



MODULE SPECIFICATION

Faculty of Engineering

Last Updated 16th December 2017

1. Module Title

Engineering Statics

2. Module Code

EM1103

3. Number of credits

10

4. Level

1

5. Semester

1

6. Pre-requisites for admission to the module

Normal Entry Requirements

7. Module Coordinator

Dr Judha Purbolaksono

8. Aims

To provide the students with the ability to derive mathematical relationships in mechanics applications, use these relationships to solve a wide range of mechanics problems and relate these problems and their solutions for the successful design of mechanism, bridges and mechanical systems

9. Summary of Contents

The module covers the following topics:

Basic concepts in engineering mechanics, Introduction to statics, , engineering problems in statics, Rectangular components, moment, couple and resultants, Mechanical system isolation, Equilibrium for two and three dimensional force systems.

Analysis of plane trusses by method of joint, Solution of applied problems in trusses, Types of friction, Application of friction in wedges, screws and flexible belts, Principle of virtual work, Potential energy and stability. Centroid of areas and volumes, Beams with internal and external effects.

10. Module Intended Learning Outcomes (MILOs)

Upon successful completion of this module, students will be able to:

No.	MILOs	Weightage (%)
1	Demonstrate understanding of force systems and equivalent force systems with engineering applications.	20
2	Apply the concept of equilibrium to two and three dimensional force systems for rigid bodies.	20
3	Apply the method of joint for the analysis of forces in the members of plane trusses	10
4	Demonstrate the ability to solve problems for the friction in power transmission belts, screws and the bodies on inclined planes.	20
5	Demonstrate the principle of virtual work	10
6	Determine internal actions in statically determinate beams and draw shear Force and Bending Moment Diagrams for the beams.	20

11. Teaching and Learning Activities (TLAs)

MILO No.	TLAs	Functions	Hours/Week
1 - 6	Lecture	The course addresses the analysis of static equilibrium problems with an emphasis on real world engineering applications.	2
2 - 6	Tutorial	Extended support to the students for the solution of mechanics problems.	1
3, 6	Laboratory work	Experimental solution of Mechanics problems.	1

12. Assessment Tasks/Activities

MILO No.	Type of Assessment Tasks/Activities	Weightage (%)
1 - 6	Examination	70
1 - 3	Class Test	10
3, 6	Practical Reports	20

Assessment Criteria:

Assessment components of the module shall be University Examination and Course-works. To achieve a pass in the module students must obtain a minimum overall marks of 50% and a minimum of 40% in each assessment component.

Resit: Students eligible for resit shall be assessed in the respective failed assessment component and to achieve a pass in the resit exam students must satisfy the above assessment criteria.

13. Attendance Requirements

Students are required to attend all laboratory sessions, tutorials and lectures.

14. Contribution to Programme Intended Learning Outcomes

	Knowledge & Understanding	Application	Analysis & Evaluation	Creativity & Design
Maths and Science Underpinning Science and Mathematics for the study of Engineering	✓	✓	✓	
Core Engineering The main principles and core subjects of the relevant Engineering Discipline	✓	✓	✓	✓
Computing and IT Computer-based methods for the analysis and modeling of Engineering problems				
Communication Skills Communicate effectively using a variety of techniques both written and oral		✓		
Engineering Practice Practical application of engineering skills combining theory and experience	✓	✓	✓	
Design Creation, design and development of a product, process or system				
Management & Economics Management and financial methods to achieve objectives in production and projects				
Social & Environmental Professional and ethical conduct; sustainable development; health and safety; environmental impact				

15. Grading of Student Achievement

Letter Grade	% Mark	Grade Definitions
A+	90-100	Excellent
A	85-89	
A-	80-84	
B+	75-79	Good
B	70-74	
B-	65-69	
C+	60-64	Adequate
C	55-59	
C-	50-54	
D+	45-49	Marginal
D	40-44	
F (Fail)	<40%	Fail

16. Resources

Primary texts

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher's Name	ISBN
1	J. L. Meriam , L. G. Kraige, And J. N. Bolton	2014	Engineering Mechanics -Statics	8 th Edition	John Wiley and sons	978-1118807330
2	Russell C. Hibbeler	2015	Engineering Mechanics Dynamics	14 th Edition	Prentice Hall	978-0133918922

Secondary text

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher's Name	ISBN
1	Ferdinand Beer, Russell Johnston, Phillip J. Cornwell and Brain P Self	2016	Vector Mechanics for Engineers	11 th Edition	McGraw-Hill Higher Education	9780077687458

Note:

- Module specification valid for BEng Mechanical Engineering Intake 06 and 07.
- BEng Mechanical Engineering Intake 08 will use the updated grading system of 16th May 2017.