**The English syllabi of the courses given in Eskişehir Osmangazi University Department of Aeronautical Engineering undergraduate education are given in the following order.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Semester** | **Course Code** | **Course Name** | **T+A** | **Credit, ECTS** | **Comp./Elec.** |
| 1 | 152411001 | INTRODUCTION TO AERONAUTICAL ENG. | 3+0 | 3 crd, 6 ects | Compulsory |
| 1 | 152411002 | COMPUTER AIDED DRAWING | 2+2 | 4 crd, 6 ects | Compulsory |
| 1 | 152411003 | OCCUPATIONAL HEALTH AND SAFETY (I) | 1+0 | 1 crd, 1 ects | Compulsory |
| 1 | 152411004 | PHYSICS I | 3+0 | 3 crd, 3 ects | Compulsory |
| 1 | 152411005 | PHYSICS I LAB. | 0+2 | 1 crd, 2 ects | Compulsory |
| 1 | 152411006 | CALCULUS I | 4+0 | 4 crd, 5 ects | Compulsory |
| 1 | 152411007 | CHEMISTRY | 3+0 | 3 crd, 3 ects | Compulsory |
| 1 | 152411008 | TECHNICAL ENGLISH | 2+0 | 2 crd, 2 ects | Compulsory |
| 1 | 152411009 | TURKISH LANGUAGE (I) | 2+0 | 0 crd, 2 ects | Compulsory |
| 2 | 152412001 | PHYSICS II | 3+0 | 3 crd, 3 ects | Compulsory |
| 2 | 152412002 | PHYSICS II LAB. | 0+2 | 1 crd, 2 ects | Compulsory |
| 2 | 152412003 | CALCULUS II | 4+0 | 4 crd, 5 ects | Compulsory |
| 2 | 152412004 | FUNDAMENTALS OF COMPUTER PROGRAMMING | 2+2 | 3 crd, 5 ects | Compulsory |
| 2 | 152412005 | INTRODUCTION TO AERIAL VEHICLES | 3+0 | 3 crd, 5 ects | Compulsory |
| 2 | 152412006 | STATICS | 3+0 | 3 crd, 3 ects | Compulsory |
| 2 | 152412007 | ACADEMIC WRITING | 3+0 | 3 crd, 4 ects | Compulsory |
| 2 | 152412008 | OCCUPATIONAL HEALTH AND SAFETY (II) | 1+0 | 1 crd, 1 ects | Compulsory |
| 2 | 152412009 | TURKISH LANGUAGE (II) | 2+0 | 0 crd, 2 ects | Compulsory |
| 3 | 152413001 | DIFFERENTIAL EQUATIONS | 3+0 | 3 crd, 5 ects | Compulsory |
| 3 | 152413002 | MECHANICS OF MATERIALS | 4+0 | 4 crd, 6 ects | Compulsory |
| 3 | 152413003 | DYNAMICS | 3+0 | 3 crd, 4 ects | Compulsory |
| 3 | 152413004 | MATERIALS SCIENCE | 3+0 | 3 crd, 5 ects | Compulsory |
| 3 | 152413005 | FUNDAMENTALS OF ELECTRICITY AND ELECTRONICS | 3+0 | 3 crd, 4 ects | Compulsory |
| 3 | 152413006 | LINEAR ALGEBRA | 3+0 | 3 crd, 4 ects | Compulsory |
| 3 | 152413007 | HISTORY OF TURKISH REVOLUTION (I) | 2+0 | 2 crd, 2 ects | Compulsory |
| 4 | 152414001 | NUMERICAL METHODS | 3+0 | 3 crd, 4 ects | Compulsory |
| 4 | 152414002 | ENGINEERING THERMODYNAMICS | 3+0 | 3 crd, 5 ects | Compulsory |
| 4 | 152414003 | AEROSPACE MATERIALS | 3+0 | 3 crd, 5 ects | Compulsory |
| 4 | 152414004 | FLUID MECHANICS | 3+0 | 3 crd, 5 ects | Compulsory |
| 4 | 152414005 | MEASUREMENT TECHNIQUES | 3+0 | 3 crd, 4 ects | Compulsory |
| 4 | 152414006 | MACHINE ELEMENTS | 3+0 | 3 crd, 5 ects | Compulsory |
| 4 | 152414007 | HISTORY OF TURKISH REVOLUTION (II) | 2+0 | 2 crd, 2 ects | Compulsory |
| 5 | 152415001 | FUNDAMENTALS OF AERODYNAMICS | 3+0 | 3 crd, 5 ects | Compulsory |
| 5 | 152415002 | HEAT TRANSFER | 3+0 | 3 crd, 5 ects | Compulsory |
| 5 | 152415003 | ELASTICITY | 3+0 | 3 crd, 4 ects | Compulsory |
| 5 | 152415004 | FUNDAMENTALS OF CONTROL SYSTEMS | 3+0 | 3 crd, 5 ects | Compulsory |
| 5 | 152415005 | MANUFACTURING TECHNOLOGIES | 3+0 | 3 crd, 5 ects | Compulsory |
| 5 | 152415006 | AIRCRAFT PERFORMANCE | 3+0 | 3 crd, 3 ects | Compulsory |
| 5 | 152415007 | PRODUCTION PLANNING | 3+0 | 3 crd, 3 ects | Non-Tech. Elec. |
| 5 | 152415008 | BEGINNING FRENCH 1 | 3+0 | 3 crd, 3 ects | Non-Tech. Elec. |
| 5 | 152415009 | GERMAN 1 | 3+0 | 3 crd, 3 ects | Non-Tech. Elec. |
| 6 | 152416001 | COMPRESSIBLE AERODYNAMICS | 3+0 | 3 crd, 5 ects | Compulsory |
| 6 | 152416002 | AEROSPACE STRUCTURES | 3+0 | 3 crd, 5 ects | Compulsory |
| 6 | 152416003 | AIRCRAFT STABILITY AND CONTROL | 3+0 | 3 crd, 5 ects | Compulsory |
| 6 | 152416004 | PROPULSION SYSTEMS | 3+0 | 3 crd, 5 ects | Compulsory |
| 6 | 152416005 | MECHANICAL VIBRATIONS | 3+0 | 3 crd, 4 ects | Compulsory |
| 6 | 152416006 | PRACTICAL TRAINING 1 | 0+0 | 0 crd, 3 ects | Compulsory |
| 6 | 152416007 | BEGINNING FRENCH 2 | 3+0 | 3 crd, 3 ects | Non-Tech. Elec. |
| 6 | 152416008 | GERMAN 2 | 3+0 | 3 crd, 3 ects | Non-Tech. Elec. |
| 7 | 152417xxx | AERONAUTICAL ENGINEERING LAB (I) | 0+4 | 2 crd, 5 ects | Compulsory |
| 7 | 152417xxx | MAINTENANCE ENGINEERING | 3+0 | 3 crd, 5 ects | Compulsory |
| 7 | 152417xxx | PRINCIPLES OF AIRCRAFT DESIGN | 3+0 | 3 crd, 5 ects | Compulsory |
| 7 | 152417xxx | AIRCRAFT SYSTEMS | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 7 | 152417xxx | STRUCTURES OF FUSELAGE | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 7 | 152417xxx | AERODYNAMIC SHAPE OPTIMIZATION | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 7 | 152417xxx | AVIATION METEOROLOGY | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 7 | 152417xxx | ACOUSTICS AND NOISE CONTROL | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 7 | 152417xxx | AIRCRAFT MECHATRONICS | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 7 | 152417xxx | GAS TURBINE ENGINE SYSTEMS | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 7 | 152417xxx | INTRODUCTION TO JET ENGINES | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 7 | 152417xxx | PRINCIPLES OF COMBUSTION | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 7 | 152417xxx | INTERNAL COMBUSTION ENGINES | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 7 | 152417xxx | DESIGN OF CONTROL SYSTEMS | 3+0 | 3 crd, 5 ects | Design Elec. |
| 7 | 152417xxx | DESIGN OF UNMANNED AERIAL SYSTEMS | 3+0 | 3 crd, 5 ects | Design Elec. |
| 7 | 152417xxx | GUIDED MISSILE DESIGN | 3+0 | 3 crd, 5 ects | Design Elec. |
| 7 | 152417xxx | COMPOSITE MATERIALS DESIGN | 3+0 | 3 crd, 5 ects | Design Elec. |
| 8 | 152418xxx | AERONAUTICAL ENGINEERING LAB (II) | 0+4 | 2 crd, 5 ects | Compulsory |
| 8 | 152418xxx | RESEARCH IN AIRCRAFT ENGINEERING (Bitirme) | 1+4 | 3 crd, 4 ects | Compulsory |
| 8 | 152418xxx | PRACTICAL TRAINING 2 | 0+3 | 3 crd, 3 ects | Compulsory |
| 8 | 152418xxx | COMPUTATIONAL AERODYNAMICS | 3+0 | 3 crd, 4 ects | Technical Elec. |
| 8 | 152418xxx | NUMERICAL METHODS IN AEROSPACE ENGINNERING | 3+0 | 3 crd, 4 ects | Technical Elec. |
| 8 | 152418xxx | INTRODUCTION TO FINITE ELEMENT ANALYSIS | 3+0 | 3 crd, 4 ects | Technical Elec. |
| 8 | 152418xxx | HYPERSONIC FLOWS | 3+0 | 3 crd, 4 ects | Technical Elec. |
| 8 | 152418xxx | COMPUTATIONAL FLUID DYNAMICS | 3+0 | 3 crd, 4 ects | Technical Elec. |
| 8 | 152418xxx | ENGINEERING WITH POLYMERS | 3+0 | 3 crd, 4 ects | Technical Elec. |
| 8 | 152418xxx | DEFENSE TECHNOLOGY MATERIALS | 3+0 | 3 crd, 4 ects | Technical Elec. |
| 8 | 152418xxx | FAILURE ANALYSIS | 3+0 | 3 crd, 4 ects | Technical Elec. |
| 8 | 152418xxx | CORROSION AND OXIDATION OF METALS | 3+0 | 3 crd, 4 ects | Technical Elec. |
| 8 | 152418xxx | MANUFACTURING METHODS IN AERONAUTICAL ENG. | 3+0 | 3 crd, 4 ects | Technical Elec. |
| 8 | 152418xxx | TESTING AND EVALUATION OF ENG. MATERIALS | 3+0 | 3 crd, 4 ects | Technical Elec. |
| 8 | 152418xxx | INTRODUCTION TO ARTIFICIAL INTELLIGENCE | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 8 | 152418xxx | INTRODUCTION TO DATABASE MANAGEMENT SYST. | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 8 | 152418xxx | SOFTWARE ENGINEERING | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 8 | 152418xxx | REMOTE SENSING AND RADAR SYSTEMS | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 8 | 152418xxx | DIGITAL IMAGE PROCESSING | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 8 | 152418xxx | POWER ELECTRONICS | 3+0 | 3 crd, 5 ects | Technical Elec. |
| 8 | 152418xxx | ROTORCRAFT DYNAMICS AND DESIGN | 3+0 | 3 crd, 5 ects | Design Elec. |
| 8 | 152418xxx | AIRCRAFT ENGINE DESIGN | 3+0 | 3 crd, 5 ects | Design Elec. |
| 8 | 152418xxx | SPACE PROPULSION SYSTEMS DESIGN | 3+0 | 3 crd, 5 ects | Design Elec. |

# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | AUTUMN |

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| --- | --- | --- | --- |
| **COURSE CODE** | 152411001 | **COURSE NAME** | Introduction to Aeronautical Engineering |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 1 | 3 | | - | - | | 3 | 6 | COMPULSORY (X) ELECTIVE ( ) | | English |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (**√) ] | | | | | **Social Science** |
|  | | X | | | X | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 20 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | | 4 | 40 |
| Project | | | |  |  |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 40 |
| **PREREQUIEITE(S)** | | | | | **-** | | | | | |
| **COURSE DESCRIPTION** | | | | | The course offered within the scope of the undergraduate education activities under the Department of Aeronautical Engineering of ESOGU will be an introductory course for the students who are just starting the undergraduate level. | | | | | |
| **COURSE OBJECTIVES** | | | | | Basic knowledge of aviation/aeronautics history, aircraft types and characteristics, structural components of aircraft, aircraft control and control surfaces, atmosphere models, aerostatics and aerodynamics (basic level). | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | Structuring the fundamental knowledge for the upcoming theoretical courses | | | | | |
| **COURSE OUTCOMES** | | | | | Brief world and Turkish aviation/aeronautics history, atmosphere models, aircraft structural elements (wing, fuselage, tail...), information about basic aircraft design processes, understanding aircraft control and control surfaces. | | | | | |
| **TEXTBOOK** | | | | | Uçuşa Başlangıç (Introduction To Flight), John D. Anderson, Jr., (Çev: Adil Yükselen), Nobel Akademik Yayıncılık, Nobel Akademik Yayıncılık | | | | | |
| **OTHER REFERENCES** | | | | | Yechout, T. R., & Morris, S. L. (2003). Introduction to aircraft flight mechanics: Performance, static stability, dynamic stability, and classical feedback control. Reston, VA: American Institute of Aeronautics and Astronautics. | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | Projector, overhead document projector, | | | | | |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Introduction to engineering and ethics |
| 2 | Overview of aeronautics and aviation, brief aviation/aeronautics history |
| 3 | Overview of aeronautics and aviation, brief aviation/aeronautics history |
| 4 | Atmosphere models |
| 5 | Aircraft classification |
| 6 | Airplane structural elements |
| 7 | Industry visits – I (1. HİBMK) |
| 8 | Propulsion systems |
| 9 | Industry visits – I (TEI) |
| 10 | Rotary wing fundamental knowledge |
| 11 | Industry visits – I (Alp Aviation) |
| 12 | Aerostatics – Aerodynamics |
| 13 | Airports, Civil aviation regulations |
| 14 | Industry visits – I (ESTU – Hasan Polatkan Airport) |
| 15,16 |  |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. |  | **X** |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  | **X** |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **X** |  |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **X** |  |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | **X** |  |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. | **X** |  |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility | **X** |  |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | **X** |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. | **X** |  |  |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):**

