BIOMEDICAL INFORMATICS (BIMI)

BIMI 6100 Elements in Biomedical Informatics (4)
Goals/Mission: To develop an understanding of biomedical informatics, the biomedical data, the practice modern medicine, conduct modern biological research, and health sciences education with information technology. Prerequisites: Students should have a basic understanding of intermediate mathematics. Designation: This course is for graduate students and advanced undergraduate students.

BIMI 6200 Introduction to Data Science for Biomedical Informatics (3)
Goals/Mission: The goal is to provide a comprehensive orientation to data science using SQL, R, Phyton, and programs with application to biomedical informatics Prerequisites: The course does not require prior programming knowledge. Designation: This course is for graduate students and advanced undergraduates.

BIMI 6300 Fundamentals of Data Analytics (3)
Goals/Mission: To develop an understanding of the integrated behavior of random variables multivariate data sets using R/ Python with application to complex biomedical data. Prerequisites: Students should have a basic understanding of statistics, multivariable calculus, and linear/matrix algebra. Designation: This course is for graduate students and advanced undergraduate students.

BIMI 6400 Health Informatics (3)
Goals/Mission: To develop an understanding of the advanced approaches of bioinformatics and its application. Prerequisites: Students should have a basic understanding of biomedical informatics and statistics. Designation: This course is for graduate students.

BIMI 7100 Statistical Machine and Deep Learning in Biomedical Practice (3)
Goals/Mission: To develop a comprehensive understanding of modeling for pattern recognition in data and utilizing these models to predict future data. Prerequisites: BIMI-6200 and BIMI-6300 This course is for graduate students and advanced undergraduate students with permission of instructor.
Prerequisite(s): BIMI 6200 and 6300.

BIMI 7300 Biomedical Data Science with Cloud Computing (3)
Goals/Mission: To develop an understanding of programming and high-performance computing techniques in data science with cloud computing. Prerequisites: BIMI-6100 and BIMI-6200 This course is for graduate students and advanced undergraduate students with permission of instructor.
Prerequisite(s): BIMI 6100 and 6200.

BIMI 7500 Big Data Analysis in Biomedical Informatics (3)
Goals/Mission: To understand the reason, opportunities, and challenges why big data are assuming a crucial role for the biomedical informatics. Prerequisites: BIMI-6100 and BIMI-6200 This course is for graduate students and advanced undergraduate students with permission of instructor.
Prerequisite(s): BIMI 6100 and 6200.

BIMI 8500 Research Methodology of Biomedical Informatics (1)
Goals/Mission: Journal clubs are a key tool for critically appraising articles and keeping up to date with the current literature. Prerequisites: BIMI-7500. Designation: This course is for graduate students only.
Prerequisite(s): BIMI 7500.
Maximum Hours: 99

BIMI 8550 Computational Biology: Structure and Organization (3)
Goals/Mission: To develop an understanding of the advanced approaches of computational biology, and their application. Prerequisites: Students should have taken BIMI-6100 and BIMI-6200 courses (prerequisites can be waive with instructor approval). Designation: This course is for graduate students and advanced undergraduate students.
Prerequisite(s): BIMI 6100 and 6200.

BIMI 8600 Advanc Data Sci Ana Tech (3)
Goals/Mission: To develop an understanding of the advanced approaches with algorithms in representation learning, generative adversarial networks, and their application to imaging multi-omics data. Prerequisites: BIMI-6100, BIMI-6200, and BIMI-6300 Designation: This course is for graduate students and advance undergraduate students.
Prerequisite(s): BIMI 6100, 6200 and 6300.
BIMI 9980  Master's Thesis Research  (0)

Goals/Mission: The goal is to develop a deeper understanding of a research field in biomedical informatics and gain capability to design a conceptual framework, conduct data analysis, and write a dissertation proposal. Prerequisites: Students should have completed courses such as BIMI-6100, BIMI-6200, and BIMI-6300. Designation: This course is for graduate students

Prerequisite(s): BIMI 6100, 6200 and 6300.