

AE 6451: Electric Propulsion – Course Outline

Prerequisites: AE 4451 Jet & Rocket Propulsion or Equivalent

1. Introduction to and Survey of Electric Propulsion Systems (~1 week)
2. Electricity and Magnetism, & Charged Particles (~2 weeks)
3. Kinetic Theory, Ionization of Gases, & Plasma Physics (~3 weeks)
4. Electrothermal Propulsion (~2 weeks)
 - Resistojets
 - Electrical Discharges
 - Arcjets
5. Electromagnetic Propulsion (~2 weeks)
 - The Lorentz Force
 - Magnetoplasmadynamic (MPD) Thrusters
 - Pulsed Plasma Thrusters (PPTs)
6. Electrostatic Propulsion (~4 weeks)
 - Ion Engines
 - Hall Thrusters
 - Field Emission Electric Propulsion [FEEP] (*if time permits*)
 - Colloid Thrusters (*if time permits*)