aquatic animals and the environment.
7628 Biomedical Physiology I (3) F Spring: consent of instructor. Physiological mechanisms underlying the cardiovascular and gastrointestinal systems of domestic species.
7629 Biomedical Physiology II (3) F Spring: consent of instructor. Physiological mechanisms underlying the respiratory and renal systems of domestic species; emphasis on systems physiology.
7630 Biomedical Pharmacology (4) F Spring: vertebate physiology, biochemistry, or equivalent; consent of instructor. Pharmacology of toxicological, therapeutic, and therapeutic utility of drugs in animals.

COMPARATIVE LITERATURE • CPLT
General education courses are marked with star (*).

★ 2201 Introduction to World Literary Traditions (3) Also offered as ENGL 2201. Study of the world's most influential literature from the ancient to the modern and non-Western traditions, from beginnings to 1650; emphasis on reading and writing about literature.
★ 2202 Introduction to Modern World Literature (3) Also offered as ENGL 2202. Overview of the literature of the world from 1650 to the present day; introduction of the concept of world literature.
7010 Research Methods and Bibliography (3) Instruction in methods of research; specific projects in bibliography geared to the study of a specific comparative literary language.
7102 History and Theory of Criticism (3) Historical survey of major works in literary theory from the classical through the modern period designed to ground subsequent work in criticism.
7120 Topics in Theory of Criticism (3) May be taken for a max. of 9 hrs. of credit when topics vary. Study of a particular school of critical thought as it applies to specifically comparative literary scholarship.
7130 Topics in Comparative Literature (3) May be taken for a max. of 9 hrs. of credit when topics vary. Basic techniques of studying a literary topic through the comparative method; examples taken from different national literary traditions.
7140 Topics in the Interdisciplinary Study of Literature (3) May be taken for a max. of 9 hrs. of credit when topics vary. Relationship between literature and other domains, such as art, religion, and film.
8000 Thesis Research 1 (1-2 sem.) "SY'VU" rating.
8900 Independent Study 1 (1-3) May be taken for a max. of 3 hrs. in the master's program and 9 hrs. in the doctoral program.
9000 Dissertation Research 1 (1-2 sem.) "SY'VU" rating.

COMPUTER SCIENCE • CSC
General education courses are marked with star (*).

1100 Computers in Society (3) Prereq.: credit in MATH 1021 or registration in MATH 1023. 2 hrs. lecture; 2 hrs. lab. Credit will not be given for this course and ISDS 1100 or LIS 1101 or registration in MATH 1023. 2 hrs. lecture; 2 hrs. lab. Credit will not be given for this course and MATH 1021 or 1022 or 1023. Not for credit for computer science majors. Introduction to Thinking with a high level language with applications in elementary statistics.
1250 Introduction to Programming (3) Prereq.: credit or registration in MATH 1021 or 1022 or 1431 or 1435 or 1550. Credit will not be given for both this course and CSC 1248 or 1253 or 1530 or ISDS 3107. Fundamentals of programming.
3102. Information security's role, threats, elements of cryptography; protocols, architectures, and technologies for secure systems; and computer security. 4002 Fundamental Computer Science for Teachers (3) Prereq.: ELRC 4507 (or prior programming experience) and credit in an alternate course numbered 2000 or above. Also offered as ELRC 4512. Advanced programming techniques; emphasis on structured programming, software and hardware architectures, graphics and other topics to prepare students to teach computer science in secondary schools.

4700 Special Topics in Computer Science (3) Prereq.: CSC 3102 or permission of department. May be taken for a max. of 9 cr. hrs. when topics vary. Total hrs earned in CSC 2700 and 4700 should not exceed 15 cr. hrs. Specialized areas of current interest in computer science.

4890 Introduction to Theory of Computation (3) Prereq.: CSC 2259. Introduction to finite automata, regular expressions and languages; push-down automata and context-free languages; selected advanced language theoretical topics; emphasis on P, PSPACE, and Nlog; characterization of polynomially boundable predicates.

4999 Advanced Independent Undergraduate Research (1-3) Prereq.: consent of department chair. May be taken for a max. of 4 hrs. of credit. Individual readings, conferences, and program development in computer science.

6100 Advanced Elements of Computer Science for Teachers (3) Prereq.: computer science programming course or by permission of instructor. Advanced programming techniques using a high-level, structured language; data structures and computer systems software.

7000 Computer Architecture (3) Prereq.: CSC 7002 or equivalent. Background in electronics not required. Functional architectural description of computer systems using design and analysis of instruction set architecture with components including coverage of specific instruction sets; languages; and their influence on performance, concurrency control, distributed systems, and control in operating systems; languages that support program verification techniques; and in-depth study of applicable areas.

7103 Advanced Operating Systems (3) Prereq.: CSC 4103. Concurrent processes; memory, consistency, and operation-oriented models; concurrent, distributed, and network programming; distributed operating systems; synchronization and deadlock detection in distributed systems.

7120 Performance Evaluation of Computer and Communication Systems (3) Prereq.: CSC 4103. Techniques and computer simulation; data structures and algorithm design techniques for geometric problems; geometric searching; convex hulls; Voronoi diagrams; proximity; intersections of geometric objects; applications of computational geometry.

7381 Computational Aspects of VLSI CAD (3) Prereq.: CSC 7000 or equivalent. Overview of VLSI design and fabrication process; abstract model of VLSI; combinatorial optimization algorithms; circuit partitioning; and floor planning; circuit compaction; and routing algorithms.

7400 Data Base Management Systems (3) Prereq.: CSC 4890. Database design and implementation; recovery techniques; and in-depth study of database management systems.

