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

Course(s) Fulfilled

ADMISSION REQUIREMENTS

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

Course(s) Fulfilled

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

Course(s) Fulfilled

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)

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