Graduate Courses in Computer Science

CS 405G Numerical Analysis I
3 hours
Prerequisites: MATH 237 or 307 or 310; and CS 180 or CS 230 or permission of instructor. Crosslisted with Math 405G.

CS 406G Numerical Analysis I
3 hours
Prerequisites: MATH 237, 307 and 331; and either MATH 405 or CS 405. Crosslisted with Math 406G.

CS 443G Database Management Systems
3 hours
Prerequisites: CS 280 and CS 360 or permission of instructor. Organization and management of large data files, various database paradigms, database design theory, query optimization, physical database design, database security, distributed databases. Credit will not be given for CS 443 or CS 443G once credit has been received for CS 543.

CS 445G Operating Systems II
3 hours
Prerequisite: CS 425. Advanced study of modern operating system theory and practice. Topics include distributed system structures and coordination, distributed file systems, and protection and security.

CS 446G Interactive Computer Graphics
3 hours
Prerequisites: CS 338, MA 307. Elementary topics in interactive computer graphics. Includes both input and display devices and techniques for 2-D and 3-D transformations, as well as difficulties encountered in these areas. Computing assignments will emphasize interaction, data structures, and applications to various disciplines.

CS 450G Computer Networks
3 hours
Prerequisite: CS 425 or permission of instructor. An advanced study of the design and implementation of computer networks. Topics include network topologies, switching techniques, routing, end-to-end protocols, quality of service, and other advanced topics, e.g. wireless networks and multimedia networks. Credit will not be given for CS 450 or CS 450G once credit has been received for CS 550.

CS 456G Artificial Intelligence
3 hours
Prerequisites: CS 338, 360. Problems having no plausible algorithmic solution, their computer representations and solutions which usually involve heuristics.

CS 460G Software Engineering II
3 hours
Prerequisite: CS 360 or equivalent. Examination of critical theoretical problems underlying software engineering, including the rigorous treatment of software metrics, cost-estimating, object-oriented design, real
time systems, etc.

CS 475G Topics/Computer Science
1-3 hours
Prerequisite: Permission of instructor. Significant problems and developments in computer science. May be repeated for 6 hours.

CS 500 Research Methods/Computer Science
3 hours
A graduate level overview of problem-solving techniques and skills for computer-based systems including
solution design and implementation. Topics include a team project to develop practical skills in documentation, communication, and module interfacing. The course may be used only in fulfilling the research tool requirement and may not be used toward an undergraduate degree in computer science.

CS 530 Automata Theory and Compiler Construction
3 hours
Prerequisite: CS graduate student status. The basic theoretical concepts of the computer viewed as an automaton. Automated tools for scanning and parsing will be studied to show how regular expressions and BNF languages are used in compiler construction and other computer applications.

CS 541 Theory of Computation
3 hours
Prerequisite: CS 530 An advanced study of the theory of computing, including languages, finite automata, grammars, Turing machines, complexity and computability.

CS 543 Advanced Database Systems
3 hours
Prerequisite: CS 443 or equivalent. An advanced study of data and information management. Topics include database application development, XML data management, data storage and indexing, transaction management, parallel and distributed databases, data warehousing and decision support.

CS 544 Compiler Theory / Design
3 hours
Prerequisite: CS 500 and CS 530 Formal properties of programming languages and the techniques used to construct compilers for these languages. Topics include lexical analysis, syntax analysis, symbol table

construction, semantic analysis, code generation, and optimization. Students will complete a programming project.

CS 545 Systems Programming
3 hours
Prerequisite: CS 445. A study of the system call interface of operating systems. Topics include low level
file I/O, signal handling, interprocess communication, distributed communication, and process management. Students will write several systems level programs. The student develops a small operating system.

CS 549 Analysis of Algorithms
3 hours
Prerequisite: CS 338. Methods (algorithms) for solving a variety of problems on computers and the relative efficiency of these algorithms.

CS 550 Advanced Topics in Computer Networks
3 hours
Prerequisites: CS 450G or equivalent. Advanced topics in computer networks. Selected topics may include embedded systems, mobile computing, or other current development in computer networks. Students can get up to 6 credits for this course under different topics with the permission of the academic advisor. Students will not get credit for CS 450G if they have already taken CS 550 or are currently taking CS 550.

CS 560 Software Engineering and Project Management
3 hours
Prerequisite: CS 360 Survey of modern software development techniques, including traditional and agile
approaches. Topics include requirement definition, process modeling, design methods, human factor issues, and an introduction to software project management. Student will be required to model a project using Unified Modeling Language.

CS 562 Parallel and Distributed Computing
3 hours
An introduction to parallel and distributed computing. The development, implementation, and analysis of parallel algorithms will be studied.

CS 565 Data Mining Techniques and Tools
3 hours
Prerequisite: CS 443G or equivalent. The theory and application of data mining, roots of data mining,
preprocessing techniques for raw data, classification algorithms and techniques, clustering algorithms and techniques, association rule mining algorithms and techniques.

CS 568 Computer Vision
3 hours
Prerequisites/corequisites: CS 380 or CS 500. A study of the techniques and applications of computer vision. Topics include pattern recognition, filtering, texture, segmentation, recognition, 3D vision and case studies. Important algorithms will be implemented by students.

CS 570 Security in Computing
3 hours
Prerequisite: CS 445G or CS 450G or equivalent. Essential techniques in cryptography and computer security. Privacy issues in a broad range of computing contexts. Topics include program security, trusted operating systems, database/data mining security, and network security.

CS 595 Advanced Topics/Computer Science
1-3 hours
Prerequisite: 9 hours of CS and permission of instructor. Significant problems and current developments in computer science. May be repeated with a different topic for a maximum of 6 hours.

CS 599 Thesis Research/Writing
1-6 hours (6 total)
No course description is available.

CS 600 Maintain Matriculation
1-6 hours
No course description is available.