POLICIES & PROCEDURES
• Total of 18 hours (six courses in sections II. – V. below) must be completed with a grade of C- or higher.
• No transfer credit or credit-by-exam may be used to fulfill certificate course requirements (except for prerequisite).
• Not all courses listed in this document are offered every semester. See UT course schedule for available class offerings.
• See SDS website for information on how to enroll and for more details about course and research project requirements: stat.utexas.edu/undergraduate/certificate-in-scientific-computation

I. PREREQUISITE KNOWLEDGE (choose one)
Mathematics: 408D Differential & Integral Calculus, 408M Multivariable Calculus

II. CORE REQUIREMENTS
A. Computer Programming (choose one)
Aerospace Engineering: 301 Intro to Computer Programming
Biomedical Engineering: 303 Intro to Computing
Computational Engineering: 301 Intro to Computer Programming, 322 Scientific Computation
Computer Science: 303E Elements of Computers and Programming, 313E Elements of Software Design
Electrical Engineering: 312/H Software Design and Implementation/Honors
Geological Sciences: 325J Programming in FORTRAN and MATLAB
Statistics & Data Sciences: 322 Intro to Scientific Programming

B. Mathematics (choose one)
Statistics & Data Sciences: 329D Practical Linear Algebra II

III. SCIENTIFIC COMPUTING COURSES (choose two categories & take one course in each)
A. Numerical Methods
Biomedical Engineering: 313L Intro to Numerical Methods
Chemical Engineering: 348 Numerical Methods in Chemical Engineering and Problem Solving
Computational Engineering: 311K EnginComputation
Computer Science: 323E/H Elements of Scientific Computing/Honors, 367 Numerical Methods
Mathematics: 348 Scientific Computation in Numerical Analysis, 368K Numerical Methods for Applications
Petroleum and Geosystems Engineering: 310 Formulation and Solution of Geoys Engin Problems
Statistics & Data Sciences: 335 Scientific and Technical Computing

B. Statistical Methods
Biomedical Engineering: 335 Engineering, Probability, and Statistics
Economics: 329 Economic Statistics
Electrical Engineering: 351K Probability and Random Processes
Mechanical Engineering: 335 Engineering Statistics
Statistics & Data Sciences: 325H Honor Statistics, 320E Elements of Statistics, 328M Biostatistics

C. Other Computing Topics
Biomedical Engineering: 350 Computational Methods for Biomedical Engineers
Chemistry: 354M Intro to Comp Methods in Chemistry
Computer Science: 324E Elements of Graphics and Visualization, 327E Elements of Databases, 377 Principles and Applications of Parallel Programming
Mathematics: 346 Applied Linear Algebra, 362M Introduction to Stochastic Processes, 376C Methods of Applied Mathematics
Mechanical Engineering: 367S Simulation Modeling
Management Information Systems: 325 Database Management
Neuroscience: 366M Quantitative Methods
Statistics & Data Sciences: 329C Practical Linear Algebra I

*Topics courses must be approved by the faculty committee. See SDS website for details on approval process.
Certificate in Scientific Computation and Data Sciences Course Requirements (2020–2022 Catalog)

IV. APPLIED COMPUTING COURSES
(choose one)

**Aerospace Engineering**: 347 Intro to Computational Fluid Dynamics

**Biochemistry**: 339N Systems Biology & Bioinformatics

**Biology**: 321G Intro to Computational Bio

**Biomedical Engineering**: 342 Biomechanics of Human Movement, 346 Computational Biomolecular Engineering, 377T Topics in Biomedical Engineering

**Computer Science**: 324E Elements of Graphics and Visualization, 329E Topics in Elements of Computing

**Chemistry**: 368 Advanced Topics in Chemistry

**Economics**: 363C Computational Economics

**Electrical Engineering**: 379K Topics in Electrical Engineering

**Finance/Statistics (IROM)**: 372.6 Optimization Methods in Finance

**Geological Sciences**: 325K Computational Methods in Geological Sciences

**Linguistics**: 350 Special Topics in the Study of Linguistics

**Mathematics**: 375T Topics in Mathematics, 374M Mathematical Modeling in Science and Engineering

**Physics**: 329 Introduction to Computational Physics

**Statistics & Data Sciences**: 322E Elements of Data Science, 348 Computation Biology & Bioinformatics

V. RESEARCH PROJECT
(one course to reach 18 total hours for certificate)

**Statistics & Data Sciences**: 379R Undergraduate Research

Work with a faculty supervisor on an original research project that is presented in a research paper. Topics must be approved by SDS Faculty Committee prior to enrollment. Students are responsible for finding their own faculty supervisor. See our website for more information.

*Topics courses must be approved by the faculty committee. See SDS website for details on approval process.*