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| **Signature**: |  |  |
|  |  |  |
|  |  | **Date:** |
| Dr. Öğr. Üyesi Zafer ÖZNALBANT |  | 22.06.2021 |
|  |  |  |



# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152411002 | **COURSE NAME** | Computer Aided Design |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
|  | | 2 | | 2 |  | | 4 | 6 | COMPULSORY (x ) ELECTIVE ( ) | | English | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | |  | | |  | | | | |  | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 40 | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | | 1 | 10 | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | |  | 50 | |
| **PREREQUIEITE(S)** | | | | | |  | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Learning 2D and 3D technical drawing skills. Solid models and assembly knowledge. | | | | | | |
| **COURSE OBJECTIVES** | | | | | | Learning fundamentals of 2 and 3D design and parametric moddelling in computer. | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | Aerospace engineers use technical drawings and modelling skills in engineering life. | | | | | | |
| **COURSE OUTCOMES** | | | | | | Understanding design, reading and evaluating of technical drawings. Basic knowledge of assembly structures and design criteria. | | | | | | |
| **TEXTBOOK** | | | | | | TECHNICAL DRAWING WITH ENGINEERING GRAPHICS,  Giesecke et. al, 15th edition, 2016, Prentence Hall | | | | | | |
| **OTHER REFERENCES** | | | | | |  | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | | Computer | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | What is graphic design? | | | | | | | | | | |
| 2 | Visualization and sketching | | | | | | | | | | |
| 3 | Geometry for modeling and design | | | | | | | | | | |
| 4 | Modeling and design: 2D | | | | | | | | | | |
| 5 | Modeling and design: 3D | | | | | | | | | | |
| 6 | 2D Drawing | | | | | | | | | | |
| 7 | Section views | | | | | | | | | | |
| 8 | Auxilary views | | | | | | | | | | |
| 9 | Modeling for manufacturing and assembly | | | | | | | | | | |
| 10 | Modeling for manufacturing and assembly | | | | | | | | | | |
| 11 | Dimensioning | | | | | | | | | | |
| 12 | Tolerancing | | | | | | | | | | |
| 13 | Drawing control and data management | | | | | | | | | | |
| 14 | Welding represantation | | | | | | | | | | |
| 15,16 |  | | | | | | | | | | |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **x** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **x** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. | **x** |  |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **x** |  |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  | **x** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **x** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | **x** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **x** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  | **x** |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | **x** |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **x** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Dr.Gökçe Mehmet AY

**Signature**: **Date:**

04/07/2021



# ESOGÜ Mechanical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152411003 | **COURSE NAME** | OCCUPATIONAL HEALTH and SAFETY 1 |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 1 | 1 | | 0 | 0 | | 1 | 1 | COMPULSORY (X) ELECTIVE ( ) | | ENGLISH |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** |
|  | | 20 | | | 30 | | | | | 50 |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 40 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 60 |
| **PREREQUIEITE(S)** | | | | | NONE | | | | | |
| **COURSE DESCRIPTION** | | | | | Concept of Occupational Health and Safety and its development; Developments related to Occupational Health and Safety in the World and in Turkey; A general view of Occupational Health and Safety and culture of safety, the tasks belong to institutions, organizations and workers in forming the safety culture; National and international institutions, agreements related to Occupational Health and Safety; Occupational Health and Safety management systems; Danger and risk terms in Occupational Health and Safety; Risk management, evaluation and methodology, risk analysis and case studies; Occupational Health and Safety risk reasons (physical, chemical, biological…); Occupational accident, reasons, preventing and protecting principles; Occupational diseases, reasons, preventing and protecting principles; Ergonomy; First aid | | | | | |
| **COURSE OBJECTIVES** | | | | | To educate students on basic Occupational Health and Safety; to form safety culture; to give information about the aim and scope of 6331 numbered Occupational Health and Safety law; to give basic information about tasks, authority and responsibilities to provide Occupational Health and Safety in works; to educate employer and workers basically about right and obligation in work; student To provide following legal regulation and evaluating Occupational Health and Safety subject to students | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | Evaluation of Occupational Health and Safety in Aeronautical Engineering | | | | | |
| **COURSE OUTCOMES** | | | | | To learn Occupational Safety regulations and basic terms of Occupational Occupational accident definition, reasons and ability to use international accident evaluation methodologies  To learn national institutions related to Occupational Safety, Occupational Safety specialist authority and responsibilities | | | | | |

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| --- | --- |
|  | To learn design and standarts of work equipments oriented to Occupational  Safety, education of health safety in works, documentation, OHSAS 18001  (TS 18001) Occupational Health and Safety quality standarts  To learn regulations related to occupation |
| **TEXTBOOK** | Özkılıç, Ö. (2005), İş Sağlığı ve Güvenliği Yönetim Sistemleri ve Risk Değerlendirme Metodolojileri, TİSK Yayınları, Ankara.Bahr, N.J., 1997. System Safety Engineering and Risk Assesment: A Practical Approach, Taylor&Francis, Ney York, 251 s. Hale, A. & Baram, M.,1998. Safety Management The Challenge of Change, Pergamon, Netherlands, 275 s.  Bayır, M., Ergül, M. (2006), İş Güvenliği, Alfa Aktüel Yayınları, s: 213, Bursa. İş Güvenliği Uzmanlığı Temel Eğitim Notları; Kanun, Tüzük ve  Yönetmelikler; Mevzuatlar; Ders Notları; Slaytlar, Videolar ve Fotoğraflar. |
| **OTHER REFERENCES** |  |
| **TOOLS AND EQUIPMENTS REQUIRED** | Computer and projector |

|  |  |
| --- | --- |
|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Concept of Occupational Health and Safety and its development |
| 2 | Developments related to Occupational Health and Safety in the World and in Turkey |
| 3 | A general view of Occupational Health and Safety and culture of safety, the tasks belong to institutions, organizations and workers in forming the safety culture |
| 4 | National and international institutions, agreements related to Occupational Health and Safety |
| 5 | Occupational Health and Safety management systems |
| 6 | Danger and risk terms in Occupational Health and Safety |
| 7 | Risk management, evaluation and methodology, risk analysis and case studies |
| 8 | MIDTERM |
| 9 | Occupational Health and Safety risk reasons (physical, chemical, biological…) |
| 10 | Occupational accident, reasons, preventing and protecting principles |
| 11 | Occupational diseases, reasons, preventing and protecting principles |
| 12 | Ergonomy |
| 13 | First aid |
| 14 | First aid |
| 15,16 | FINAL |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of aeronautical engineering problems. |  |  | **X** |
| 2 | Ability to determine, define, formulate and solve complex aeronautical engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  |  | **X** |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  |  | **X** |
| 4 | Ability to develop, select and use modern methods and tools required for aeronautical engineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate aeronautical engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  | **X** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  |  | **X** |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | **X** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **X** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility | **X** |  |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | **X** |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. | **X** |  |  |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Assoc. Prof. Işıl YAZAR

