MODULE DESCRIPTION FORM

DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING

ME105 MECHANICAL ENGINEERING DESIGN

Module Registrar: Dr Andrew McLaren andrew.mclaren@strath.ac.uk	**Taught To (Course): Cohorts for whom class is compulsory**		
Other Lecturers Involved: Dr E Henderson	**Credit Weighting: 20**	**Semester: 1 and 2**	
Assumed Prerequisites: none	**Compulsory class**	**Academic Level: 1**	**Suitable for Exchange: N**

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	**Total**
	40	20	30				10	100	200

Educational Aim

This module aims to place the essential elements of design at the heart of courses for Mechanical Engineering students. It shows how the disparate elements of engineering science may be brought together and used to create a safe, durable and cost-effective solution to a perceived engineering need.

Learning Outcomes

On completion of the module the student is expected to be able to:

LO1 Appreciate and use a range of manufacturing techniques, including hand tools.

LO2 Appreciate the importance of materials selection as a fundamental aspect of the design process.

LO3 Understand the importance of team working and cooperative learning.

LO4 Have a basic appreciation of formal design methods, and the use of sketching and drawing as an essential component of communication.

Syllabus

The module will teach the following:

a) Students will create a model vehicle using a range of manufacturing techniques and develop an appreciation of hand and machine tools for manufacturing and assembly.

b) An introduction to formal design methods, sketching and drawing.

c) An introduction to Engineering Communication, including engineering drawings and their place within the wider context of the manufacturing process.

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1
C1 Students should be able to use a range of hand tools to create and assemble artefacts.
C2 Students should have an appreciation of the use of machine tools in the manufacturing process

LO2
C1 Students should describe the structure and processing of the materials observed
C2 Students should relate structure and processing to materials properties including cost
C3 Students should relate structure, processing and properties to the service conditions of the component.

LO3
C1 Students should complete tasks in teams.
C2 Students should cooperate to produce joint outputs that combine the efforts of each team member

LO4
C1 Students should complete a formal design exercise including the generation of concepts, their evaluation and selection.
C2 Part of students' assessment will be their ability to communicate their design ideas back to the year group.
C3 Students should utilise graphical communication skills in their design project outputs.

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback
(within Assessment and Feedback Policy at: https://www.strath.ac.uk/staff/policies/academic/)

Deliver high quality feedback information that helps learners self-correct:
High quality feedback will be provided by staff to students in groups at all stages of their work. This will involve group discussions, poster review sessions and feedback on project work.

Ensure that summative assessment has a positive impact on learning.
Summative assessments by poster sessions and design presentations will include detailed feedback on an individual and group basis.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations				**Courseworks**		**Projects**	
	Number	Month(s)	Duration	***Weighting***	Number	***Weighting***	Number	***Weighting***
					1	40%	2	60%
L/Outcomes					LO5		LO1-LO4	

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (*academic weeks*): To be advised – will be different for each student group.
Resit Assessment Procedures: Resubmission of coursework prior to commencement of the August exam diet.

PLEASE NOTE:
Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of coursework. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

*****Purchase recommended **Highly recommended reading *For reference (do NOT purchase)**

*** BS 8888:2017 "Technical product documentation and specification.", British Standards. Can be downloaded free on DS using the following link. (https://bsol-bsigroup-com.proxy.lib.strath.ac.uk/Home).

* "Materials Science and Engineering: an Introduction" by Wm D Callister, John Wiley & Sons, Copies in the Main Library.

* "Mastering Manufacturing" by Gordon Mair, Macmillan, 1993, ISBN 0333542304. Copies available in Main Library.

* "Manufacturing Engineering and Technology" by S. Kalpakjian, Addison-Wesley, 1995, ISBN 0201538466. Copies in Main Library.

* "Materials and Processes in Manufacturing" by E.P. DeGarmo, Macmillan, 1984, ISBN 0029-401405. Copies in Main Library.

Additional Student Feedback
(Please specify details of when additional feedback will be provided)

Date	Time	Room No
Depending on group's schedule of activities.		Check timetable webpages for details

Session:2018/19

Students receive regular feedback through discussion with staff during group activities throughout the year. Students will receive grades and detailed feedback in response of myplace quiz. Written feedback for the presentation element of assessment. Other elements of the course will involve verbal feedback only, in the context of group discussions with supervising staff.

Approved:

Course Director Signature: Dr Barbara A. Keating
Date of Last Modifications: 23rd August 2018

(Updated May 2018)

MODULE TIMETABLE

Module Code:	**ME105**	**Module Title:**	**Mechanical Engineering Design**

Brief Description of Assessment:
Buggy design: Each team of 4 produces a brief report on the design and manufacture of their vehicle.

Engineering Communication: Each student must complete a short myplace quiz to test knowledge and understanding of engineering drawings, standards and communication.

Design project: Each team of 4 will produce and present a design project for a product to fulfil a brief supplied by staff.

Assessment Timing:-

Buggy class assignment due at end of semester 1.
Design project presentations will be scheduled over week 10.
Myplace quiz will be week 6.

Please note: Timings can and will change, this should only be used as a guide.

Semester One	W&D Wk	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period
	Choose an item. Choose an item.	Project Set Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Project Submission Choose an item.	Choose an item.

Semester Two	C&D Wk	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period
	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Online Test Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Presentation Choose an item.	Choose an item. Choose an item.	Choose an item.