## ELECTIVES FOR CS UNDERGRADUATES

### ALGORITHMS AND COMPLEXITY
- 15354*: Computational Discrete Mathematics
- 15453*: Formal Languages, Automata, and Computability
- 15456*: Computational Geometry
- 21301: Combinatorics

### LOGIC & LANGUAGES
- 15317*: Constructive Logic
- 15414*: Bug Catching: Automated Program Verification and Testing
- 21300: Basic Logic
- 80310: Formal Logic

### SYSTEMS
- 15410*: Operating System Design and Implementation
- 15411*: Compiler Design
- 15418*: Parallel Computer Architecture and Programming
- 15440*: Distributed Systems
- 15441*: Computer Networks

### APPLICATIONS
- 05391*: Designing Human Centered Software
- 10601*: Introduction to Machine Learning
- 11411*: Natural Language Processing
- 15313*: Foundations of Software Engineering
- 15322*: Introduction to Computer Music
- 15381*: Artificial Intelligence: Representation and Problem Solving
- 15462*: Computer Graphics
- 16384*: Robot Kinematics and Dynamics

### UNDERGRADUATE SCS ELECTIVES

**in addition to SCS courses marked * above**

- 02450: Automation of Biological Research
- 02512: Computational Methods for Biological Modeling and Simulation
- 05392: Interaction Design Overview
- 05410: User-Centered Research and Evaluation
- 05413: Human Factors
- 05430: Programming Usable Interfaces
- 05431: Software Structures for User Interfaces
- 05452: Service Design
- 05499: Special Topics in HCI
  (sections: Crowd Computing, Twitch Plays Game Design, Computing for Good, Persuasive Design, Accessibility)
- 05588: Undergraduate Small Group Study in HCI
  (Campus Stress As a Wicked Problem)
- 08530: Pervasive and Ubiquitous Computing
- 11291 (tentative): Computational Intelligence Lab (formerly 15-291)
- 11344/05434: Machine Learning in Practice
- 11421: Grammars and Lexicons
- 11441: Machine Learning for Text Mining
- 11442: Search Engines
- 11492: Speech Processing
- 15214: Principles of Software Construction: Objects, Design & Concurrency
- 15239: Special Topic: Software Development for Social Good
- 15294: Rapid Prototyping Technologies [IDEATE Course] [Mini-1: 5 units]**
- 15295: Competition Programming and Problem Solving [5 units]**
- 15319: Cloud Computing
- 15394: Intermediate Rapid Prototyping [IDEATE Course] [Mini-2: 5 units]**
- 15412: Operating System Practicum
- 15421: Information Security and Privacy
- 15437: Web Application Development
- 15445: Database Systems (NEW!)
- 15458: Discrete Differential Geometry (NEW!)
- 15463: Computational Photography
- 15487: Introduction to Computer & Network Security & Applied Cryptography
- 15539: Independent Study in Computer Science Pedagogy
- 16362: Mobile Robot Programming Laboratory
- 16375: Robotics for Creative Practice [IDEATE Course]
- 16445: Robotics Systems Engineering

**NOTE: Courses less than 9 units should be paired together to form a full SCS elective of at least 9 units.

Revised 4/11/2017, 4:30PM