**Signature**: **Date:** 29/06/2021



## ESOGU Aeronautical Engineering

### Course Information Form

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| SEMESTE  R | AUTUMN |

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| --- | --- | --- | --- |
| **COURSE CODE** | 152411004 | **COURSE NAME** | Physics I |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 1 | 3 | | 0 | 0 | | | 3 | 3 | COMPULSORY (x ) ELECTIVE ( ) | | Türkish ( ) English ( x) |
| **COURSE CATAGORY** | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | | **Aeronautical Engineering**  **[if it contains considerable design, mark with (**√)] | | | | | **Social Science** |
| 100 | |  | | | | ( ) | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 30 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | | 2 | 10 |
| Homework | | | |  |  |
| Project | | | | 1 | 10 |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | | |  | | | | 1 | 50 |
| **PREREQUIEITE(S)** | | | | | |  | | | | | |
| **COURSE DESCRIPTION** | | | | | | Measurement and units; vectors; Kinematics; Dynamics; Work and  Energy; Linear Momentum and Collisions; Rotational Motion; Equilibrium; Oscillatory Motion | | | | | |
| **COURSE OBJECTIVES** | | | | | | To teach the basic concepts and laws of physics and practices of daily life. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | In practice, varieties of physical systems to recognize and solve problems and at the same time improve their ability to practice in daily life. Using them, students will realize the role of physics in applied sciences such as health sciences and engineering. | | | | | |
| **COURSE OUTCOMES** | | | | | | Students realize of the variety problems of physical systems and solve these problems.  Understands the importance of measurement and the units.  Physical systems apply in their personal daily life.  Recognizes the role of physics in engineering and health sciences.  The basic laws of physics and concepts. | | | | | |
| **TEXTBOOK** | | | | | | **Physics for Scientists and Engineers**  Raymond A. Serway - Emeritus, John W. Jewett - ISBN 0534408427 Thomson Brooks/Cole © 2004; 6th Edition | | | | | |
| **OTHER REFERENCES** | | | | | | 1. Physics for Scientists and Engineers,Fishbane, P.M., Gasiorowicz, S., & Thornton, S.T. (1996). Physics for Scientists and Engineers. Prentice Hall, Inc. 2. Fundamentals of Physics ,Halliday, D. , Resnick, R., &  [Walker,](http://www.amazon.com/exec/obidos/search-handle-url/index=books%26field-author-exact=Jearl%20%20Walker%26rank=-relevance%2C%2Bavailability%2C-daterank/002-8598554-4103264) J. (2006) 6th ed. Fundamentals of Physics. New York: John Wiley & Sons, Inc. | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | Calculater, Projector and Computer, Black board | | | | | | |

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|  | **COURSE SYLLABUS** |
| **WEE**  **K** | **TOPICS** |
| 1 | Measurement and units |
| 2 | Vectors |
| 3 | Motion in One Dimension |
| 4 | Motion in Two Dimensions |
| 5 | Newton’s Laws |
| 6 | Work and Power |
| 7 | Energy |
| 8 | Mid-Term Examination |
| 9 | Linear Momentum and Collisions |
| 10 | Rotational Motion |
| 11 | Applications of Rotational Motion |
| 12 | Equilibrium |
| 13 | Oscillatory Motion |
| 14 | Gravity |
| 15,16 | Final Exam |

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| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and Aeronauticalengineering; an ability to apply theoretical and practical knowledge on solving and modeling of Metallurgical and Materials engineering problems. | **x** |  |  |
| 2 | Ability to determine, define, formulate and solve complex Aeronauticalengineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  | **X** |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for Metallurgical and Materials engineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate Aeronauticalengineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  | **X** |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | **X** |  |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | **X** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Prepared by:** Prof. Dr. S. Deniz KORKMAZ **Date:**

**Signature(s)**:



## ESOGU Aeronautical Engineering

### Course Information Form

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| --- | --- |
| SEMESTER | AUTUMN |

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| --- | --- | --- | --- |
| **COURSE CODE** | 152411005 | **COURSE NAME** | Physics Lab I |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 1 | 0 | | 0 | 2 | | 1 | 2 | COMPULSORY (X ) ELECTIVE ( ) | | Turkish |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **AeronauticalEngineering**  **[if it contains considerable design, mark with (****)]** | | | | | **Social Science** |
| 100 | |  | | | ( ) | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | |  |  |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Report | | | | 5 | 50 |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 50 |
| **PREREQUIEITE(S)** | | | | |  | | | | | |
| **COURSE DESCRIPTION** | | | | | General instructions; measurements; free fall and projectile motion;  Newton’s second law; the simple pendulum and moment of inertia; hooke’s law and spiral spring; viscosity | | | | | |
| **COURSE OBJECTIVES** | | | | | learning the basic principles and concepts of physics | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | To use existing technology and to produce new technologies. | | | | | |
| **COURSE OUTCOMES** | | | | | To explain natural phenomena and analysis learn the science of physics, Understanding of scientific method and research skills. | | | | | |
| **TEXTBOOK** | | | | | **M.C.Baykul, E.Alğın, S.Eroğlu, C.Aşıcı, Physics I-II Lab Manuel foe scientist and engineers,** Eskisehir Osmangazi University | | | | | |
| **OTHER REFERENCES** | | | | | Ekem, N. Ve Şenyel, M., **Fizik I-II Deneyleri** | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | |  | | | | | |

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| --- | --- |
|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | General instructions |
| 2 | The education of occupational health and safety |
| 3 | Measurements |
| 4 | Free fall and projectile motion |
| 5 | Free fall and projectile motion |
| 6 | Newton’s second law |
| 7 | Measurements |
| 8 | Mid-term examination |
| 9 | The simple pendulum and moment of inertia |
| 10 | The simple pendulum and moment of inertia |
| 11 | Hooke’s law and spiral spring |
| 12 | Hooke’s law and spiral spring |
| 13 | Viscosity |
| 14 | Viscosity |
| 15,16 | Final Exam |

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| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and Aeronauticalengineering; an ability to apply theoretical and practical knowledge on solving and modeling of Aeronauticalengineering problems. | **x** |  |  |
| 2 | Ability to determine, define, formulate and solve complex Aeronauticalengineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  | **X** |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for  Aeronauticalengineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate Aeronauticalengineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **X** |  |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | **X** |  |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | **X** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **x** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Prepared by:** Fen Edebiyat Fak. Fizik Bölümü Öğr.Üyesi **Date:**

