
APPENDIX B: APPROVED MATHEMATICS / NUMERICAL METHODS COURSES

Listed below are the approved courses that will satisfy the mathematics / numerical methods requirement in partial fulfillment of your graduate degree in Mechanical Engineering, course **must be taken A/F**.

Aerospace Engineering

AEM 5251. Computational Fluid Mechanics.

AEM 8201. Fluid Mechanics I.

AEM 8251. Finite-Volume Methods in Computational Fluid Dynamics.

Chemical Engineering

CHEN 8201. Applied Mathematics I: Linear Analysis.

CHEN 8202. Applied Mathematics II: Nonlinear Analysis.

Civil Engineering

CE 8022. Numerical Methods for Free and Moving Boundary Problems.

CE 8336. Boundary Element Methods I.

CE 8337. Boundary Element Methods II.

CE 8401. Fundamentals of Finite Element Method.

CE 8402. Nonlinear Finite Element Analysis.

CE 8572. Computational Environmental Fluid Dynamics.

Computer Science

CSCI 5302. Analysis of Numerical Algorithms.

CSCI 5304. Computational Aspects of Matrix Theory.

CSCI 8314. Iterative Methods for Linear Systems.

CSCI 8323. Numerical Solutions of Linear Least Square Problems.

CSCI 8363. Numerical Linear Algebra in Dynamical Systems.

Electrical Engineering

EE 5231. Linear Systems and Optimal Control .

Geological Engineering

GEOE 8336. Boundary Element Methods I.

GEOE 8337. Boundary Element Methods II.

Industrial Engineering

IE 5522. Quality Engineering and Reliability.

IE 5531. Engineering Optimization I.

IE 8531. Engineering Optimization II.

IE 8532. Stochastic Processes and Queuing Systems.

Mathematics

MATH 4512. Differential Equations with Applications

MATH 5481. Mathematics of Industrial Problems I.

MATH 5482. Mathematics of Industrial Problems II.

MATH 5485. Introduction to Numerical Methods I.

MATH 5486. Introduction to Numerical Methods II.

MATH 5487. Comp.Methods for Differential and Integral Equations in Engineering Science I.

MATH 5488. Computational Methods for Differential and Integral Equations in Eng Science II.

MATH 5525. Introduction to Ordinary Differential Equations.

MATH 5583. Complex Analysis.

MATH 5587. Elementary Partial Differential Equations I.

MATH 5615H. Honors: Introduction to Analysis I.

MATH 5651. Basic Theory of Probability and Statistics.

MATH 5711. Linear Programming and Combinatorial Optimization.
MATH 8365. Riemannian Geometry.
MATH 8366. Riemannian Geometry.
MATH 8385. Calculus of Variations and Minimal Surfaces.
MATH 8386. Calculus of Variations and Minimal Surfaces.
MATH 8387. Mathematical Modeling of Industrial Problems.
MATH 8388. Mathematical Modeling of Industrial Problems.
MATH 8401. Mathematical Modeling and Methods of Applied Mathematics.
MATH 8402. Mathematical Modeling and Methods of Applied Mathematics.
MATH 8431. Mathematical Fluid Mechanics.
MATH 8432. Mathematical Fluid Mechanics.
MATH 8441. Numerical Analysis and Scientific Computing.
MATH 8442. Numerical Analysis and Scientific Computing.
MATH 8445. Numerical Analysis of Differential Equations.
MATH 8446. Numerical Analysis of Differential Equations.
MATH 8450. Topics in Numerical Analysis.
MATH 8501. Theory of Ordinary Differential Equations.
MATH 8502. Dynamical Systems and Differential Equations.
MATH 8503. Bifurcation Theory in Ordinary Differential Equations.
MATH 8581. Applications of Linear Operator Theory.
MATH 8582. Applications of Linear Operator Theory.
MATH 8583. Theory of Partial Differential Equations.
MATH 8584. Theory of Partial Differential Equations.
MATH 8651. Theory of Probability Including Measure Theory.
MATH 8652. Theory of Probability Including Measure Theory.
MATH 8654. Fundamentals of Probability Theory and Stochastic Processes.
MATH 8655. Stochastic Calculus with Applications.
MATH 8659. Stochastic Processes.
MATH 8701. Complex Analysis.
MATH 8702. Complex Analysis.

Mechanical Engineering

ME 5228. Introduction to Finite Element Modeling, Analysis, and Design.
ME 5351. Computational Heat Transfer.
ME 8228. Finite Elements in Multidisciplinary Flow/Thermal/Stress and Man. Applications.
ME 8229. Finite Element Methods for Computational Mechanics: Transient/Dynamic Problems.
ME 8253. Computational Nanomechanics.
ME 8341. Advanced Heat Transfer I.
ME 8345. Computational Heat Transfer and Fluid Flow.

Physics

PHYS 5041. Analytical and Numerical Methods of Physics I.
PHYS 5042. Analytical and Numerical Methods of Physics II.

Scientific Computing

SCIC 8021. Advanced Numerical Methods.
SCIC 8031. Modeling, Optimization, and Statistics.
SCIC 8041. Computational Aspects of Finite Element Methods.

Statistics

STAT 5021. Statistical Analysis.
STAT 5101. Theory of Statistics I.
STAT 5102. Theory of Statistics II.
STAT 5303. Designing Experiments.