INFORMATICS

An interdisciplinary major at the
UNIVERSITY OF MICHIGAN

The concentration in Informatics requires 40 credit hours, including (a) three core courses for a total of 12 credits, (b) 4 courses in one of two flexible program tracks for a total of 14-16 credits, and (c) concentration electives for a total of 12-14 credits, depending upon the track selected. MATH 115, EECS 183 (or equivalent) and STATS 250 must be completed with a grade of C or better prior to declaring; SI/UC 110 can be completed with a C or better after declaring.

Concentration Prerequisites

[4] SI / UC 110 Introduction to Information Studies

[4] MATH 115 Calculus I (or equivalent)

[4] EECS 183 Elementary Programming Concepts (or equivalent)

[4] STATS 250 Introduction to Statistics & Data Analysis (or equivalent)

Concentration Core Courses [12 credits]

[4] EECS 203 Discrete Math

[4] EECS 280 Programming & Introductory Data Structures

[4] STATS 403 Introduction to Quantitative Research Method

Concentration Track & Elective Courses [28 total credits]

Data Mining & Information Analysis Track
[15-16 credits]
Available to declare through June 30, 2015

[4] MATH 217 Linear Algebra (pre-requisite MATH 215)
[4] STATS 406 Introduction to Statistical Computing
[4] STATS 415 Data Mining and Statistical Learning

One of the following quantitative courses:
[3] MATH 471 Introduction to Numerical Methods
[3] MATH 571 Numerical Methods for Scientific Computing I
[3] MATH / STATS 425 Introduction to Probability
[3] STATS 500 Applied Statistics I
[4] IOE 310 Introduction to Optimization Methods
[3] IOE 510 / MATH 561 / OMS 518 Linear Programming I
[3] IOE 511 / MATH 562 Continuous Optimization Methods
[3] IOE 512 Dynamic Programming

Informatics Electives [12-13 credits]

Eight [8] credits must be at the 300 level or higher, and all electives must be selected in consultation with a faculty advisor.

Life Science Informatics
[14-15 credits]

[4] BIOINF 527 Intro to Bioinformatics and Computational Biology

One of the following life science courses:
[3] BIOLOGY 305 Genetics
[3] MCDB 310 Introductory Biochemistry

Two of the following computational / quantitative courses:
[4] EECS 376 Foundations of Computer Science
[4] EECS 485 Web Database and Information Systems
[4] STATS 401 Applied Statistical Methods II
[3] STATS / BIOSTAT 449 Topics in Biostatistics
[4] STATS 470 Introduction to the Design of Experiments

Informatics Electives [13 -14 credits]

Four [4] credits must be at the 300 level or higher, and all electives must be selected in consultation with a faculty advisor.

INFORMATICS

Informatics Electives [12-14 credits]

Data Mining & Information Analysis

12-13 credits needed—8 credits at the 300 level or higher.

*BIOLCHEM/BIOINF/BIOMEDE/PATH 551 Proteome Informatics
*BIOINF 527 Intro to Bioinformatics & Computational Biology
*BIOINF 545/STATS 545/BIOSTAT 646 Molecular Genetic and
    Epigenetic Data
MATH 547/BIOINF 547/STATS 547 Probabilistic Modeling in
    Bioinformatics
MATH/STATS 548 Computations in Probabilistic Modeling in
    Bioinformatics
BIOSTAT/STATS 449 Topics in Biostatistics
*CMPLXSYS 510 Introduction to Adaptive Systems
EECS 281 Data Structures and Algorithms
EECS 376 Foundations of Computer Science
EECS 382 Internet-scale computing
EECS 476 Theory of Internet Applications
EECS 477 Introduction to Algorithms
EECS 481 Software Engineering
EECS 484 Database Management Systems
EECS 485 Web Database and Information Systems
EECS 487 Interactive Computer Graphics
EECS 489 Computer Networks
EECS 492 Introduction to Artificial Intelligence
EECS 493 User Interface Development
HON 352 Cyberscience
*IOE 510/MATH 561/OMS 518 Linear Programming I
*IOE 511/Math 562 Continuous Optimization Methods
*IOE 512 Dynamic Programming
MATH 416 Theory of Algorithms
MATH 425 Introduction to Probability
MATH 433 Introduction to Differential Geometry
MATH 451 Advanced Calculus I
MATH 462 Mathematical Models
MATH 463 Math Modeling in Biology
MATH 471 Introduction to Numerical Methods
MATH 525 Probability Theory
MATH 526 Discrete State Stochastic Processes
MATH 550 Introduction to Adaptive Systems
MATH 571 Numerical Methods for Scientific Computing I
MCDB 408 Genomic Biology
*SI 301 Models of Social Information Processing
*SI 422 Evaluation of Systems and Services
SI 508 Networks: Theory and Application
*SI 664 Database Design
*SI 583 Recommender Systems
*SI 631 Practical l Engagement Workshop: Content Management
    Systems
*SI 679 Aggregation and Prediction Markets
*SI 683 Reputation Systems
*SI 689 Computer-Supported Cooperative Work
STATS 401 Applied Statistical Methods II
STATS 408 Statistical Principles for Problem Solving: A Systems Ap-
    proach
STATS 425 Introduction to Probability
STATS 426 Introduction to Theoretical Statistics
STATS 430 Applied Probability
STATS 470 Introduction to the Design of Experiments
STATS 480 Survey Sampling Techniques
STATS 500 Applied Statistics I
STATS 525 Probability Theory

Life Science Informatics

13 -14 credits - 8 credits at the 300 level or higher.

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    Informatics
BIOINF 545/STATS 545/BIOSTAT 646 Molecular Genetic and
    Epigenetic Data
MATH 547/BIOINF 547/STATS 547 Probabilistic Modeling in
    Bioinformatics
MATH/STATS 548 Computations in Probabilistic Modeling in
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BIOSTAT/STATS 449 Topics in Biostatistics
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EECS 281 Data Structures and Algorithms
EECS 376 Foundations of Computer Science
EECS 382 Internet-scale computing
EECS 476 Theory of Internet Applications
EECS 477 Introduction to Algorithms
EECS 481 Software Engineering
EECS 484 Database Management Systems
EECS 485 Web Database and Information Systems
EECS 487 Interactive Computer Graphics
EECS 489 Computer Networks
EECS 492 Introduction to Artificial Intelligence
EECS 493 User Interface Development
*EECS 495 Patent Fundamentals for Engineers
HON 352 Cyberscience
MATH 416 Theory of Algorithms
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MCDB 411 Protein Structure and Function
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Effective Fall 2014