INDIANA UNIVERSITY

University Graduate School
2005-2006
Academic Bulletin

Informatics

School of Informatics
Bloomington

Dean
J. Michael Dunn*

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Faculty

(An asterisk [*] denotes membership in the University Graduate School faculty with the endorsement to direct doctoral dissertations.)

Professors
William Aspray*, David James Hakken, Alessandro Vespignani, Larry Steven Yaeger

Associate Professor
L. Jean Camp, Markus Jakobsson, Filippo Menczer*, Christopher S. Raphael, Luis M. Rocha

Assistant Professors
Mu-Hyun Baik, Eli B. Blevis, Mehmet M. Dalkilic, Alessandro Flammini, Dennis Patrick Groth, Esfandiar Haghverdi, Sue Kim, Youn-kyung Lim, Santiago David Schnell, Kalpana Shankar, Haixu Tan, Yuqing Wu

Graduate Advisor
Director of Research and Graduate Studies Martin A. Siegel*, (812) 856-1103, msiegel@indiana.edu
Interim Director, Bioinformatics Program, Gary Wiggins*, (812) 856-1086, wiggins@indiana.edu

Ph.D. Minor in Bioinformatics

Bioinformatics draws on knowledge and information from various fields such as biology, computer science, medicine, chemistry and physics. Students in relevant Ph.D. programs such as biochemistry and molecular biology, medical and molecular genetics, medicine, chemistry, or biology are the target audience for the Ph.D. minor in bioinformatics.

Requirements
A minor in bioinformatics requires 12 credit hours. The core curriculum consists of graduate level courses in informatics. Electives may be chosen based on personal interests from a broad list of courses in biology, chemistry, computer science, information science, and medical and molecular genetics.

The graduate bioinformatics courses in the School of Informatics assume a minimal knowledge of cell and molecular biology. That level of understanding could be gained with at least 6 undergraduate credit hours in molecular biology, genetics, or evolution.

Courses

Core Courses
INFO I500 Fundamental Computer Concepts for Informatics (3 cr.)
INFO I501 Introduction to Informatics (3 cr.)
INFO I502 Information Management (3 cr.)

INFO I531 Seminar in Health Informatics (1-3 cr.) Variable topic. Emphasis is on advanced topics and research in health informatics. Can be repeated with different topics, subject to approval of the Dean.

INFO I532 Seminar in Bioinformatics (1-3 cr.) Variable topic. Emphasis is on advanced topics and research in bioinformatics. Can be repeated with different topics, subject to approval of the Dean.

INFO I533 Seminar in Chemical Informatics (1-3 cr.) Variable topic. Emphasis is on advanced topics and research in chemical informatics. Can be repeated with different topics, subject to approval of the Dean.

INFO I534 Seminar in Human-Computer Interaction (1-3 cr.) P: Graduate Standing. Variable topic. Emphasis is on advanced topics and research in human-computer interaction. Can be repeated with different topics, subject to approval of Dean.

INFO I571 Chemical Information Technology (3 cr.) P: Consent of Instructor. Overview of chemical informatics techniques, including: chemical structure coding, chemical data representation, chemical database and search systems, molecular visualization and modeling techniques, and the development of chemical informatics software.

INFO I572 Computational Chemistry and Molecular Modeling (3 cr.) P: INFO-I571. Computer models of molecules and their behavior in gas and condensed phases; implicit and explicit salvation models; quantum and molecular mechanics; search strategies for conformational analysis, geometry optimization methods; information content from Monte Carlo and molecular dynamics simulations; QSAR; CoMFA; docking.

INFO I590 Topics in Informatics (1-3 cr.) Graduate standing. Variable topic. Emphasis is on new developments and research in informatics. Can be repeated with different topics, subject to approval of the Dean.

Required Graduate Course
BIOL L519 Bioinformatics: Theory and Application (3 cr.) Note: With approval of the instructor, advanced students could be allowed to substitute L529 for L519 Bioinformatics in Molecular Biology and Genetics: Practical Applications (4 cr.)