

Note: Non-U.S. citizens who want to preserve their ability to work in the U.S. should consult with the Bechtel International Center about visa paperwork requirements several months before graduation.

Mathematics Requirements in Aero/Astro

Each Aero/Astro degree has a math requirement, for which courses on the following list are pre-approved. (Other advanced courses may also be acceptable.) Students should consult with their advisors in selecting the most appropriate classes for their field. M.S. and Engineer candidates select 2 courses (at least 6 units). Ph.D. candidates select 3 courses, with at least 6 units from courses numbered above 200. **Note:** Courses with the same "footnote" cannot be combined, e.g., both Math 113 (*) and ME 300A (*)

<u>Course Number</u>	<u>Course Name</u>	<u>Unit Count</u>
AA 203	Optimal and Learning-based Control	3
AA 212	Advanced Feedback Control Design	3
AA 214	Numerical Methods for Compressible Flows	3
AA 218	Introduction to Symmetry Analysis	3
AA 222	Introduction to Multidisciplinary Design Optimization	3 - 4
AA 228 (CS 238)	Decision Making under Uncertainty	3 - 4
AA 229 (CS 239)	Advanced Topics in Sequential Decision Making	3 - 4
AA 242B (ME 242B)	Mechanical Vibrations	3
CEE 281	Mechanics and Finite Elements	3
CME 108 (MATH 114)	Introduction to Scientific Computing	3 - 4
CME 302	Numerical Linear Algebra	3
CME 303 (MATH 220)	Partial Differential Equations of Applied Mathematics	3
CME 306 (MATH 226)	Numerical Solution of Partial Differential Equations	3
CME 307 (MS&E311)	Optimization	3
CME 308 (MATH 228, MS&E 324)	Stochastic Methods in Engineering	3
CS 221	Artificial Intelligence: Principles and Techniques	3 - 4
CS 229 (STATS 229)	Machine Learning	3 - 4
EE 261	Fourier Transform and its Applications	3
EE 263	Introduction to Linear Dynamical Systems	3
EE 264	Digital Signal Processing	3 - 4
EE 266 (MS&E 251)	Introduction to Stochastic Control with Applications	3
EE 278	Introduction to Statistical Signal Processing	3
EE 364A	Convex Optimization I	3
EE 364B	Convex Optimization II	3
ENGR 207B	Linear Control Systems II	3
ENGR 209A	Analysis and Control of Nonlinear Systems	3
MS&E 201	Dynamic Systems	3 - 4
MS&E 221	Stochastic Modeling	3
MS&E 311	Optimization	3
MS&E 351	Dynamic Programming and Stochastic Control	3
* MATH 113	Linear Algebra and Matrix Theory	3
MATH 115	Functions of a Real Variable	3
MATH 120	Groups and Rings	3
MATH 2xx	All Math courses over 200 will qualify (except seminars)	
* ME 300A (CME 200)	Linear Algebra with Application to Engineering Computations	3
# ME 300B (CME 204)	Partial Differential Equations in Engineering	3
ME 300C (CME 206)	Introduction to Numerical Methods for Engineering	3
ME 335A	Finite Element Analysis	3
ME 335B	Finite Element Analysis	3
ME 335C	Finite Element Analysis	3
ME 408 (CME 322)	Spectral Methods in Computational Physics	3
ME 469	Computational Methods in Fluid Mechanics	3
PHYSICS 211	Continuum Mechanics	3
STATS 110	Statistical Methods in Engineering and the Physical Sciences	4 - 5
STATS 116	Theory of Probability (not recommended as Ph.D. math - take 110)	3 - 5
STATS 217	Introduction to Stochastic Processes I	2 - 3