

# Computer Programming AAS DEGREE

## Program Overview

The job of the applications programmer is to (1) review job specifications provided by the system analyst and end user and (2) plan, code, test, and document a programming solution which takes the available data input and produces the desired output in the form of a printed report or a screen display. The programming language(s) used depends on the nature of the problem and the languages available to the programmer at his/her installation.

The student should have above average communications and math skills. He/she should exhibit qualities of patience, perseverance and preciseness and should enjoy working in a team environment and also be able to work independently.

## Career Opportunities

Graduates find excellent opportunities as computer programmers in business, manufacturing, government and education. Jobs for computer programmers for all types of computer systems are found throughout the country with opportunities for good earning and rapid advancement. Jobs include: Programmer, Database Project Specialist, Applications Programmer, Technical Programmer, Systems Analyst, MIS Coordinator, Software Developer, Junior Programmer-Analyst, and Senior Programmer-Analyst.

## Program Outcomes

1. Graduates will be able to design and code production software applications.
2. Graduates will be able to analyze complex organizational problems and create design specifications to address these problems.
3. Graduates will be able to use industry standard database management systems to support their applications
4. Graduates of the degree programs will have mastered the general education requirements for work and life roles.
5. Graduates will be prepared to take certification exams in their area of specialization.

## Program Faculty

Warren Sheaffer warren.sheaffer@saintpaul.edu

## Program Requirements

Check off when completed

Course	Cr
<input type="checkbox"/> CSCI 1410 Computer Science & Information Systems	4
<input type="checkbox"/> CSCI 1423 Computer Networking – Client	4
<input type="checkbox"/> CSCI 1450 Web Fundamentals/HTML	4
<input type="checkbox"/> CSCI 1523 Intro to Computing and Programming Concepts	4
<input type="checkbox"/> CSCI 1524 Intro to Algorithms and Data Structures	4
<input type="checkbox"/> CSCI 2570 Machine Architecture and Organization	4
<input type="checkbox"/> <b>Technical Electives</b>	<b>4</b>
Select one of the courses listed below. Ensure that your elective is not part of your chosen emphasis:	
<input type="checkbox"/> CSCI 1541 Java Programming 1	4
<input type="checkbox"/> CSCI 1531 Objective-C Programming	4
<input type="checkbox"/> CSCI 1550 Database Management Fundamentals	4
<input type="checkbox"/> CSCI 2440 Client Side Programming 1 (required for the Web Based 2D Game Development Emphasis)	4
<input type="checkbox"/> CSCI 2442 Server Side Programming	4
<input type="checkbox"/> CSCI 2560 Introduction to Computer Games	4
<b>Subtotal</b>	<b>28</b>

### Complete one of the Emphases listed below . . . . 16

Java Program Emphasis	Cr
<input type="checkbox"/> CSCI 1541 Java Programming 1	4
<input type="checkbox"/> CSCI 1542 Java Programming 2	4
<input type="checkbox"/> CSCI 1550 Database Management Fundamentals	4
<input type="checkbox"/> CSCI 2466 J2EE-JSP and Servlets	4
<b>Total Emphasis Credits</b>	<b>16</b>

Web Development Emphasis	Cr
<input type="checkbox"/> CSCI 2440 Client Side Programming 1	4
<input type="checkbox"/> CSCI 2442 Server Side Programming	4
<input type="checkbox"/> CSCI Technical Electives	8
<input type="checkbox"/> CSCI 2466 J2EE-JSP and Servlets	4
<input type="checkbox"/> CSCI 2621 Ruby on Rails	4
<input type="checkbox"/> CSCI 2622 Client Side Programming 2	4
<b>Total Emphasis Credits</b>	<b>16</b>

Mobile Development Emphasis	Cr
<input type="checkbox"/> CSCI 1531 Objective-C Programming	4
<input type="checkbox"/> CSCI 1541 Java Programming 1	4
<input type="checkbox"/> CSCI 2628 Programming iOS Devices	4
<input type="checkbox"/> CSCI 2629 Programming Android Devices	4
<b>Total Emphasis Credits</b>	<b>16</b>

Web Based 2D Game Development Emphasis	Cr
<input type="checkbox"/> DGIM 2521 2D Web Animation	2
<input type="checkbox"/> DGIM 2586 Digital Sound	2
<input type="checkbox"/> CSCI 2587 Web Based Game Development 1	4
<input type="checkbox"/> CSCI 2588 Web Based Game Development 2	4
<input type="checkbox"/> DGIM Technical Electives	4
<input type="checkbox"/> DGIM 1490 3D Animation Fundamentals	4
<input type="checkbox"/> DGIM 2560 Illustrator	4
<input type="checkbox"/> DGIM 1483 Photoshop 1	2
<input type="checkbox"/> DGIM 1484 Photoshop 2	2
<b>Total Emphasis Credits</b>	<b>16</b>

Enterprise Emphasis	Cr
<input type="checkbox"/> CSCI 1544 Enterprise Operating Systems	4
<input type="checkbox"/> CSCI 1546 COBOL Programming 1	4
<input type="checkbox"/> CSCI 1547 COBOL Programming 2	4
<input type="checkbox"/> CSCI 2470 Enterprise Database Systems	4
<input type="checkbox"/> CSCI 2472 Enterprise Transaction Processing (CICS)	4
<b>Total Emphasis Credits</b>	<b>16</b>

