CSE 6001. Introduction to Computational Science and Engineering. 1 Credit Hour.
This course will introduce students to major research areas in computational science and engineering.

CSE 6010. Computational Problem Solving for Scientists and Engineers. 3 Credit Hours.
Computing principles, computer architecture, algorithms and data structure; software development, parallelism. No credit for graduate students or undergraduates in Computer Science or Computational Media.

CSE 6040. Computing for Data Analysis: Methods and Tools. 3 Credit Hours.
Computational techniques needed for data analysis; programming, accessing databases, multidimensional arrays, basic numerical computing, and visualization; hands-on applications and case studies. Credit is not awarded for both CSE 6040 and CX 4240.

CSE 6140. Computational Science and Engineering Algorithms. 3 Credit Hours.
This course will introduce students to designing high-performance and scalable algorithms for computational science and engineering applications. The course focuses on algorithms design, complexity analysis, experimentation, and optimization, for important science and engineering applications.

CSE 6151. Introduction to Parallel and Distributed Systems. 3 Credit Hours.
This course will introduce students to the design of parallel and distributed systems. The course focuses on algorithms design, complexity analysis, experimentation, and optimization, for important science and engineering applications.

CSE 6220. High Performance Computing. 3 Credit Hours.
This course will introduce students to the design, analysis, and implementation of high performance computational science and engineering applications.

CSE 6221. Multicore Computing: Concurrency and Parallelism on the Desktop. 3 Credit Hours.
This course will introduce students to the design and analysis of real-world algorithms on multicore computers.

CSE 6230. High Performance Parallel Computing: Tools and Applications. 3 Credit Hours.
Introduction to MIMD parallel computation, using textbook excerpts, research papers, and projects on multiple parallel machines. Emphasizes practical issues in high-performance computing.

CSE 6240. Web Search and Text Mining. 3 Credit Hours.
Basic and advanced methods for Web information retrieval and text mining: indexing and crawling, IR models, link and click data, social search, text classification and clustering.

CSE 6241. Pattern Matching Algorithms. 3 Credit Hours.
Foundations and algorithms underlying the development and application of tools for the efficient searching, matching and discovery of discrete.
CSE 6XXX. Comput. Sci. & Engr Elective. 1-21 Credit Hours.
CSE 7000. Master’s Thesis. 1-21 Credit Hours.
CSE 7750. Mathematical Foundations of Machine Learning. 3 Credit Hours.
Provides the mathematical background for two of the pillars of modern data science: linear algebra and applied probability.
CSE 7751. Probabilistic Graphical Models in Machine Learning. 3 Credit Hours.
The course provides an introduction to theory and practice of graphical models in machine learning. It covers three main aspects; representation, probabilistic inference, and learning.
CSE 7850. Machine learning in computational biology. 3 Credit Hours.
Introduction to modern machine learning techniques in computational biology.
CSE 7999. Preparation for Doctoral Qualifying Examination. 1-21 Credit Hours.
CSE 7XXX. Comput. Sci. & Engr Elective. 1-21 Credit Hours.
CSE 8001. Computational Science and Engineering Seminar. 1 Credit Hour.
Group discussion concerning advanced topics in Computational Science and Engineering.
CSE 8002. Computational Science and Engineering Seminar. 2 Credit Hours.
Group discussion concerning advanced topics in Computational Science and Engineering.
CSE 8003. Computational Science and Engineering Seminar. 3 Credit Hours.
Group discussion concerning advanced topics in Computational Science and Engineering.
CSE 8004. Computational Science and Engineering Seminar. 4 Credit Hours.
Group discussion concerning advanced topics in Computational Science and Engineering.
CSE 8005. Computational Science and Engineering Seminar. 5 Credit Hours.
Group discussion concerning advanced topics in Computational Science and Engineering.
CSE 8801. Special Topics. 1 Credit Hour.
Topics of current interest in Computational Science and Engineering.
CSE 8802. Special Topics. 2 Credit Hours.
Topics of current interest in Computational Science and Engineering.
CSE 8803. Special Topics. 3 Credit Hours.
Topics of current interest in Computational Science and Engineering.
CSE 8804. Special Topics. 4 Credit Hours.
Topics of current interest in Computational Science and Engineering.
CSE 8805. Special Topics. 5 Credit Hours.
Topics of current interest in Computational Science and Engineering.
CSE 8901. Special Problems. 1-21 Credit Hours.
Small-group or individual investigation of advanced topics with a faculty member.
CSE 8903. Special Problems. 1-21 Credit Hours.
Small-group or individual investigation of advanced topics with a faculty member.
CSE 8907. Teaching Assistantship. 1-6 Credit Hours.
For students holding teaching assistantships.
CSE 8998. Research Assistantship. 1-6 Credit Hours.
For students holding research assistantships.
CSE 8999. Doctoral Thesis Preparation. 1-21 Credit Hours.
CSE 8XXX. Comput. Sci. & Engr Elective. 1-21 Credit Hours.
CSE 9000. Doctoral Thesis. 1-21 Credit Hours.