BIOMEDICAL INFORMATICS (BMIN)

BMIN 501 Introduction to Biomedical and Health Informatics
This course is designed to provide a survey of the major topic areas in medical informatics, especially as they apply to clinical research. Through a series of lectures and demonstrations, students will learn about topics such as databases, natural language, clinical information systems, networks, artificial intelligence and machine learning applications, decision support, imaging and graphics, and the use of computers in education.

Taught by: Holmes
Course usually offered in fall term
Activity: Lecture
1 Course Unit

BMIN 502 Databases in Biomedical Research
This course is intended to provide in-depth, practical exposure to the design, implementation, and use of databases in biomedical research, and to provide students with the skills needed to design and conduct a research project using primary and secondary data. Topics to be covered include: database architectures, data normalization, database implementation, client-server databases, concurrency, validation, Structured-Query Language (SQL) programming, reporting, maintenance, and security. All examples will use problems or data from biomedical domains. MySQL will be used as the database platform for the course, although the principles apply generally to biomedical research and other relational databases.

Taught by: Holmes
Course usually offered in spring term
Activity: Lecture
1 Course Unit

BMIN 503 Data Science for Biomedical Informatics
In this course, we will use R and other freely available software to learn fundamental data science applied to a range of biomedical informatics topics, including those making use of health and genomic data. After completing this course, students will be able to retrieve and clean data, perform explanatory analyses, build models to answer scientific questions, and present visually appealing results to accompany data analyses; be familiar with various biomedical data types and resources related to them; and know how to create reproducible and easily shareable results with R and github.

Taught by: Himes
Course usually offered in fall term
Activity: Lecture
1 Course Unit

BMIN 504 Special Topics in Biomedical and Health Informatics
This course is designed to provide an in-depth look at four topics that are of essential importance in biomedical informatics. Each topic will be allotted four consecutive weeks in the class schedule, as four modules, with the intention that each module becomes its own "mini-course." The topics for each module may rotate from semester to semester, based on criteria such as historical importance to the current field of biomedical informatics research and/or practice, and cutting-edge developments in biomedical informatics.

Taught by: Moore
Two terms. student must enter first term.
Prerequisites: BMIN 501: Introduction to Biomedical and Health Informatics, or permission of the instructor
Activity: Lecture
1 Course Unit

BMIN 505 Precision Medicine and Health Policy
Through a series of lectures, readings and response papers, students will learn about topics such as medical ethics, unintended consequences of medicine/research, genetics, genetic interpretation, hospital performance, and informatic methods to assess these factors. The informatics topics covered in this course include: decision support, genetic database, clinical interpretation of genetics, detection of bias in EMRs, detection of bias in guidelines, methods to ameliorate bias, mapping clinical guidelines to computable standards, performance assessment, machine learning, and artificial intelligence applications in this space.

Taught by: Boland
Course usually offered in fall term
Activity: Lecture
1 Course Unit