**Signature:**

**T.C. ESKİŞEHİR OSMANGAZİ UNİVERSİTY**

**FACULTY OF ENGINEERING AND ARCHITECTURE**

**AERONAUTİCAL ENGİNEERİNG**

# COURSE INFORMATION FORM

|  |  |
| --- | --- |
| **PERIOD** | AUTUMN |

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| --- | --- | --- | --- |
| **COURSE CODE** | 152411006 | **COURSE NAME** | CALCULUS I |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMEST**  **ER** | **WEEKLY HOURS** | | | | | **COURSE** | | | |
| **Theoretic**  **al** | | **Application / Labaratory** | | | **Credit** | **ECTS** | **Type** | **Language** |
| 1 | 4 | | 0 | | | 4 | 5 | Compulsory (X) Elective ( ) | EN |
|  | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **AERONAUTİCAL ENGİNEERİNG**  **[Mark (****) if there is high design content.]** | | | | **Humanitie s** |
| 4 | |  | | |  | | | |  |
| **ASSESSMENT** | | | | | | | | | |
| **Midterm** | | | | | **Exam Types** | | | **Number** | **%** |
| Midterm | | | 1 | 40 |
|  | | |  |  |
|  | | |  |  |
|  | | |  |  |
|  | | |  |  |
|  | | |  |  |
|  | | |  |  |
| **Final** | | | | | Final | | | 1 | 60 |
| Prerequisites | | | | |  | | | | |
| Brief content of the course | | | | | Functions. their graphs, limits and continuity.  Differentiation. Applications of derivative, indefinite Integration. definite integral, area,volume, surface ares, parametric curves, polar coordinate systems. | | | | |
| Objectives of the course | | | | | Main objective of this course is to teach students basic concepts, theorems of calculus and provide them the ability to solve mathematical problems | | | | |
| Contribution of the course towards professional education | | | | | the students gain necessary mathematical background for engineering courses and their professional lives. | | | | |
| Outcomes of the course | | | | | 1. Solving limit problems. 2. Defining differentiation. 3. Applying derivatives to certain problems. 4. Defining integration. 5. Solving definite integrals. 6. Analyzing sequences and series. | | | | |
| Textbook of the course | | | | | **Calculus: one and several variables , Saturnino L. Salas, Garret J. Etgen, Einar Hille.** | | | | |
| Other reference books | | | | 1. **Calculus and Analytic Geometry, 9th Edition, G. B.**   **Thomas,Jr., R. L. Finney, Addison-Wesley, 1998.2) Calculus the Maple Way, Robert B. Israel, Addison-Wesley, 2000.**   1. **Calculus, A Complete Course-Fifth Edition, Robert**   **A. Adams, Addison-Wesley, 2001** | | | | | |
|  | | | |  | | | | | |

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|  | **DERSİN HAFTALIK PLANI** |
| **HAFTA** | **İŞLENEN KONULAR** |
| 1 | Functions, elementary functions , combination of functions , Transcendental functions |
| 2 | Limits and continuity:definition of limits, some limit teorems, continuity |
| 3 | Derivatives:mean value theorem, Derivatives rules |
| 4 | Derivatives of elementary functions |
| 5 | Max-Mim. Problems, concavity |
| 6 | Graph of special functions |
| 7 | Differentials, Taylor theorem |
| 8 | Midterm |
| 9 | Integrals, area of certain region, |
| 10 | Some application of integrals |
| 11 | Integrals of elementary functions |
| 12 | Surface, ares, volme of certain solids, length of parametric curves |
| 13 | Polar coordinate system, area using polar coordinate system. |
| 14 | Indefinite integral |
| 15,16 | Final exam |

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| **NO** | **PROGRAM ÇIKTISI** | **4** | **3** | **2** | **1** |
| 1 | Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Electrical and Electronic Engineering | **[**X**]** | **[** **]** | **[** **]** | **[** **]** |
| 2 | Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods. | **[** **]** | **[** **]** | **[** **]** | **[**X**]** |
| 3 | Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering. | **[** **]** | **[** **]** | **[** **]** | **[**X**]** |
| 4 | aving skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Aeronautical Engineering, skills to use information technology effectively | **[** **]** | **[** **]** | **[** **]** | **[**X**]** |
| 5 | kills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Aeronautical Engineering | **[** **]** | **[** **]** | **[** **]** | **[**X**]** |
| 6 | ility to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas | **[** **]** | **[** **]** | **[** **]** | **[**X**]** |
| 7 | Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions. | **[** **]** | **[** **]** | **[** **]** | **[**X**]** |
| 8 | Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing | **[** **]** | **[** **]** | **[** **]** | **[**X**]** |
| 9 | Understanding of professional and ethical responsibility | **[** **]** | **[** **]** | **[** **]** | **[**X**]** |
| 10 | nformation on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development. | **[** **]** | **[** **]** | **[** **]** | **[**X**]** |
| 11 | Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions. | **[** **]** | **[** **]** | **[** **]** | **[**X**]** |
|  | 4: High 3: Medium 2: Low 1:None |  |  |  | |

**Name of Instroctor(s):** Dr. Öğr. Üyesi Emrah Atılgan **Date:** 1/07/2021

**Signiture**:



# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152411007 | **COURSE NAME** | Chemistry |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | | | |
| 01 | | 3 | | 0 | 0 | | 3 | 3 | COMPULSORY (x) ELECTIVE ( ) | | English | | | |
| **COURSE CATAGORY** | | | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | | | |
| X | | |  | | |  | | | | |  | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | | | |
| 1st Mid-Term | | | | 1 |  | 50 |  | |
| 2nd Mid-Term | | | |  |  | | | |
| Quiz | | | |  |  | | | |
| Homework | | | |  |  | | | |
| Project | | | |  |  | | | |
| Report | | | |  |  | | | |
| Others (………) | | | |  |  | | | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 50 | | | |
| **PREREQUISITE(S)** | | | | | | No | | | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Basic properties of subsances, measurements, atoms and atomic theory, periodic table and periodic properties, chemical reactions and stoichiometry, gaseous state, thermodynamics and thermochemistry,  solutions, chemical equilibria, electrochemistry | | | | | | | | |
| **COURSE OBJECTIVES** | | | | | | To introduce the main subjects of chemistry, to provide the basic chemistry knowledge necessary for electrical engineering | | | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | Providing the fundamental chemistry knowledge and the ability of solving problems in chemistry | | | | | | | | |
| **COURSE OUTCOMES** | | | | | | The student can define, explain and use the basic knowledge on the subjects in the course contents and can also solve the prroblems related to these areas | | | | | | | | |
| **TEXTBOOK** | | | | | | Chemistry, The Study of Matter and Its Changes; J. E. Brady, J. R. Holum; John Wiley & Sons, Inc. | | | | | | | | |
| **OTHER REFERENCES** | | | | | |  | | | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | |  | | | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | | | |
| 1 | Basic concepts and properties, measurements, units, dimensions, basic calculations | | | | | | | | | | | | |
| 2 | Atoms and atomic theory, periodic table and periodic properties, the mol concept | | | | | | | | | | | | |
| 3 | Chemical reactions and stoichiometry | | | | | | | | | | | | |
| 4 | Chemical compounds, mole and chemical Formula calculations, mass relationships in chemical phenomena | | | | | | | | | | | | |
| 5 | Concentration units, stoichiometry in solutions | | | | | | | | | | | | |
| 6 | Gaseous state | | | | | | | | | | | | |
| 7 | Chemical Kinetics | | | | | | | | | | | | |
| 8 | MIDTERM | | | | | | | | | | | | |
| 9 | Thermodynamics | | | | | | | | | | | | |
| 10 | Thermochemistry | | | | | | | | | | | | |
| 11 | Equilibrium | | | | | | | | | | | | |
| 12 | Solutions, colligative properties | | | | | | | | | | | | |
| 13 | Chemical equilibria | | | | | | | | | | | | |
| 14 | Electrochemistry | | | | | | | | | | | | |
| 15,16 | FINAL | | | | | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | X |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  |  | X |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  |  | X |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  |  | X |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  | X |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  |  | X |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | X |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | X |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | X |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | X |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | X |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s): Prof. Dr. O. Sermet Kabasakal**

