

# SCIE C1606: Aviation Science 2

Creadits:         5           Oradits:         5           MRQ Level:         6           Module Delivered In         3 programme(s)           Teaching & Learning Strategies:         The course delivery is a mixture of active learning and prescribed learning. Prescribed learning will take the form of lectures where the student will be introduced to core concepts in Physics with a particular focus on tippis that are relevant to their across where in a dual as engine design and fibre optics. Active learning will take the form of laboratory exercises with a particular focus on tippis that are relevant to their across where in the attroduced to core concepts in Physics. With a particular focus on tippis that are relevant to their across where in the student will be to fieldiate the student to be to be to relate the developing important relational knowledge of the fectures with real-life objects thereby developing important relation at multistructural and multistructural and multistructural in antifections. It is furthermore envisioned that the knowledge developed here can later be extended as it will complement later modules, which they will and cancer their degree, that focus on propulsion systems, optical measurements, and communications.           Learning Outcomes         Consuccessful completion of this module the learner should be able to:           L01         Develop knowledge of the various fields of study in Physics with a called objects and problems.           L03         Analyse and appriase experimental data in a laboratory environment.           L04         Gain experience of various forms of instrumentation and measurement equipment.           L05         Deve	Module Title:		Aviation Science 2			
NFQ Level:         6           Module Delivered In         3 programme(s)           Teaching & Learning Strategies:         The course delivery is a mixture of active learning and prescribed learning. Prescribed learning will take the form of lectures where the student will be introduced to core concepts in Physics with a particular focus on bojics that are relevant to their aeronautical career such as linear and rotational motion as well as engine design and fibre optics. Active learning will take the form of laboratory excitoses in Physics. The goal of these active learning sessions in the laboratory will be to facilitate the student to be able to relate the prescribed instituctural an ombiative curral nowable of the lectures with real-like objects thereby developing important relational knowledge.           Module Aim:         The aim of this module is to allow the student the opportunity to understand difficult but fundamental ideas from Physics with an emphasis on their practical ranifications. It is furthermore envisioned that the knowledge developed here can later be extended as it will complement later modules, which they will undertake in their degree, that focus on propulsion systems, optical measurements, and communications.           Learning Outcomes         Con successful completion of this module is of study in Physics namely matter, kinetics, dynamics, thermodynamics, wave-motion and optics.           L01         Develop knowledge of the various fields of study in Physics namely environment.           L02         Demonstrate the mathematical skills required to apply formulae to real-life objects and problems.           L03         Analyse and appraise experimental data in a laboratory environment.	Language of Instruction:		English			
Module Delivered In       3 programme(s)         Teaching & Learning Strategies:       The course delivery is a mixture of active learning and prescribed learning. Prescribed learning will take the form of lectures where the student will be introduced to core concepts in Physics with a particular focus on problem solving skills as well as examine and measure fundamental processes where the student form of lectures where the student will be introduced to core concepts in Physics. The goal of these active learning sessions in the laboratory will be to facilitate the student to be able to relate the prescribed unistructural and multistructural knowledge.         Module Aim:       The aim of this module is to allow the student the opportunity to understand difficult but fundamental ideas from Physics with an emphasis on their practical ramifications. It is furthermore envisioned that the knowledge developed here can later be extended as it will complement later modules, which they will undertake in their degree, that focus on propulsion systems, optical measurements, and communications.         Learning Outcomes       Develop knowledge of the various fields of study in Physics namely matter, kinetics, dynamics, thermodynamics, wave-motion and optics.         L01       Develop knowledge of the various fields of study in Physics namely matter, kinetics, dynamics, thermodynamics, wave-motion and optics.         L02       Demonstrate the mathematical skills required to apply formulae to real-life objects and problems.         L03       Analyse and appraise experimental data in a laboratory environment.         L04       Gain experience of various forms of instrumentation and measurement equipment.         L05	Credits:	Credits: 5				
Teaching & Learning         The course delivery is a mixture of active learning and prescribed learning. Prescribed learning will take the form of learner where the student will be infroduced to core concepts in Physics with a particular focus on topics that are relevant to their aeronautical career such as linear and rotational motion as well as engine design and fibre optics. Active learning will be the form of learner subtents will be infroduced to core concepts in Physics. The goal of these active learning sexils as well as examine and measure fundamental processes in Physics. The goal of these active learning will be to facilitate the student to beals to relate the eveloping important relational knowledge.           Module Aim:         The aim of this module is to allow the student the opportunity to understand difficult but fundamental ideas from Physics with an emphasis on their practical ramifications. It is furthermore envisioned that the knowledge developed here can later be extended as i will complement later modules, which they will undertake in their degree, that focus on propulsion systems, optical measurements, and communications.           Learning Outcomes         Dr successful completion of this module the learner should be able to:           LO1         Develop knowledge of the various fields of study in Physics namely matter, kinetics, dynamics, thermodynamics, wave-motion and optics.           LO2         Demonstrate the mathematical skills required to apply formulae to real-life objects and problems.           LO3         Analyse and appraise experimental data in a laboratory environment.           LO4         Gain experience of various forms of instrumentation and measurement equipment.           LO5         Develop	NFQ Level:	6				
