**Math Courses for MS/PhD in Bioengineering**

*Please note that not all courses will be offered every year/semester and it is up to the student to confirm they have the appropriate background/prerequisites for the course. *Please also note that there may be alternative courses that will meet the requirement, they should be 500-level or greater and should generally be taught outside of SEAS.

AMCS 601  Algebraic Techniques for Applied Mathematics and Computational Science I  
AMCS 602  Algebraic Techniques for Applied Mathematics and Computational Science II  
AMCS 608  Analytic Techniques for Applied Math and Computational Science I  
AMCS 609  Analytic Techniques for Applied Mathematics and Computation Science II  
BE 504  Epigenomics  
BE 510  Biomechanics and Biotransport  
BE 516  High-performance Scientific Computing  
BE 518  Optical Microscopy  
BE 530  Theoretical and Computational Neuroscience  
BE 559  Multiscale Modeling of Biological Systems  
BE 566  Network Neuroscience  
BE 567  Mathematical Computation Methods for Modeling Biological Systems  
BE 584  Mathematics of Medical Imaging and Measurements  
BIOL 556  Advanced Statistics  
BIOM 520  Concepts and Methods in Biostatistics - Basic  
BIOM 521  Concepts and Methods in Biostatistics – Intermediate  
BMIN 503  Data Science for Biomedical Informatics  
BSTA 620  Probability I  
BSTA 621  Statistical Inference I  
BSTA 622  Statistical Inference II  
BSTA 630  Statistical Methods for Data Analysis I  
BSTA 631  Statistical Methods for Data Analysis II  
BSTA 651  Introduction to Linear Models and Generalized Linear Models.  
BSTA 774  Statistical Methods for Evaluating Diagnostic Tests.  
CBE 508  Probability and Statistics for Biotechnology  
CBE 520  Modeling, Simulations, and Optimization of Chemical Processes  
CBE 522  Polymer Rheology and Processing  
CBE 617  Control of Nonlinear Systems  
CHEM 521  Statistical Mechanics 1  
CIS 519  Applied Machine Learning  
CIS 520  Machine Learning  
CIS 536  Computational Biology  
CIS 537  Biomedical Image Analysis  
ENM 502  Numerical Methods and Modeling  
ENM 503  Introduction to Probability and Statistics  
ENM 510  Foundations of Engineering Mathematics I  
ENM 511  Foundations of Engineering Mathematics II  
ENM 520  Theory and Computation for ODE/PED-constrained optimization  
ENM 520  Topics in Computational Science and Engineering  
ENM 600  Functional Analysis
ENM 601  Special Topics in Engineering Mathematics - Nonlinear Dynamics and Chaos
ESE 500  Linear Systems Theory
ESE 502  Introduction to Spatial Analysis
ESE 504  Introduction to Optimization Theory
ESE 505  Control of Systems
ESE 530  Elements of Probability Theory and Random Processes
ESE 531  Digital Signal Processing
ESE 603  Simulation Modeling and Analysis
ESE 632  Random Process Models and Optimum Filtering
ESE 674  Information Theory
MATH 584  Mathematics of Medical Imaging
MATH 512  Advanced Linear Algebra
MEAM 522  Fundamentals of Sensor Technology
MEAM 527  Finite Element Analysis
MEAM 528  Advanced Kinematics
STAT 500  Applied Regression and Analysis of Variance.
STAT 510  Probability
STAT 511  STATISTICAL INFERENCE
STAT 512  Mathematical Statistics.
STAT 530  Probability
STAT 541  Statistical Methods
STAT 542  Bayesian Methods and Computation
STAT 550  Mathematical Statistics
STAT 571  Modern Data Mining