VANDERBILT V UNIVERSITY

Scientific Computing

Scientific Computing AT VANDERBILT

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Finding Eligible Scientific Computing Courses

On YES (https://webapp.mis.vanderbilt.edu/more/SearchClasses!input.action), to select all courses approved for credit in the Scientific Computing minor, select the "Advanced" link next to the search box, select the "Class Attributes" drop-down box on the bottom right of the advanced search page, and then select "Eligible for Scientific Computing" to find all courses.

Core Programming Courses

CS 1101 [Formerly CS 101] Programming and Problem Solving. An intensive introduction to algorithm development and problem solving on the computer. Structured problem definition, top down and modular algorithm design. Running, debugging, and testing programs. Program documentation. [3]
- or -
CS 1103 [Formerly CS 103] Introductory Programming for Engineers and Scientists. An introduction to problem solving on the computer. Intended for students other than computer science and computer engineering majors. Methods for designing programs to solve engineering and science problems. Generic programming concepts. [3]

CS 2201 [Formerly CS 201] Program Design and Data Structures. The study of elementary data structures, their associated algorithms and their application in problems; rigorous development of programming techniques and style; design and implementation of programs with multiple modules, using good data structures and good programming style. Prerequisite: CS 1101. [3]
- or -
CS 2204 [Formerly CS 204] Program Design and Data Structures for Scientific Computing. Data structures and their associated algorithms in application to computational problems in science and engineering. Time and memory complexity; dynamic memory structures; sorting and searching; advanced programming and problem-solving strategies; efficient software library use. Prerequisite: CS 1101 or 1103. [3]

Scientific Computing Courses

SC 3250 [Formerly SC 250] Scientific Computing Toolbox. Team taught course with topics illustrating use of computational tools in multiple science and engineering domains. Topics may include simulations of complex physical, biological, social, and engineering systems, optimization and evaluation of simulation models, Monte Carlo methods, scientific visualization, high performance computing, or data mining. Prerequisite: CS 1101 or 1103; Math 1200. [3]

SC 3260 [Formerly SC 260] High Performance Computing. Introduction to concepts and practice of high performance computing. Parallel computing, grid computing, GPU computing, data communication, high performance security issues, performance tuning on shared-memory-architectures. Prerequisite: CS 2201 or CS 2204. SPRING. [3]

SC 3841 [Formerly SC 293A] Directed Study in Scientific Computing. Participation in ongoing research projects under direction of a faculty sponsor. Project must combine scientific computing tools and techniques with a substantive scientific or engineering problem. Consent of both the faculty sponsor and one Director of the SC minor is required. Prerequisite: SC 3250. [1-3 each semester]

SC 3842 [Formerly SC 293B] Directed Study in Scientific Computing. Continuation of SC 3841 under the direction of the same or different faculty sponsor. Same requirements as for SC3841 [1-3 each semester]

SC 3843 [Formerly SC 293C] Directed Study in Scientific Computing. Continuation of SC 3842 under the direction of the same or different faculty sponsor. Same requirements as for SC3841. [1-3 each semester]

SC 3851 [Formerly SC 295A] Independent Study in Scientific Computing. Development of a research project by the individual student under direction of a faculty sponsor. Project must combine scientific computing tools and techniques with a substantive scientific or engineering problem. Consent of both the faculty sponsor and one Director of the SC minor is required. Prerequisite: SC 3250. [1-3 each semester]

SC 3852 [Formerly SC 295B] Independent Study in Scientific Computing. Continuation of SC 3851 under the direction of the same or different faculty sponsor. Same requirements as for SC3851. [1-3 each semester]

SC 3853 [Formerly SC 295C] Independent Study in Scientific Computing. Continuation of SC 3852 under the direction of the same or different faculty sponsor. Same requirements as for SC3851. [1-3 each semester]

SC 3890 [Formerly SC 290] Special Topics in Scientific Computing. Special topics course. [3]