Course Listings

Courses include: (credit hours in parentheses)

**BMD 501 (3) Introduction to Biomedical Informatics**
Provides an overview of the field of biomedical informatics, combining perspectives from medicine, computer science and cognitive/social science for use of computers and information in health care and biomedical sciences, covering specific applications and general methods, current issues, capabilities and limitations of biomedical informatics.

**BMD 510 (3) Current Perspectives in Biomedical Diagnostics**
Provides an overview of the Biomedical Diagnostics industry covering research, policy and legal aspects of the field. Visiting speakers from ASU, DCU, biomedical diagnostics companies, and regulatory agencies will provide an overview of their specialty based on personal experience and case studies. Plans are for students to work in teams to research and develop a case study report related to biomedical diagnostics.

**BMD 511 (3) Health Economics, Policy and Payment Models**
Provides a thorough grounding in selected microeconomic concepts and models that are relevant for the economic aspects of health care but also have more general applications. The concepts and methods are applied to a selected set of topics that include the public provision of health insurance, benefit-cost and cost effectiveness analysis, human capital models of investments in health, incentives and the legal approach to medical malpractice and current approaches to methods of payment for health care services.

**BMD 667 (3) Regulation of Medical Diagnostics**
This course explores the regulatory environment for the development, marketing, access and interpretation of modern biomedical diagnostics. Students will explore the business environment of diagnostic firms, interactions with state and federal regulatory authorities, and how new types of diagnostics and business models challenge established approaches for safeguarding the validity and safety of new products and service.

**BMD 598 (4) Principles of Diagnostic Technology 2: Immunology**
The purpose of this module is to provide a detailed understanding of the theory and applications of advanced diagnostic assay systems and devices. In this module students will gain knowledge in immunoassay design and validation with particular attention to the manipulation of the immune system for disease recognition. This module assumes no former knowledge of immunology, but some knowledge would be advantageous.

**BMD 502 (3) Foundations of Biomedical Informatics Methods I**
Survey the methods and theories underlying the field of biomedical informatics. The course explores techniques in mathematics, logic, decision science, computer science, engineering, cognitive science, management science and epidemiology, and demonstrates the application to healthcare and biomedicine.

**BMD 598 (3) Biomedical Device Design**
Medical Device Design is a hybrid class/lab where a mixture of lecture, hands on, demos, lab experiments are used to convey the breadth of medical devices in the medical diagnostic device industry. Classification of devices and function are explained and covered. Students will learn, reverse engineer and build simple devices as well as learn about the FDA, market, business and design side of these products.

**BMD 598 (3) Molecular Diagnostics**
This is a survey course covering topics such as multiple types of analytes including DNA, RNA and protein, a multitude of disease application areas, major molecular diagnostic platforms, development of molecular diagnostics tests, sample preparation, and future prospects for molecular diagnostics.

**Culminating Experience/ Research Courses: (5 credit hours)**

**BMD 592 (2) Research**
Biomedical Diagnostics Independent study (Applied Project) in which a student, under the supervision of a faculty member or industry mentor, conducts research that is expected to lead to a specific project such as a thesis or dissertation, report, or publication. This course is focused on developing a project charter and plan to serve as a guide towards successfully completing the Applied Project research component in the following BMD 593 Applied Projects course.

**BMD 593 (3) Applied Project**
Students will complete an experiential learning experience as part of their applied project on a topic of relevance to the diagnostics field and their career interests. Applied projects will demonstrate students’ ability to apply skills and knowledge learned in coursework, use research methods appropriate to the field, and report and present results.

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