



COURSE OUTLINE

ELR104

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Course Code: Title	ELR104: ELECTRICAL FUNDAMENTALS										
Program Number: Name	4061: AVIATION TECHNOLOGY										
Department:	ELECT./INSTRUMENTATION PS										
Semester/Term:	17F										
Course Description:	An introductory course designed to give an overview of terms, devices, symbols and analysis techniques used in DC circuits, as they relate to the Aviation Industry. Topics include series, parallel and series-parallel DC circuit analysis. Other topics include an introduction to magnetism and magnetic devices, inductors and capacitors and their principle operation in DC circuits, an introduction to AC circuits, phasor diagrams and RLC circuit analysis basics. The course will be directed towards Aircraft systems, and all course material will be related to aircraft components, including Aircraft Batteries, Motors, Generators, and Power distribution, with a focus on reading, and understanding Aircraft General Electrical Systems Schematics, as found in any Aircraft Manual.										
Total Credits:	3										
Hours/Week:	3										
Total Hours:	45										
Prerequisites:	AVF111, AVF115, AVF117, AVT119, CMM115, GEN100, MTH612, PHY125										
This course is a pre-requisite for:	AFT130, AVF241, AVF242, AVF245, AVT248, ELN224										
Essential Employability Skills (EES):	#3. Execute mathematical operations accurately. #4. Apply a systematic approach to solve problems.										
Course Evaluation:	Passing Grade: 50%, D										
Evaluation Process and Grading System:	<table border="1"> <thead> <tr> <th>Evaluation Type</th> <th>Evaluation Weight</th> </tr> </thead> <tbody> <tr> <td>Assignments</td> <td>10%</td> </tr> <tr> <td>Attendance</td> <td>5%</td> </tr> <tr> <td>Quizzes</td> <td>10%</td> </tr> <tr> <td>Tests</td> <td>75%</td> </tr> </tbody> </table>	Evaluation Type	Evaluation Weight	Assignments	10%	Attendance	5%	Quizzes	10%	Tests	75%
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Tests	75%										

Books and Required Resources:

Aircraft Electricity and Electronics by Thomas K. Eismin
Publisher: McGraw-Hill Edition: 6
ISBN: 978-0071799157

Scientific Calculator, similar to Sharp EL-520W

Course Outcomes and Learning Objectives:**Course Outcome 1.**

Analyse Series, Parallel and Series-Parallel DC circuits containing voltage and current sources and resistors, to determine individual voltage, current and power values.

Learning Objectives 1.

Complete mathematical questions from text and assignments
Choice and use of network Theorems to aid in analysis

Course Outcome 2.

Analyse magnetic properties of circuits and devices.

Learning Objectives 2.

Determine the direction of magnetic flux present as a result of DC current flow in a conductor.
Determine the direction of magnetic flux present as a result of DC current flow in a coil
Determine the direction of rotation of a simple dc motor
Determine the direction of current flow in a simple dc generator
Completion of DC machine diagrams showing flux fields, main fields and rotation

Course Outcome 3.

Analyse a DC circuit containing inductors or capacitors and resistors, to determine charge and discharge characteristic values.

Learning Objectives 3.

Completion of RL and RC circuit questions regarding time constants
Completion of RL and RC circuit questions requiring the solution of the time for threshold voltage or current achievement

Course Outcome 4.

Analyse an AC circuit containing inductors and capacitors, to determine total impedance, current, phase angles and power factor.

Learning Objectives 4.

Completion of AC sine wave characteristics questions
Completion of impedance calculations in AC circuits

Current and voltage phase angle calculations
Power factor correction in parallel AC circuits

Course Outcome 5.

Practical knowledge of Aircraft Electrical Systems, and basic ability to read and understand schematic drawings.

Learning Objectives 5.

Aircraft starters, generators, and related control circuits.
Power Distribution Systems
Design and maintenance of aircraft electrical systems.

Date:

Tuesday, January 23, 2018

Please refer to the course outline addendum on the Learning Management System for further information.