

# **EAS305e Aircraft Electrical, Instrument Systems/Servomechanisms and Electronics**

**Level:** 3

**Credit Units:** 5 Credit Units

**Language:** ENGLISH

**Presentation Pattern:** EVERY JULY

**E-Learning:** BLENDED - Learning is done MAINLY online using interactive study materials in Canvas. Students receive guidance and support from online instructors via discussion forums and emails. This is supplemented with SOME face-to-face sessions. If the course has an exam component, this will be administered on-campus.

## **Synopsis:**

The course will provide students with a detailed understanding of aircraft electrical fundamentals and the operational characteristics of variable speed drive systems. He/She will be familiar with the terminology associated with these units, and be able to make an intelligent choice on the most appropriate system for a particular aerospace system application.

The course will provide an intermediate/advanced level treatment on the principles of operation and systems configuration / design of aircraft electrical and instrument systems.

## **Topics:**

- Electrical Fundamentals
- Electrical Systems
- Instrument Systems
- Inverters
- DC Motors
- AC Motors

## **Textbooks:**

Muhammad H. Rashid (University of West Florida): Power Electronics: Circuits, Devices and Applications (eTextbook) 4th edition. Pearson Educational International  
ISBN-13: 9780273785149-AA

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**Learning Outcome:**

- Distinguish the different types of electrical motors and the related drive units.
- Compare the electrical layout of different classes of aircrafts.
- Appraise the elements of aircraft instrumentation and integration of the system to meet the control, navigational and operational requirements of aircraft.
- Illustrate the terminologies used in aircraft control.
- Demonstrate the effects of external forces on the aircraft control system into control component specifications.
- Apply different subsystems that form the aircraft control system in block diagram form and formulate transfer function of each subsystem.
- Formulate test procedures to evaluate performance of aircraft control system and interpret results.
- Infer the laboratory sessions to physical systems in aircraft and getting feel of actual aircraft systems.
- Interpret case studies with theory learnt and relate relevance of lecture material to systems operational in latest aircrafts.

**Assessment Strategies:**

<b>Continuous Assessment Component</b>	<b>Weightage (%)</b>
PRE-CLASS QUIZ	2
PRE-CLASS QUIZ	2
PRE-CLASS QUIZ	2
QUIZ	12
LAB REPORT	12
<b>Sub-Total</b>	<b>30</b>

<b>Examinable Component</b>	<b>Weightage (%)</b>
Written Exam	70
<b>Sub-Total</b>	<b>70</b>

**Weightage Total** **100**