DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGY
COURSE SYLLABUS

Course Details				
Code	**Academic Year**			**Semester**
EBT105	1			1
Title	**T**	**A**	**L**	**ECTS**
Technical Drawing and Computer Aided Design	2	0	4	6

Language	German					
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**	
Department / Program	Energy Science and Technology					
Forms of Teaching and Learning	Face-to-face					
Course Type	**Compulsory**	**X**	**Elective**			
Objectives	This course aims to teach students the fundamental principles of technical drawing used in engineering design and manufacturing processes, while developing their planar and spatial drawing skills. Students will gain proficiency in essential topics such as part creation, dimensioning, dimensional and geometric tolerances, fits, and surface properties. Additionally, they will master the design processes by using three-dimensional computer-aided design (CAD) tools.					
Content	This course provides an introduction to the fundamental principles of technical drawing used in engineering design and manufacturing processes. The course covers planar and spatial drawing techniques, as well as the creation and dimensioning of parts and the application of dimensional and geometric tolerances. Students will gain proficiency in surface processing and surface properties while learning the principles of fits and tolerances. Emphasis is also placed on the basic rules of design and systematic design processes. Through the use of three-dimensional computer-aided design (CAD) software, students will work on creating simple components. The course aims to provide students with a solid foundation in technical drawing and computer-aided design.					
Prerequisites	None					
Coordinator	Asst. Prof. Dr. Mehmet İPEKOĞLU					
Lecturer(s)	Prof. Dr. Hulusi BOZKURT Asst. Prof. Dr. Mehmet İPEKOĞLU					
Assistant(s)	None					
Work Placement	None					

Recommended or Required Reading	
Books / Lecture Notes	Schlecht, Berthold: Maschinenelemente 1. Pearson Studium,München, 2007 Roloff/ Matek; Maschinenelemente; Vieweg-Verlag Decker; Maschinenelemente; Hanser-Verlag Haberhauer/ Bodenstein; Maschinenelemente; Springer-Verlag Hoischen; Technisches Zeichnen; Verlag Cornelsen-Giradet Klein, Einführung in die DIN-Normen; Teubner-Verlag DIN-Normen; “Tabellenbuch Metall”, Europa-Verlag 2014 Ders Notları elektronik ortamda mevcuttur. Çizim araçları, Autodesk Inventor Frey, H. Herrmann, A. Kuhn, V. (1996). Bautechnik Technisches Zeichnen, Deutschland.
Other Sources	-

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Additional Course Material	
Documents	Class Notes
Assignments	-
Exams	1 Midterm Exam, 1 Final Exam

Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design	50	%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge	50	%

Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	40
Quiz	-	-
Assignments	-	-
Attendance	-	-
Recitations	-	-
Projects	-	-
Final Exam	1	60
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	14	2	28
Self-Study	10	5	50
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations	14	2	28
Laboratory	14	4	56
Projects			
Final Exam	1	3	3
		Total Work Load	**168**

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ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes	
1	Gains knowledge of the fundamentals of technical drawing.
2	Learns about the dimensioning of components and related standards.
3	Becomes proficient in 3D Computer-Aided Design (CAD).
4	Develops expertise in procedures and methods for creating simple components.
5	Applies engineering approaches and basic working techniques to create simple designs.
6	Utilizes knowledge of tolerances and their fits effectively.
7	Understands the fundamentals of technical drawing as a source of information for design and manufacturing.
8	Acquires the ability to create and interpret technical drawings for simple designs.
9	Can create a component drawing based on given boundary conditions.

Weekly Content	
1	Fundamentals of technical drawing as an information tool for construction and manufacturing
2	Fundamentals of technical drawing as an information tool for construction and manufacturing
3	Representation and dimensioning of elements
4	Representation and dimensioning of elements
5	Introduction to design hierarchy and design methodology in the manufacturing process
6	Introduction to design hierarchy and design methodology in the manufacturing process
7	Introduction to Standard / Norm Information
8	Midterm Exam
9	Introduction to Standard / Norm Information
10	Use of standards information and harmonizations
11	Use of standards information and harmonizations
12	Creation of manual technical drawings of the given elements considering the boundary and connection conditions
13	Detailing the design with all necessary drawings
14	Modeling with 3D computer-aided design
15	Modeling with 3D computer-aided design
16	Final Exam

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**
Ö1	5	4	4						
Ö2	5	4	4						
Ö3	5	4	4						

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Ö4	5	4	4						
Ö5	5	4	4						
Ö6	5	4	4						
Ö7	5	4	4						
Ö8	5	4	4						
Ö9	5	4	4						

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	Res. Assist. Kevser Celep
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