

DEPARTMENT OF INDUSTRIAL DESIGN
INDUSTRIAL DESIGN UNDERGRADUATE COURSE DESCRIPTIONS

Course Code, Course Name (Theory-Practice-Credit-ECTS)

1st semester

ENT101 Industrial Basic Design 1 (2-4-4-7)

Basic design principles. Visual applications in 2nd and 3rd dimensions. Preservation of perception in transitions between 2nd and 3rd dimensions.

ENT103 Technical Drawing for Product Design 1 (2-4-4-7)

Exploded perspective drawings of products with parallel perspective rules, drawing projection views of angled objects, projection drawing of prisms intersecting at various angles, scaled drawings of various objects from projection views, drawing cross-sectional views of various objects, conical perspective drawing method. Drawing single and double escape perspective views of objects.

MTF105 Art History (2-0-2-3)

The course includes world art history from pre-historic era to the present.

ENT105 Introduction to Industrial Design (2-2-3-4)

The methods applied by industrial designers in the process of designing producible products. In the context of cause-and-effect relationship, problem definition, conceptual ideas and form development, expressing first thoughts with sketches, interdisciplinary interaction in the design process are examined and covered.

LNG101 General English 1 (2-0-2-2)

Exercises aimed at expressing basic adjectives, personal characteristics in daily conversations, and using communication using the language they learn. To be able to read, understand and interpret texts and to be able to write texts using the patterns they have learned.

MAT101 Mathematics 1 (3-0-3-3)

Number systems (Natural numbers, integers, rational numbers, real numbers and proportion and proportions). Complex numbers (4 operations, trigonometric representation of complex numbers), equations and inequalities, lines and parabolas, functions and their properties, derivatives and applications, matrices.

GNL105 Turkish Language 1 (2-0-2-2)

History and basic rules of Turkish, reading literary and scientific text samples.

GNL101 Atatürk's Principles and History of Turkish Revolution 1 (2-0-2-2)

The emergence of the Ottoman Empire and it's rise and pause and dissolution and disintegration. Also collapse of Ottoman State and a view to reasons for Turkish Revolutions, WWI, Invasions, Reactions, Associations, after the Mondros treatment actions of Mustafa Kemal Pasha and his going to Anatolia, Opening of T.N.A, structure of the Assembly, its laws

and activities, intrinsic and extrinsic reactions to the opening of the Assembly, Sevr Treatment, attack of Greece and wars in the west side, Mustafa Kemal's being supreme command, Sakarya War and development of foreign policy after it, Grand Attack and signing the Mudanya Armistice, developments before Lozan conference.

2nd semester

ENT102 Industrial Basic Design 2 (2-6-5-8)

Design principles, design elements, product language, collage and composition, emotion design, abstraction, transition between dimensions.

ENT104 Technical Drawing for Product Design 2 (2-4-4-7)

Exploded perspective drawing with parallel perspective rules, drawing projection views of angled objects, projection drawing of prisms intersecting at various angles, drawing of various objects measured on their projection views, drawing cross-sectional views of various objects, drawing of various objects with conical perspective method. and drawing their double escape view.

ENT106 Structure in Industrial Design (2-0-2-3)

Definition and concept of structure. Traditional and contemporary structures. External forces affecting the structure. Stress-strain definition. Structure design criteria. The choice of material.

ENT108 Physics in Industrial Design (2-0-2-2)

SI unit system, basic physical quantities and units. Density, unit weight, compactness, porosity calculation. Interaction of substances with water. Investigation of materials under the effect of force. Tensile, compressive stress, Young's Modulus. Heat and its effect on materials, calculation of thermal stresses. Electrical and magnetic properties of matter. Light and its properties. Interaction of substances with light. Corrosion, its types and causes. Ways to prevent corrosion.

MTF316 Industrial Design History (2-0-2-2)

Industrial revolution, historical development of product design, art and design movements.

GNL102 Atatürk's Principles and History of Turkish Revolution 1 (2-0-2-2)

Evaluating the Republic of Turkey since its foundation in terms of undertakings to reach the contemporary civilization, relations with other countries and phases it got through.

GNL106 Turkish Language 2 (2-0-2-2)

Verbal expression, definition and scope of speech, importance of speaking, features of verbal and written expression, Principles of beautiful, effective and correct speech, errors of speech and features of Turkish speech, Types of Speech, Types of Oral Expression, Types of Written Expression, Official Correspondence, Scientific Research Methods, Scientific Report Preparation, Citation, bibliography and footnote rules

ING102 General English 2 (2-0-2-2)

Basic English grammar.

