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

- SI / UC 110 Introduction to Information Studies
- MATH 115 Calculus I (or equivalent)
- EECS / SI 182 Building Apps. for Info. Environments (or equivalent)
- STATS 250 Introduction to Statistics & Data Analysis (or equivalent)

### Concentration Core Courses [12 credits]

- EECS 203 Discrete Math
- EECS 280 Programming & Introductory Data Structures
- EECS 282 Information Systems Design & Programming
- 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

- EECS 280 Programming and Introductory Data Structures
- EECS 382 Internet-scale computing
  - Two of the following computational courses:
    - EECS 281 Data Structures and Algorithms
    - EECS 376 Foundations of Computer Science
    - EECS 388 Introduction to Computer Security
    - EECS 476 Theory of Internet Applications [in development]
    - EECS 477 Introduction to Algorithms
- EECS 481 Software Engineering
- EECS 484 Database Management Systems
- EECS 485 Web Database and Information Systems
- EECS 492 Introduction to Artificial Intelligence
- EECS 493 User Interface Development
- 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]

- MATH 217 Linear Algebra (pre-requisite MATH 215)
- STATS 406 Introduction to Statistical Computing
- STATS 415 Data Mining and Statistical Learning
  - One of the following quantitative courses:
    - MATH 471 Introduction to Numerical Methods
    - MATH 571 Numerical Methods for Scientific Computing I
    - MATH / STATS 425 Introduction to Probability
    - STATS 500 Applied Statistics I
    - IOE 310 Introduction to Optimization Methods
    - IOE 510 / MATH 561 / OMS 518 Linear Programming I
    - IOE 511 / MATH 562 Continuous Optimization Methods
    - IOE 512 Dynamic Programming

**Informatics Electives [12-13 credits]**

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

#### 3. Life Science Informatics [14-15 credits]

- BIOINF 527 Intro to Bioinformatics and Computational Biology
  - One of the following life science courses:
    - BIOLOGY 305 Genetics
    - MCDB 310 Introductory Biochemistry
  - Two of the following computational / quantitative courses:
    - EECS 281 Data Structures and Algorithms
    - EECS 376 Foundations of Computer Science
    - EECS 382 Internet-scale computing
    - EECS 485 Web Database and Information Systems
    - STATS 401 Applied Statistical Methods II
    - STATS / BIOSTAT 449 Topics in Biostatistics
    - 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

- PSYCH 280 Introduction to Social Psychology
- SI 301 Models of Social Information Processing
- SI 422 Evaluation of Systems and Services
- 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

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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
- MATH 416 Theory of Algorithms
- MATH 425 Introduction to Probability
- 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 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
- MATH 416 Theory of Algorithms
- MATH 425 Introduction to Probability
- MATH 510/MATH 561/OMS 518 Linear Programming I
- *MATH 511/Math 562 Continuous Optimization Methods
- *MATH 512 Dynamic Programming
- MATH 416 Theory of Algorithms
- MATH 425 Introduction to Probability
- MATH 433 Introduction to Differential Geometry
- MATH 451 Advanced Calculus
- 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
- MCD 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

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### 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/BIOINF 476/MATH 547 Probabilistic Modeling in Bioinformatics
- 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
- 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
- MCD 408 Genomic Biology
- MCD 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
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- 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

*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.

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### 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
- 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
- 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
- *IOE 512 Dynamic Programming
- MATH 416 Theory of Algorithms
- MATH 425 Introduction to Probability
- MATH 525 Probability Theory
- SI 508 Networks: Theory and Application
- *SI 532 Digital Government I: Information Technology and Democratic Politics
- SI 539 Design of Complex Websites
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- STATS 401 Applied Statistical Methods II
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- 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

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

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439 West Hall
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Ann Arbor, MI 48109-1107
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Web: http://lsa.umich.edu/informatics

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