APPROVED

MECH8010: IPD Laboratories 2

Module Details

Module Code:	MECH8010
Title:	IPD Laboratories 2 APPROVED
Long Title:	Innovative Product Development
NFQ Level:	Advanced
Valid From:	Semester 1 - 2022/23 (September 2022)
Duration:	1 Semester
Credits:	5
Field of Study:	5211 - Mechanical Engineering
Module Delivered in:	4 programme(s)
Module Description:	This laboratory based module will cover the development of Mechanical Engineering Innovative Prototype Planning, Production and Testing Skills, Energy Utilisation and Efficiency Technologies, Intellectual Property Right Protection, Marketing and Teamwork Management. The IPD Laboratory 2 module is designed as a semester 2 six week follow-on module to semester 1 IPD Laboratories 1 Module.

Learning Outcomes

On successful completion of this module the learner will be able to:

#	Learning Outcome Description
LO1	Devise and implement an innovative prototype production plan including hazard assessment application.
LO2	Undertake innovative product prototype / model production.
LO3	Investigate and apply experimental measurement and proof of concept validation.
LO4	Analyse product development and management in the engineering business / work environment including intellectual property right protection and marketing.
LO5	Submit formal oral presentations, written project reports and exhibition standard promotional material on developed prototype product.
LO6	Demonstrate teamwork and leadership skills.

Dependencies

Module Recommendations

IPD Laboratories 1, Mechanical Design (CAE),Mechanical Materials (2D) , Mechanics of Machines , Thermodynamics (Laws and Cycles), Fluid Mechanics

Incompatible Modules

No incompatible modules listed

Co-requisite Modules

No Co-requisite modules listed

Requirements

No requirements listed

Indicative Content

Foundation and Safety Workshop
n/a

Prototype Production Project Hazard Analysis
n/a

Intellectual Property Protection
n/a

Round-Table Workshops - Prototype Production Plan
n/a

Supervised Self-Directed Workshop
n/a

Energy Utilisation Laboratory
n/a

Experimental Measurement and Research Facilities Laboratory
n/a

Business / Work Environment Laboratory
n/a

Round-Table Workshops Project / Commercial Assessment and Teamwork
n/a

Round-Table Workshops - Advanced Prototype Production and Project Review
n/a

Communications – Teamwork Skills
n/a

Communications - Prototype Development and Production
n/a

Mechanical/Business Interdisciplinary Teams Management
n/a

Prototype Promotion, Marketing and Demonstration
n/a

Module Content & Assessment

Assessment Breakdown	%
Coursework	100.00%

Assessments

Coursework

Assessment Type	Oral Examination/Interview	**% of Total Mark**	10
Timing	Week 4	**Learning Outcomes**	1,5,6

Assessment Description
Round-Table Workshops - Prototype Production Plan Review

Assessment Type	Written Report	**% of Total Mark**	15
Timing	Week 6	**Learning Outcomes**	3,5,6
Assessment Description Laboratory			
Assessment Type	Oral Examination/Interview	**% of Total Mark**	10
Timing	Week 8	**Learning Outcomes**	1,2,6
Assessment Description Round-Table Workshops - Advanced Prototype Production and Project Review			
Assessment Type	Written Report	**% of Total Mark**	15
Timing	Week 8	**Learning Outcomes**	4,5,6
Assessment Description Laboratory			
Assessment Type	Presentation	**% of Total Mark**	15
Timing	Week 10	**Learning Outcomes**	2,4,5,6
Assessment Description Innovative Product Development			
Assessment Type	Written Report	**% of Total Mark**	25
Timing	Week 10	**Learning Outcomes**	3,4,5,6
Assessment Description Innovative Product Development			
Assessment Type	Exhibition Evaluation	**% of Total Mark**	10
Timing	Week 12	**Learning Outcomes**	3,5,6
Assessment Description Prototype Demonstration			

No End of Module Formal Examination

Reassessment Requirement
Coursework Only *This module is reassessed solely on the basis of re-submitted coursework. There is no repeat written examination.*

Module Workload

Workload: Full Time

Workload Type	*Contact Type*	*Workload Description*	*Frequency*	*Average Weekly Learner Workload*	*Hours*
Lab	Contact	Laboratory	Every Week	3.00	3
Independent & Directed Learning (Non-contact)	Non Contact	Workshop	Every Week	2.00	2
Independent & Directed Learning (Non-contact)	Non Contact	Self Directed Study	Every Week	2.00	2
				Total Hours	7.00
				Total Weekly Learner Workload	7.00
				Total Weekly Contact Hours	3.00

Workload: Part Time

Workload Type	*Contact Type*	*Workload Description*	*Frequency*	*Average Weekly Learner Workload*	*Hours*
Lab	Contact	Laboratory	Every Week	3.00	3
Independent & Directed Learning (Non-contact)	Non Contact	Workshop	Every Week	2.00	2
Independent & Directed Learning (Non-contact)	Non Contact	Self Directed Study	Every Week	2.00	2
				Total Hours	7.00
				Total Weekly Learner Workload	7.00
				Total Weekly Contact Hours	3.00

Module Resources

Supplementary Book Resources

Trott P.. (2016), Innovation Management and New Product Development, 6th. Prentice Hall, [ISBN: 1292133422].

