

To: The Faculty of the College of Engineering
From: The School of Aeronautics and Astronautics
Date: March 23, 2021
Re: Fast track EFD: AAE339 Updated Learning Outcomes

Course: AAE 33900 Aerospace Propulsion

Reason: The updated Learning Outcomes more closely reflect the actual course content, precisely identify topics, and are worded in improved outcomes language.

From:

1. Knowledge of propulsion applications that use gas turbine engines and rockets.
2. Understanding of the Brayton cycle and ability to calculate enthalpy and work balance.
3. Ability to solve mass, momentum, and energy balances using a control volume approach.
4. Ability to perform top-level performance and sizing calculations of gas turbine engines.
5. Ability to apply Euler's work equation to compressors and turbines to calculate work.
6. Ability to use the Rocket Equation to calculate impulse requirements and size rocket thrusters.

To:

1. Demonstrate a knowledge of conventional propulsion system types, their form, the functions of their components, and the applications for which they are suited.
2. Calculate the properties of 1D compressible flow with area change, energy exchange (heat and work), friction, and shocks.
3. Apply laws of conservation and the 2nd Law of thermodynamics to calculate thrust and specific impulse.
4. Calculate performance and efficiency of ramjets, turbojets, turbofans, turboprops and rockets and their components including inlets, compressors, pumps, combustors, turbines, and nozzles.
5. Derive propulsion requirements from mission requirements and perform top-level sizing calculations of ramjets, gas turbine engines, liquid rockets, and solid rockets.

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