

Master of Science in Medical and Bioinformatics

Medical and Bioinformatics utilizes computer technology to manage and analyze information in the life and health sciences.

The Medical and Bioinformatics M.S. program at Grand Valley State University is one of three new interdisciplinary Professional Science Masters (PSM) degrees (M.S. in Biostatistics and M.S. in Biotechnology) that emphasize teamwork, problem-solving, communication skills, and exposure to business concepts in addition to rigorous technical training. PSM programs have been established across the US with the support of the Alfred P. Sloan Foundation and the Council on Graduate Studies. The Science Master's is designed to prepare professionals for work outside academia. This degree is granted by the School of Computing and Information Systems within the Padnos College of Engineering & Computing.

The Grand Valley Biomedical Community

Grand Valley State University is uniquely positioned for launching this new Medical & Bioinformatics M.S. program. Grand Rapids is on the western end of Michigan's 'Life Sciences Research Corridor', and Grand Valley is partnering with the city of Grand Rapids on an economic SmartZone in the biotechnology sector.

Teamwork is the Key Advantage

Grand Valley is leading the way in developing collaborative, interactive programs in response to the need for team-oriented professionals with advanced interdisciplinary knowledge and skills. The Medical & Bioinformatics M.S. program equips graduates to be effective leaders and team members in their professions and to communicate effectively with those in other disciplines.

Curriculum:

36 credits with a minimum cumulative GPA of 3.0.

Fourteen (14) credits are shared with the other Professional Science Masters programs in Biostatistics and Biotechnology:

Four common core courses:

- CMB 610 Foundations of Biotechnology,
- CS 661 Introduction to Medical/Bioinformatics
- PSM 650 Ethics and Professionalism in Applied Science

One Applied Statistics Course:

- STA 610 Applied Statistics for Health Professions *or*
- STA 622 Statistical Methods for Biologists

Two common seminar courses provide important interdisciplinary opportunities for the three programs.

- PSM 661 Seminar in Professional Practice I
- PSM 662 Seminar in Professional Practice II

The **internship** takes place in partnering workplace organizations and will be supervised by Grand Valley faculty to meet properly outlined criteria and objectives.

- PSM 691 Internship (min 4 credits)

5 Directed Courses: (15 credits)

- CS 635 Knowledge Discovery & Data Mining
- CS 671 Information Visualization
- CS 673 Principles of Database Design

- Choose either Group 1 or Group 2:

1. CS 677 High-Performance Computing *and*
CS 678 Machine Learning

or

2. CS 665 Clinical Information Systems *and either*
PA 630 Health Administration and Service *or*
PA 635 Hospital Organization and Management

Capstone Course: (3 credits)

- CS 691 Medical and Bioinformatics Capstone

GVSU Facilities

The Medical & Bioinformatics M.S. program will be housed in Grand Valley State's new state-of-the-art Cook-DeVos Center for Health Sciences in downtown Grand Rapids. The Center is located near the Van Andel Research Institute, Spectrum Health, and St. Mary's Mercy Medical Center. These partners in the scientific healthcare community and other businesses have already given formal support for internships and continuing assistance.

The Cook-DeVos Center features cutting-edge training and laboratory facilities, project rooms to encourage group learning and interdisciplinary study, case-study classrooms, a bioinformatics computer lab and faculty offices to keep students close to instructors and mentors. These facilities bring students close to these health care partners and life science researchers, creating a learning environment infused with the synergy of high-quality education and professional collaboration.

Medical and Bioinformatics Laboratory

The Cook-DeVos Center for Health Sciences contains a specifically designed Medical and Bioinformatics Computer Lab.

Admission Requirements

In addition to general university graduate admission requirements, candidates must:

- Have a grade point average of 3.0 (B) from all undergraduate coursework or a satisfactory score on the GRE or GMAT test.
- Have a base of underlying knowledge relevant to graduate study in the medical informatics or bioinformatics fields



PSM Testimonials

"Individuals with an educational background in these interdisciplinary areas are very few in number. [The] idea of combining a rare and highly demanded technical education with a modest exposure to training in business will produce students who are truly unique, and these students will be highly recruited by industry."

Ken Smith
Co-founder of Carbon Nanotechnologies, Inc.

"Add science, business, mathematics and stir: New degree offers career outside lab," *USA Today*, July 19, 2004

"The PSM is being called the MBA for scientists and mathematics. It's an education aimed at future managers who will be able to move comfortably in the business of science.... Experts predict it will become the 21st century's fastest ticket to the major leagues in business and government."

"Science Degree Aims at Business," *Wall Street Journal*, August 3, 2004

"The typical PSM graduate is 24 years old and starts out earning \$55,000 in business or \$45,000 in government.... Amgen Inc., Lockheed Martin Corp, and Putnam Investments hired some of the earliest graduates as midlevel managers. Unlike traditional graduate science programs, which concentrate on academics and research, the PSM programs have a strong real-world component. "

For More Information contact:

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Grand Valley State University is an affirmative action/equal opportunity institution. It encourages diversity and provides equal opportunity in education, employment, all of its programs, and the use of its facilities.

www.gvsu.edu/psm

Professional Science Masters Degree in Medical & Bioinformatics

