Computer Science (Biomedical Informatics), MS

ESCSBIOIMS

Innovators, this one's for you. The computer science biomedical informatics concentration blends computing with health care.

Program description

Degree awarded: MS Computer Science (Biomedical Informatics)
The MS program in computer science with a concentration in biomedical informatics is designed for graduate students who wish to perform research in such topics as genomics and computational systems biology.

The concentration is transdisciplinary in nature, providing preparation that integrates technological expertise in the information sciences, computer science, biosciences and statistics with an understanding of the clinical environment of the health care professional. The curriculum exposes computer science students to current issues in clinical practice as well as the use of information systems in health care settings.

Biomedical informatics has a key role to play in the transition to more effective and efficient health care through the use of knowledge and computer science principles.

At a glance

- **College/School:** Ira A. Fulton Schools of Engineering
- **Location:** Tempe

Accelerated program options

This program allows students to obtain both a bachelor's and master's degree in as little as five years. It is offered as an accelerated bachelor's plus master's degree with:

Computer Science, BS

Computer Science (Cybersecurity), BS

Computer Science (Software Engineering), BS

Computer Systems Engineering, BSE

Computer Systems Engineering (Cybersecurity), BSE

Software Engineering, BS

Acceptance to the graduate program requires a separate application. Students typically receive approval to pursue the accelerated master's during the junior year of their bachelor's degree program. Interested students can learn about eligibility requirements and how to apply.

Degree requirements

30 credit hours and a thesis, or
30 credit hours including the required applied project course (CSE 593)

Required Core Areas (9 credit hours)
applications (3)
foundations (3)
systems (3)

Concentration (9 credit hours)
BMI 502 Foundations of Biomedical Informatics Methods I (3)
BMI 601 Fundamentals of Health Informatics (3)
Select one course from the following:
BMI 505 Foundations of Biomedical Informatics Methods II (3)
BMI/CSE 507 Image Processing and Analysis (3)
BMI 517 Advanced Biostatistics for Biomedical Research and Health Care (3)
BMI 550 Translational Bioinformatics (3)
BMI 598 Topic: Knowledge Management and Engineering (3)
BMI 615 Human Factors Engineering for Biomedical Applications (3)
BMI 616 Clinical Decision Support and Evidence-based Medicine (3)

Electives or Research (6 or 9 credit hours)

Culminating Experience (3 or 6 credit hours)
CSE 593 Applied Project (3)
CSE 599 Thesis (6)

Additional Curriculum Information
Students focus their research in one of the following areas: bioinformatics, biomedical informatics,

clinical informatics, imaging informatics or public health informatics. Students complete nine credit hours of BMI concentration courses selected in consultation with the student's graduate advisor.

Students should see the academic unit for the list of courses approved for each core area in applications, foundations and systems. Courses that are used to satisfy the concentration requirement on the plan of study cannot be used to satisfy the core requirement. Additionally, courses selected as part of the core or concentration may not be used as other elective coursework on the same plan of study.

Students who select the applied project as their culminating experience must complete their project at the direction of an approved computer science faculty member and complete the project course with a "B" grade (scale is 4.00 = "A") or higher.

Students complete a minimum of 30 credit hours for the program. At least 21 of these credit hours must be 500-level CSE courses at ASU.

Admission requirements

Applicants must fulfill the requirements of both the Graduate College and the Ira A. Fulton Schools of Engineering.

Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree in computer science, computer engineering or a closely related area.

Applicants must have a minimum cumulative GPA of 3.25 (scale is 4.00 = "A") in the last 60 hours of their first bachelor's degree program, or applicants must have a minimum cumulative GPA of 3.25 (scale is 4.00 = "A") in an applicable master's degree program.

All applicants must submit:

1. graduate admission application and application fee
2. official transcripts
3. GRE scores
4. statement of purpose
5. proof of English proficiency

Additional Application Information
An applicant whose native language is not English must provide proof of English proficiency via a TOEFL score regardless of their current residency.

The student must submit verbal, quantitative and analytical GRE scores (optional: subject test in computer science) unless the student has graduated with an undergraduate degree in computer science or computer systems engineering from ASU. ASU does not accept the GREÂ® General Test at home edition.

Students assigned any deficiency coursework upon admission must complete those classes with a grade of "C" or higher (scale is 4.00 = "A") within two semesters of admission to the program. Deficiency courses are:

CSE 230 Computer Organization and Assembly Language Programming
CSE 310 Data Structures and Algorithms
CSE 330 Operating Systems
CSE 340 Principles of Programming Languages or CSE 355 Introduction to Theoretical Computer Science

The applicant's undergraduate GPA and depth of preparation in computer science and engineering are the primary factors affecting admission.

Tuition information

When it comes to paying for higher education, everyone's situation is different. Students can learn about [ASU tuition and financial aid](#) options to find out which will work best for them.

Application deadlines

Fall

Spring   expand

                     expand

Career opportunities

Graduates of the Master of Science program in computer science with a concentration in biomedical informatics are able to analyze and apply key theories, algorithms and software modules used in the field of computer science.

Career examples include:

- biomedical researcher
- computer network architect
- computer systems analyst
- computer systems engineer
- data scientist or engineer
- machine learning, AI computer vision engineer
- software developer
- software engineer

Contact information

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