

AEROSPACE ELECTRONICS COURSE MODULES

Always dreamt of navigating an aircraft from its cockpit one day? Or handling the in-flight entertainment and control systems onboard modern planes? With the Diploma in Aerospace Electronics [AE], the sky's the limit.

The course will provide you with a strong engineering foundation as well as a firm grounding in the design and application of electronics in aviation. You will also get to study the principles of flight and learn to fly an aircraft using a realistic flight simulator. If you are game enough, you can even sign up for national competitions such as the Singapore Amazing Flying Machine Competition and overseas competitions such as the International Unmanned Flying Car Competition in South Korea.

In the first two years, we will strengthen your engineering knowledge with modules such as Engineering Mathematics, Engineering Mechanics and Programming. You will also gain an overview of the avionics systems such as a plane's radar and global positioning system, and learn how to maintain an aircraft's electronics. In your final year, you will learn about the various sophisticated systems on an aircraft, such as navigation and communication systems.

Then, put your knowledge and skills into practice with either an industry project or an internship with industry leaders such as Airbus Helicopters, Hawker Pacific Aerospace, Rockwell Collins, Scoot, SilkAir, ST Aerospace, ST Electronics and Thales Solutions Asia.

LEVEL 3.1

Aircraft Electrical & Instrumentation Systems

The aim of this module is to introduce the fundamental concepts avionic interfacing techniques, electrical power systems and distribution, wiring practices and installations, and fundamentals of flight control as part of our efforts to meet the CAAS SAR-66 requirements of obtaining a license as a Licensed Aircraft Engineer. It also covers aspects of in-flight entertainment and other sub-systems to meeting the aforesaid requirements. The module will endeavor to bridge the gap between class room learning and actual working with the systems on an aircraft through hands-on laboratory work.

Aircraft Navigation & Communication Systems

This module provides students with the theory of operations and functional description of airborne navigation and communication systems. The airborne navigation systems include Automatic Direction Finder, VHF Omnidirectional Range, Distance Measuring Equipment, Instrument Landing System, Radar, Inertial Navigation System and VLF Navigation System such as LORAN-C. The airborne communication systems include HF and VHF communication systems. The standard digital data-bus communications protocol such as ARINC 429 and ARINC 629 used by commercial aircraft and MIL-STD-1553B by military aircraft will also be covered.

Avionics Project Design

A Problem-based Learning (PBL) approach which combines the fundamental learning process and engineering problem solving. This module is designed to impart the prerequisites skill and knowledge like problem analysis, software tools, definition and formulation in engineering terms before engaging them in real-life problem solving.

Fundamentals of Control Systems

This module provides students with a basic coverage of feedback control systems. The topics cover basic concepts of automatic control, components of control systems, simple analytical tools, and stability analysis of systems. Students are also introduced to the use of MATLAB or SIMULINK as a computer tool in control systems analysis.

Project ID - Connecting the Dots (IS Module)

This module aims to prepare students for an increasingly globalized and interconnected world where problems are multi-faceted and require interdisciplinary research and collaboration to solve. Using a project-based learning approach, students will have the opportunity to work in a multi-disciplinary team to investigate and propose comprehensive recommendations for a pressing real-world problem affecting Singapore. They will be guided to step out of their disciplinary silos and effectively communicate and collaborate with peers from different backgrounds. Ultimately, the module seeks to develop independent learning skills and the ability to synthesize diverse strands of

knowledge to solve a complex problem, while impressing on students the importance of being a responsible global citizen.

LEVEL 3.2

Six-Month Internship (Local/Overseas)

In this module, students will be attached to sponsoring companies or institutions for a period of approximately six months. During their internships, they will undertake projects assigned by the company / institution. Activities may be related to operations, research, project, maintenance, etc.

Final Year Project

In this module, students will work together in teams of three to design and implement a project that demonstrates their engineering skills as well as teamwork. The module is structured to encourage creativity and innovative thinking. This will also help students develop a positive work attitude and good team spirit. Students are required to demonstrate their ability and resourcefulness in implementing their selected project design solution. The scope of work includes printed circuit board fabrication, wiring, assembly and testing of the final prototype. In addition, software-based projects may require database coding, operating system implementation and testing, server and client system design, portable design field test and Web-based integration.

COURSE CURRICULUM

Module Name	Credit Units
YEAR 3	
Level 3.1 (24 hours per week)	
Aircraft Electrical & Instrumental Systems	5
Aircraft Navigation & Communication Systems	5
Avionics Project Design	5
Fundamentals of Control Systems	5
Project ID: Connecting the Dots ^	4
Level 3.2 (22 hours per week)	
INTERNSHIP	
6-Month Internship	22
NON-INTERNSHIP	
Final Year Project	22

Notes:

^ For more details on Interdisciplinary Studies (IS) electives, please log on to www.np.edu.sg/is/

IS Modules

The School of Interdisciplinary Studies (IS) delivers a broad-based curriculum, which nurtures a new generation of professionals with multidisciplinary skills and an innovative and entrepreneurial spirit to meet the challenges of a knowledge economy. IS offers both prescribed modules and electives to challenge boundaries. Prescribed modules develop students' competencies in core areas such as Communication, Innovation and Enterprise, Culture and Communication, and Personal Mastery and Development, while elective modules provide insights into Arts and Humanities, Business, Design, and Science and Technology.