

Department: Aerospace Engineering
Level and Major: Undergraduate

Division: Flight Mechanics

Course Title: Simulations Fundamentals

Number of Credits: 3

Prerequisite: Concurrent with Flight Mechanics (II)

Lecturer: Kamran Raissi

Course Description:

Simulation of Electrical and Mechanical systems, aircraft and projectiles, control system, and autopilot

Course Goals and Objectives:

Learn to model and simulate in Math lab-Simulink software and predict the behavior of the system.

Course Topics:

- Modeling methodology
- Modeling validation
- Simulation Philosophy
- Math lab-Simulink software
- Electrical system simulation
- Mechanical system simulation
- Three degree of freedom aircraft simulation
- Six degree of freedom aircraft simulation
- Three degree of freedom projectile simulation
- Six degree of freedom projectile simulation
- Control system simulation
- Autopilot simulation

The course aims to:

Ability to model and simulate a system

Reading Resources

- R. Dorf, R. Bishop, “Modern Control System, 12th Ed.”, Prentice Hall Publishing.
- Anon., “Math lab – Simulink Software manual”, Mathworks 2015.

Evaluation:

Midterm Exam

Project

Final exam