AGE-1330
Section 1, CRN: 175/176
Section 2, CRN: 238/239
Section 3, CRN: 1470/1471
Section 4, CRN: 1472/1473

First Semester 1447 H (Fall 2025) – 2(2,1,0)
"Statics"

Course Description

Course-in-brief

Force systems; Vector analysis; Moments, and couples in 2D and 3D; Equilibrium of force systems; Analysis of structures; Plane trusses and frames; Distributed force system; Centroids and composite bodies; Area moments of inertia; Analysis of beams; Friction.

Level: 4 (for more details: https://appliedengineering.ksu.edu.sa/en/node/2973)

Estimated Category Content:
Engineering science: 2 credit hours

Prerequisite:
Math-1110; Math-1120

Time and Place

Section 1	Section 2	Section 3	Section 4
Lecture (175): **Tue: 03:00 – 04:50 PM** (G-D-109) Dr. El-Sherbeeny	Lecture (238): **Sun: 10:00 – 11:50 AM** (G-D-115) Prof. Es-Saheb	Lecture (1470): **Tue: 08:00 – 09:50 AM** (1-E-121) Prof. Es-Saheb	Lecture (1472): **Mon: 10:00 – 11:50 AM** (G-C-136) Dr. El-Sherbeeny
Exercises (176): **Thu: 10:00 – 10:50 AM** (G-D-100) Engr. Abdulaziz Alqahtani	Exercises (239): **Sun: 09:00 – 09:50 AM** (G-D-116) Engr. Shahbaz Yousef	Exercises (1471): **Wed: 09:00 – 09:50 AM** (G-D-100) Engr. Abdulaziz Alqahtani	Exercises (1473): **Wed: 10:00 – 10:50 AM** (G-D-101) Engr. Abdulaziz Alqahtani

Course Resources

Resources for the course include the instructor; assigned textbook and references; class notes and handouts; the library; the World Wide Web.

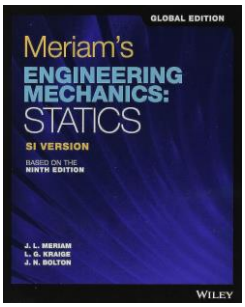
Instructors
Prof. Maher Es-Saheb
email: essaheb@ksu.edu.sa

Dr. Ahmed M. El-Sherbeeny
Office: Room S053; email: aelsherbeeny@ksu.edu.sa
Web Site: https://faculty.ksu.edu.sa/en/aelsherbeeny

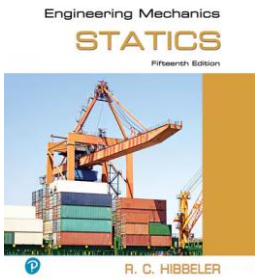
Teaching Assistants
Engr. Abdulaziz Alqahtani

Office Hours
Office hours can be conducted physically, or via Zoom or email. Best times to find me in the office this semester are: **Sun: 03:00 – 05:00 PM; Mon: 03:00 – 05:00 PM, Tue: 10:00 AM – 12:00 PM**; or by appointment.

Textbook: ***Meriam's Engineering Mechanics: Statics***. James L. Meriam, L. G. Kraige, J. N. Bolton. Ninth Edition (SI). Wiley, 2020. ISBN-10: 1119665043; ISBN-13: 978-1119665045.



Reference: ***Engineering Mechanics: STATICS***. R. C. Hibbeler. Fifteenth Edition (SI). Pearson, 2022. ISBN-13: 9780137514663.



Course Objectives

This course introduces students to the basic skills for analysis of simple mechanical systems. In its greater majority, is devoted to modeling and analysis of mechanical systems that are in static equilibrium. An emphasis is placed on drawing a free-body diagram and on selecting an appropriate coordinate system. In solving different problems of the course, students learn to follow general, well-systemized procedures. Creativity is required for skillful application of these procedures. This emphasizes the general engineering approach to problem solving.

