Instructional Programs

Computer Information Systems

San Jacinto Campus
(951) 487-MSJC (6752)
1-800-624-5561
Bil Bergin (951) 487-3530
bbergin@msjc.edu

Menifee Valley Campus
(951) 672-MSJC (6752)
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Dwight Duffie (951) 639-5531
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Degree(s)
Transfer:
A.S.-T in Computer Science for Transfer 32492 AS.CIS.CS.OPTBAST
or 32492 AS.CIS.CS.OPTCAST
(Using General Education Requirements Option B or C)

See also:
A.A. in Liberal Arts - Business & Technology Emphasis

Non-Transfer:
A.S. in Computer Information Systems 4395 AS.CIS.GENERAL, AS.CIS.NETWORK, AS.CIS.INTERNET, AS.CIS.PROGRAM
(with General Education Requirements Option A)

Certificate(s)
Certificate in General Track 22128CT.CIS.GEN.98
Certificate in Internet Authoring 11474 CT.CIS.1A.98
Certificate in Networking 11475 CT.CIS.NET.98
Certificate in Programming 11476 CT.CIS.PROG.98

Employment Concentration Certificate(s)
Computer Forensics 99999 ECC.AJ.CF
Computer Hardware Specialist 99999 ECC.CIS.A-
Data Analysis and Modeling 99999 ECC.CIS.DAM
Internet Authoring Apprentice 99999 ECC.CIS.IAA
Internet and Web Technologies 99999 ECC.CIS.I

Program Description

Computer Information Systems are the tools that facilitate the effective and efficient transformation of data into information. MSJC’s CIS program is designed to provide students with the knowledge and skills required to gain entry level employment as computer programmers, and/or software/system administration technicians.

The requirement and knowledge and hands-on experience in microcomputer applications, programming, operating systems, and networking. The program in Computer Information Systems offers students an opportunity to earn a transfer degree in Computer Science, a non-transfer CIS Associate degree, State Approved Certificate, or locally approved Employment Concentration. The program offers students the choice of pursuing a transfer degree in Computer Science, an Associate in Science (A.S.) degree in Computer Information Systems or certificate(s) with emphasis in General Track, Internet Authoring, Networking and Programming. The program also offers a transfer preparation. The courses offered will transfer to California State University/University of California systems, and other four year colleges.

These programs offer students a well-equipped technical environment for instruction and lab. CIS courses are taught in computer equipped classrooms, allowing hands-on experience in the use of industry-standard hardware, application software, operating systems, networking, and programming tools.

Career Opportunities

All career opportunities listed are representative careers in each field. There are no guaranteed positions for students completing these programs. (See: www.onetonline.org)

Transfer Degree
For any BA/BS careers, please see your transfer institution.

Non-Transfer A.S. Degree(s)
Computer and Information Systems Manager - Emphasis in General Track: Networking Technologies Apprentice or Service Desk Hardware Support
Computer Forensic Investigators - Emphasis in General Track: Computer Forensics
Information Researcher - Emphasis in Internet Authoring: Internet and Web Technologies

Network Control Technician - Emphasis in Programming: C++ Programming, Java Programming, SQL Programming, Database Programming or Database Developer
Office and Administrative Support Supervisors and Managers - Emphasis in General Track: Computer Hardware Specialist, Networking Technologies Apprentice or Service Desk Hardware Support

General Track Certificate
This Certificate is a viable program study for working professionals who are looking to improve their standing in the workplace by 1) gaining a better understanding of information technologies or 2) by the acquisition of specific job skills.

Computer Forensic Investigator, Computer Systems Analyst, Software Engineer, System Architect, System Designer

Internet Authoring Certificate
This Certificate is a viable program of study for working professionals who are looking to improve their standing in the workplace by 1) gaining a better understanding of information technologies or 2) by the acquisition of specific job skills.

Web Developer, Internet Developer, Web Designer, Web Publisher, Web Technologies
Networking Certificate
This Certificate is a viable program of study for working professionals who are looking to improve their standing in the workplace by 1) gaining a better understanding of information technologies or 2) by the acquisition of specific job skills.

Computer Forensic Investigator, Software Engineer, System Architect, Computer Systems Analyst, System Designer

Programming Certificate
This Certificate is a viable program of study for working professionals who are looking to improve their standing in the workplace by 1) gaining a better understanding of information technologies or 2) by the acquisition of specific job skills.

