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 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
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 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/PDE-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
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<tr>
<td>ESE 505</td>
<td>Control of Systems</td>
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<tr>
<td>ESE 530</td>
<td>Elements of Probability Theory and Random Processes</td>
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<td>ESE 531</td>
<td>Digital Signal Processing</td>
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<tr>
<td>ESE 603</td>
<td>Simulation Modeling and Analysis</td>
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<td>ESE 632</td>
<td>Random Process Models and Optimum Filtering</td>
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<td>ESE 674</td>
<td>Information Theory</td>
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<td>MATH 584</td>
<td>Mathematics of Medical Imaging</td>
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<tr>
<td>MATH 512</td>
<td>Advanced Linear Algebra</td>
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<tr>
<td>MEAM 522</td>
<td>Fundamentals of Sensor Technology</td>
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<td>MEAM 527</td>
<td>Finite Element Analysis</td>
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<td>MEAM 528</td>
<td>Advanced Kinematics</td>
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<td>STAT 500</td>
<td>Applied Regression and Analysis of Variance.</td>
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<td>STAT 510</td>
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<td>STAT 511</td>
<td>STATISTICAL INference</td>
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<td>STAT 541</td>
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<td>STAT 542</td>
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<td>STAT 550</td>
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<td>STAT 571</td>
<td>Modern Data Mining</td>
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