

<b>Module Title:</b>	Dynamic Mechanics
<b>Credits:</b>	5
<b>NFQ Level:</b>	6
<b>Module Delivered In</b>	<a href="#">4 programme(s)</a>
<b>Teaching &amp; Learning Strategies:</b>	The student will be exposed to learning experiences grounded in both classroom and virtual practice. The experiences will be linked through collective analysis, teamwork, and individual challenges.
<b>Module Aim:</b>	To provide the student with an understanding of the underlying scientific principles of the dynamics of mechanical systems.
<b>Learning Outcomes</b>	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Interpret written descriptions of practical dynamic problems.
LO2	Translate written descriptions of dynamic systems into mathematical form as part of the solution.
LO3	Select appropriate mathematical formulae for a given dynamics problem and solve.
LO4	Perform experiments on mechanical engineering dynamics topics and interpret the results.
<b>Pre-requisite learning</b>	
<b>Module Recommendations</b> <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
<b>Incompatible Modules</b> <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
<b>Co-requisite Modules</b>	
No Co-requisite modules listed	
<b>Requirements</b> <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
No requirements listed	

**Module Content & Assessment**
**Indicative Content**
**Linear Motion**

Acceleration, Speed, Velocity, Displacement, Motion. Newton's Laws of Motion. Equations of Motion. Velocity-Time Graphs.

**Kinetic Friction**

Laws of Friction. Limiting Friction. Friction on Horizontal and Inclined Planes.

**Energy, Work and Power**

Work Done by a Force. Power. Work done by Torque. Tractive Effort and Tractive Resistance.

**Linear Momentum**

Elastic and Non-Elastic Collisions. Conservation of Momentum. Kinetic Energy. Potential Energy. Conservation of Energy.

**Circular Motion.**

Angular Velocity and Acceleration. Equations of Motion. Torque. Moment of Inertia. Combined Angular and Linear Motion. Energy and Work.

**Simple Machines**

Law of a Machine. Mechanical Advantage. Velocity ratio. Efficiency and Limiting Efficiency. Applications to Simple Machines.

<b>Assessment Breakdown</b>	<b>%</b>
Continuous Assessment	10.00%
Practical	30.00%
End of Module Formal Examination	60.00%

**Continuous Assessment**

<i>Assessment Type</i>	<i>Assessment Description</i>	<i>Outcome addressed</i>	<i>% of total</i>	<i>Assessment Date</i>
Examination	In Class/Online Assessment	1,2,3	10.00	Week 6

No Project

**Practical**

<i>Assessment Type</i>	<i>Assessment Description</i>	<i>Outcome addressed</i>	<i>% of total</i>	<i>Assessment Date</i>
Practical/Skills Evaluation	Written lab reports on a number of lab experiments: Work and Energy, Friction on an Incline, Screw Jack, Worm and Worm Wheel, Angular Motion. Atwood Machine	1,2,3,4	20.00	Every Second Week
Practical/Skills Evaluation	Computer Competencies Assignment	1,2,3,4	10.00	End-of-Semester

**End of Module Formal Examination**

<i>Assessment Type</i>	<i>Assessment Description</i>	<i>Outcome addressed</i>	<i>% of total</i>	<i>Assessment Date</i>
Formal Exam	An end of module terminal examination assessing all content covered from week 1.	1,2,3	60.00	End-of-Semester

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

**Module Workload**

<b>Workload: Full Time</b>		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	12 Weeks per Stage	4.00
Laboratory	12 Weeks per Stage	1.00
Independent Learning	15 Weeks per Stage	4.33
Total Hours		125.00

**Module Delivered In**

<b>Programme Code</b>	<b>Programme</b>	<b>Semester</b>	<b>Delivery</b>
CW_EMMEC_B	<a href="#">Bachelor of Engineering (Honours) in Mechanical Engineering</a>	2	Mandatory
CW_EEROB_B	<a href="#">Bachelor of Engineering (Honours) in Robotics and Automated Systems</a>	2	Mandatory
CW_EEMEC_D	<a href="#">Bachelor of Engineering in Mechanical Engineering</a>	2	Mandatory
CW_EEROO_D	<a href="#">Bachelor of Engineering in Robotics and Automated Systems</a>	2	Mandatory