ڕانکۆی پۆلیتەکنیکی ھەولێر
ERBIL POLYTECHNIC UNIVERSITY

Module (Engineering Mechanics II) Catalogue

2022-2023

College/ Institute	College of Erbil Technical Engineering	
Department	Civil Engineering	
Module Name	**Engineering Mechanics 2**	
Module Code	**ENM203**	
Degree	Technical Diploma ☐ Bachelor ■ High Diploma ☐ MSc ☐ PhD ☐	
Semester	1	
Qualification	PhD	
Scientific Title	Lecturer	
ECTS (Credits)	7	
Module type	Prerequisite ☐ Core ■ Assist. ☐	
Weekly hours	4	
Weekly hours (Theory)	(4) hr Class	(189) Total hrs Workload
Weekly hours (Practical)	(0) hr Class	(0) Total hrs Workload
Number of Weeks	15	
Lecturer (Theory)	Dr. Kamaran S. Ismail Tava Dhahir Mohammed	
E-Mail & Mobile NO.	kamaran.ismail@cive.soran.edu.iq tava.mohammed@epu.edu.iq	
Lecturer (Practical)	N/A	
E-Mail & Mobile NO.	N/A	
Websites		

Course Book

Course Description	This course re-introduces the principles required to solve engineering mechanics problems. It addresses the modelling and analysis of static equilibrium problems with an emphasis on real-world engineering applications and problem solving. To master this course, you should have a background in basic calculus and physics covering classical mechanics and also the basics of engineering mechanics. Concepts will be applied in this course from previous courses you have taken in basic math and physics and the first module of engineering mechanics.
Course objectives	In this course, students will continue learning the process for analysis of static objects; concepts of force, moment, and mechanical equilibrium which they got in the first module. In addition to that they will learn how to analysis frames and trusses; how to locate the centroid of an area; how to calculate the second moment of an area, calculate the principal second moments of an area. The tools learned in this course will provide the basis for later courses and a career in engineering.
Student's obligation	expected to attend every class meeting for the entire class period. Only extreme circumstances should require your missing class. If you do miss class, it is your responsibility to obtain announcements, course documents and assignments. You are responsible for material presented in the lecture whether it is discussed in the textbook. You should expect questions on the exams to test your understanding of concepts discussed in the lecture and in the homework assignments. It can be very helpful to study with a group. This type of cooperative learning is encouraged; however, be sure that you have a thorough understanding of the concepts besides the mathematical steps used to solve a problem. You must be able to work through the problems on your own. Students will need to submit the required homework, reports, seminars and/or any other assignments requested by the lecturer in time and in a proper way.
Required Learning Materials	lecture halls with data show equipment for lecture presentations, white board, overhead projector, posters and the handouts of lecture notes will be used as forms of teaching. Also, the online lectures and Moodle platform may be used.

Evaluation	Task	Weight (Marks)	Due Week	Relevant Learning Outcome
	Paper Review			

	Assignments	Homework	10%	1-12	All
		Class Activity	2%	1-12	All
		Report			
		Seminar	8%	8	All
		Essay			
		Project	8%	10	All
	Quiz		8%	1-12	All
	Lab.				
	Midterm Exam		24%	8	All
	Final Exam		40%	14	All
	Total		100%		

Specific learning outcome:	On successful completion of this module, students should be able to 1. Understand the basics of trusses and frames. 2. Define, identify, and carry out equilibrium analysis of frames, trusses, beams and cables. 3. Draw complete and correct free-body diagrams and write the appropriate equilibrium equations from the free-body diagram for trusses and frames. Determine the support reactions on a structure. 4. Determine the connection forces in trusses and in general frame structures. 5. Locate the centroid of an area. Calculate the second moment of an area (moment of inertia), calculate the principal second moments of an area. 6. Analyse systems that include frictional forces.
Course References:	1- Engineering Mechanics - STATICS, by R.C. Hibbeler 2- Engineering Mechanics - STATICS, by J. L. Meriam and L. G. Kraige. 3- A Textbook of Engineering Mechanics, by R. S. Khurmi

Course topics (Theory)	Week	Learning Outcome
Introduction to trusses and Frames	1	1
Trusses and Frames	2	1,2
Trusses and Frames	3	1,2
Trusses and Frames	4	3,4
Centroid of (Line, Area, and Volume)	5	5

Centroid of (Line, Area, and Volume)	6	5
Centroid of (Line, Area, and Volume)	7	5
Moment of Inertia	8	5
Moment of Inertia	9	5
Moment of Inertia	10	5
Friction	11	6
Friction	12	6
Practical Topics	**Week**	**Learning Outcome**
N/A		

Questions Example Design

The exam questions may have similarities with the examples and Homework assignments taught during the course, but it is not necessary to be the same. An Example of the questions:

The roof truss shown in Fig. 13.23 is supported at A and B and carries vertical loads at each of the upper chord points.
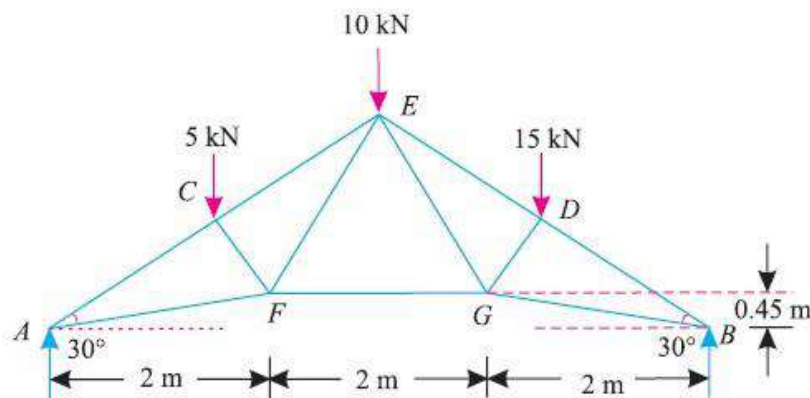

Fig. 13.23.

Using the method of sections, determine the forces in the members CE and FG of truss, stating whether they are in tension or compression.

Extra notes:

able to complete the assigned problems. Lecturing will be kept to a level necessary to create greater understanding of the principles and techniques described in the textbooks. Students will be actively involved in learning during the class. Always bring your calculator and paper.

Because each class builds on previous classes, it is essential to keep up with assignments. Collaboration on homework is allowed for the purpose of improving learning. Any student may be called upon at any time to present a homework solution to the class. Homework will be checked for completion; problem solutions will be returned with the checked homework, so late homework will not be possible.

External Evaluator