The University of Texas at Austin
Department of Statistics and Data Sciences
College of Natural Sciences

Certificate in Scientific Computation Course Progression Worksheet 2020–2022 Catalog

ADMISSION REQUIREMENTS

Course(s) Fulfilled

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 Computing

Computer Science:
303E Elements of Computers & Programming
313E Elements of Software Design

Electrical Engineering:
312 Software Design & Implementation
312H Software Design & Implementation Honors

Geological Sciences:
325J Programming in FORTRAN & MATLAB

Statistics & Data Sciences:
322 Intro to Scientific Programming

B. Mathematics (choose one)

Mathematics:
427K Advanced Calculus for Applications
340L Matrices & Matrix Calculations
341 Linear Algebra & Matrix Theory
372K Partial Differential Equations & Applications

Statistics & Data Sciences:
329C Practical Linear Algebra I

III. SCIENTIFIC COMPUTING COURSES

(Choose two categories & take one course in each)

A. Numerical Methods

Aerospace Engineering:
211K Engineering Computation

Biomedical Engineering:
313L Intro to Numerical Methods

Civil Engineering:
379K Computer Methods for Civil Engineering

Chemical Engineering:
348 Numerical Methods in Chemical Engineering

Computational Engineering:
311K Engineering Computing

Computer Science:
323E Elements of Scientific Computing
323H Scientific Computing-Honors
367 Numerical Methods

Mathematics:
348 Scientific Computation in Numerical Analysis
368K Numerical Methods for Applications

Petroleum & Geosystems Engineering:
310 Formulation & Solution of Geosystems Engineering Problems

Statistics & Data Sciences:
335 Scientific & Technical Computing

B. Statistical Methods

Biomedical Engineering:
335 Engineering, Probability, & Statistics

Economics:
329 Economic Statistics

Electrical Engineering:
351K Probability & Random Processes

Mathematics:
358K Applied Statistics
378K Intro to Mathematical Statistics

Mechanical Engineering:
335 Engineering Statistics

Statistics & Data Sciences:
325H Honor Statistics
328M Biostatistics

C. Other Computing Topics

Biomedical Engineering:
350 Computational Methods for Biomeical Engineers

Chemistry:
354M Intro to Computational Methods in Chemistry

Computer Science:
324E Elements of Graphics & Visualization
327E Elements of Databases
329E Topics in Elements of Computing
377 Principles & Applications of Parallel Programming

Mathematics:
346 Applied Linear Algebra
362M Introduction to Stochastic Processes
368K Numerical Methods for Applications
372K PDE & Applications
376C Methods of Applied Mathematics

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Certificate in Scientific Computation Course Progression Worksheet 2020–2022 Catalog *(Continued)*

Course(s) Fulfilled

Mechanical Engineering:
367S Simulation Modeling

Management Information Systems:
325 Database Management

Neuroscience:
466M Quantitative Methods

Statistics & Data Sciences:
329D Practical Linear Algebra II
374C Parallel Computing
374D Distributed & Grid Computing for Sci. & Engineers
374E Visualization & Data Analysis

IV. APPLIED COMPUTING COURSES

(choose one)

Biochemistry:
339N Systems Biology & Bioinformatics

Biology:
321G Intro to Computational Bio

Computer Science:
324E Elements of Graphics & Visualization
329E Topics in Elements of Computing

Chemistry:
368 Advanced Topics in Chemistry

Biomedical Engineering:
342 Computational Biomechanics,
346 Computational Structural Biology,
377T Topics in Biomedical Engineering

Computational Engineering:
347 Introduction to Computational Fluid Dynamics

Decision Science:
372.6 Optimization Method in Finance

Economics:
363C Computational Economics

Electrical Engineering:
379K Topics in Electrical Engineering (Approved Topics)

Course(s) Fulfilled

Finance/Statistics:
(IROM) 372.6/372 Optimization Methods in Finance

Geological Sciences:
325K Computational Methods in Geological Sciences

Linguistics:
350.15 Computational Semantics

Mathematics:
375T Topics in Mathematics
374M Mathematical Modeling in Science & Engineering

Physics:
329 Introduction to Computational Physics

Statistics and Data Sciences:
348 Computation Biology & Bioinformatics

V. RESEARCH PROJECT

Statistics & Data Sciences: 3/479R

Undergraduate Research

POLICIES & PROCEDURES

- Return applications to GDC, Campus Mail Code: D9800
- Total of 18 hours required
- All coursework must be completed with a grade of C- or higher
- Please visit the certificate website for more detailed information on course options & policies
- stat.utexas.edu/undergraduate/certificate-in-scientific-computation