Strategies:       form of lectures where the student will be introduced to core concepts in Physics with a particular focus on topics that are relevant to their aeronautical career such as linear and rotational motion as well as engine design and fibre optics. Active learning will take the form of laboratory exercises where students will develop probem-solving skills as well as examine and measure fundamental processes in Physics. The goal of these active learning sessions in the laboratory will be to facilitate the student to be able to relate the prescribed unsiturcutural and nutlistructural and in knowledge of the lectures with real-life objects thereby developing important relational knowledge.         Module Aim:       The aim of this module is to allow the student the opportunity to understand difficult but fundamental ideas from Physics with an emphasis on their practical ramifications. It is thremore envisioned that the knowledge eveloped here can later be extineed as it will objects and communications.         Learning Outcomes       Con successful completion of this module the learner should be able to:         L01       Develop knowledge of the various fields of study in Physics namely matter, kinetics, dynamics, thermodynamics, wave-motion and optics.         L02       Demonstrate the mathematical skills required to apply formulae to real-life objects and problems.         L03       Analyse and appraise experimental data in a laboratory environment.         L04       Gain experience of various finds wills through active learning in the laboratory environment.         L05       Develop and extend problem-solving skills through active learning outcomes of this module.         Norecommendations <td>Module Deliv</td> <td>vered In</td> <td>3 programme(s)</td>	Module Deliv	vered In	3 programme(s)			
In the properties of the provided eveloped here can later be extended as it will complement later modules, which they will undertake in their degree, that focus on propulsion systems, optical measurements, and communications.         Learning Outcomes         On successful completion of this module the learner should be able to:         L01       Develop knowledge of the various fields of study in Physics namely matter, kinetics, dynamics, thermodynamics, wave-motion and optics.         L02       Demonstrate the mathematical skills required to apply formulae to real-life objects and problems.         L03       Analyse and appraise experimental data in a laboratory environment.         L04       Gain experience of various forms of instrumentation and measurement equipment.         L05       Develop and extend problem-solving skills through active learning in the laboratory environment.         L05       Develop and extend problem-solving skills through active learning outcomes of this module.         No recommendations       Tris is prior learning (or a practical skill) that is recommended before enrolment in this module.         No incompatible Modules       These are modules which have learning outcomes that are too similar to the learning outcomes of this module.         No incompatible modules listed       No co-requisite modules listed         Co-requisite modules listed       Requirements         Requirements       Requirements in this module perfore enrolment in this module is allowed.			form of lectures where the student will be introduced to core concepts in Physics with a particular focus on topics that are relevant to their aeronautical career such as linear and rotational motion as well as engine design and fibre optics. Active learning will take the form of laboratory exercises where students will develo problem-solving skills as well as examine and measure fundamental processes in Physics. The goal of these active learning sessions in the laboratory will be to facilitate the student to be able to relate the prescribed unistructural and multistructural knowledge of the lectures with real-life objects thereby			
On successful completion of this module the learner should be able to:         L01       Develop knowledge of the various fields of study in Physics namely matter, kinetics, dynamics, thermodynamics, wave-motion and optics.         L02       Demonstrate the mathematical skills required to apply formulae to real-life objects and problems.         L03       Analyse and appraise experimental data in a laboratory environment.         L04       Gain experience of various forms of instrumentation and measurement equipment.         L05       Develop and extend problem-solving skills through active learning in the laboratory environment.         L05       Develop and extend problem-solving skills through active learning in the laboratory environment.         L05       Develop and extend problem-solving skills through active learning in the laboratory environment.         L05       Develop and extend problem-solving skills through active learning in the laboratory environment.         L05       Develop and extend problem-solving skills through active learning in the laboratory environment.         L05       Develop and extend problem-solving skills through active learning in the laboratory environment.         L06       Recommendations         This is prior learning (or a practical skill) that is recommended before enrolment in this module is allowed.         No incompatible modules listed       Co-requisite modules listed         Requirements       Tho is prior learning (or a practical skill) that is mandatory before	Module Aim:		from Physics with an emphasis on their practical ramifications. It is furthermore envisioned that the knowledge developed here can later be extended as it will complement later modules, which they will			
LO1       Develop knowledge of the various fields of study in Physics namely matter, kinetics, dynamics, thermodynamics, wave-motion and optics.         LO2       Demonstrate the mathematical skills required to apply formulae to real-life objects and problems.         LO3       Analyse and appraise experimental data in a laboratory environment.         LO4       Gain experience of various forms of instrumentation and measurement equipment.         LO5       Develop and extend problem-solving skills through active learning in the laboratory environment.         Pre-requisite learning       Module Recommendations         This is prior learning (or a practical skill) that is recommended before enrolment in this module.         No recommendations listed         Incompatible Modules         These are modules listed         Co-requisite modules listed         No Co-requisite modules listed         Requirements         Requirements         This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.	Learning Ou	tcomes				