**Signature**: **Date:**

# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

|  |  |
| --- | --- |
| **SEMESTER** | AUTUMN |

|  |  |  |  |
| --- | --- | --- | --- |
| **COURSE CODE** | 152411008 | **COURSE NAME** | Technical English |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 1 | 2 | | 0 | 0 | | 2 | 2 | COMPULSORY (X) ELECTIVE ( ) | | English |
| **COURSE CATEGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering**  **[if it contains considerable design, mark with (**√) ] | | | | | **Social Science** |
|  | |  | | |  | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 20 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | | 3 | 15 |
| Homework | | | |  |  |
| Project | | | | 1 | 10 |
| Report | | | | 1 | 10 |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 45 |
| **PREREQUISITE(S)** | | | | | To have sufficient knowledge of English (students must have successfully completed or have to be exempt from the English preparatory class). | | | | | |
| **COURSE DESCRIPTION** | | | | | Introduction to technical English, aeronautical terminology, military and civil applications, design, production, maintenance practices, aviation administrations and certifications, mishap and incident reporting, describing and troubleshooting problems, using technical manuals, technical log entries, forms/checklists, parts catalogs, formal reports, academic research and writing, technical communication skills, presenting technical data. | | | | | |
| **COURSE OBJECTIVES** | | | | | To provide required understanding of Technical English for Aeronautical Engineering education. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUCATION** | | | | | In this course, students of the Aeronautical Engineering Department will gain the most necessary Technical English knowledge used in civil/military aviation companies operating in the fields of aircraft design, manufacture, maintenance and repair. | | | | | |
| **COURSE OUTCOMES** | | | | | On completion of the course the student should;   1. Have contributed to both oral and written Technical English, 2. Have experience in real life English language used in aeronautical engineering, 3. Understand how these outcomes are related to aeronautical engineering practice. | | | | | |
| **TEXTBOOK** | | | | | - | | | | | |
| **OTHER REFERENCES** | | | | | **-** | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | Computer system equipped with suitable speakers, projector and writing board. | | | | | |

|  |  |
| --- | --- |
|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Introduction to Technical English |
| 2 | Aeronautical Terminology |
| 3 | Military and Civil Applications |
| 4 | Design, Production, Maintenance Practices |
| 5 | Aviation Administrations and Certifications |
| 6 | Mishap and Incident Reporting |
| 7 | Describing and Troubleshooting Problems |
| 8 | Mid-Term Examination |
| 9 | Using Technical Manuals |
| 10 | Technical Log Entries, Forms/Checklists, Parts Catalogs |
| 11 | Formal Reports |
| 12 | Academic Research and Writing |
| 13 | Technical Communication Skills |
| 14 | Presenting Technical Data |
| 15,16 | Final Exam |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | [ ] | [x] | [ ] |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | [ ] | [x] | [ ] |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. | [ ] | [x] | [ ] |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | [ ] | [x] | [ ] |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | [ ] | [ ] | [x] |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | [x] | [ ] | [ ] |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. | [x] | [ ] | [ ] |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | [x] | [ ] | [ ] |
| 9 | Understanding of professional and ethical issues and taking responsibility | [ ] | [x] | [ ] |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. | [ ] | [ ] | [x] |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. | [ ] | [x] | [ ] |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s) :** Assistant Prof. S. Fehmi DİLTEMİZ

**Signature :**

**Date :** 30.06.2021

 **ESOGÜ Aeronautical Engineering Department**

**COURSE CODE:** 151221181 - 151241181 **COURSE TITLE:** Turkish I

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Semester** | **Weekly Hours** | | | **COURSE** | | | | | | | |
| **Theoretical** | **Practical** | | **Credits** | | **ECTS** | | **Type** | | | |
| 1 | 2 | 0 | | 0 | | 2 | | Compulsory ( x) Elective ( ) | | | |
| Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.). | | | | | | | | | | | |
| **Math and Basic Science** | | | **Aeronautical Engineering** | | | | **General Education** | | **Humanities** | | |
|  | | | [mark () if there is high design content ( ) ] | | | | 2 | |  | | |
| **Assessment** | | | **THEORETICAL-PRACTICAL COURSES** | | | | **LABORATORY COURSES** | | | | |
| **Midterm** | | | **Type** | **Number** | **%** | | **Activity Type** | | | **Number** | **%** |
| Midterm | 1 | 50 | | Quiz | | |  |  |
| Quiz |  |  | | Lab performance | | |  |  |
| Homework |  |  | | Report | | |  |  |
| Project |  |  | | Oral exam | | |  |  |
| Other (………) |  |  | | Other (………) | | |  |  |
| **Final** | | |  | 1 | 50 | |  | | |  |  |
| **Makeup exam (Oral/Written)** | | | Oral | | | |  | | | | |
| **Prerequisites** | | | - | | | | | | | | |
| **Brief content of the course** | | | The contents of this course are description and features of language, languages of the world, Position of Turkish among other languages, historical development of Turkish, development of western Turkish, Atatürk’s ideas and projects on Turkish, pronunciation and punctuation, language policies. | | | | | | | | |
| **Objectives of the course** | | | The subject of the course is to expose the value of Turkish language by giving information about development of Turkish language, to gain national language awareness, to develop reading and writing skills, to compare and contrast Turkish language to other languages, to compare and contrast language policy of developed countries to Turkish language policy, to gain skill of speaking. | | | | | | | | |
| **Contribution of the course towards professional education** | | | 1. Learn Turkish grammar 2. Gain an understanding of the position of Turkish among other languages 3. Gain an understanding of history of Turkish language 4. Gain knowledge about Turkish languages in the world 5. Develop the ability of using Turkish properly 6. Learn the language policies 7. Gain writing skill 8. Gain speaking skill 9. Learn sentence structure and analyzing 10. Be able to realize Turkish vowels 10. Be able to realize formation of Turkish 11. Be able to read and comprehend 12. Be able to speak simultaneously 13. Be able to write compositions | | | | | | | | |
| **Outcomes of the course** | | |  | | | | | | | | |
| **Textbook of the course** | | | 1. Ergin, M. (1997). Üniversiteler İçin Türk Dili. İstanbul: Bayrak   Yayınları   1. Kaplan, M. (1993). Kültür ve Dil. İstanbul: Dergâh Yayınları (8. baskı) 2. Fuat, M. (2001). Dil Üstüne. İstanbul: Adam Yayınları 3. Aksan, D. (1984). Türkçe’nin Gücü. Ankara: Bilgi Yayınevi (4. baskı) 4. Karamanlıoğlu, A. F. (1984). Türk Dili. İstanbul: Dergâh Yayınları (3. baskı) 5. Anday, M. C. (1996). Dilimiz Üstüne Konuşmalar. İstanbul: Yapı   Kredi Yayınları   1. Karaağaç, G. (2002). Dil Tarih ve İnsan. Ankara: Akçağ Yayınevi 2. Aksan, D. (2003). Dil Şu Büyülü Düzen. Ankara: Bilgi Yayınevi | | | | | | | | |

