

# SOFTWARE DEVELOPER A.A.S.

61 Semester Credit Hours; Curriculum: 0120

This degree prepares the student to become proficient in writing business-oriented computer programs and to develop skills in 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.

**Note:** Refer to IAI General Education Courses page for guidelines on General Education course selection.

Code	Title	Hours
<b>General Education Requirements</b>		
<i>Area A — Communications</i>		
EGL 101	Composition I	3
Select one of the following: 3		
EGL 102	Composition II	
EGL 111	Introduction to Business and Technical Writing (recommended)	
EGL 211	Writing Digital Content	
EGL 212	Technical Writing Applications (recommended)	
SPE 103	Effective Speech (recommended)	
<i>Area B — Mathematics</i>		
Select seven credit hours from Area B — Mathematics (MAT 140 or higher required)		7
MAT 140	College Algebra (recommended)	
MAT/CSC 144	Discrete Mathematics (recommended)	
<i>Area C — Science</i>		
No course needed		0
<i>Area D — Social and Behavioral Sciences</i>		
One course from a social or behavioral science discipline		3
<i>Area E — Humanities/Fine Arts</i>		
One course from a humanities or fine arts discipline		3
<i>Area F — Global Studies<sup>1</sup></i>		
One course that satisfies Global Studies requirement		0-3
<i>Area G — U.S. Diversity Studies<sup>2</sup></i>		
One course that satisfies U.S. Diversity Studies requirement		0-3
<b>Total Hours</b>		<b>19</b>

<sup>1</sup> Students may take a Global Studies course that satisfies both Area F and another Area requirement.

<sup>2</sup> Students may take a U.S. Diversity Studies course that satisfies both Area G and another Area requirement.

Code	Title	Hours
<b>Major Requirements</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	Introduction to SQL	3
or CIS 241	Database Management	
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
Select one of the following eight credit hour tracks:		8
<b>Total Hours</b>		<b>42</b>

Code	Title	Hours
<i>General Programmer Track</i>		
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
<i>Mobile Programmer Track</i>		
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
<i>Web Developer Track</i>		
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.

## Software Developer Pathway

The following Pathway is recommended for students pursuing an Associate in Applied Science degree in Software Development. For more information or program specific advising contact the program co-coordinators. **General Education courses should be selected from the list of IAI General Education Courses.**

First Year		Hours
<b>Semester One</b>		
EGL 101	Composition I	3
MAT 140	College Algebra	4
CIS 101	Introduction to Computer Information Systems	3
CIS 131	Web Page Development	4
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>17</b>
<b>Semester Two</b>		
CIS 143 or CIS 241	Introduction to SQL or Database Management	3
CIS 171	Advanced Web Page Development	3
MAT/CSC 144	Discrete Mathematics	3
Select one of the following:		3
EGL 102	Composition II	
EGL 111	Introduction to Business and Technical Writing (recommended)	
EGL 211	Writing Digital Content	
EGL 212	Technical Writing Applications (recommended)	
SPE 103	Effective Speech (recommended)	
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>		
CIS 136	Project Management Fundamentals Using Agile Principles	3
CIS 204	Introduction to System Analysis and Design	3
CIS 205	Documentation and Technical Writing	3
Select courses to total a minimum of eight credit hours from one of the tracks listed below		8
<b>Hours</b>		<b>17</b>

<b>Semester Two</b>		
CIS 270	Automated Testing and Deployment	3
CSC 255	Objects and Algorithms	3
Select one of the following:		3
ART 114	Art History: Art of the Non-Western World <sup>1</sup>	
EGL 130	Introduction to Global Literature <sup>1</sup>	
HUM 161	Global Cinema <sup>1</sup>	
HUM 165	Introduction to World Music <sup>1</sup>	
HUM 210	World Mythologies <sup>1</sup>	
HUM 220	Asian Humanities <sup>1</sup>	
PHL 205	World Religions <sup>1</sup>	
PHL 215	Asian Philosophy <sup>1</sup>	
Select one of the following:		3
SOC 101	Introduction to Sociology <sup>2</sup>	
SOC 103	Social Problems <sup>3</sup>	
SOC 104	Sociology of Marriage and Family <sup>2</sup>	
SOC 230	Sociology of Sex and Gender <sup>2</sup>	
SOC 232	Sociology of Race and Ethnicity <sup>2</sup>	
SSC 105	Introduction to Ethnic Studies <sup>2</sup>	
<b>Hours</b>		<b>12</b>
<b>Total Hours</b>		<b>61</b>

- <sup>1</sup> Course fulfills the Global Studies requirement. At least one Global Studies course is required for degree completion.
- <sup>2</sup> Course fulfills the U.S. Diversity Studies requirement. At least one U.S. Diversity Studies course is required for degree completion.
- <sup>3</sup> Course fulfills both the Global Studies and U.S. Diversity Studies requirement.

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
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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
<i>Web Developer Track</i>		
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):

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**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. Apply 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.