Identification	Subject	ME317, Technical Drawing and Design, 6 ECTS
	Department	Mechanical Engineering
	Program	Undergraduate
	Term	Spring 2026
	Instructor	Anar Khalilov
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	Phone:	
	Classroom/hours	
	Office hours	
Prerequisites		
Language	English	
Compulsory/Elective	Compulsory	
Required textbooks and course materials	Engineering drawing 2nd edition. Basant Agrawal, C M Agrawal, 2014 Engineering Drawing Plane and solid geometry. 50th edition. N D Bhatt. 2011 SolidWorks 2025 Step by step guide. Amit Bhatt, Mark Wiley. 2025 Introducing SolidWorks. Dassault systems.	
Course website		
Course outline	This course introduces fundamental principles of technical drawing and engineering design. Students learn the use of drawing instruments, standard conventions, geometric constructions, and engineering projections including orthographic, isometric, oblique, and perspective views. The course also introduces computer-aided design (CAD) using SolidWorks, covering sketching, solid modeling, assemblies, and engineering drawings. Emphasis is placed on visualization, accuracy, and interpretation of engineering graphics for design communication.	
Course objectives	The objectives of this course are to: • Introduce the fundamental principles and standards of technical and engineering drawing. • Develop students' ability to visualize and represent three-dimensional objects using two-dimensional projections. • Teach geometric constructions and engineering curves used in design and drafting. • Enable students to read, interpret, and create orthographic, isometric, oblique, and perspective drawings. • Provide foundational skills in computer-aided design (CAD) using SolidWorks for sketching, modeling, assemblies, and drawings. • Prepare students to communicate engineering design ideas clearly and accurately through graphical methods.	
Learning outcomes	Upon successful completion of this course, students will be able to: • Use standard drawing instruments, sheet layout, line types, lettering, and dimensioning according to engineering drawing conventions. • Perform geometric constructions, scales, and engineering curves accurately for technical drawing applications.	

	• Visualize and represent three-dimensional objects through orthographic projections of points, lines, planes, and solids. • Create sectional views and apply isometric, oblique, and perspective projection methods to represent engineering components. • Develop 2D sketches and 3D solid models using SolidWorks, including reference geometry, features, and patterns. • Create assemblies and generate engineering drawings with appropriate views and dimensions using CAD tools. • Interpret and communicate engineering design information effectively through graphical representations.

Teaching methods		
	Lecture	x
	Group discussion	x
	Experiential exercise	-
	Tutorials once a month on weekends	-
	Case analysis and assignments	x
	Course paper	-
	Others	---

Evaluation	Methods	Date/deadlines	Percentage (%)
	Midterm Exam		30
	Attendance & Activity	At each lesson	5
	Quiz (4 quizzes)	During the semester	15
	Assignment	During the semester	10
	Final Exam		40
	Total		100

Policy	
	▪ **Ethics** Copy of other students' work is highly discouraged. All assignments must be handled by the student himself. This is a university policy and violators will be reprimanded accordingly. ▪ **Preparation for class** The structure of this course demands your individual effort outside the classroom for extra practice of many problems within the textbook. After each session, every student needs to put sufficient time to practice and finish the assignments by the predetermined date. • **Withdrawal (pass/fail)** This course strictly follows the grading policy of the School of Engineering. Thus, a student is expected to achieve a mark of at least 60% to pass. In case of failure, he/she will be required to repeat the course the following term or year. ▪ **Cheating/plagiarism** Cheating or other plagiarism in handling the assignments, Mid-term and Final Examinations will lead to course failure. In this case, the student will automatically get zero (0), without any considerations. ▪ **Professional behavior guidelines** The students shall behave in a way to create a favorable academic and professional environment during the class hours. Unauthorized

discussions and unethical behavior are strictly discouraged.

- **Attendance & Activity**
  Attendance and in-class activity constitute 5 marks out of the total 100 marks for this course. Students who attend and actively participate in class activities will receive these marks. For each unexcused absence, 1 mark will be deducted from the attendance and activity score.

- **Quiz**
  Quizzes constitute 15 marks out of the total 100 marks for this course. Four quizzes will be conducted during the semester. Quiz questions will primarily assess students' understanding of key concepts in technical drawing, geometric constructions, and basic projection techniques. Full credit will be awarded only for clearly presented answers with accurate drawings, proper dimensions, and correct justification of the results.

- **Assignment**
  Assignments will contribute to the overall course grade by evaluating students' ability to apply drawing techniques, create sketches, and develop engineering drawings using both manual and CAD methods. Students are expected to submit accurate, well-organized, and properly annotated drawings.

- **Exam**
  The midterm and final examinations will evaluate students' understanding of technical drawing principles and engineering design concepts covered in the course. Emphasis will be placed on visualization, geometric constructions, projection methods, and CAD-based modeling and drafting skills. Problem-solving, accuracy, and clarity of graphical presentation will be key criteria for evaluation.

Tentative Schedule

Week	Date/Day (tentative)	Topics	Textbook/ Assignments
1		Syllabus- Drawing instruments and sheet layout. Lines, Lettering and dimensioning	Book 1, Chapter 1 & 2 Book 2, Chapter 1, 2 & 3
2		Geometrical constructions. Scales	Book 1, Chapter 3 & 4 Book 2, Chapter 4 & 5
3		Conic sections. Engineering curves and Loci of points. Orthographic projection.	Book 1, Chapter 5, 6 & 7 Book 2, Chapter 6, 7 & 8
4		Projection of points, straight lines	Book 1, Chapter 8 & 9 Book 2, Chapter 9 & 10
5		Projection of planes and solids	Book 1, Chapter 10 & 11
6		Sections of Solids	Book 1, Chapter 12
7		Isometric projections. Oblique projections. Perspective projections	Book 1, Chapter 15, 16 & 17

8		Review **Midterm Exam**	
9		Getting started with Soliworks. Basic sketching tools	Book 3, Chapter 1 & 2 Book 4, Chapter 2
10		Advance sketching and editing tools. Applying dimensions and geometric relations	Book 3, Chapter 3 & 4
11		Solid modeling tools. Referance geometry and curves	Book 3, Chapter 5 & 6 Book 4, Chapter 3
12		Hole features and Pattern Geometry	Book 3, Chapter 7
13		Advance Solid modeling tools	Book 3, Chapter 8 & 9
14		Creating assemblies	Book 3, Chapter 10 Book 4, Chapter 4
15		Drawings and views	Book 3, Chapter 11 Book 4, Chapter 5
16		**Final Exam**	

This syllabus is a guide for the course and any modifications to it will be announced in advance.