3rd Term

ENT201 Industrial Design Project 1 (2-4-4-10)

Realization of innovative designs with research, development, appropriate drawing techniques and technical drawings that comply with international standards.

ENT203 Computer Aided Modeling 1 (2-2-3-5)

Gaining the skill of visualization by modeling as a form of form communication. Realizing design sketches and ideas in 3 dimensions as well as the visualization of material, color and texture with the program, Rhino. Computer-aided design is also used to produce 2-dimensional drawings of projects.

ENT207 Model Making Techniques (3-2-4-5)

The course is designed for designer candidates in the first phase of the industrial design education process; as a way to design and visualize, techniques include static display, mock-up and prototyping such as modeling and visualization techniques serve to transfer information on the use and quality of materials of products.

ENM205 Materials and Production Methods 1 (3-0-3-5)

Internal structure of the material, mechanical and physical properties, Hooke's law, composites, wood and paper, extrusion, injection, plastics, powder metallurgy design studies

ENT214 Introduction to Mechanical Design (elective) (3-0-3-5)

Basic concepts related to mechanical systems, simple mechanisms, mechanical systems, motion transmission elements, gears, cams, springs, hydraulic and pneumatic systems and components, fixed fasteners: welding, rivet, soldering and bonding soluble fasteners: bolts, nuts, hinges, locks, magnetic and vacuum attachment elements.

4th Term

ENT202 Industrial Design Project 2 (2-4-4-10)

Realization of innovative designs with research, development, appropriate drawing techniques and technical drawings that comply with international standards.

ENT204 Computer Aided Modeling 2 (2-2-3-5)

Advanced modeling and graphic presentation training.

ENM206 Materials and Production Methods 2 (3-0-3-5)

Basic information about manufacturing methods, machining, unconventional manufacturing methods, prototyping processes.

ENT208 Industrial Design Theories and Methods (3-0-3-5)

To discuss the theoretical approaches to explain the contents of industrial design process, to be informed about the systematic problem-solving methods, to investigate the methods of

defining the design problem and to explain the situations that the designer candidates may encounter in all areas of their professional practice.

ENT212 Consumer Behavior in Design (elective) (3-0-3-5)

Different approaches, methods applied in the industrial design process and information and research to determine trends.

5th Term

ENT301 Industrial Design Project 3 (2-6-5-10)

Realization of innovative designs with research, development, appropriate drawing techniques and technical drawings that comply with international standards.

ENT307 Human Factors in Design (2-0-2-2)

It is aimed to introduce ergonomic standards, data and methods related to human-machine-equipment and environmental factors that Industrial Product Design students may encounter in the design process of. In addition, examining and understanding the interface and communication concepts through the product constitute the main objective and content of the course.

ENT303 Industrial Furniture Design (2-2-3-5)

Projects are carried out through interior and exterior furniture and furniture-user relationships. The trends that determine the furniture design and the reflection of technology are covered.

ENT305 Reverse Design (1-2-2-3)

To discuss the functional and formal functions of existing products by disassembling and redesign.

ENT315 Computer Aided Parametric Design (elective) (2-2-3-5)

Designing original products by doing market research on the selected topics from the list of 30 products.

ENT318 Material Selection and Productivity in Design (elective) (3-0-3-5)

Design of product components. Mechanical design of product components. Importance of materials in design, classification of materials, material selection and selection methods. Standard elements and fasteners. Casting, forging, machining, sheet metal forming, welded forming, etc. Design for manufacturing methods, Examination of the manufacturability of designed parts, Design for assembly. Assembly methods. Process of changing physical and visual properties of components. The selected production method and the effect of material on design. Factors determining the production method preferences. Systems that control design and production methods. Production costs are estimated.

6th Term

ENT302 Industrial Design Project 4 (2-6-5-8)

Realizing innovative product design projects through research, development and appropriate drawing techniques.

ENT306 Computer Aided Design / Production (CAD / CAM) (2-2-3-4)

General information about computer aided design programs. Recognizing and using commercial software in the design process. Solidworks program and recognition of computer aided production elements.

ENT308 Packaging Design (2-2-2-4)

Theoretical knowledge and application of the dynamics of packaging design through brand-product-user relationship.

ENT309 Project Presentation Techniques and Portfolio (1-2-3-4)

Learning of the necessary software, portfolio design, which include individual identity design. The portfolios are transferred to digital media and presentation is aimed to made using multimedia.

