



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 four flexible program tracks for a total of 13-16 credits, and (c) concentration electives for a total of 12-16 credits, depending upon the track selected. MATH 115, EECS/SI 182 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. A grade of C- is lowest grade accepted for any other course taken to fulfill concentration requirements.

Concentration Prerequisites

- [4] SI / UC 110 Introduction to Information Studies
- [4] MATH 115 Calculus I (or equivalent)
- [4] EECS / SI 182 Building Apps. for Info. Environments (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 **OR**
- [4] EECS 282 Information Systems Design & Programming
- [4] STATS 403 Introduction to Quantitative Research Method

Concentration Track & Elective Courses [28 total credits]

1. Computational Informatics Track [16 credits]

May declare through Fall 2013

- * [4] EECS 280 Programming and Introductory Data Structures
- * [4] EECS 382 Internet-scale computing

Two of the following computational courses:

- [4] EECS 281 Data Structures and Algorithms
- [4] EECS 376 Foundations of Computer Science
- [4] EECS 388 Introduction to Computer Security
- [4] EECS 476 Theory of Internet Applications [in development]
- [4] EECS 477 Introduction to Algorithms
- [4] EECS 481 Software Engineering
- [4] EECS 484 Database Management Systems
- [4] EECS 485 Web Database and Information Systems
- [4] EECS 492 Introduction to Artificial Intelligence
- [4] EECS 493 User Interface Development
- [4] EECS 494 Computer Game Design and Development

****Informatics Electives [12 credits]**

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

**If EECS 282 was taken for the Core, EECS 280 may be used toward the Track requirement.*

**EECS 382 is no longer offered. Students are advised to complete EECS 281 as a substitute and complete 2 additional computational courses in the list.*

***If EECS 280 was taken for the Core, 12 credits of Track and 16 credits of approved electives are needed.*

2. Data Mining & Information Analysis Track [15-16 credits]

- [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]

3. 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 382 Internet-scale computing
- [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.

4. Social Computing [13 credits]

May declare through Fall 2013

- [4] PSYCH 280 Introduction to Social Psychology
- [3] SI 301 Models of Social Information Processing
- [3] SI 422 Evaluation of Systems and Services
- [3] SI 429 eCommunities: Analysis & Design of Online Interaction Environments

Informatics Electives [15 credits]

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

For more information, please contact the program coordinator

734.615.3789

informatics@umich.edu

<http://lsa.umich.edu/informatics/>

**439 West Hall
1085 South University
Ann Arbor, MI 48109-1107**

Effective Winter 2013

M INFORMATICS

Informatics Electives [12-16 credits]

Computational Informatics

If EECS 280 was taken for the Core, 12 credits of Track and 16 credits of approved electives are needed. 8 credits at the 300 level or higher.

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

EECS 281 Data Structures and Algorithms

EECS 376 Foundations of Computer Science

EECS 388 Introduction to Computer Security

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 494 Computer Game Design and Development

MATH 416 Theory of Algorithms

MATH 425 Introduction to Probability

MATH 525 Probability Theory

SI 301 Models of Social Information Processing

SI 422 Evaluation of Systems and Services

SI 429 eCommunities: Analysis & Design of Online Interaction Environments

SI 508 Networks: Theory and Application

*SI 532 Digital Government I: Information Technology and Democratic Politics

SI 539 Design of Complex Websites

SI 664 Database Design

SI 583 Recommender Systems

*SI 689 Computer Supported Cooperative Work

STATS 401 Applied Statistical Methods II

STATS 406 Introduction to Statistical Computing

STATS 408 Statistical Principles for Problem Solving: A Systems Approach

STATS 415 Data Mining

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

STATS 526 Discrete State Stochastic Processes

Internet Informatics

Electives are the same as Computational Informatics with addition of: EECS 280 unless EECS 280 has been taken to count as Core credit.

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 I 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 Approach

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

Informatics Electives [12-16 credits]

Life Science Informatics

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

BIOLCHEM/BIOINF/BIOMEDE/PATH 551 Proteome 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 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
*EECS 495 Patent Fundamentals for Engineers
HON 352 Cyberscience
MATH 416 Theory of Algorithms
MATH 425 Introduction to Probability
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
MCDB 408 Genomic Biology
MCDB 411 Protein Structure and Function
*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 631 Practical I Engagement Workshop: Content Management Systems
*SI 689 Computer-Supported Cooperative Work
STATS 401 Applied Statistical Methods II
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STATS 480 Survey Sampling Techniques
STATS 500 Applied Statistics I
STATS 525 Probability Theory
STATS 526 Discrete State Stochastic Processes

Social Computing

15 credits — 8 credits at the 300 level or higher.

*BIOSTAT 503 Introduction to Biostatistics
EECS 280 Programming and Introductory Data Structures
EECS 281 Data Structures and Algorithms
EECS 376 Foundations of Computer Science
EECS 382 Internet-scale computing
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EECS 477 Introduction to Algorithms
EECS 481 Software Engineering
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HON 352 Cyberscience
*IOE 310 Introduction to Optimization Methods
*IOE 510/MATH 561/OMS 518 Linear Programming I
*IOE 511/Math 562 Continuous Optimization Methods
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MATH 416 Theory of Algorithms
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SI 539 Design of Complex Websites
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STATS 470 Introduction to the Design of Experiments
STATS 480 Survey Sampling Techniques
STATS 500 Applied Statistics I
STATS 525 Probability Theory
STATS 526 Discrete State Stochastic Processes

Only one elective course in a track indicated with "" can be taken for elective credit.

Note: Alternative courses will be considered for elective credit. Please consult with an Informatics faculty advisor.

For more information, please contact the program coordinator:

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Ann Arbor, MI 48109-1107
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Email: informatics@umich.edu
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