Biomedical Informatics and Data Science, MS

ESBIOINFMS

This program's name has changed effective Fall 2024. The previous name was Biomedical Informatics.

Innovators, this one's for you. Combine your passion for information technology and health care while improving lives with your expertise in a booming area of health and medicine.

Program description

Degree awarded: MS Biomedical Informatics
The MS program in biomedical informatics and data science offers students the opportunity to become professionals who use biomedical data, information and knowledge to improve human health.

Students in this program learn problem-solving, theory and the methodologies underlying the field of biomedical informatics, taking courses in areas such as knowledge representation, clinical environments, imaging, bioinformatics and data science. Core courses provide a background in clinical informatics, while electives allow specialization in areas such as data science or mobile health.

Biomedical informatics fosters collaborations among academic researchers, clinical practitioners and regional health care providers to apply new developments in informatics theory to clinical practice. Students gain the informatics knowledge and skills that enable them to:

- detect disease early
- improve the patient hospital experience
- improve the precision of diagnosis
- improve the quality of patient health care and reduce its cost
- minimize hospital visits

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

Students should note that some courses and faculty offices are located at the [Health Futures Center](#) building in North Phoenix.

At a glance

- **College/School:** [College of Health Solutions](#)
- **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:

[Biomedical Informatics, 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

32 credit hours including the required applied project course (BMI 593)

Required Core (17 credit hours)
BMI 502 Foundations of Biomedical Informatics Methods I (3)
BMI 505 Foundations of Biomedical Informatics Methods II (3)
BMI 515 Applied Biostatistics in Medicine and Informatics (3)
BMI 540 Problem Solving in Biomedical Informatics (3)
BMI 570 BMI Symposium (2)
BMI 601 Fundamentals of Health Informatics (3)

Other Requirements (3 credit hours)
BMI 404 Clinical Environments (3) or
BMI 504 Introduction to Clinical Environments (3)

Electives (9 credit hours)

Culminating Experience (3 credit hours)
BMI 593 Applied Project (3)

Additional Curriculum Information
BMI 570 is a one credit hour course. Students take BMI 570 twice for a total of two credit hours.

Students should contact the academic unit for a list of approved elective courses. Electives must include at least six credit hours of BMI coursework.

Admission requirements

Applicants must fulfill the requirements of both the Graduate College and the College of Health Solutions.

Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree in biology, computer science, engineering, nursing or statistics from a regionally accredited institution.

Applicants must have a minimum cumulative GPA of 3.00 (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 3.00 (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. statement of purpose
4. resume or curriculum vitae
5. three references (academic or professional)
6. proof of English proficiency

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

Applicants who have earned degrees in other unrelated fields with appropriate academic backgrounds or postbaccalaureate training also will be considered.

All applicants must have basic competencies in general biology (BIO 181 or equivalent), statistics (HCD 300 or STP 226 or equivalent) and computer programming (BMI 110 or CSE 110 or equivalent).

A one- to two-page statement of purpose is required. Students must explain why they are interested in the program, outline their background, describe expected outcomes from the program, identify potential faculty advisors and areas of research, and elaborate on how the degree will support their goals. To accommodate applicants' diverse backgrounds, the statement must include at least one paragraph that describes the applicant's educational and professional background in the following three areas: computer science; statistics and mathematics; and biological sciences and health sciences.

Contact information for three references is required. References will be contacted via email to submit a letter of recommendation and respond to a series of questions about the applicant.

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

expand

Program learning outcomes

Program learning outcomes identify what a student will learn or be able to do upon completion of their program. This program has the following program outcomes:

- Graduates will be able to synthesize the history and values of biomedical informatics and its relationship to other fields while demonstrating an ability to read, interpret and critique the core literature and be prepared to be successful in the biomedical informatics workforce.
- Graduates of this program will be able to apply and evaluate approaches in the context of biomedical problems, including imaging and signal analysis; information documentation, storage and retrieval; machine learning and data mining; networking, security and databases; natural language processing and semantic technologies; representation of logical and probabilistic knowledge and reasoning; simulation and modeling; and software engineering.
- Graduates of this program will be able to apply knowledge in design, evaluation, behavioral and organizational sciences, ethical and legal issues, and economic and social context of biomedical research, pharmaceutical and biotechnology industries, medical instrumentation, health care and public health.

Career opportunities

Professionals with advanced training in biomedical informatics and data science are in high demand across a variety of sectors and industries, including academic institutions, not-for-profit research institutes, government and public health agencies, and health care organizations, as well as information technology, biotech and pharmaceutical industries. Graduates can also pursue admission to medical school.

Career examples include:

- account manager
- analyst
- data scientist
- product manager
- research scientist

Contact information

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