Intended Learning Outcomes

At the end of this course, students are expected to acquire knowledge regarding the following:

1. The ability to analyze simple mechanical systems.
2. The ability to model a given mechanical system that is in static equilibrium.
3. The ability to follow general, well-systemized procedures.
4. The ability to draw a free-body diagram and on selecting an appropriate coordinate system.
5. The ability to choose coordinates that suit a given problem.
6. Solve particle and rigid body problems with the ability to visualize physical configuration.
7. Calculate the forces and moments in engineering applications (Structures, Trusses, Beams).
8. Developing the ability to construct free-body diagrams and learn their importance in statics.
9. Developing the ability to understand problem formulation and the construction of a meaningful mathematical model.
10. Understand the importance of developing theory and its limitations for the purpose of solving problems.
11. Developing analytical thinking is necessary for practicing engineering and to realize how theory can only approximate the real world of mechanics.

Course Policies

Attendance

Attendance is a must! Attendance will be taken at the **first minute** of each class period (lecture, tutorial, and lab). The policy for considering attendance is as follows (please take serious note of this):

- If you are present at the time of taking attendance (in your **official section**) you are considered **present**.
- If you arrive late for your official section, then you are counted as **half-present**, so long as you arrive before mid-session (i.e. within the first 25 minutes); if you arrive later than that, then you are counted as absent.
- If you arrive at the time of taking attendance in a section other than yours, then you are counted as **half-present**; if you arrive later than that, then you are counted as absent.
- If you are absent with a valid excuse, you must bring the original excuse within one week for it to be counted.

Make-up Tests and Late Homework Policy

No makeup test will be given and late homework will not be accepted unless the reason is beyond the student's control. A valid, official excuse must be presented.

Class Discussion

Communication is very important in achieving collective goals and objectives. Feel free to voice your opinions and ask questions anytime during a class period. Practice your right and freedom to learn.

Help Sessions

Help sessions will be organized at convenient times as needed upon request from students.

Assessment and Evaluation

Assessment in the following areas will be converted to points, to compute your final grade in the course:

Assessment Item	Comment	Points*
Attendance	Used only to assess denial status	0%
Quizzes + HW	Assigned frequently (note, quiz problems selected from the HW)	10%
Midterm 1	8th Academic Week*	25%
Midterm 2	12th Academic Week*	25%
Final Exam	Exams period (Exams Week 3): **Sunday, Dec. 28, 2025 (08/07/1447H): 08:00 – 10:00 AM**	40%

**** Tentative***

Course Curriculum:

Course topics*:

1. Introduction and Revision (1 Week)
2. Forces Systems, Force, Moment and Couple, Resultants (2 Weeks)
3. Equilibrium, System Isolation, Equilibrium Conditions (2 Weeks)
4. Analysis of structures and frames (3 Weeks)
5. Distributed Forces, Mass Centers and Centroids, Area Moments of Inertia, Beams (2 Weeks)
6. Friction (2 Weeks)

* Subject to change

Selected problems from textbook (4th edition):

Topic	Article	Lecture	Tutorial	Homework	Hours
INTRODUCTION	1/1-7 and Appendix C	1/2, 3			**2**
FORCES SYSTEMS					**4**
2- D force systems					
Force	2/1,2,3	2/7, 13	2/8, 11	2/4, 16	
Moment and Couple	2/4,5	2/31, 38	2/32, 66	2/36, 70	
Resultants	2/6	2/77, 84	2/82, 89	2/88, 90	
3- D force systems					
Rectangular Components	2/7	2/99,104	2/102,107	2/103,113	
Moment and Couple	2/8	2/109,133	2/120,132	2/123,139	
Resultants	2/9	2/148	2/149,160	2/151	
EQUILIBRIUM					**4**
System Isolation	3/1,2	3/A	3/B	3/C	
Equilibrium Conditions	3/3	3/20, 32	3/14, 44	3/24, 40	
ANALYSIS OF STRUCTURES AND FRAMES					**5**
Plane trusses	4/1-2				
Method of Joints	4/3	4/1,10	4/3,11	4/6,10	
Method of Sections	4/4	4/30	4/31,40	4/24	
Frames and Machines	4/6	4/69,73	4/78,83	4/70,82	
DISTRIBUTED FORCES					
Mass centers & Centroids	5/1,2,3,4	5/1, 7	5/8, 50	5/17, 41	**4**
Area Moments of Inertia	A/1,2,3	A/13, 50	A/21, 42	A/2, 42	**4**
Beams	5/6,7	5/93,93*, 118	5/97, 121	5/96, 119	**4**
FRICTION	6/1,2,3	6/4, 12	6/8, 9	6/2, 5	**3**