7420 Parallel and VLSI Computation (3) F Prereq.: CSC 5102. Theoretical aspects of the design and algorithm design for parallel computation; physical implementation of VLSI chips.

7442 Data Mining and Knowledge Discovery (3) Prereq.: CSC 7153. Introduction to data mining and knowledge discovery in databases; data cleaning, statistical techniques, association rule learning; time series and spatial data mining algorithms; and information retrieval algorithms.

7443 Scientific Information Visualization (3) Prereq.: CSC 7000 or equivalent. Study of computer visualization techniques, methods, and tools used for explaining and understanding information; includes visualization algorithms, techniques, and applications.

7444 Advanced Artificial Intelligence (3) Prereq.: CSC 4444. Temporal and nonmonotonic logic; truth maintenance systems; probabilistic reasoning; deductive databases; automated learning, planning, and tutoring; and knowledge engineering.

7446 Soft Computing (3) Prereq.: CSC 4446 or permission of instructor. Student presentation of soft computing; fuzzy sets and fuzzy logic, neural computing, and evolutionary programming; applications in image processing, diagnosis and analysis, and other areas; software and simulation tools for problem solving in the soft-computing arena.

7450 Programming and Performance Evaluation of Parallel Computers (3) Prereq.: CSC 3102 or equivalent and CSC 7300. Parallel programming techniques; message passing and process synchronization; performance evaluation; prediction of parallel architectures and algorithms; scalability analysis.

7481 Information Retrieval Systems (3) Prereq.: CSC 3102 or equivalent. Also offered as LIS 7610. Topics include commercial and available retrieval systems, text content analysis, query processing models and current research problems.

7500 System Modeling and Computer Simulation (3) Prereq.: CSC 2263 or equivalent. Construction and use of mathematical models for estimation; compartmental models; simulation techniques; applications of simulations; examples and case studies from physical, social, and life sciences; engineering, business, and information sciences.

7501 Advanced Computer Networks (3) Prereq.: CSC 7500. Design and implementation of computer networks; routing algorithms and protocols; switch and router architectures; traffic flow management and error control; scheduling and queuing models for packet switching; and scheduling and queuing theory applied to computer networks; selected issues in high-speed network design.

7502 Advanced Network and Network Security (3) Prereq.: CSC 4601. Secret sharing; secret sharing homomorphism; verifiable secret sharing; electronic voting; advanced cryptography; anonymity on the net; wireless security.

7540 Distributed Systems (3) Prereq.: CSC 4103. Networking and inter-networking; client-server model; remote procedure calls; distributed systems; distributed file systems; transaction-processing techniques; and distributed systems for high performance computing.

7560 Computational Methods (3) Prereq.: CSC 4362 or equivalent. Synthesis, implementation, and analysis of numerical algorithms; algorithm cost. Introduction to the design and analysis of scientific computing; important algorithms for parallel computation; high performance computing.

7601 Design Issues in High-Speed Networks: Multicast, Pricing and Control (3) Prereq.: CSC 4501. Multicasting architectures, protocols, and applications; ATM and Internet systems; scalable reliable multicast; distributed sensor networks; Internet pricing and economics of communication; game theoretic approaches to congestion.

7701 Sensor Networking Concepts (3) Prereq.: CSC 4601 or permission of instructor. Finite difference schemes for molecular dynamics; classical deterministic simulations; combinatorial optimization; algorithms for quantum molecular dynamics; scientific applications in high performance computing.

7702 High Performance Computing III (3) V Prereq.: CSC 6606 or equivalent. Time and space efficient schemes for computation; efficient schemes for massive parallel computers; simulated annealing and routing algorithms.

7703 Topics in Computer Science (3) May be taken for a max. of 12 hrs. of credit when topics vary. Specialized areas of current interest in computer science.

7705 Sensor Networking Concepts (3) Prereq.: CSC 4501 or 7501. Self-organizing sensor networks; querying and data aggregation; routing; energy-efficient routing in sensor networks.

7720 Telecommunications Networks (3) Prereq.: CSC 4501. The convergence of traditional voice-centric telecommunication networks; applications-focused distributed middleware architectures; and the Internet; traditional telecommunications; telephone and ISDN architectures; Signal System 7; distribution of application processing in the Advance Intelligent Network; new frameworks for Internet-based core architectures; proposals to generalize the existing telephony architecture.

7800 Computer Science Research Seminar (1) V May be taken for a max. of 2 hrs. of credit when topics vary. Specialized areas of current interest in computer science.

7999 Selected Readings in Computer Science (1-3) Prereq.: consent of department chair. May be taken for a max. of 6 sem. hrs. of credit.

9000 Dissertation Research (1-12 per sem.) "S"/"U" grading.

CONSTRUCTION MANAGEMENT • CM

Registration in any course above CM 2112 is restricted to students admitted to a senior college with a declared CM major or minor. A grade of "C" or better is required in all CM prerequisite courses.

1010 Construction Graphics and Numerical Control (3) Credit or registration in MATH 1750. 2 hrs. lab. Prereq.: 2 hrs. lab. Graphic communication concepts and techniques relating to construction processes and nomenclature.

1020 Engineering Graphics for Mechanical Engineering (2) 1-2 hrs. lab. Credit will not be given for both this course and CM 1020. Not open to construction management majors. Conception and drafting of mechanical engineering drawings; introduction to communication of creative design concepts; introduction to engineering drafting and USA Standards Institute standards; freehand sketching; computer-aided drafting systems; freehand sketching; computer-aided drafting systems; freehand sketching; computer-aided drafting systems; freehand sketching; computer-aided drafting systems.