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Education

Our department is working toward expanding its educational offering each year. We currently offer courses that are open to USU matriculated students as well as others (on a not-for-credit basis).

**Bioinformatics (BID 500)**: The goal of this course is to provide students with an overview of the databases, information systems and web-based technologies presently available for biological information and to survey tools available to process the information. Some emphasis will be placed on using web-based and stand-alone tools for both DNA and protein sequencing analysis, providing students with the knowledge and skills to immediately use the tools and/or move on to higher level courses. (Dr. Williams-spring term).

**Public Health Informatics (**[**BID 501**](http://www.usuhs.mil/bid/pdf/BID501.pdf)**)**: The course provides students with a conceptual framework for understanding the emerging field of public health informatics. The course will include in-depth discussion of technology in the practice of public health with emphasis on preparing for and responding to manmade and natural disasters and emerging infectious diseases outbreaks. The course will also highlight successes and failures in implementing public health informatics projects and the critical role that leaders play in each step of the developmental process from idea inception through systematic implementation. **This course is a product of an emerging collaboration between the Uniformed Services University and the National Library of Medicine**. (Drs. Hakkinen & Johnson-spring term).

**Introduction to Health Informatics (**[**BID 502**](http://www.usuhs.mil/bid/PMO594.doc)**)**: The course provides future health care leaders a conceptual framework for understanding medical informatics and information technology as applied in the healthcare environment. The course will include in-depth discussion of technology in health care systems with emphasis on leveraging technology to improve quality and efficiency in care delivery. The course will also highlight successes and failures in implementing health information technology and the critical role that leaders play in each step of the developmental process from idea inception through systematic implementation. **This course is a product of an emerging collaboration between the Uniformed Services University and the National Library of Medicine**. (Dr. Gimbel - winter term).

**Patient Safety & Quality in an IT-driven World (BID 503)**: This course integrates theory and conceptual frameworks at use in patient safety, clinical quality, and in implementation science. The course is designed for students (both clinically-oriented and non-clinical) with patient safety & quality exposures but minimal understanding of health informatics and for those with health informatics exposure but minimal introduction to patient safety & quality. The curriculum includes three basic building blocks: 1) basic theories, frameworks, and concepts in patient safety & quality, 2) health information systems and technologies, and 3) themed challenges in patient safety & quality being addressed with technology solutions (either exclusively or as a component). The course will emphasize advancing the science of patient safety & quality. **The course is a part of an emerging partnership between the Agency for Healthcare Research & Quality and the Uniformed Services University focused on the delivery of education in patient safety & quality**. (Drs. Gimbel, Brady & Battles - spring term).

**Perl Programming for Biologists (BID 504)**: The purpose of this course is to give students a practical working knowledge of the Perl programming language for applications in biology. Programming skills are becoming increasingly important in biology. From the text: "Advances in high-throughput biology have transformed modern biology into an incredibly data-rich science. Biologists who never thought they needed computer programming skills are now finding that using an Excel spreadsheet is simply not enough." Perl is the most widely used language used for biological problems, there is a very large number of existing Perl programs that can readily be adapted for repeated tasks typically performed by biologists, so it is seldom necessary for biologists to write perl programs from scratch, and "regular expressions" in Perl are applicable in a wide variety of other scripting languages, including Python. (Dr. Williams-fall term).

**Statistics for Biologist Using R (BID 505)**: (Dr. Williams - full term)

**Unix and Databases (BID 506)**: The purpose of this course is to give students a practical working knowledge of Unix (Linux and MacOS command line) and SQL databases. (Dr. Williams-winter term).

**Python Programming for Biologists (BID 507)**: The purpose of this course is to give students a practical working knowledge of the Python 2.7 programming language for applications in biology. Programming skills are becoming increasingly important in biology and many biologists are finding that web based applications are not adequate for processing high throughput data or for tasks that require repeated operations. Python is now one of the scripting languages of choice for bioinformaticists. It is easy to learn and used, and can interface with Java, R, and other languages easily. While Perl may be a better choice for writing small programs that get work done, and for re-using code written by others, Python is preferred by many bioinformatics programmers who need to write larger programs. (Dr. Williams-spring term).

**Clinical Informatics (BID 4001)**: This 4 week clinical informatics elective is offered to provide medical students with some education and exposure to clinical informatics. The student(s) will be mentored by the top clinical informaticians currently serving in the Military Health System. The student(s) will receive training on information systems, work alongside the clinical informatics staff developing tools/templates, participate in meetings with clinic personnel about their informatics needs, shadow their preceptor in command meetings with policy implications, and like activities (Dr. Gimbel). [**4th year medical student elective**]