BIOMEDICAL INFORMATICS (PHD AND MD/PHD)

Curriculum

Graduate Committee

Dr. Jenenne Geske (Interim Chair and Program Director), Dr. James Campbell, Dr. Scott Campbell, Dr. Martina Clarke, Dr. Jane Meza (or designee), Dr. Ann Fruhling (University of Nebraska - Omaha representative), and Dr. Dele Davies (Senior Vice Chancellor for Academic Affairs).

The mission of the Biomedical Informatics Graduate Program is to develop the next generation of biomedical informaticians who will advance research and practice in contemporary information and knowledge management using innovative evidence-based approaches to improve human health. The Biomedical Informatics Graduate Program was formally approved by the Regents of the University and the State of Nebraska in the Spring of 2013. This program brings together experts and resources from multiple campuses including the University of Nebraska Medical Center (UNMC (http://unmc.edu/)), the University of Nebraska - Omaha (UNO (http://www.unomaha.edu/college-of-information-science-and-technology/academics/bioinformatics.php)) and the University of Nebraska Lincoln (UNL).

This joint program involving UNMC & UNO leverages expertise across campuses to provide an educational and research program with strengths in biologic, health care and technological aspects of biomedical informatics. It is a multidisciplinary, interprofessional effort integrating the theory and practice of information technology management, computer science, decision support systems, and applied computing with clinical science, biological science, bio-imaging, and public health.

General Requirements for PhD

- Completion of Coursework.
- Completion of the Comprehensive Examination.
- Completion of a research project consistent with a PhD level of achievement.
- Completion and successful defense of a doctoral dissertation.
- Concurrence of the mentor and the student's Supervisory Committee.

PhD Coursework

Students pursuing the PhD degree in Biomedical Informatics must complete the courses listed below. PhD students with prior education can place out of core courses.

Code	Title	Credit Hours
Biomedical Sciences Core: Select (2) courses from the following:		
GCBA 823	FUNDAMENTALS IN GENETICS AND GENOMICS	2
HPRO 830	FOUNDATIONS OF PUBLIC HEALTH	3
HSRA 810	U.S. HEALTH CARE SYSTEM: AN OVERVIEW	3
PMI 940	MOLECULAR BASIS OF DISEASE	3
Research & Quantitative Methods Core: Select two (2) courses from the following		
BIOS 806	BIOSTATISTICS	3
EPI 821	APPLIED EPIDEMIOLOGY	3
Computing Core: CSCI 8010 and one (1) additional course selected from the following		
CSCI 8010	(FOUNDATIONS OF COMPUTER SCIENCE - This course is offered at the University of Nebraska - Omaha)	3
CIST 9080	(RESEARCH DIRECTIONS IN IT - This course is offered at the University of Nebraska - Omaha)	3
CSCI 8080	(DESIGN AND ANALYSIS OF ALGORITHMS - This course is offered at the University of Nebraska - Omaha)	3
CSCI 8325	(DATA STRUCTURES - This course is offered at the University of Nebraska - Omaha)	3
Informatics Core: Select two (2) courses from the following		
BMI 810	INTRODUCTION TO BIOMEDICAL INFORMATICS	3
ISQA 8570	(INFORMATION SECURITY POLICY AND ETHICS - This course is offered at the University of Nebraska - Omaha)	3
Research Tools Core: Select four (4) courses from the following		
BIOS 835	DESIGN OF MEDICAL HEALTH STUDIES	3
ISQA 8160	(APPLIED DISTRIBUTION FREE STATISTICS - This course is offered at the University of Nebraska - Omaha)	3
ISQA 8340	(APPLIED REGRESSION ANALYSIS - This course is offered at the University of Nebraska - Omaha)	3
ISQA 9010	(FOUNDATIONS OF INFORMATION SYSTEMS RESEARCH - This course is offered at the University of Nebraska - Omaha)	3
ISQA 9120	(APPLIED EXPERIMENTAL DESIGN & ANALYSIS - This course is offered at the University of Nebraska - Omaha)	3
ISQA 9130	(APPLIED MULTIVARIATE ANALYSIS - This course is offered at the University of Nebraska - Omaha)	3
Electives as needed		
Each Student will work with his/her Supervisory Committee to determine the appropriate graduate-level elective courses		
Other Required Courses		
BMI 970	SEMINAR - HEALTH INFORMATICS	1
BMI 999	DOCTORAL DISSERTATION	1-9
GRAD 800	RESPONSIBLE CONDUCT IN RESEARCH TRAINING	0
NOTE: all courses except one must be completed prior to taking the Comprehensive Exam		

MD/PhD Coursework

MD/PhD students in Biomedical Informatics must complete 18 credits of graded (not Pass/Fail) graduate-level courses. Students with prior education can place out of core courses, but will need to take an elective in that same core.

Code	Title	Credit Hours
Research & Quantitative Methods Core (6 credits)		
EPI 821	APPLIED EPIDEMIOLOGY	3
BIOS 810	INTRODUCTION TO SAS PROGRAMMING	3
Computing Core (6 credits)		
CSCI 8010	(FOUNDATIONS OF COMPUTER SCIENCE - This course is offered at the University of Nebraska - Omaha)	3
ISQA 8050	(DATA ORGANIZATION AND STORAGE - This course is offered at the University of Nebraska - Omaha)	3
CSCI 8080	(DESIGN AND ANALYSIS OF ALGORITHMS - This course is offered at the University of Nebraska - Omaha)	3
CSCI 8325	(DATA STRUCTURES - This course is offered at the University of Nebraska - Omaha)	3
Informatics Core (6 credits)		
ISQA 8570	(INFORMATION SECURITY POLICY AND ETHICS - This course is offered at the University of Nebraska - Omaha))	3
BMI 810	INTRODUCTION TO BIOMEDICAL INFORMATICS	3
Other Required Courses		
GRAD 800	RESPONSIBLE CONDUCT IN RESEARCH TRAINING	0
BMI 970	SEMINAR - HEALTH INFORMATICS	1
BMI 999	DOCTORAL DISSERTATION	1-9
NOTE: All courses must be completed before taking Comprehensive Exam		