COMPUTER SCIENCE (CSEN)

CSEN 5303 Adv Topics in Computer Sci 1-3 SCH (1-3)
One or more advanced topics. May be repeated when topic changes. (Credit may not be obtained for both CSEN 5303 and EEEN 5303 courses if the topic is the same.)

CSEN 5304 Adv Computer Architecture 3 SCH (3-0)
Introduces the design principles of modern computers. The topics include RISC and CISC architecture, interconnection networks, multiprocessors and multiprocessor systems, dataflow and systolic arrays, future outlook for architectures and the basics of parallel algorithms. Credit may not be obtained in both CSEN 5304 and EEEN 5304.

CSEN 5305 Graduate Research Project 3 SCH (3)
Designed for project option students and requires completion of research project. Prerequisite: departmental approval. May be repeated for a maximum of 6 semester hours.

CSEN 5306 Thesis 3 SCH (3)
Designed for thesis option students. The course requires completion of thesis research. Prerequisite: departmental approval. May be repeated for maximum of 6 semester hours.

CSEN 5313 Compiler Design 3 SCH (3-0)
This course introduces the structure of a compiler and the various techniques used for designing a compiler. Topics include grammars, parsing methods, implementation details and translator writing systems.

CSEN 5314 Database Systems 3 SCH (3-0)
Basic concepts and architecture of database systems, ER model, relational model, relational algebra, SQL, ER-to-rational mapping, functional dependencies normalization, database design process, object-oriented database. Distributed database. Prerequisite: graduate standing in computer science or another engineering discipline.

CSEN 5322 Operating systems 3 SCH (3-0)
Operating systems principles; procedures and their implementation; protection, concurrent, cooperating and communicating processes; storage management; resource allocation; scheduling; file systems; and system design issues.

CSEN 5323 Computer Comm Networks 3 SCH (3-0)
The International Standards Organization (ISO) Open Systems Interconnection (OSI) model as a framework for the study of computer communication networks. Data communication. Functions and protocols of physical layer, medium access sublayer, link layer, network layer and transport layer. Case studies. ISDN. Prerequisite: graduate standing in computer science or electrical engineering.

CSEN 5325 Software Engineering 3 SCH (3-0)
Covers development life-cycle models, inspection process, software quality metrics, testing, validation metrics, estimation and scheduling. Prerequisite: graduate standing in engineering.

CSEN 5333 Real Time Systems 3 SCH (3-0)
Characteristics of systems and techniques used in real time computer applications. Scheduling theory, verification and design techniques including simulation and probabilistic models. Prerequisite: graduate standing.

CSEN 5334 Algor Graph and Perfect Graphs 3 SCH (3-0)
Introduction to new results in algorithmic graph theory and perfect graphs. Presentation of algorithms and applications associated with different structured families of graphs. Survey of new research directions. Prerequisite: graduate standing.

CSEN 5336 Analysis of Algorithms 3 SCH (3-0)
Introduction of the design and analysis of computer algorithms. Topics include asymptotic efficiency; a survey of useful algorithms for sorting, information retrieval, and graphs; paradigms for algorithm design; and a brief introduction to complexity classes including NP. Prerequisite: graduate standing.

CSEN 5337 Theory of Computation 3 SCH (3-0)
Examination of Turing machine theory; decidability; reduction of one problem to another; complexity theory; and NP-completeness. Analysis of the intrinsic difficulty of entire classes of problems. Prerequisite: graduate standing.

CSEN 5339 Embedded System Design 3 SCH (3-0)
Embedded system architecture and programming. Role of microprocessors, input/output, analog and digital interfacing, and peripherals in hardware integration. (Credit may not be obtained for this course and for EEEN 5339. Prerequisites: EEEN 5333 and EEEN 5330 (or approval of instructor).

CSEN 5350 Application of Neural Networks 3 SCH (3-0)
Includes a review of network architectures, perceptron, linear networks, back-propagation and radial basis networks. A real-time laboratory experience in seeing the application of neural networks. Prerequisite: graduate standing in Computer Science. (Credit may not be obtained in both CSEN 5350 and EEEN 5350.)

CSEN 5401 Adv Probs in Computer Sci 1-4 SCH (1-4)
Individual or group research on advanced problems conducted under the supervision of a faculty member. Maximum credit 8 semester hours.