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 6010	Algebraic Techniques for Applied Mathematics and Computational Science I
AMCS 6020	Algebraic Techniques for Applied Mathematics and Computational Science II
AMCS 6080	Analytic Techniques for Applied Math and Computational Science I
AMCS 6090	Analytic Techniques for Applied Mathematics and Computation Science II
BE 5040	Epigenomics
BE 5100	Biomechanics and Biotransport
BE 5160	High-performance Scientific Computing
BE 5180	Optical Microscopy
BE 5300	Theoretical and Computational Neuroscience
BE 5500	Continuum Tissue Mechanics
BE 5590	Multiscale Modeling of Biological Systems
BE 5660	Network Neuroscience
BE 5670	Mathematical Computation Methods for Modeling Biological Systems
BE 5840	Mathematics of Medical Imaging and Measurements
BIOL 5560	Advanced Statistics
BIOM 5200	Concepts and Methods in Biostatistics - Basic
BIOM 5210	Concepts and Methods in Biostatistics – Intermediate
BMIN 5030	Data Science for Biomedical Informatics
BSTA 6200	Probability I
BSTA 6210	Statistical Inference I
BSTA 6220	Statistical Inference II
BSTA 6300	Statistical Methods for Data Analysis I
BSTA 6310	Statistical Methods for Data Analysis II
BSTA 6510	Introduction to Linear Models and Generalized Linear Models.
BSTA 7740	Statistical Methods for Evaluating Diagnostic Tests.
CBE 5080	Probability and Statistics for Biotechnology
CBE 5200	Modeling, Simulations, and Optimization of Chemical Processes
CBE 5220	Polymer Rheology and Processing
CBE 6170	Control of Nonlinear Systems
CHEM 5210	Statistical Mechanics 1
CIS 5150	Fundamentals of Linear Algebra and Optimization
CIS 5190	Applied Machine Learning
CIS 5200	Machine Learning
CIS 5360	Computational Biology
CIS 5370	Biomedical Image Analysis
ENM 5020	Numerical Methods and Modeling
ENM 5030	Introduction to Probability and Statistics
ENM 5100	Foundations of Engineering Mathematics I
ENM 5110	Foundations of Engineering Mathematics II
ENM 5200	Theory and Computation for ODE/PED-constrained optimization
ENM 5200	Topics in Computational Science and Engineering
ENM 6000	Functional Analysis

ENM 6010	Special Topics in Engineering Mathematics - Nonlinear Dynamics and Chaos
ESE 5000	Linear Systems Theory
ESE 5020	Introduction to Spatial Analysis
ESE 5040	Introduction to Optimization Theory
ESE 5050	Control of Systems
ESE 5300	Elements of Probability Theory and Random Processes
ESE 5310	Digital Signal Processing
ESE 6030	Simulation Modeling and Analysis
ESE 6320	Random Process Models and Optimum Filtering
ESE 6740	Information Theory
MATH 5840	Mathematics of Medical Imaging
MATH 5120	Advanced Linear Algebra
MEAM 5220	Fundamentals of Sensor Technology
MEAM 5270	Finite Element Analysis
MEAM 5280	Advanced Kinematics
STAT 5000	Applied Regression and Analysis of Variance.
STAT 5100	Probability
STAT 5110	STATISTICAL INFERENCE
STAT 5120	Mathematical Statistics.
STAT 5300	Probability
STAT 5410	Statistical Methods
STAT 5420	Bayesian Methods and Computation
STAT 5500	Mathematical Statistics
STAT 5710	Modern Data Mining