

Computer and Information Science



Department of Computer and Information Science
College of Engineering and Computer Science

The Computer and Information Science Programs

Computer and Information Science 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 Computer and Information Science (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** in one of two options (computer science or information systems) and receive a **Bachelor of Science (BS) degree in Computer and Information Science**. 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) option**. Students in this option study computer architecture, artificial intelligence, formal methods, distributed and parallel systems, networks, operating systems, programming, and web technologies. The CS option places greater emphasis on understanding how computer systems work and prepares its graduates for positions in embedded and systems programming, enterprise computing, graphics and visualization, computer game development, networks, scientific programming, and web technology, among others.

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

Curriculum Requirements (CS Option)

Area Semester Credits

Area I: CECS Distribution Requirements 24

COMP 105	English Composition I	3
COMP 270	Technical Writing	3
ECON 201	Macroeconomics	3
– Two courses in the humanities, from specified choices		6
– Two courses in the behavioral/social sciences, from the specified choices		6
– One upper-level (300/400-level) course in the humanities or the behavioral/social sciences, in the same academic discipline as one of the courses taken above		3

Area II: Mathematics, Science, Applied Business 36

Mathematics and Statistics

MATH 115	Calculus I	4
MATH 116	Calculus II	4
CIS 275	Discrete Structures I	4
CIS 306	Discrete Structures II	4
MATH 217	Matrix Algebra (or MATH 227 Linear Algebra)	2
IMSE 317	Probability and Statistics	3
A two-course laboratory science sequence		8
An additional laboratory science course		4
ENGR 400	Applied Business Techniques	3

Area III: Computer Science and Electives 60

Computer Science Core 28

CIS 150	Computer Science I	4
CIS 200	Computer Science II	4
CIS 310	Computer Organization	4
CIS 350	Data Structures & Algorithm Analysis	4
CIS 375	Software Engineering	4
CIS 427	Computer Networks & Distributed Processing	4
CIS 450	Operating Systems	4

Computer Science Senior Design

CIS 495 I	Senior Design Seminar I	2
CIS 495 II	Senior Design Seminar II	2
Track, CISC Electives, and General Electives		28

Five Tracks are offered:

Engineering Systems, Game Design, Networking, Systems Foundations, and Individualized Computer Science

NOTE: CIS requirements may change. Students should see an advisor for current requirements.

The Requirements (IS Option)

Area	Semester Credits
Area I: CECS Distribution Requirements	21
COMP 105 English Composition I	3
COMP 270 Technical Writing	3
ECON 201 Macroeconomics	3
– Two courses in the humanities, from specified choices	6
– Two courses in the behavioral/social sciences, from the specified choices	6
Area II: Mathematics, Science, and Cognates	38
Mathematics and Statistics	
MATH 115 Calculus I	4
MATH 116 Calculus II	4
CIS 275 Discrete Structures I	4
MATH 217 Matrix Algebra	
(or MATH 227 Linear Algebra)	2
IMSE 317 Probability and Statistics	3
Two-semester laboratory science sequence	8
ACC 298 Accounting I	3
OB 354 Organizational Behavior	3
IMSE 3005 Operations Research	4
ENGR 400 Applied Business Techniques	3
Area III: Computer Science and Electives	61
Computer Science Core	28
CIS 150 Computer Science I	4
CIS 200 Computer Science II	4
CIS 310 Computer Organization & Assembly Lang	4
CIS 350 Data Structures & Algorithm Analysis	4
CIS 375 Software Engineering	4
CIS 427 Computer Networks & Distributed Processing	4
CIS 450 Operating Systems	4
Information System Courses	25
CIS 294, 296, or 297 Visual Basic, Java, or C#	3
CIS 421 Database Systems	4
CIS 4261 Information Systems Analysis & Design I	4
CIS 4262 Information Systems Analysis & Design II	4
CIS 4951 Senior Design Seminar I	2
CIS 4952 Senior Design Seminar II	2
– Two information systems electives from approved list	6
General Electives	8

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

Computer Facilities

www.engin.umd.umich.edu/labs

Modern computer laboratory facilities are essential in preparing students for professional positions in the world of computer science and software engineering practice and research. College of Engineering and Computer Science students use a wide variety of computing resources as part of their undergraduate education: local area networks of Pentium and Unix computers, and the large SUN workstation network. The CIS Department computer facilities include the 3-D Graphics and Visualization Lab, the Agile Software Engineering Lab, the Database and Multimedia Systems Lab, the Game Design and Usability Lab, the Real-Time and Secure Systems Lab, the Vehicular Networking Systems Research Lab, the Virtual Engineering Lab, and the Web Services Lab.

Faculty of the Computer and Information Science (CIS) Department

The CIS degree program is taught primarily by Ph.D. faculty dedicated to teaching and research. The research interests of the computer and information science faculty include CAD/CAM, computer graphics, digital government, geometric modeling, database systems, data integration, data mining, multimedia information systems, game design, computer usability and accessibility, digital government,

distributed systems and middleware, mobile computing, multimedia information systems, organizational information systems, peer-to-peer systems, vehicular networking, security and privacy, real-time systems, semantic web, soft computing, software engineering, web information systems, and web services. Some courses are taught by local industry professionals.

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 they have selected.

Co-op makes it possible for students to have the experience of working in the CIS field before they graduate. Students who participate in co-op gain valuable professional experience, earn a salary, and establish contacts useful for later employment.

Co-op students in computer and information science have found recent co-op placements in such companies as: Acromag, Arvin-Meritor, Barton-Marlow Company, Blue Cross Blue Shield, Cebos, Ceridian Corp., CMJ Designs, Crain Communication, Daimler-Chrysler Financial Group, DTE Energy, EDS, Hometown Communications Network, Intel Corporation, Lockhead Martin, Marathon Petroleum, Masco Corp., Midway Games, Net Portfolio, Nokia Automotive, Observer, Polk, Ricardo Inc., Sirius Radio, Solo World, SPX, Trans-man Logistics, TRW, Unisys, U.S. Steel, United States Tank Command, Urban Science, Valassis, and Vector Cantech.

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, Daimler-Chrysler, DTE Energy, EDS, ERIM, Federal Mogul, Ford Motor Company, General Motors, IBM, Marathon Ashland, Peat Marwick, 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, math, 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 Engineering Complex
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