

## Course List by Area for MS students

### AERODYNAMICS

**AAE:** 511, 512, 514, 518, 519, 520, 521, 556, 590 (Plasma and Electric Discharges), 590 (Molecular Gas Dynamics), 590 (Nonequilibrium Hypersonic Flows), 613, 624, 626, AAE 690/ME 697 (Numerical Methods for High-Speed Flows)

**ME:** 509, 510, 513, 517, 526, 533, 597 (Fluid Dynamic Stability), 597 (Applied Engineering Acoustics), 608, 610, 611, 613, 614, 615

### AEROSPACE SYSTEMS

**METHODS COURSES** (requires at least two for major area, at least one for minor area):

**AAE:** 550, 551, 560, 561, 568\*, 571, 590 (Surrogate Methods), 590 (Aerospace Human Factors), 668\*

**CONTEXT COURSES:**

**AAE:** 585, 590\*\* (Space Flight Operations), 590\*\* (Spacecraft Environment Interaction)

**ME:** 553, 571, 597 (Decision-Making for Engineering Systems Design)

**SYS:** 500, 510, 530, 590 (Systems Engineering Processes and Professional Competencies)

\* For students not also majoring/minoring in Autonomy and Control

\*\* For students not also majoring/minoring in Astrodynamics and Space Applications

### ASTRODYNAMICS AND SPACE APPLICATIONS

**AAE:** 507, 508, 523, 532, 533, 575, 590 (Spacecraft Attitude Dynamics), 590 (Space Flight Operations), 590 (Applied Control in Astronautics), 590 (Satellite Constellation and Formation), 590 (Spacecraft Environment Interactions), 590 (Attitude Determination and Control), 590 (Probabilistic Estimation and Tracking), 607, 632, 675, 690 (Orbital Perturbations)

### AUTONOMY AND CONTROL

**AAE:** 507, 508, 561, 564, 567, 568, 590 (Multi-Agent Systems and Control), 590 (Aerospace Engineering Probability & Estimation), 590 (Estimation, Control and Optimization Laboratory), 590 (Modern Avionics), 590\* (Applied Control in Astronautics), 590\* (Attitude Determination and Control), 607, 666, 668

\* For students not also majoring/minoring in Astrodynamics and Space Applications

**ECE:** 580, 600, 602, 675, 680, 686, 695 (Struc & Dyn Large-Scale Ntwks)

**ME:** 539, 560, 562, 563, 564, 565, 575, 578, 579, 580, 584, 597 (Autonomous Systems), 664, 675, 677, 680, 689, 697Y (Intelligent Systems)

### PROPULSION

**AAE:** 512, 521, 534, 535, 537, 538, 539, 590 (Aerospace Propulsion), 590 (Computational Combustion), 590 (Electric Propulsion), 590 (Molecular Gas Dynamics), 590 (Physics of Non-ideal Fluids for Propulsion Applications), 590 (Rocket Propulsion), 590 (Sustainable Aviation), 690 (Liquid Propellant Chemistry & Applications), 690 (Advanced Turbulent Combustion Modeling)

**ME:** 500, 501, 505, 506, 525, 526, 533, 538, 597 (Combustion of Energetic Materials), 608

## STRUCTURES AND MATERIALS

**AAE:** 545, 546, 548, 550, 552, 553, 554, 555, 556, 558, 590 (Design of Composite Materials and Structures), 590 (Manufacturing Advanced Composite Materials), 590/MSE 586 (Experimental Characterization of Advanced Composite Materials), 590 (Data Science in Mechanics of Materials), 648, 654, 690 (Multiscale Structural Mechanics)

**CE:** 595 (Finite Elements in Elasticity), 597 (Nonlinear Fracture Mechanics)

**ME:** 539, 559, 563, 597 (Wave Propagation in Solids), 650, 612

## Engineering Leadership Courses (for students in Professional MS program)

*More courses are to be decided and under development. If you find courses you believe are professional-oriented that you would like to use toward the 9-credit hour requirement, contact the AAE Graduate Office.*

**MGMT:** 60000 (Accounting for Managers), 61000 (Financial Marketing), 62000 (Marketing Management), 65000 (Strategic Management), 66000 (Operations Management), 54600 (Decision Support and Expert Systems), 56200 (Project Management), 57100 (Data Mining), 67000 (Business Analytics)

(Likely to accept any regular MGMT 500 and 600-level course that received a letter grade.)

**CS:** 50011 (Introduction to Systems for Information Security), 50100 (Computing For Science and Engineering), 52600 (Information Security), CS 53600 (Data Communication and Computer Networks)

**ENE** 554 (Globalization and Engineering)

**GRAD** 590 (Program Management: A Comprehensive Overview of the Discipline)

## **Additional course notes:**

**Math courses allowed:** Any non-seminar graduate-level course from Math or Statistics; ME 581, 539; PHYS 600, 601; CHE 630, 632; AAE 590 (Aerospace Engineering Probability & Estimation)

**Technical elective options:** Any non-seminar, graduate-level course in Engineering (excluding ENE and ECE 695 Communication for Engineering Leaders), Science, additional Math/STAT, SYS

For a list of these courses available via **distance learning**, please visit <https://engineering.purdue.edu/online/courses>