOPER CERTIFICATE

42 Semester Credit Hours; Curriculum: 0124

This certificate provides a comprehensive and hands-on educational experience designed to equip aspiring developers with the essential skills, knowledge, and practical expertise required to thrive in the ever-evolving field of software development.

The program covers a wide range of topics, from foundational programming concepts to advanced application development. Students will gain proficiency in various programming languages, development tools, and best practices, enabling them to build and maintain software applications that meet industry standards and demands.

Students may select one of three different tracks: general programmer, mobile programmer, or web programmer.

Code	Title	Hours
<b>Courses for a Certificate</b>		
CIS 101	Introduction to Computer Information Systems	3
CIS 131	Web Page Development	4
CIS 136	Project Management Fundamentals Using Agile Principles	3
CIS 143 or CIS 241	Introduction to SQL Database Management	3
CIS 171	Advanced Web Page Development	3
CIS 204	Introduction to System Analysis and Design	3
CIS 205	Documentation and Technical Writing	3
CIS 270	Automated Testing and Deployment	3
Select one of the following course sequences:		6
CSC 155 & CSC 240	C++ Computer Science I and C++ Data Structures	
CSC 156 & CSC 241	Java Computer Science I and Java Data Structures	
CSC 157 & CSC 242	Python Computer Science I and Python Data Structures	
CSC 255	Objects and Algorithms	3
Complete one of the following 8 credit hour tracks		8
<b>Total Hours</b>		<b>42</b>

Code	Title	Hours
<b>General Programmer Track</b>		
Select two of the following:		8
CIS 208	Visual Basic for Applications	
CIS 209	Database Programming for PCs	
CIS 210	Visual Basic .NET Programming for Files and Databases	
CIS 211	Java Programming	
CIS 213	Advanced Topics in Visual Basic .NET Programming	
CIS 222	Java Programming Using Files and Databases	

CIS 227	C# Programming	
CIS 231	Advanced Java Programming	
<b>Total Hours</b>		<b>8</b>

Code	Title	Hours
<b>Mobile Programmer Track</b>		
Select one of the following course sequences:		8
CIS 257 & CIS 267	Apps Programming for Apple Mobile Devices and Advanced Apps Programming Using Apple Mobile Devices	
Or		
CIS 258 & CIS 268	Apps Programming for Android Mobile Devices and Advanced Apps Programming for Android Mobile Devices	
<b>Total Hours</b>		<b>8</b>

Code	Title	Hours
<b>Web Developer Track</b>		
Select one of the following:		4
CIS 214	Web Site Maintenance and Management	
CIS 232	Web Scripting	
Select one of the following:		4
CIS 188	Active Server Pages	
CIS 248	Web Database Management	
<b>Total Hours</b>		<b>8</b>

## Internship (recommended):

An internship in a software development certificate is vital as it provides hands-on, real-world experience, allowing students to apply their theoretical knowledge, gain practical skills, and build a professional network crucial for launching a successful career in the field. In addition to finding internships on their own, students are welcome to use Oakton's Internship program for assistance. Please visit [www.oakton.edu/](http://www.oakton.edu/) internships or email [internships@oakton.edu](mailto:internships@oakton.edu) for more information.

## Software Developer Certificate Pathway

The following Pathway is recommended for students pursuing the Software Developer Certificate.

First Year		
Semester One		Hours
CIS 101	Introduction to Computer Information Systems	3
CIS 131	Web Page Development	4
CIS 143 or CIS 241	Introduction to SQL or Database Management	3
Select one of the following:		3
CSC 155	C++ Computer Science I	
CSC 156	Java Computer Science I	
CSC 157	Python Computer Science I	
<b>Hours</b>		<b>13</b>
Semester Two		
CIS 136	Project Management Fundamentals Using Agile Principles	3
CIS 171	Advanced Web Page Development	3
CIS 204	Introduction to System Analysis and Design	3
CIS 205	Documentation and Technical Writing	3
Select one of the following:		3
Note: Take a course in the same programming language that you took in the first semester		
CSC 240	C++ Data Structures	

CSC 241	Java Data Structures	
CSC 242	Python Data Structures	
<b>Hours</b>		<b>15</b>
<b>Second Year</b>		
<b>Semester One</b>		
CSC 255	Objects and Algorithms	3
CIS 270	Automated Testing and Deployment	3
Select courses to total a minimum of 8 credit hour from one of the following tracks		8
<b>Hours</b>		<b>14</b>
<b>Total Hours</b>		<b>42</b>

Code	Title	Hours
<b>General Programmer Track</b>		
Select two of the following:		8
CIS 208	Visual Basic for Applications	
CIS 209	Database Programming for PCs	
CIS 210	Visual Basic .NET Programming for Files and Databases	
CIS 211	Java Programming	
CIS 213	Advanced Topics in Visual Basic .NET Programming	
CIS 222	Java Programming Using Files and Databases	
CIS 227	C# Programming	
CIS 231	Advanced Java Programming	
<b>Total Hours</b>		<b>8</b>

Code	Title	Hours
<b>Mobile Programmer Track</b>		
Select one of the following course sequences:		8
CIS 257 & CIS 267	Apps Programming for Apple Mobile Devices and Advanced Apps Programming Using Apple Mobile Devices	
Or		
CIS 258 & CIS 268	Apps Programming for Android Mobile Devices and Advanced Apps Programming for Android Mobile Devices	
<b>Total Hours</b>		<b>8</b>

Code	Title	Hours
<b>Web Developer Track</b>		
Select one of the following:		4
CIS 214	Web Site Maintenance and Management	
CIS 232	Web Scripting	
Select one of the following:		4
CIS 188	Active Server Pages	
CIS 248	Web Database Management	
<b>Total Hours</b>		<b>8</b>

#### Internship (recommended):

An internship in a software development degree is vital as it provides hands-on, real-world experience, allowing students to apply their theoretical knowledge, gain practical skills, and build a professional network crucial for launching a successful career in the field. In addition to finding internships on their own, students are welcome to use Oakton's Internship program for assistance in finding an internship. Please visit [www.oakton.edu/internships](http://www.oakton.edu/internships) or email [internships@oakton.edu](mailto:internships@oakton.edu) for more information.

**Note:** Pathway is a recommended sequence and selection of courses. Part-time students should contact the department chair to discuss a part-time pathway as well as course prerequisites and recommendations.

## Program Learning Outcomes

1. Architect, implement and debug complex business applications using web scripting and a diverse range of programming languages.
2. Integrate database usage into computer programs.
3. Demonstrate effective teamwork skills.
4. Compose clear and effective technical documentation to convey complex concepts to diverse audiences.
5. Discuss the ethical and societal concerns regarding computer technology.
6. Demonstrate appropriate workplace behaviors in the classroom environment.
7. Identify and solve problems using various resources, both independently and collaboratively.
8. Apply Agile and Scrum principles to manage software development projects, ensuring iterative progress, effective collaboration, and timely delivery of high-quality code.
9. Create, implement, and manage automated testing processes and streamlined deployment pipelines in software development projects.