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|  |  |
| --- | --- |
|  | 1. Banarlı, N. S. (2002). Türkçe’nin Sırları. İstanbul: Kubbealtı Neşriyatı (18. baskı) 2. Parlatır,İ. & Korkmaz, Z. & Gülensoy, T. & Zülfikar, H. & Birinci, N. (2005). Türk Dili ve Kompozisyon. Ankara: Ekin Yayınları |
| **Other reference books** |  |
| **Required material for the course** |  |

|  |  |
| --- | --- |
|  | **WEEKLY PLAN OF THE COURSE** |
| **Week** | **Topics** |
| 1 | Description and features of language |
| 2 | Description and features of language |
| 3 | Languages of the world |
| 4 | Position of Turkish among other languages |
| 5 | Historical development of Turkish |
| 6 | Historical development of Turkish |
| 7 | Development of western Turkish |
| 8 | Midterm |
| 9 | Midterm |
| 10 | Atatürk’s ideas and projects on Turkish |
| 11 | Pronunciation |
| 12 | Punctuation |
| 13 | Punctuation |
| 14 | Language policies |
| 15,16 | Final |

## Contribution of the course to the program outcomes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **NO** | **OUTCOMES OF THE PROGRAMME** | **4** | **3** | **2** | **1** |
| 1 | Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering |  |  |  | **x** |
| 2 | Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods. |  |  |  | **x** |
| 3 | Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering. |  |  |  | **x** |
| 4 | Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively. |  |  |  | **x** |
| 5 | Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems |  |  |  | **x** |
| 6 | Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas. |  |  |  | **x** |
| 7 | Communicating effectively in oral and written form both in Turkish and English. | **x** |  |  |  |
| 8 | Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing |  | **x** |  |  |
| 9 | Understanding of professional and ethical responsibility |  |  |  | **x** |
| 10 | Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development. |  |  |  | **x** |
| 11 | Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions. |  |  |  | **x** |

**Scale for assessing the contribution of the course to the program outcomes: 4: High 3: Medium 2: Low 1:None Name of Instructor(s):**

**Signature(s)**: **Date:**

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### ESOGU Aeronautical Engineering



#### Course Information Form

|  |  |
| --- | --- |
| SEMESTE  R | SPRING |

|  |  |  |  |
| --- | --- | --- | --- |
| **COURSE CODE** | 152412001 | **COURSE NAME** | Physics II |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 2 | 3 | | 0 | 0 | | 3 | 3 | COMPULSORY (x ) ELECTIVE ( ) | | Türkçe |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **AeronauticalEngineering**  **[if it contains considerable design, mark with (**√)] | | | | | **Social Science** |
| 100 | |  | | | ( ) | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 30 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | | 2 | 10 |
| Homework | | | |  |  |
| Project | | | | 1 | 10 |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 50 |
| **PREREQUIEITE(S)** | | | | |  | | | | | |
| **COURSE DESCRIPTION** | | | | | Electric Charges; Coulomb’s Law; The Electric Field; Electric Potential;  Capacitance and Dielectrics; Current and Resistance; Magnetic Fields;  Sources of the Magnetic Field; Faraday’s Law, AC cureents, Electromagnetic waves | | | | | |
| **COURSE OBJECTIVES** | | | | | To teach the basic concepts and laws of physics and practices of daily life. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | In practice, varieties of physical systems to recognize and solve problems and at the same time improve their ability to practice in daily life. Using them, students will realize the role of physics in applied sciences such as health sciences and engineering. | | | | | |
| **COURSE OUTCOMES** | | | | | Students realize of the variety problems of physical systems and solve these problems.  Understands the importance of measurement and the units.  Physical systems apply in their personal daily life.  Recognizes the role of physics in engineering and health sciences.  The basic laws of physics and concepts. | | | | | |
| **TEXTBOOK** | | | | | Physics For Scientists And Engineers Wıth Modern Physics [Raymond A. Serway - John W. Jewett,](https://www.nadirkitap.com/kitapara.php?ara=kitaplari&tip=kitap&yazar=Raymond+A.+Serway+-+John+W.+Jewett) - 8th Edition (International Edition), [Brooks / Cole,](https://www.nadirkitap.com/kitapara.php?ara=kitap&tip=kitap&yayin_Evi=Brooks+/+Cole&siralama=fiyatartan) [2010](https://www.nadirkitap.com/kitapara.php?ara=kitaplari&tip=kitap&tarih1=2010&tarih2=2010) | | | | | |
| **OTHER REFERENCES** | | | | | Physics for Scientists and Engineers with Modern Physics  **B**yFishbane, P.M., Gasiorowicz, S., & Thornton, S.T. 3rd Edition, 2005 Prentice-Hall | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | Calculater, Projector, Computer, Black board | | | | | |

|  |  |
| --- | --- |
|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Electric Charges; Coulomb’s Law |
| 2 | The Electric Field |
| 3 | The Electric Field, continuous charge distribution |
| 4 | Electric Potential |
| 5 | Capacitance and Dielectrics |
| 6 | Capacitance and Dielectrics |
| 7 | Current and resistivity |
| 8 | Mid-Term Examination |
| 9 | DC circuits, Kirchhoffís Rules |
| 10 | Magnetic fields |
| 11 | Sources of the Magnetic Field, Biot-Savart Laws |
| 12 | Sources of the Magnetic Field Ampere law |
| 13 | Faraday’s Law and Induction |
| 14 | Altervative current and Electromagnetic Waves |
| 15,16 | Final Exam |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and Metallurgical and Materials engineering; an ability to apply theoretical and practical knowledge on solving and modeling of Aeronauticalengineering problems. | **x** |  |  |
| 2 | Ability to determine, define, formulate and solve complex Aeronauticalengineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  | **X** |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for  Aeronauticalengineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate Aeronauticalengineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  | **X** |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | **X** |  |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | **X** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Prepared by:** Prof. Dr. S. Deniz KORKMAZ **Date:**

