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|  | **ECTS Course Description Form** |
| **PART I ( Senate Approval)** |
| **Offering School**  | College of Engineering |
| **Offering Department** | Industrial Engineering |
| **Program(s) Offered to** | Industrial Engineering | Compulsory |
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| **Course Code**  | ME 112 |
| **Course Name** | Computer Aided Technical Drawing |
| **Language of Instruction** | English |
| **Type of Course** | Mandatory Course |
| **Level of Course** | Undergraduate |
| **Hours per Week** | **Lecture**: 3 hour | **Laboratory:** | **Recitation:**   | **Practical:**  | **Studio:** | **Other:** |
| **ECTS Credit** | 4 |
| **Grading Mode** | Letter Grade |
| **Pre-requisites** | - |
| **Co-requisites** | **-** |
| **Registration Restriction** | - |
| **Educational Objective** | Reading of project, description of design by drawing, Drawing of perspective. |
| **Course Description** | To explain drawing tools used in course and their usage, Description of Technical Drawing and Descriptive Geometry, Procedures of projection, Types of projection, Perspective, Create of epure, Projections of points, Positions and projections of lines, projection drawings of 3D geometrical objects, Types of lines and line weights, Scale, Rules of dimensioning, Methods of line weighting, Horizontal and vertical interfaces, Description of AutoCAD, Display, New files, open files, Union of files, Commands of joint work with different files, 2D drawing; drawing commands, Modify commands, View commands, Layers, Settings of dimensioning according to architecture and civil engineering and to make dimensioning, Create and use of block and library, Text and hatch, Plot. |
| **Learning Outcomes**  | **LO1** | 1. Students will learn the conseption of projection created basis of drawing project.
2. Students will improve their 3D thinking talent
3. Students will be able to make 3D project drawing
4. Students will be able to generate two dimensional projection drawings from three dimensional objects drawings.
5. Students will learn rules of dimensioning used in Architecture and Civil Engineering
6. Students will be able to draw horizontal and vertical interfaces of engineering projects
7. Students will be able to necessary modification (scaling, type of line, line weight) for Mechanical Engineering in AutoCAD program.
8. Students will be able to 2D project drawings with AutoCAD program
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| **LO2**  |
| **LO3** |
| **LO4** |
| **LO5****LO6****LO7****LO8** |
| **PART II ( Faculty Board Approval)** |
| **Basic Outcomes (University-wide)** | **No.** | Program Outcomes | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **LO6** | **LO7** | **LO8** |
| **PO1** | Ability to communicate effectively and write and present a report in Turkish and English.  | LO1, LO2, LO3, LO4, LO5, LO6, LO7 |
| **PO2** | Ability to work individually, and in intra-disciplinary and multi-disciplinary teams. | LO1, LO2, LO6 |
| **PO3** | Recognition of the need for life-long learning and ability to access information, follow developments in science and technology, and continually reinvent oneself. | LO2, LO3 |
| **PO4** | Knowledge of project management, risk management, innovation and change management, entrepreneurship, and sustainable development. | LO6, LO7 |
| **PO5** | Awareness of sectors and ability to prepare a business plan. | LO7 |
| **PO6** | Understanding of professional and ethical responsibility and demonstrating ethical behavior. | LO2, LO6 |
| **Faculty Specific Outcomes** | **PO7** | Ability to develop, select and use modern techniques and tools necessary for engineering applications and ability to use information technologies effectively. | LO4, LO6 |
| **PO8** | Recognition of the effects of engineering applications on health, environment and safety in the universal and societal dimensions and the problems of the time and awareness of the legal consequences of engineering solutions. | LO4, LO7 |
| **PO9** | Ability to identify, define, formulate and solve complex engineering problems; and electing and applying appropriate analysis and modeling methods for this purpose. | LO4, LO7 |
| **Discipline Specific Outcomes (program)** | **PO10** | Sufficient knowledge in mathematics, science and civil engineering; and the ability to apply theoretical and practical knowledge in these areas to model and solve engineering problems. | LO2, LO3, LO4, LO7 |
| **PO11** | Ability to design a complex system, process, device or product to meet specific requirements under realistic constraints and conditions of economic, environmental, sustainability, manufacturability, ethics, health, safety, social and political issues; and the ability to apply modern design methods for this purpose. | LO6, LO7 |
| **PO12** | Ability to design experiments, conduct experiments, collect data, analyze and interpret results for the examination of industrial engineering problems. | LO6, LO7 |
| **Specialization Specific Outcomes** | **PO N….** |  |  |
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| **Course Subjects, Contribution of Course Subjects to Learning Outcomes, and Methods for Assessing Learning of Course Subjects** | **Subjects** | **Week** |  | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **LO6** | **LO7** | **LO8** |
| **S1** | 1 | Description of Technical Drawing and Descriptive Geometry,Explainations of drawing tools used in course, Projection; Types of projection. | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 |
| **S2** | 2 | Prodecures of projection, Projections of points, Create of epure, Lines; Description of lines, Positions and projections of lines | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 |
| **S3** | 3 | Usage of drawing tools, Projection drawings of a 3D geometrical object,Perspective,Types of lines and line weights | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 |
| **S4** | 4 | Rules of dimensioning at top, front and profile views, Methods of line weighting, Scale Project drawing of top, front and profile views of an engineering structure, dimensioning, weighting | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 |
| **S5** | 5 | Horizontal and vertical interfaces, Rules of dimensioning at horizontal and vertical interfaces, Project drawing of horizontal and vertical interfaces of an engineering structure, dimensioning, weighting. | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 |
| **S6** | 6 | Project drawing of horizontal, vertical interfaces and views of an engineering structure, dimensioning, weighting. | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 |
| **S7** | 7 | Description of AutoCAD, display, toolbars, shortcuts, data entry, New, open, save and exit commands. | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 |
| **S8** | 8 | Select commands, Drawing commands and their practices; Line ray, construction line, multiline, multiline style, rectangle, pline, polygon, arc, circle, donut, spline, ellipse, point, point style. | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 |
| **S9** | 9 | Midterm 1 | A1 | A1 | A1 | A1 | A1 | A1 |
| **S10** | 10 | View commands; Zoom, pan, view, hide, shade, redraw, regen Modify commands; Erase, copy, move, offset, trim, rotate, scale, mirror, array, Text commands. | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 |
| **S11** | 11 | Modify commands; Explode, stretch, break, extend, fillet, chamfer, lenghten, pedit, properties, machprop, change, undo, redo, Layers | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 |
| **S12** | 12 | Dimensioning; Dimensioning styles, dimensioning modify, rules of dimensioning in Mechanical Engineering. | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 |
| **S13** | 13 | Block and xref commands, OLE object; block editor, design center, tool palettes window, Hatch, Inquiry commands; Status, list, area, distance. Plot | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 |
| **S14** | 14 | Project drawing of horizontal, vertical interfaces and views of an engineering structure, dimensioning, weighting according to rules of Technical Drawing by AutoCAD. | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 | A1,A3 |
| **S15** | 15 | Final | A1 | A1 | A1 | A1 | A1 | A1 |
| **Assessment Methods, Weight in Course Grade, Implementation and Make-Up Rules**  | **No.** | **Type** | **Weight** | **Implementation Rule** | **Make-Up Rule** |
|  | **A1** | **Exam** | %90 | Midterm exams and final exams will take place. Exams will be in written test and all the course materials will be forbidden to use during the examination. Midterm dates are tentative and announced at the beginning of semester. | The official rules and regulations of the University apply. |
| **A2** | **Quiz** |  | Quizzes will be regularly taken after announcement during the semester. | The official rules and regulations of the University apply. |
| **A3** | **Homework** | %10 | Homework is due the following class. Late homework are not accepted. Homework is to be neat and orderly. All calculations of homework problems are to be in an orderly fashion. | There is no make up for homework. |
| **A4** | **Project** |  | The delivery date of the projects is one week after the project is submitted. Late delivery is not accepted. The non-delivered project is zero. Group projects are included in these rules. |  |
| **A5** | **Report** |  | Reports should be submitted in writing. |  |
| **A6** | **Presentation** |  | Various presentation techniques are allowed in the presentations. |  |
| **A7** | **Attendance/ Interaction** |  | Attendance is strongly recommended and obligatory | The official rules and regulations of the University apply. |
| **A8** | **Class/Lab./****Field Work** |  | Written or oral applications are shown to students. | The official rules and regulations of the University apply. |
| **A9** | **Other** |  |  |  |
| **TOTAL** | **100%** |
| **Evidence of Achievement of Learning Outcomes** | Students will demonstrate learning outcomes through midterm exams, homework/coursework and preparation and the final exam. Every topic is tested with at least one exam question. In order to pass, a student needs to accumulate certain percentage of points and this percentage is determined by the class mean. |
| **Method for Determining Letter Grade** | One midterm, homework, and a final exam are used for grading. The table shows the maximum points to be collected.

