**UNDERGRADUATE CONSTRAINED ELECTIVES**

### ALGORITHMS AND COMPLEXITY
- 15455* Undergraduate Complexity Theory
- 21301 Combinatorics

### LOGICS AND 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* Machine Learning
- 11411* Natural Language Processing
- 15313* Foundations of Software Engineering
- 15322* Introduction to Computer Music
- 15381* Artificial Intelligence: Representation and Problem Solving
- 15415* Database Applications
- 15462* Computer Graphics
- 16384* Robot Kinematics and Dynamics

### PROBABILITY
- 15359 Probability and Computing
- 21325 Probability
- 36217 Probability Theory and Random Processes
- 36225 Introduction to Probability Theory

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**UNDERGRADUATE SCS ELECTIVES**

In addition to SCS courses marked * above:

- 02450 Automation of Biological Research
- 02512 Computational Methods for Biological Modeling and Simulation
- 02530 Cell and Systems Modeling
- 05435 Advanced Fabrication Techniques for HCI
- 05497 Special Topics in HCI (Mini-2; 6 units)**
- 05499 Special Topics in HCI
- 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 and Concurrency
- 15291 Special Topic: Applied Computational Intelligence Lab
- 15294 Special Topic: Rapid Prototyping Technologies (Mini-1 and Mini-2; 5 units)**
- 15295 Competition Programming and Problem Solving (5 units)**
- 15319 Cloud Computing
- 15387 Computational Perception
- 15388 Practical Data Science
- 15390 Entrepreneurship for Computer Science
- 15412 Operating Systems Practicum
- 15421 Information Security and Privacy
- 15437 Web Application Development
- 15463 Computational Photography
- 15487 Introduction to Computer & Network Security & Applied Cryptography
- 16362 Mobile Robot Programming Laboratory

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