

BS/MS Program Educational Objectives

1. *Students who enter the workforce will have established themselves as effective professionals by having solved real problems through the use of their computer science knowledge and their communication, critical thinking, and problem solving skills.*
2. *Students who continue in academia will have been successful in pursuing advanced degrees and in demonstrating their ability to master advanced areas of computer science.*
3. *Students will have demonstrated their ability to adapt to a rapidly changing environment by having learned and applied new skills and new technologies.*

B.S. Student Learning Outcomes

1. *Students will be able to apply concepts and techniques from computing and mathematics to both theoretical and practical problems.*
2. *Students will be able to demonstrate fluency in at least one programming language and acquaintance with at least three more.*
3. *Students will have a strong foundation in the design, analysis, and application of many types of algorithms.*
4. *Students will have a fundamental understanding of computer systems.*
5. *Students will have the training to analyze problems and identify and define the computing requirements appropriate to their solutions.*
6. *Students will have the training to design, implement, and evaluate large software systems working both individually and collaboratively.*
7. *Students will be able to communicate effectively orally and in writing.*
8. *Students will have the knowledge, skills, and attitudes for lifelong self-development.*
9. *Students will have the ability to analyze the local and global impact of computing on individuals and society.*
10. *Students will have a fundamental understanding of social, professional, ethical, legal, and security issues in computing.*

M.S. Student Learning Outcomes

1. *Students will be able to use advanced mathematical methods to analyze the complexity of algorithms.*
2. *Student will have the ability to use state-of-the-art patterns and frameworks to design, analyze, and assess software architectures.*
3. *Students will understand modern software engineering concepts, techniques, practices, and tools, and will be able to apply them to the development of complex software systems.*
4. *Students will have acquired advanced knowledge and skills in one or more specialized areas of computer science.*
5. *Students will be able to communicate effectively both orally and in writing.*
6. *Students will embrace lifelong learning and exhibit the knowledge, skills and attitude for adapting to new environments and technologies.*



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EARN YOUR BACHELORS AND/OR MASTERS DEGREE IN COMPUTER SCIENCE

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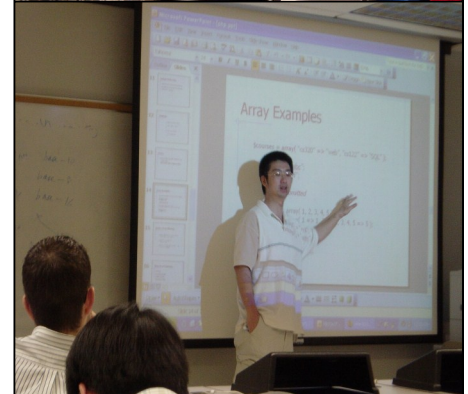
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COMPUTER SCIENCE

Preparing students to meet the
challenges of a rapidly changing,
increasingly complex world.



**EARN YOUR BACHELORS
AND/OR MASTERS DEGREE
IN COMPUTER SCIENCE**

**AND OPEN UP A WHOLE NEW
WORLD**

Is there a Bachelors or Masters in your future . . .

The **Department of Computer Science** offers programs of study for a graduate (MS) degree, an undergraduate (BS) degree, and a blended (BS+MS) degree. These degree programs have been designed to prepare qualified students for careers involving the design of computer systems and their application to science and industry. The programs are structured with a maximum of flexibility to insure that you have the opportunity to focus on areas that interest you the most. Students who complete a CS degree will be qualified for high-paying jobs. Unprecedented demand exists for men and women trained in computer software skills. The Department of Computer Science can show you the shape of the future—today! We have the faculty, programs, and facilities to help you transform *your* dreams into reality.

Integrated Blended Bachelors & Masters

The Blended BS/MS program in computer science provides an accelerated route for academically excellent upper-division students in the BS degree program to complete the MS degree program while simultaneously completing the BS requirements. The main objectives of the program are:

- To provide an accelerated route to a graduate degree, with simultaneous awarding of both bachelor's and master's degrees.
- To provide a seamless process whereby a limited number of select students can progress from undergraduate to graduate status.

