The Computer and Information Science Program

Computer and Information Science (CIS) is one of the most rapidly growing professions worldwide. CIS professionals offer expertise in the effective and efficient use of computers for tackling a broad spectrum of practical challenges. The CIS curriculum provides students with a firm foundation in both hardware/architecture and software and in their application.

The field of computer and information science includes the following technical areas: algorithms, artificial intelligence, compilers, computer graphics, computer networks and network administration, database systems and administration, distributed and parallel systems, enterprise computing, formal methods, game design, information systems, operating systems, programming languages, software engineering, and web technologies.

Students complete a minimum of 120 credits and receive a Bachelor of Science (BS) degree in Computer and Information Science. Two concentrations are available within the CIS degree: computer science or information systems. The program is primarily directed toward day students, with some evening courses offered. The CIS degree prepares graduates for immediate employment in the computing field and for graduate study.

CIS students interested in scientific or engineering applications, game design, or networking elect the Computer Science (CS) concentration. CS concentration students study computer architecture, artificial intelligence, distributed and parallel systems, networks, operating systems, programming, and web technologies. The CS concentration places greater emphasis on understanding how computer systems work and prepares graduates for positions in embedded and systems programming, enterprise computing, graphics and visualization, computer game development, networks, scientific programming, and web technology, among others.

Students interested in applying information technology in commercial, governmental, or scientific contexts elect the Information Systems (INSY) concentration. INSY concentration students study computer networks, databases, programming, web technologies, and accounting, and the design and development of information systems. The INSY concentration includes more applications-related courses than the CS concentration and prepares graduates for positions in applications databases, enterprise computing, information systems design, systems analysis, and web-based information systems.

B.S in CIS Requirements

<table>
<thead>
<tr>
<th>Area I: CECS Distribution Requirements</th>
<th>Semester Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMP 105 English Composition I</td>
<td>3</td>
</tr>
<tr>
<td>COMP 270 Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>ECON 201 Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>– Two courses in the humanities, from specified choices</td>
<td>6</td>
</tr>
<tr>
<td>– Two courses in the behavioral/social sciences, from specified choices</td>
<td>6</td>
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<table>
<thead>
<tr>
<th>Area II: Mathematics, Science, Applied Business</th>
<th>Semester Credits</th>
</tr>
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<tbody>
<tr>
<td>Mathematics and Statistics</td>
<td></td>
</tr>
<tr>
<td>MATH 115 Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 116 Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>CIS 275 Discrete Structures I</td>
<td>4</td>
</tr>
<tr>
<td>IMSE 317 Probability and Statistics</td>
<td>3</td>
</tr>
<tr>
<td>A two-course laboratory science sequence</td>
<td>8</td>
</tr>
<tr>
<td>ENGR 400 Applied Business Techniques</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area III: Computer Science and Senior Design</th>
<th>Semester Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Science Core</td>
<td>28</td>
</tr>
<tr>
<td>CIS 150 Computer Science I</td>
<td>4</td>
</tr>
<tr>
<td>CIS 200 Computer Science II</td>
<td>4</td>
</tr>
<tr>
<td>CIS 310 Computer Organization</td>
<td>4</td>
</tr>
<tr>
<td>CIS 350 Data Structures &amp; Algorithm Analysis</td>
<td>4</td>
</tr>
<tr>
<td>CIS 375 Software Engineering</td>
<td>4</td>
</tr>
<tr>
<td>CIS 427 Computer Networks &amp; Distributed Processing</td>
<td>4</td>
</tr>
<tr>
<td>CIS 450 Operating Systems</td>
<td>4</td>
</tr>
</tbody>
</table>

| Computer Science Senior Design Seminars         |                  |
| CIS 4951 Senior Design Seminar I                | 2                |
| CIS 4952 Senior Design Seminar II               | 2                |

Concentration Requirements 41

Choose one: Computer Science (CS) or Information Systems (INSY)

NOTE: Degree and concentration requirements may change. Students should see an advisor for current requirements.


## Computer Science Concentration

### Area I: Distribution Requirements

One upper-level (300-400-level) course in the humanities or the behavioral or social sciences, in the same academic discipline as one of the courses taken above.

### Area II: Mathematics and Science

- **MATH 217** Matrix Algebra
  
- **MATH 227** Linear Algebra
  
- **CIS 306** Discrete Structures II
  
- An additional laboratory science course

### Area III: Computer Science Concentration Courses

- Track courses, approved CIS electives, general electives

  Five CS Concentration Tracks are offered:
  - Engineering Systems
  - Game Design
  - Networking
  - Systems Foundations
  - Individualized Computer Science

### Information Systems Concentration

### Area II: Linear Algebra, Cognates

- **MATH 227** Linear Algebra
- Accounting, Organizational Behavior, and Operations Research

### Area III: Information Systems Concentration Courses

- **CIS 294, 296, or 297** Visual Basic, Java, C#
- **CIS electives from approved list**

### General Electives

- **7**

**NOTE:** Requirements may change. Students should consult an advisor for current requirements.

## Cooperative Education

CIS students are eligible to participate in the College of Engineering and Computer Science's Cooperative Education Program. During co-op placements, juniors or seniors alternate semesters of full-time classes with semesters of full-time paid CIS work in a company or organization in their chosen field. Co-op makes it possible for students to gain valuable professional work experience before they graduate, earn a salary, and establish contacts useful for later employment.


## Employment Opportunities

A wide variety of employment opportunities is available to computer scientists, such as the following, based on titles of CIS alumni:
- applications programmer, software engineer, computer systems consultant, telecommunications planner, computer game programmer, computer applications trainer, database administrator, systems analyst or programmer,
- systems software developer, computer security administrator, computer graphics specialist, network administrator, systems designer, technical writer, computer and technical support analyst, and president of own company.

Computer scientists are also employed in research or consulting in education, industry, government, teaching, and training.

Recent graduates from the University of Michigan-Dearborn with a BS in CIS have found professional employment in such companies as Accenture, Activision, Blue Cross/Blue Shield, Chrysler, DTE Energy, EDS, ERIM, Federal Mogul, Ford, General Motors, IBM, Marathon Ashland, NASA, Oracle, and Unisys.

## Admission Requirements

### From High School:

3.00 adjusted GPA or higher and ACT of 22 or higher.

### From Community College or University:

2.75 adjusted GPA (cumulative, mathematics, and science—all three) in transferable courses. Courses with a grade of C- or below do not transfer.

## For More Information

### For Engineering and Computer Science Information:

College of Engineering and Computer Science

Student Records and Advising

2000 Heinz Prechter Engineering Complex

4901 Evergreen Road

Dearborn, MI 48128-2406

313-593-5510

uginfo@engin.umd.umich.edu

www.engin.umd.umich.edu

### For Admissions Information and Applications:

Office of Admissions and Orientation

University of Michigan-Dearborn

4901 Evergreen Road

Dearborn, MI 48128-2406

313-593-5100

admissions@umd.umich.edu

www.umd.umich.edu