Computer Forensic Investigator, Software Engineer, System Architect, Computer Systems Analyst, System Designer

General Track Employment Concentrations
Students who are interested in obtaining an advanced degree in one of the Computing & Information Technology disciplines are encouraged to supplement their bachelors/masters programs with a program of study that may be pertinent to their career interest.

Computer Forensics
Private Detective, Investigator

Computer Hardware Specialist

Data Analysis and Modeling
Administrative Assistant, Computer Specialist, Computer Support Technician, Data Entry and Information Processing Worker, Help-Desk Technician, Statistical Assistant

Internet Authoring Employment Concentrations
Students who are interested in obtaining an advanced degree in one of the Computing & Information Technology disciplines are encouraged to supplement their bachelors/masters programs with a program of study that may be pertinent to their career interest.

Internet Authoring Apprentice
Web Developer, Internet Developer, Web Designer, Web Developer, Web Publisher, Web Technologies

Internet and Web Technologies
Electronic Publishing, Web Developer

TRANSFER PREPARATION

Computer Science
MSJC offers a range of course work to prepare students to transfer to four-year colleges and universities. All four-year institutions prescribe their own standards for course evaluation and admissions. Prospective transfer students are advised to research careers, degrees and majors in the Career/Transfer Center, access www.assist.org, review the MSJC catalog and meet with a counselor to expedite their transfer plan.

Computer Information Systems
MSJC offers a range of course work to prepare students to transfer to four-year colleges and universities. Courses that fulfill major requirements for an associate degree in this program might not be the same as those required for transfer into the major at a four year university. All four-year institutions prescribe their own standards for course evaluation and admissions. Prospective transfer students are advised to research careers, degrees and majors in the Career/Transfer Center, access www.assist.org, review the MSJC catalog and meet with a counselor to expedite their transfer plan.

LEARNING OUTCOMES

• Recognize that a system consists of people, procedures, hardware, software, and data within a global environment.
• Apply systems concepts in the investigation, evaluation, and resolution of information technology problems.
• Recognize how the very large amounts of data collected by modern organizations can be used to review, redesign, and improve processes.
• Employ applications software and software tools in the application of information technologies to help individuals, groups, and organizations achieve their goals.
• Analyze existing processes based on interviewing, observation, documentation, analysis and other similar methods.
• Research and apply industry reference models and best practices in order to improve process designs.
• Assess, manage, and control IT risks.
• Demonstrate working effectively as a member of the team to accomplish common goals.
• Analyze technical information, as well as listen effectively to, communicate orally with, and prepare memos, reports and documentation for a wide range of audiences.
• Investigate and assess new sources of information and learning opportunities to stay abreast of emerging information and computing technologies.
• List career paths related to the program of study, as well as any qualifications and/or professional certifications that may be associated with those careers.

DEGREES

Computer Science
The curriculum in Computer Science is designed to provide the transfer student the opportunity to earn an Associate in Science in Computer Science for Transfer degree. Computer Science is the study of computers, their design, and their uses for computation, data processing, and systems control, including
Design and development of computer hardware and software, and programming. Computer Science provides a foundation of knowledge for students with career objectives in a wide range of computing and computer-related professions.

The major required for an A.S.-T in Computer Science for Transfer may be met by:

- Completion of 60 semester units or 90 quarter units that are eligible for transfer to the California State University.
- The Intersegmental General Education Transfer Curriculum (IGETC) or the California State University General Education-Breadth Requirements.
- A minimum of 18 semester units or 27 quarter units in a major or area of emphasis, as determined by the community college district.
- Obtainment of a minimum grade point average of 2.0.

**A.S.-T in Computer Science for Transfer**

**Required Core (28 units)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSIS-113A</td>
<td>C++ Programming - Level 1</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>CSIS-113B</td>
<td>Java Programming - Level 1</td>
</tr>
<tr>
<td>CSIS-118B</td>
<td>Computer Organization &amp; Assembly Language</td>
<td>3</td>
</tr>
<tr>
<td>CSIS-211</td>
<td>Introduction to Data Structures and Algorithms</td>
<td>3</td>
</tr>
<tr>
<td>CSIS-213</td>
<td>Discrete Structures</td>
<td>3</td>
</tr>
<tr>
<td>MATH-211</td>
<td>Analytic Geometry and Calculus I</td>
<td>5</td>
</tr>
<tr>
<td>MATH-212</td>
<td>Analytic Geometry and Calculus II</td>
<td>5</td>
</tr>
<tr>
<td>or</td>
<td>MATH-212H</td>
<td>Honors Analytic Geometry and Calculus II</td>
</tr>
<tr>
<td>PHY-201</td>
<td>Mechanics and Wave Motion</td>
<td>4</td>
</tr>
<tr>
<td>PHY-202</td>
<td>Electricity and Magnetism</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td>PHY-202H</td>
<td>Honors Electricity and Magnetism</td>
</tr>
</tbody>
</table>