and optics.       and optics.       and optics.         LO2       Demonstrate the mathematical skills required to apply formulae to real-life objects and problems.         LO3       Analyse and appraise experimental data in a laboratory environment.         LO4       Gain experience of various forms of instrumentation and measurement equipment.         LO5       Develop and extend problem-solving skills through active learning in the laboratory environment.         Pre-requisite learning         Module Recommendations         This is prior learning (or a practical skill) that is recommended before enrolment in this module.         No recommendations listed       Incompatible Modules         These are modules which have learning outcomes that are too similar to the learning outcomes of this module.         No incompatible modules listed       Co-requisite Modules         Requirements       This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.	On successfu	I completion of t	his module the learner should be able to:			
LO3       Analyse and appraise experimental data in a laboratory environment.         LO4       Gain experience of various forms of instrumentation and measurement equipment.         LO5       Develop and extend problem-solving skills through active learning in the laboratory environment.         Pre-requisite learning       Module Recommendations         This is prior learning (or a practical skill) that is recommended before enrolment in this module.         No recommendations listed         Incompatible Modules         These are modules which have learning outcomes that are too similar to the learning outcomes of this module.         No incompatible modules listed         Co-requisite modules listed         No Co-requisite modules listed         Requirements         This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.	LO1					
LO4       Gain experience of various forms of instrumentation and measurement equipment.         LO5       Develop and extend problem-solving skills through active learning in the laboratory environment.         Pre-requisite learning         Module Recommendations This is prior learning (or a practical skill) that is recommended before enrolment in this module.         No recommendations listed       Incompatible Modules These are modules which have learning outcomes that are too similar to the learning outcomes of this module.         No incompatible modules listed       Co-requisite Modules         No Co-requisite modules listed       Requirements This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.	LO2	Demonstrate the mathematical skills required to apply formulae to real-life objects and problems.				
LO5       Develop and extend problem-solving skills through active learning in the laboratory environment.         Pre-requisite learning         Module Recommendations This is prior learning (or a practical skill) that is recommended before enrolment in this module.         No recommendations listed         Incompatible Modules These are modules which have learning outcomes that are too similar to the learning outcomes of this module.         No incompatible modules listed         Co-requisite Modules         No Co-requisite modules listed         No Co-requisite modules listed         Requirements This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.	LO3	Analyse and ap	praise experimental data in a laboratory environment.			
Pre-requisite learning         Module Recommendations         This is prior learning (or a practical skill) that is recommended before enrolment in this module.         No recommendations listed         Incompatible Modules         These are modules which have learning outcomes that are too similar to the learning outcomes of this module.         No incompatible modules listed         Co-requisite Modules         No Co-requisite modules listed         Requirements         This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.	LO4	Gain experience	e of various forms of instrumentation and measurement equipment.			
Module Recommendations         This is prior learning (or a practical skill) that is recommended before enrolment in this module.         No recommendations listed         Incompatible Modules         These are modules which have learning outcomes that are too similar to the learning outcomes of this module.         No incompatible modules listed         Co-requisite Modules         No Co-requisite modules listed         Requirements         This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.	LO5	Develop and extend problem-solving skills through active learning in the laboratory environment.				
This is prior learning (or a practical skill) that is recommended before enrolment in this module. No recommendations listed Incompatible Modules These are modules which have learning outcomes that are too similar to the learning outcomes of this module. No incompatible modules listed Co-requisite Modules No Co-requisite modules listed Requirements is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.	Pre-requisite	elearning				
Incompatible Modules These are modules which have learning outcomes that are too similar to the learning outcomes of this module. No incompatible modules listed Co-requisite Modules No Co-requisite modules listed Requirements This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.			ctical skill) that is recommended before enrolment in this module.			
These are modules which have learning outcomes that are too similar to the learning outcomes of this module. No incompatible modules listed Co-requisite Modules No Co-requisite modules listed Requirements This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.	No recomme	ndations listed				
Co-requisite Modules No Co-requisite modules listed Requirements This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.						
No Co-requisite modules listed Requirements This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.	No incompatible modules listed					
Requirements This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.	Co-requisite Modules					
This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.	No Co-requisite modules listed					
No requirements listed						
	No requireme	ents listed				