O'Kane B.. (2018), Starting a Business in Ireland, 7th. Oak Tree Press, [ISBN: 1 904 887 35X].

Kiyosaki R.T.. (2017), Rich Dad Poor Dad, 2nd. Plata Publishing, [ISBN: 1612680194].

Clason G.S.. (2013), The Richest Man in Babylon, Megaladon, [ISBN: 0553102877].

Tracy B.. (2010), Goals, 2nd. Berret-Koehler, [ISBN: 1605094113].

Jolly A.. (2012), Handbook of European Intellectual Property Management - Developing, Managing and Protecting Yor Company's Intellectual Property, 3rd. Kogan Page, [ISBN: 0 7494 4988 8].

Drafke M.. (2008), The Human Side of Organizations, 10th. Prentice Hall, [ISBN: 9332559422].

Jolly A.. (2013), From Idea to Profit: How to Market Innovative Products and Services, 3rd. Kogan Page, [ISBN: 0 7494 4219 0].

Sloane P.. (2006), The Leader's Guide to Lateral Thinking Skills: Unlocking the Creativity and Innovation in You and Your Team, Kogan Page, [ISBN: 0 7494 4797 4].

Wilson C.C., Kennedy, M.E., Trammell C.J.. (1995), Superior Product Development: Managing the Process for Innovative Products, Blackwell Publishing, [ISBN: 1 5578 6509 0].

Malone M.. (2002), Betting It All: The Entrepreneurs of Technology, Wiley, [ISBN: 0 471 10190 1].

Peake S.. (2018), Renewable Energy - Power for a Sustainable Future, 4th. Oxford University Press, [ISBN: 0198759754].

Boyle G. et al.. (2012), Energy Systems and Sustainability - Power for a Sustainable Future, 2nd. Oxford University Press, [ISBN: 0199593744].

Lynn G., Reilly R.. (2002), The Five Keys to Developing Great New Products, Harper Collins, [ISBN: 0 06 008473 1].

Ugural A.C., Fenster S.K.,. (2019), Advanced Mechanics of Materials and Applied Elasticity, 6th. Prentice Hall, [ISBN: 0134859286].

Goodno B.J., Gere J.M.. (2017), Mechanics of Materials, 9th. Nelson Engineering, [ISBN: 1337093343].

Twidell J.. (2005), Renewable Energy Sources, 2nd. Taylor & Francis, [ISBN: 0419253300].

Dally J.W., Riley W.F.. (2005), Experimental Stress Analysis, College House Enterprises, [ISBN: 0 9762 4130 7].

Cook R.D., Malkus D.S., Plesha M.E.. (2007), Concepts and Applications of Finite Element Analysis, 4th. Wiley, [ISBN: 0 4718 4788 7].

Hearn E.J.. (1997), Mechanics of Materials Volume 2, 3rd. Butterworth Heinemann, [ISBN: 0 7506 3266 6].

Boresi A.P.. (2010), Elasticity in Engineering Mechanics, 3rd. Wiley, [ISBN: 0 4717 0126 2].

This module does not have any article/paper resources

Other Resources

Website, The Human Side of Organizations Website,
http://www.prenhall.com/drafke

Website, Enterprise Ireland Website,
http://www.enterprise-ireland.ie

Website, Engineers Ireland. Code of Ethics and bye-laws,
http://www.engineersireland.ie/about-us/ governance/code-of-ethics-and-bye-laws/

Website, Starting a Business in Ireland Website,
http://startingabusinessinireland.com

Website, Irish Patents Office Website,
http://patentsoffice.ie

Website, Irish Technology User Website,
http://www.techcentral.ie

Website, European Patents Office Website,
http://epo.org

Website, Irish Venture Capital Association Website,
http://ivca.ie

Website, Engineering Fundamentals Website - Stress Analysis,
http://www.efunda.com/formulae/solid_mec hanics/mat_mechanics/stress.cfm

Website, Engineers Edge Website - Mechanics of Materials,
http://www.engineersedge.com/mechanics_m aterial_menu.shtml

Module Delivered in

Programme Code	Programme	Semester	Delivery
CR_EBIOM_8	Bachelor of Engineering (Honours) in Biomedical Engineering	-1	Mandatory
CR_EMECH_8	Bachelor of Engineering (Honours) in Mechanical Engineering	-1	Mandatory
CR_ESMPR_8	Bachelor of Engineering (Honours) in Smart Product Engineering	-1	Mandatory
CR_EPRDD_8	Certificate in Product Design and Development	-1	Mandatory