EAS201 Aerospace Propulsion

Level: 2
Credit Units: 5 Credit Units
Language: ENGLISH
Presentation Pattern: EVERY JAN

Synopsis:

The aim of this course is to equip students with adequate knowledge of aerospace propulsion as they enter the aviation industry, whether it be an aero-engine company or otherwise.

Most modern aircraft are powered by gas turbine engines. The course introduces students to various methods of aerospace propulsion before focusing on gas turbines and ramjets. Students will apply engineering principles and laws to gas turbine theories and be conversant with computing engine thrust, efficiencies and other gas turbine parameters and concepts. They will have to perform parametric cycle analysis of both ideal and real engine cycles. At the same time, students will develop an understanding of the construction of the various types of gas turbines and their key subsystems like fuel and ignition systems.

To augment their understanding and knowledge retention, students will attend laboratory sessions where they will explore the behavior of the gas turbine engines under varying operating conditions through computer simulations.

Topics:

- Introduction to Aerospace Propulsion Systems
- Aircraft Gas Turbine Engine Basics
- Analysis and Performance of Airbreathing Propulsion Systems – Part I
- Performance of Gas Turbine Engine Components
- Analysis and Performance of Airbreathing Propulsion Systems – Part II
- Aircraft Gas Turbine Engine Systems

Textbooks:

EAS201 Study Guide
ISBN-13: SG-0705

Design Project and Laboratory Manual Booklet
ISBN-13: EAS201 LabM

Learning Outcome:

- Explain of the theory of gas turbines and ramjets.
- Describe the construction and characteristics of different types of gas turbine engines.
- Illustrate the performance of aerospace propulsion systems.
- Analyse individual component performance and component matching
- Discuss the methodologies used in improving efficiencies and increasing specific work outputs of an aerospace propulsion system.
- Solve a Parametric Cycle Analysis for Ideal Engines.
- Calculate a Parametric Cycle Analysis for Real Engines.
- Apply self-study and individual lab assignment skills learned on the course in aerospace MRO work.

Assessment Strategies - Regular Semester (Evening Class):

Components	**Description**	**Weightage Allocation (%)**
Overall Continuous Assessment	QUIZ 1	10
	LAB REPORT 1	12
	TUTOR-MARKED ASSIGNMENT 1	8
Overall Examinable Components	Written Exam	70
Total		**100**

*The information listed is subject to review and change.