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|  | Midterm 1 | Homeworks | Final  | Total |
| **Point** | 30 | 10 | 60 | 100 |

Letter grade is determined using the table below:

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Total Point** | 100-95 | 94-85 | 84-80 | 79-75 | 74-65 | 64-60 | 59-55 | 54-50 | 49-45 | 44-40 |
| **Letter Grade** | A | A- | B+ | B | B- | C+ | C | C- | D+ | D |

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| **Teaching Methods, Student Work Load** | **No** | **Method** | **Explanation** | **Hours** |
| ***Time applied by instructor*** |
| **1** | **Lecture** | Lecturing and utilizing chalkboard/whiteboard. Sample questions and answers. Total number of hours in semester. | 3\*14=52 |
| **2** | **Interactive Lecture** |  |  |
| **3** | **Recitation** |  |  |
| **4** | **Laboratory** |  |  |
| **5** | **Practical** |  |  |
| **6** | **Field Work** |  |  |
| ***Time expected to be allocated by student*** |
| **7** | **Project** |  |  |
| **8** | **Homework** | Homework/coursework and their preparations | *3\*14=52* |
| **9** | **Pre-class Learning of Course Material**  | Pre-class/ after class individual study | *2\*14=28* |
| **10** | **Review of Course Material** |  | *2\*14=28* |
| **11** | **Studio** |  |  |
| **12** | **Office Hour** |  | *2\*14=28* |
| **TOTAL** |  |
| **IV. PART** |
| **Instructor** | **Name** |  |
| **E-mail** |  |
| **Phone Number** |  |
| **Office Number** |  |
| **Office Hours** |  |
| **Course Materials** | **Mandatory** |  |
| **Recommended** |  |
| **Other** | **Scholastic Honesty** | Violations of scholastic honesty include, but are not limited to cheating, plagiarizing, fabricating information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. Any form of scholastic dishonesty is a serious academic violation and will result in a disciplinary action. |
| **Students with Disabilities** | Reasonable accommodations will be made for students with verifiable disabilities. |
| **Safety Issues**  | The course does not require any special safety precautions. |
| **Flexibility** | Circumstances may arise during the course that prevents the instructor from fulfilling each and every component of this syllabus; therefore, the syllabus is subject to change.  Students will be notified prior to any changes. |