### SCIE C1606: Aviation Science 2

### **Module Content & Assessment**

#### Indicative Content

#### Matter

Nature of matter: the chemical elements, structure of atoms, molecules; Chemical compounds. States: solid, liquid and gaseous; Changes between states.

#### **Kinetics**

Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity); Rotational movement: uniform circular motion (centrifugal/centripetal forces); Velocity ratio, mechanical advantage and efficiency.

#### Dynamics

Mass Force, inertia, work, power, energy (potential, kinetic and total energy); Momentum, conservation of momentum; Gyroscopic principles; Friction: nature and effects, coefficient of friction (rolling resistance).

#### Thermodynamics

Temperature scales, Heat transfer, Laws of thermodynamics, Gas laws.

#### Optics

Nature of light; speed of light; Laws of reflection and refraction: reflection at plane surfaces, reflection by spherical mirrors, lenses; Fibre optics.

#### Wave Motion and Sound

Wave motion: mechanical waves, sinusoidal wave motion, Periodic motion: simple harmonic motion; Simple theory of vibration, harmonics and resonance; interference phenomena, standing waves; Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect.

Assessment Breakdown	%
Continuous Assessment	10.00%
Practical	30.00%
End of Module Formal Examination	60.00%

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	Class test	1,2	10.00	n/a

No Project

Practical				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Laboratories that relate to measurement equipment and physical object's behaviour will develop problem-solving skills through active learning.	3,4,5	30.00	n/a
End of Module Formal Examination				

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	At the end of the semester, a final examination will be given that will comprise the prescriptive lecture material over the entire semester	1,2,5	60.00	End-of- Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment



## SCIE C1606: Aviation Science 2

### Module Workload

Workload: Full Time				
Workload Type	Frequency	Average Weekly Learner Workload		
Lecture	12 Weeks per Stage	3.00		
Practicals	12 Weeks per Stage	2.00		
Independent Learning	15 Weeks per Stage	4.33		
	Total Hours	125.00		

#### Module Delivered In Delivery Programme Code Semester Programme CW\_EEAER\_B 2 Bachelor of Engineering (Honours) in Aerospace Engineering Mandatory CW\_EEACS\_D 2 Mandatory Bachelor of Engineering in Aircraft Systems CW\_EEPLT\_D 2 Bachelor of Science in Pilot Studies Mandatory