The Hong Kong University of Science and Technology

Aerospace Engineering Laboratory / MECH3690 (3 Credits)

Pre-/co-requisites: Fundamental AE courses

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Course Description

This course provides a series of aerospace engineering hands-on laboratories, which are covered through both Lectures and Experiments. Lectures introduce general information on how to design, perform and exploit experimental tests, along with some basic information pertaining to each experimental topic. Experiments include basic tests pertaining to flows and structures, along with more advanced tests relating to specific topics e.g. propulsion aerodynamics/aeroacoustics, aircraft design and flight dynamics (through a glider design competition). The course is geared to aerospace engineering students who have completed fundamental AE courses.

Assessments

Assessment Task	Contribution to Overall Course grade (%)
Lab participation & notebooks	10%
Mid-Term course quiz	15%
Lab reports	75%

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
Lab experiments, notebooks and reports	ILOs 1 to 5	This task assesses the students' ability to demonstrate their mastery of the theoretical knowledge (ILO1) and experimental protocols (ILO2) pertaining to aerospace engineering, thereby proving their capacity to conduct experiments and analyze test data (ILO3, ILO4) whilst working as a team (ILO5).
Midterm course quiz	ILOs 1-4	This task assesses the students' ability to demonstrate their mastery of the theoretical knowledge (ILO1) experimental protocols (ILO2) pertaining to aerospace engineering, thereby proving their capacity to conduct experiments and analyze test data (ILO3, ILO4).

Required Texts and Materials

1. Lectures material (incl. the dedicated "AE lab" manual)

2. Recommended Textbooks (advised)
   - Richard S. Figliola and Donald E. Beasley, 1995, Theory and Design of Mechanical Measurements, John Wiley & Sons
   - Joseph E. Shigley and Charles R. Mischke, 1989, Mechanical Engineering Design, 5th. ed., McGraw Hill