**Units for Major**

- **30**

**CSU General Education or IGETC Pattern**

- **37**

**Possible double counting**

- **7**

**Transferable Electives (as needed to reach 60 CSU transferable units)**

**Total Units for A.S.-T Degree**

- **60 units**

This Associate in Science in Computer Science for Transfer degree is intended for students who plan to complete a bachelor’s degree in a similar major at a CSU campus. A student completing this degree is guaranteed admission to the CSU system, but not a particular campus or major. Students should meet with a counselor to develop an educational plan and receive university admission and transfer requirements.

**Computer Information Systems**

An Associate degree in CIS may be earned by completing a CIS State Certificate in General Track, Internet Authoring, Programming, or Networking (18 units) as well as all MSJC General Education Option A requirements.

**Elective Courses (3 units)**

- **CAPP-122** | Using Microsoft Excel | 3 units
- **CAPP-123** | Using Microsoft Access - Level 1 | 3 units
- **CAPP-135** | Using Microsoft Project | 3 units

**Internet Authoring (18 units)**

**Required Courses (15 units)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSIS-103</td>
<td>Introduction to the Internet</td>
<td>3</td>
</tr>
<tr>
<td>CSIS-114A</td>
<td>SQL Programming - Level 1</td>
<td>3</td>
</tr>
<tr>
<td>CSIS-115A</td>
<td>Web Development - Level 1</td>
<td>3</td>
</tr>
<tr>
<td>CSIS-116B</td>
<td>Developing ASP.NET Web Applications</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>CSIS-116D</td>
<td>PHP Web Development</td>
</tr>
<tr>
<td>CSIS-125A</td>
<td>Web Development - Level 2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Elective Courses (3 units)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSIS-104</td>
<td>Introduction to E-Commerce Infrastructure</td>
<td>3</td>
</tr>
<tr>
<td>CSIS-113B</td>
<td>Java Programming - Level 1</td>
<td>3</td>
</tr>
<tr>
<td>CSIS113C</td>
<td>C# Programming - Level 1</td>
<td>3</td>
</tr>
<tr>
<td>CSIS-115B</td>
<td>XML Design - Level 1</td>
<td>3</td>
</tr>
<tr>
<td>CSIS-116E</td>
<td>Python Programming - Level 1</td>
<td>3</td>
</tr>
<tr>
<td>CSIS-117D</td>
<td>Using Microsoft Expression Web - Level 1</td>
<td>3</td>
</tr>
<tr>
<td>CSIS-124A</td>
<td>SQL Programming - Level 2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Networking (18 units)**

**Required Courses (9 units)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSIS-101</td>
<td>Introduction to Computers and Data Processing</td>
<td>3</td>
</tr>
<tr>
<td>CSIS-201</td>
<td>System Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>CSIS-202</td>
<td>Networks and Data Communications</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>NET-100</td>
<td>Network Fundamentals</td>
</tr>
</tbody>
</table>

**Elective Path (9 units)**

**Select a Path:**

- **Cisco Path**
  - **NET-101** | Routing Protocols and Concepts                  | 3 units
  - **NET-102** | LAN Switching and Wireless                       | 3 units
  - **NET-103** | Accessing the WAN                                | 3 units

- **Unix/Linux Path**
  - **CSIS-153** | Using Unix-Based Operating Systems               | 3 units
  - **CSIS-223A** | Linux System Administration - Level 1           | 3 units
  - **CSIS-233A** | Linux System Administration - Level 2           | 3 units

- **Windows Path**
  - **CSIS-150** | Using Microsoft Windows                           | 3 units
  - **CSIS-151** | Using the OS Command Line Interface              | 3 units
  - **CSIS-154** | Using and Configuring Windows Operating Systems  | 3 units

