AER E Technical Electives
Students must take 12 Technical Elective credit hours from the following three groups/categories:

**Group A.) Aerospace – 3 credits needed**
- a. any AER E or EM graduate level (500+ level) courses
- b. AER E 407X Applied Formal Methods
- c. AER E 412 Propulsion
- d. AER E 417 Experimental Mechanics
- e. AER E 422 Structures
- f. AER E 423 Composites
- g. AER E 426 Design/Structures
- h. AER E 432 Controls
- i. AER E 433 Spacecraft Dynamics/Control
- j. AER E 442 V/STOL
- k. AER E 446 Comp. Fluid Dynamics
- l. AER E 448 Fluid Dyn. Of Turbo Mach.
- m. AER E 451 Astrodynamics
- n. AER E 463 Intro to Multi-disciplinary Design Optimization
- o. AER E 464 Spacecraft Systems
- p. AER E 468 Large Scale Complex Eng. Syst.
- q. AER E 471X Aviation Safety & Piloting
- r. AER E 480 Ultrasonic Nondestructive Evaluation
- s. AER E 481 Wind Energy
- t. AER E 483 Aeroacoustics

**Group B.) Technical/Engineering – 3 credits needed**
- a. any additional course from Group A listed above
- b. AER E 381 Intro to Wind Energy
- c. AER E 490 Aerospace Engineering Independent Study/Research**
- d. AER E 494X Make:2:Innovate**
- e. ASTRO 342 Intro to Solar System Astronomy
- f. ASTRO 346 Intro to Astrophysics
- g. EE 314 Electromagnetics for Non-Electrical Engineers
- h. IE 305 Engineering Economic Analysis
- i. IND D 341 Computer Aided Industrial Design (SolidWorks)
- j. MATH 365 Complex Variables
- k. MATH 385 Intro to Partial Differential Equations
- l. MATH 414 Analysis I
- m. MATH 481 Numerical Methods for Differential Equations
- n. PHYS 306 Physics of Wave Motion
- o. PHYS 321 Intro to Modern Physics I
- p. PHYS 361 Classical Mechanics
- q. STAT 305 Engineering Statistics
- r. STAT 341 Intro to Theory of Probability & Statistics
- s. any 300-level or above course in the College of Engineering (must first be approved by AER E Curriculum Committee – EE 351, MAT E 311, ENGR 350, & AER E/ME 318X will not count as a Tech Elective)

**Group C.) Career – 6 credits needed**
- a. any additional course from Group A or Group B listed above
b. AFAS 341 Air Force Leadership Studies I

c. AFAS 342 Air Force Leadership Studies II

d. N S 320 Naval Ship Systems I

e. N S 330 Naval Ship Systems II

f. any course 300-level or above from the Iowa State University catalog that is relevant to a student’s statement of career goals and objectives. Students will need to type up a document that includes their statement of career goals, how the course ties into those goals, and how it will help the student achieve those goals. That document will need to be submitted to the student’s assigned academic adviser and possibly the AER E Curriculum Chair for review.

**Please note:** A maximum of six credit hours of AER E 490 & 494X credit can be applied to a student’s degree audit for graduation.