General Education Requirements	Cr
Refer to the Minnesota Transfer Curriculum Course List for each Goal Area	
<input type="checkbox"/> Goal 1: Communication	7
ENGL 1711 Composition 1 – 4 cr	
SPCH XXXX – 3 cr	
<input type="checkbox"/> Goal 3 or Goal 4	3
Goal 3: Natural Sciences OR	
Goal 4: Mathematical/Logical Reasoning	
<input type="checkbox"/> Goal 5: History, Social Science and Behavioral Sciences	3
<input type="checkbox"/> Goal 6: Humanities and Fine Arts	3
<b>General Education Requirements</b>	<b>16</b>

**Total Program Credits . . . . . 60**

*See back of this guide for Course Sequence, Transfer Opportunities and Chart*

*Information is subject to change.  
This Program Requirements Guide is not a contract.*

**Minimum Program Entry Requirements**  
Students entering this program must meet the following minimum program entry requirements:

**Reading:** Score of 78+ or grade of "C" or better in READ 0722

**Writing:** Score of 78+ or grade of "C" or better in ENGL 0922

**Elementary Algebra:** Score of 76+ or grade of "C" or better in MATH 0910

**Assessment Results and Prerequisites:**  
Students admitted into Saint Paul College programs may need to complete additional courses based on assessment results and course prerequisite requirements. Certain MATH, READ, and ENGL courses have additional prerequisites.

009A (7011)

# Computer Programming AAS DEGREE *(continued)*

## Program Start Dates

Fall, Spring, Summer

## Course Sequence

The following sequence is recommended for a full-time student; however, this sequence is not required. Not all courses are offered each semester.

### First Semester

CSCI 1410 Computer Science & Information Systems	. 4
CSCI 1423 Computer Networking – Client	. 4
CSCI 1450 Web Fundamentals/HTML	. 4
Goal 1: SPCH XXXX	. 3
<b>Total Semester Credits</b>	<b>15</b>

### Second Semester

CSCI 1523 Intro to Computing and Programming Concepts	. 4
Goal 3: Natural Sciences OR	
Goal 4: Mathematical/Logical Reasoning	. 3
Emphasis Course	. 4
Technical Elective	. 4
<b>Total Semester Credits</b>	<b>15</b>

### Third Semester

CSCI 1524 Intro to Algorithms and Data Structures	. 4
Goal 1: ENGL 1711 Composition 1	. 4
Emphasis Course(s)	. 8
<b>Total Semester Credits</b>	<b>16</b>

### Fourth Semester

CSCI 2570 Machine Architecture and Organization	. 4
Goal 5: History, Social and Behavioral Sciences	. 3
Goal 6: Humanities and Fine Arts	. 3
Emphasis Course(s)	. 4
<b>Total Semester Credits</b>	<b>14</b>

**Total Program Credits . . . . . 60**

## Transfer Opportunities

Saint Paul College has a transfer articulation agreement between the following program and post-secondary institution for the baccalaureate degree program listed below.

For more information please go to [www.saintpaul.edu/Transfer](http://www.saintpaul.edu/Transfer).

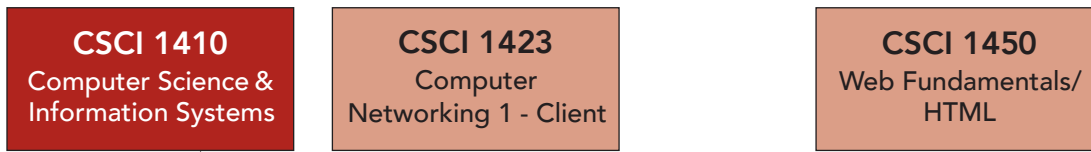
### Computer Programming AAS

- BS Operations Management  
Minnesota State University-Moorhead
- BS Information Technology  
Saint Mary's University-Twin Cities Campus
- BS Computer Information Systems  
College of St. Scholastica
- BA Individualized Studies  
Metropolitan State University

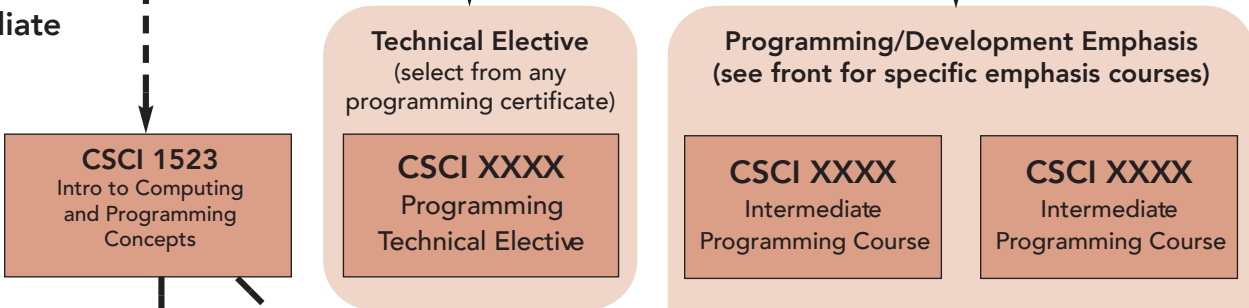
## Computer Programming AAS Degree (44 credits + 16 GenEd credits)

The below chart illustrates the courses required for completion of this degree.

### Introductory



### Intermediate



### Advanced