**Programming (18 units)**

**Required Courses (6 units)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>CSIS-118B</td>
<td>Computer Organization &amp; Assembly Language</td>
<td>3</td>
</tr>
<tr>
<td>CSIS-201</td>
<td>System Analysis and Design</td>
<td>3</td>
</tr>
</tbody>
</table>

**Programming Elective Courses (6 units)**

**Select a Level 1 & Level 2 course from the same language**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
</table>
| CSIS-113A   | C++ Programming - Level 1                        | 3 units
| CSIS-113B   | Java Programming - Level 1                       | 3 units
| CSIS-116E   | Python Programming - Level 1                      | 3 units
| CSIS-123A   | C++ Programming - Level 2                         | 3 units
| CSIS-123B   | Java Programming - Level 2                        | 3 units
| CSIS-126E   | Python Programming - Level 2                      | 3 units

**Additional Elective Courses (6 units)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
</table>
| CSIS-111B   | Fundamentals of Computer Programming             | 3 units
| CSIS113C    | C# Programming - Level 1                          | 3 units
| CSIS-114A   | SQL Programming - Level 1                         | 3 units
| CSIS-115A   | Web Development - Level 1                         | 3 units
| CSIS-116B   | Developing ASP.NET Web Applications               | 3 units
| CSIS-116D   | PHP Web Development                               | 3 units

**Certificates**

**General Track (18 units)**

**Required Courses (15 units)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
</table>
| CSIS-101    | Introduction to Computers and Data Processing    | 3 units
| CSIS-103    | Introduction to the Internet                     | 3 units
| CSIS-201    | System Analysis and Design                        | 3 units
| CSIS-202    | Networks and Data Communications                   | 3 units
| CSIS-214    | Principles of Database Management Systems         | 3 units

**Note:** Every effort has been made to keep program information current. Please use this information as a guide and consult with the chair of the department/program or an MSJC counselor.
CSIS-118A  Embedded Systems Programming  3 units
CSIS-123C  C# Programming - Level 2  3 units
CSIS-124A  SQL Programming - Level 2  3 units
CSIS-125A  Web Development - Level 2  3 units
CSIS-211  Introduction to Data Structures and Algorithms  3 units
CSIS-214  Principles of Database Management Systems  3 units

EMPLOYMENT CONCENTRATIONS

Computer Forensics (16 units)
AJ-103  Criminal Evidence  3 units
AJ-105  Public Safety Report Writing  3 units
AJ-108  Criminal Investigation  3 units
CSIS-181  Computer Hardware – Level 1  4 units
CSIS-182  Computer Forensics  3 units

Computer Hardware Specialist Certification (12 units)
This program of study prepares students for A+ industry certification. In order to obtain that certificate students must take the CompTIA exam. Students can register for these exams at http://www.2test.com and testing facilities are available on campus.
CSIS-151  Using the OS Command Line Interface  3 units
CSIS-154  Using and Configuring Windows Operating Systems  3 units
CSIS-181  Computer Hardware – Level 1  4 units
CSIS-183  Green Computing  2 units

Data Analysis and Modeling (9 units)
CAPP-122  Using Microsoft Excel  3 units
CAPP-123  Using Microsoft Access – Level 1  3 units
CAPP-143  Using Microsoft Access – Level 2  3 units

Internet Authoring Apprentice (9 units)
Note: A cumulative GPA of 2.0 or higher is required for these courses.

Foundation Layer (3 units)
CSIS-103  Introduction to the Internet  3 units

Presentation Layer (3 units)
CSIS-115A  Web Development - Level 1  3 units
or
CSIS-117D  Using Microsoft Expression Web - Level 1  3 units

Interactive Layer (3 units)
CSIS-119A  ActionScript Programming - Level 1  3 units
or
CSIS-125A  Web Development - Level 2  3 units

Internet and Web Technologies (15 units)
This program of study prepares students for Internet industry certification. In order to obtain that certificate students must take the CompTIA exams. Students can register for these exams at http://www.2test.com and testing facilities are available on campus.
CSIS-103  Introduction to the Internet  3 units
CSIS-104  Introduction to E-Commerce Infrastructure  3 units
CSIS-115A  Web Development – Level 1  3 units
CSIS-125A  Web Development – Level 2  3 units
CSIS-202  Networks and Data Communications  3 units