Program Features

- Simplified application process
- BS and MS coursework can be taken concurrently
- **Sixteen** common elective units used in both BS and MS programs.
- Access to graduate student facilities

Bachelor of Science

The program provides an excellent foundation in all core areas of computer science with the opportunity to choose electives in a variety of specialized fields. A minimum of **180 units** are required for the degree, including **130 units in the major**.

Lower Division Major Requirements (63 units)

CS 120	Introduction to Web Site Development (3)
CS 122	Using Relational Databases and SQL (3)
CS 201	Introduction to Programming (5)
CS 202	Introduction to Object Oriented Programming (5)
CS 203	Programming with Data Structures (5)
CS 245	Intro. to Comp. Org, O.S.& Networks (3)
MATH 206-208	Calculus I,II,III (4,4,4)
MATH 248	Discrete Mathematics (4)
MATH 255	Introduction to Matrix Theory (4)
MATH 270	Probability with Applications (4)
PHYS 211-213	Physics (5,5,5)

Upper Division Major Requirements (43 units)

CS 301	Computer Ethics and Societal Impact of Computing (2)
CS 312	Data Structures and Algorithms (4)
CS 320	WEB and Internet Programming (3)
CS 332FLC	Functional/Logic/C++ Programming (2,2,2)
CS 337	Software Design (3)
CS 386	Introduction to Automata Theory (4)
CS 437	Software Engineering (5)
CS 440	Introduction to Operating Systems (4)
EE 444	Computer Architecture (4)
CS 490	Computer Science Recapitulation (2)
CS 496ABC	Software Design Laboratory (2,2,2)

Upper Division Technical Electives (24 units)

Select 6 additional upper division Computer Science courses (CS3xx/4xx except CS342)



Faculty and students work together on programming assignments.

Master of Science

The Master of Science degree in Computer Science prepares students to work at advanced levels in industry, business or government, further graduate work, or to teach at the community college. Students are able to tailor their program to fit career interests and goals.

Program Requirements (45-52 units)

The MSCS degree requires completion of 45-52 units as described in (i) through (iv) below. At least 36 of the 45 units must begin after the student has been admitted to the master's degree program.

(i) Core (12 units)

- a. CS512 Analysis and Design of Algorithms (4)
- b. CS537 Advanced Software Engineering (4)
- c. CS520 Web Programming (4)

(ii) Concentration (12 units)

With prior consent, select three courses from A, B, or C.

A. Application Software:

- CS522 Advanced Database Systems (4)
- CS540 Adv Topics in Operating Systems (4)
- CS550 Adv Computer Graphics (4)
- CS560 Adv Topics - Artificial Intelligence (4)
- CS570 Networks & Distributed Processing (4)
- CS575 Human Issues in Computing (4)
- CS581 Computer & Network Security (4)

B. System Software:

- CS540 Adv Topics in Operating Systems (4)
- CS565 Reliable Computing (4)
- CS570 Networks & Distributed Processing (4)
- CS580 Computer Systems Security (4)
- CS588 Languages and Translators (4)

C. Computer Theory:

- CS522 Advanced Database Systems (4)
- CS560 Adv Topics in Artificial Intelligence (4)
- CS565 Reliable Computing (4)
- CS586 Theory of Computing (4)
- CS588 Languages and Translators (4)

(iii) Four Elective courses (16 units): Choose four other CS 400/500 level courses with the prior approval of the advisor (at least 8 units from 500 level)

(iv) Culminating Experience (5 or 12 units)

- Thesis/Project Option: CS599AB (5 units)
- Comprehensive Exam Option: (12 units)
 - i. Choose 12 additional units of 400/500 level courses (at least 8 units from 500 level)
 - ii. CS 596 Comprehensive Exam (0 units)