

Computer Science

Prerequisite courses must be passed with a minimum grade of C.

LOWER DIVISION

CS 131. Introduction to Computer Science (4). Concepts; historical background; computer systems; algorithmic processes; control structures; scalar data structures and arrays; structure programming in C++. [Prereq: MATH 115 or MPT3 15 or math code 50. Weekly: 3 hrs lect, 2 hrs lab.]

CS 132. Introduction to Computer Science II (3). An introduction to the domain of software design, including abstract data types, specifications, complexity analysis, file organization, sorting and searching, and database organization. [Prereq: CS 131 or IA. Weekly: 2 hrs lect, 2 hrs lab.]

CS 233. Computer Organization (3). Principles of computer architecture from a layered point of view, including data representation, machine language execution, addressing modes, and symbolic assembly language. Fundamental notions of operating systems, interfacing, and communication are also introduced. [Prereq: CIS 132 or IA. Weekly: 2 hrs lect, 2 hrs lab.]

CS 234. Computer Architecture (3). A study of the design of computers. Topics include the design of combinatorial and sequential circuits, design methodology of a basic computer, central processor organization, microprogramming, memory organization, input-output organization, and arithmetic processor design. [Prereq: CS 233.]

CS/CIS 235. Java Programming (3). Object orientation; event handling; abstract windowing toolkit applets; applications; Java database connectivity; applications programming interface and Java doc. [Prereq: CS 131 or CIS 230. Service fee.]

CS 236. Algorithms (3). Introduction to key algorithmic concepts and constructs. Algorithmic development, tracing, and analysis. Algorithm construction and analysis in both non-executable contexts and within programming environments. [Prereq: MATH 253, CS 132.]

CS/CIS 240. Visual Basic Programming (3). Concepts in object-oriented, event-driven graphic user interface (GUI) programs to develop/implement computer applications for Windows environment. [Prereq: CS 131 or CIS 130 or 230 or 235 or 291 or IA.]

UPPER DIVISION

CS/CIS 315. Database Design & Implementation (3). Design/implementation concepts for relational model. Enterprise and entity-relationship modeling. Schema development: normalization; SQL data manipulation and data manipulation language; user-defined types, rules, and triggers to support the schema. Features to support integrity, ease of use, and control: concurrency,

locking, distribution, performance. [Prereq: CIS 230, 250, 260 or CS 233; MATH 253 recommended. Weekly: 2 hrs lect, 2 hrs lab.]

CS/CIS 318. Programming Database Applications (3). 4th generation language tools. Ad hoc interaction with database using SQL. Program SQL scripts; design applications using forms and menus; program an application using form and menu structures; program with a report generator; access the database from a procedural language. [Prereq: CIS/CS 315, MATH 253. Weekly: 2 hrs lect, 2 hrs lab.]

CS 334. Operating Systems and Architecture (3). An in-depth treatment of computer architecture, technology choices, and the operating system interface with the hardware, the application, and the system user. [Prereq: CS 233 or IA. Weekly. Rep.]

CS 335. Programming Languages: Principles and Paradigms (3). An in-depth treatment of programming languages, including their history, data types, data control, sequence control, run-time storage, language translation, and semantics. Paradigms include procedural, functional logic, and object-oriented programming. [Prereq: CS 233 or IA. Rep.]

CS/CIS 372. Telecommunications (3). Data communications principles and applications; administering and managing communications systems. Protocols, networks, communication hardware, design, performance analysis. [Prereq: CIS 130 and 250 with grade of C or CS 233, or IA for students from other disciplines. Weekly: 2 hrs lect, 2 hrs lab.]

CS/CIS 373. Network Design & Implementation (3). Comprehensively examine network design standards, communication protocols, configuration and management methods, security, and traffic analysis. Practical lab activities with tools and equipment. [Prereq: CIS 110 or CS 131 (C). CIS/CS 372 recommended.]

CS 434. Systems Software (3). An in-depth study of systems software to include assembler, macroprocessor, linkage editor, text editor, interactive debugger. Also includes language translation and operating systems concepts including concurrent processes, synchronization, deadlock, processor management, memory management, I/O subsystem, and file management. [Prereq: CS 132 and CS 334 or IA. Weekly: 2 hrs lect, 2 hrs lab.]

CS 435. Software Engineering (3) Introduction to software engineering principles, including discussion of development methodologies, requirements, analysis, project planning, software design, construction, management, and quality assurance. [Prereq: CS 334, CS 335.]

CS 436. Theory of Computation (3). A study of formal models of computation, such as finite

state automata, pushdown automata, and Turing machines. Elements of formal languages to be examined include regular expressions, context-free languages, recursively-enumerable languages, undecidability, and NP-completeness. [Prereq: CS 236; CS 335 recommended.]

CS/CIS 475. Geographic Information Systems: Spatial Analysis & Modeling (3). GIS applications. Vector- and raster-based systems. Layering techniques, representation methods, analytical operations, information management/integration. [Weekly: 2 hrs lect, 2 hrs lab.]

CS/CIS 480. Selected Topics in Computer Science (1-4). May include object-oriented programming, artificial intelligence programming, computer graphics, or specialized application tools. [Possible mandatory CR/NC. Weekly: meets 1 hr per unit as lect (CIS/CSB); 2 hrs per unit lab (480L); or combination of 2 hrs lect, 2 hrs lab (480). Rep with different topics.]

CS/CIS 482. Internship (1-4). Supervised experience in business, governmental, or service agencies, matching theory with practice. [CR/NC. Prereq: IA. Weekly: 3 hrs per unit of credit.]

CS/CIS 492. Systems Design & Implementation (3). Apply computer programming and implementation concepts to comprehensive group project. Use management planning and scheduling tools; practice assessing and reporting progress; develop, test, quality assure software; develop documentation. CIS majors only. [Prereq: CIS/CS 318, 350, 372 and 450. All prereqs must be completed with C or above. Weekly: 2 hrs lect, 2 hrs lab.]

CS/CIS 499. Directed Study (1-4). Individual study on selected topics. Open to advanced students with consent of faculty sponsor and DA.