ENT422 Automotive Design (elective) (3-0-3-5)

Automotive design development; design plan, platform, concept design and design studio studies; main criteria in vehicle design; vehicle body design; vehicle characteristics; performance, active-passive safety; navigational characteristics of vehicles; driver and passenger ergonomics; comfort, human factors and design of basic systems; rollover and collision mechanics; Study of conflicting targets and methods of elimination; 2D and 3D modeling and development of vehicle design.

ENT412 Optimization Techniques in Design (elective) (3-0-3-5)

Fundamentals of Classical, Numerical and Heuristic optimization: problem formulation, optimality conditions, search direction and stride length. Computational techniques for univariate and multivariate optimization. Constrained and unconstrained optimization methods. Global optimization methods. Multipurpose optimization: Pareto optimization and approaches. Applications of various methods to represent design problems.

ENT406 Design for Everyone (elective) (3-0-3-5)

The universal design concept and its historical development, to learn the status and position of people with disabilities in the world and in Turkey, an understanding of the factors influencing the classification of physical disability, principles of universal design and analysis of design realized in this direction.

7th Term

ENT401 Industrial Design Project 5 (2-6-5-9)

The design of industrial products that can be mass produced and the process methodology related to the change and development under different factors in accordance with mass production under research that will form a new product definition. To ensure the realization of new product designs that can be applied in industry by using methods and techniques suitable for research and development. Experiencing the development of new product design projects suitable for mass production in various Industries.

ENT403 Industrial Design Management (2-0-2-5)

Innovation and Design: Common Points and Differences. Design Driven Innovation. Strategy and Strategic Design. Experience Economy and Experience Innovation. Open Innovation. Co-Creation of Value, Alternative Business Models. Service Innovation. Factors Triggering New Product Development. The Concept of Product Integrity. Different Approaches to Organizing and Managing Design Function. Case study analysis. The value chain concept and the importance of taking part in the global value chain. The role of design and branding to rise in the global value chain.

GNL411 Senior Research Project (2-2-3-4)

Definition of new product research: Design research in industrial new product development. Scientific and qualifications of market research. History of design research. Research approaches: data collection and data analysis. Ways to define research problem. Use of library resources and literature research. Data collection methods and analysis. Observation. Interview. Case Study Method. Action Research, Protocol Analysis. Techniques of using problem solving techniques focused on new product development are covered.

MTF314 Design Philosophy (elective) (3-0-3-5)

Theoretical explanations and analyzes extending from the artistic and architectural development of humanity that constitutes the design philosophy to the construction of a sustainable world that shapes the needs of the 21st century.

ENT411 Animation in Industrial Design (elective) (2-2-3-5)

Defining animation techniques and determining animation hierarchy. Placing the modeled objects on the stage in accordance with animation, assigning materials and light. Key-frame usage in animation. Understanding animation controls. Vector Animation in 2 Dimensions. Optimization methods that make it possible to share optimized anime movies digitally and on social media. 2D / 3D Various object deformations. Solution of render resolution and antialiasing problems.

8th Term

MTF402 Graduation Project (0-8-4-10)

As a graduation project, it is to carry out a comprehensive design process that is qualified and can use all the knowledge and equipment obtained during the education. The course aims to develop original design approaches in the light of the basic professional knowledge

gained by the student over four years, transferring practical knowledge, and using a professional approach and decision-making methods required for designing products in professional life.

HUK404 Design Law (2-0-2-5)

The definition of design through the eyes of designers and legal practitioners. Intellectual property concept, design law. Protection conditions. Right ownership, registration. Infringement of the design right and the powers of the right owner.

GNL 450 Vocational Seminar (2-0-2-0)

Every week, designers with different specializations give seminars and inform students about their area of specialization with questions and answers.

ENT 404 Semantics (elective) (2-2-3-5)

The content of the course consists of reading texts, discussion topics, classroom exercises and assignments to introduce students to the main ideas, theories and methods related to meaning studies in design. In the course, an interdisciplinary framework consisting of semiotics, communication studies, product semantics, cultural studies and cognitive science is adopted. The most important subjects and concepts covered by the course are: sign, sequence, syntax, code, meaning, connotation, spoken, metaphor, metonym, ideology, meaning, function, meaning, symbolic and classification coordinates of the object, stickiness, collective objects, product character, subject. and identity, classification, mental world, semantic profile, design rhetoric, design arguments (mind, character, emotion), representation, consumption, cultural artifacts, semantic map, semantic networks, cultural agents, lifestyles.

ENT409 Marketing and Branding in Design (elective) (3-0-3-5)

Knowledge of brand and usage, protection rights and examination of brand-concept relationship.

ENT415 Interaction Design (elective) (2-2-3-5)

Interaction and user experience design.