## ELECTIVES FOR CS MAJORS

### ALGORITHMS AND COMPLEXITY
- **15455***: Undergraduate Complexity Theory
- **21301**: Combinatorics
- **21484**: Graph Theory

### LOGIC & LANGUAGES
- **15312**: Foundations of Programming Languages
- **15316**: Software Foundations of Security and Privacy
- **17355**: Program Analysis (currently approved for Spring 2018 only)
- **80311**: Undecidability and Incompleteness (for students entering CMU prior to 2017)

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

### APPLICATIONS
- **02250**: Introduction to Computational Biology (for students entering CMU in 2017)
- **02510**: Computational Genomics (for students entering CMU prior to 2017)

### SCS UNDERGRADUATE ELECTIVES (in addition to SCS courses marked * above)
- **02425**: Computational Methods for Proteogenomics and Metabolomics
- **02450**: Automation of Biological Research
- **02518**: Computational Medicine
- **05320**: Social Web
- **05392**: Interaction Design Overview
- **05410**: User-Centered Research and Evaluation
- **05418**: Design Educational Games
- **05430**: Programming Usable Interfaces
- **05435**: Advanced Fabrication Techniques for HCI
- **05470**: Digital Service Innovation
- **05540**: Rapid Prototyping of Computer Systems
- **05588**: Undergraduate Small Group Study in HCI (Campus Stress As a Wicked Problem)
- **08303**: Cryptocurrencies, Blockchains and Applications
- **08421**: Building User-focused Sensing Systems
- **08534/05436**: Usable Privacy and Security
- **08537**: Advances in Artificial Intelligence for Social Good
- **10405**: Machine Learning with Large Datasets
- **11344/05434**: Machine Learning in Practice
- **11441**: Machine Learning for Text Mining
- **11442**: Search Engines
- **15294**: Rapid Prototyping Technologies [IDEATE Course] [Mini-1: 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
- **15394**: Intermediate Rapid Prototyping [IDEATE Course] [Mini-2: 5 units]**
- **15400**: Research Practicum in Computer Science
- **15412**: Operating System Practicum
- **15417**: HOT Compilation
- **15465**: Animation Art and Technology
- **15494**: Cognitive Robotics: The Future of Robot Toys
- **15503**: Introduction to Cryptography
- **15539**: Independent Study in Computer Science Pedagogy
- **16264**: Humanoids
- **16299**: Introduction to Feedback Control Systems
- **16311**: Introduction to Robotics
- **16350**: Planning Techniques for Robotics
- **16374**: Art of Robotic Special Effects [IDEATE Course]
- **16425**: Medical Image Analysis
- **16455**: Human-Machine Virtuosity
- **17214**: Principles of Software Construction: Objects, Design & Concurrency
- **17356**: Startup Engineering
- **17413**: Software Engineering Practicum
- **17437**: Web Application Development

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

Revised 11/03/2017, 12:30PM