**Signature(s)**:

#### ESOGU Aeronautical Engineering Course Information Form



|  |  |
| --- | --- |
| SEMESTER | SPRING |

|  |  |  |  |
| --- | --- | --- | --- |
| **COURSE CODE** | 152412002 | **COURSE NAME** | Physics Lab II |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 2 | | 0 | | 0 | 2 | | 1 | 2 | COMPULSORY (X ) ELECTIVE ( ) | | Turkish | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering**  **[if it contains considerable design, mark with (****)]** | | | | | **Social Science** | |
| 100 | | |  | | | ( ) | | | | |  | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | |  |  | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | | 5 | 50 | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 50 | |
| **PREREQUIEITE(S)** | | | | | |  | | | | | | |
| **COURSE DESCRIPTION** | | | | | | General instructions; Electrolysis; Magnetic Force; Ohm’s Law; Resonance tube and stable waves; transformers | | | | | | |
| **COURSE OBJECTIVES** | | | | | | learning the basic principles and concepts of physics | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | To use existing technology and to produce new technologies. | | | | | | |
| **COURSE OUTCOMES** | | | | | | To explain natural phenomena and analysis learn the science of physics, Understanding of scientific method and research skills. | | | | | | |
| **TEXTBOOK** | | | | | | **M.C.Baykul, E.Alğın, S.Eroğlu, C.Aşıcı, Physics I-II Lab Manuel foe scientist and engineers,** Eskisehir Osmangazi University | | | | | | |
| **OTHER REFERENCES** | | | | | | Ekem, N. Ve Şenyel, M., **Fizik I-II Deneyleri** | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | |  | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | General instructions | | | | | | | | | | |
| 2 | Electrolysis | | | | | | | | | | |
| 3 | Electrolysis | | | | | | | | | | |
| 4 | Magnetic force | | | | | | | | | | |
| 5 | Magnetic force | | | | | | | | | | |
| 6 | Ohm’s law | | | | | | | | | | |
| 7 | Ohm’s law | | | | | | | | | | |
| 8 | Mid-Term Examination | | | | | | | | | | |
| 9 | Transformers | | | | | | | | | | |
| 10 | Transformers | | | | | | | | | | |
| 11 | Resonance tube and stable waves | | | | | | | | | | |
| 12 | Resonance tube and stable waves | | | | | | | | | | |
| 13 | Compensated experiments | | | | | | | | | | |
| 14 | Compensated experiments | | | | | | | | | | |
| 15,16 | Final Exam | | | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and Metallurgical and Materials engineering; an ability to apply theoretical and practical knowledge on solving and modeling of Metallurgical and Materials engineering problems. | **x** |  |  |
| 2 | Ability to determine, define, formulate and solve complex Aeronauticalengineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  | **X** |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for Metallurgical and Materials engineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate Metallurgical and Materials engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **X** |  |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | **X** |  |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | **X** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **x** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Prepared by:** Fen Edebiyat Fak.Öğretim Üyesi **Date:**

**Signature(s)**:



# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

|  |  |
| --- | --- |
| **SEMESTER** | SPRING |

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| **COURSE CODE** | 152412003 | **COURSE NAME** | CALCULUS 2 |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 2 | | 4 | | 0 | 0 | | 4 | 5 | COMPULSORY (X) ELECTIVE ( ) | | ENGLISH | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Mechanical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
| X | | |  | | |  | | | | |  | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 40 | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 60 | |
| **PREREQUIEITE(S)** | | | | | |  | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Polar coordinates. Curvilinear coordinate systems. Vectors. Partial derivatives. Vector differential operators. Multiple integrals. Integration in vector fields. | | | | | | |
| **COURSE OBJECTIVES** | | | | | | Main objective of this course is to teach students basic concepts, theorems of calculus and provide them the ability to solve mathematical problems. | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | By taking this course, the students gain necessary mathematical background for engineering courses and their professional lives. | | | | | | |
| **COURSE OUTCOMES** | | | | | | 1. Defining coordinate systems and vectors. 2. Solving problems with partial derivatives. 3. Defining vector differential operators. 4. Solving problems with multiple integrals. 5. Defining integral theorems related to vector fields. 6. Solving problems with line and surface integrals. | | | | | | |
| **TEXTBOOK** | | | | | | George B. Thomas Jr., Thomas’ Calculus, 12th edition, Pearson Publications, 2009. | | | | | | |
| **OTHER REFERENCES** | | | | | | * Abdülkadir Özdeğer ve Nursun Özdeğer, Çözümlü Yüksek Matematik Problemleri Cilt I, İTÜ Fen Fakültesi Yayınları, 1994. * Ahmet A. Karadeniz, Yüksek Matematik Cilt: 2, 9. Baskı, Çağlayan Kitabevi, 2007. * Ahmet A. Karadeniz, Yüksek Matematik Cilt: 3, 8. Baskı, Çağlayan Kitabevi, 2004. | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | |  | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Parametric curves. | | | | | | | | | | |
| 2 | Polar coordinates. Graphing in polar coordinates. | | | | | | | | | | |
| 3 | Vectors. Dot product. Cross product. Curvilinear coordinate systems. | | | | | | | | | | |
| 4 | Functions of several variables. Limits and continuity. Partial derivatives. | | | | | | | | | | |
| 5 | Partial derivative. Chain rule. Directional derivatives. | | | | | | | | | | |
| 6 | Extreme values and saddle points. Lagrange multipliers. | | | | | | | | | | |
| 7 | Gradient, divergence and curl operators. | | | | | | | | | | |
| 8 | Midterm | | | | | | | | | | |
| 9 | Gradient, divergence and curl operators. | | | | | | | | | | |
| 10 | Double integrals and their applications | | | | | | | | | | |
| 11 | Triple integrals and their applications. | | | | | | | | | | |
| 12 | Line and surface integrals. | | | | | | | | | | |
| 13 | Line and surface integrals. | | | | | | | | | | |
| 14 | Green’s theorem in the plane. Gauss’ and Stokes’ theorems. | | | | | | | | | | |
| 15,16 | Final | | | | | | | | | | |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | X |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  |  | X |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  |  | X |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  |  | X |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  | X |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  |  | X |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | X |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  |  | X |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | X |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | X |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | X |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Assist Prof. Dr. Emrah Atılgan

**Signature**: **Date:** 10/07/2021



# ESOGÜ Aeronautical Department COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| **COURSE CODE** | 152412004 | **COURSE NAME** | Fundamentals of Computer Programming |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | | | |
| II | | 2 hours | | 2 | 0 | | 3 | 5 | COMPULSORY ( ) ELECTIVE ( ) | | TURKISH() ENGLISH (X) | | | |
| **COURSE CATAGORY** | | | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | | | |
| 0 | | | 3 | | |  | | | | |  | | | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | | | |
| 1st Mid-Term | | | | 1 |  | 40 |  | |
| 2nd Mid-Term | | | |  |  | | | |
| Quiz | | | |  |  | | | |
| Homework | | | | 1 | 10 | | | |
| Project | | | |  |  | | | |
| Report | | | |  |  | | | |
| Others (………) | | | |  |  | | | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 50 | | | |
| **PREREQUIEITE(S)** | | | | | | None | | | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Introduction to Python programming; flow diagram, data types/conversion, operators, expressions and statements, interpreters, conditionals, loops, functions, basic structure of a program, arrays | | | | | | | | |
| **COURSE OBJECTIVES** | | | | | | Learn to write simple programs in Python | | | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | Students aiming to be a future programmer get familiar with introductory details of the programming in Python. | | | | | | | | |
| **COURSE OUTCOMES** | | | | | | 1. Students will know how to write simple programs in Python. 2. Understand and follow code written in this language. 3. Gain ability to create simple algorithms and methods to solve simple problems | | | | | | | | |
| **TEXTBOOK** | | | | | | Brian Heinold, A Practical Introduction to Python Programming | | | | | | | | |
| **OTHER REFERENCES** | | | | | | Lecture notes, previous exams and homeworks, resources on the internet | | | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | | Accessible computers for each student, installed Public Licensed Python and additional development applications. | | | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | | | |
| 1 | Getting started, Installing Python, A first program, printing, Variables | | | | | | | | | | | | |
| 2 | For loops | | | | | | | | | | | | |
| 3 | Numbers | | | | | | | | | | | | |
| 4 | İf statements | | | | | | | | | | | | |
| 5 | Misc. Topics I; Counting, Summing, Swapping, Flag variables, Comments, Simple Debugging | | | | | | | | | | | | |
| 6 | Strings | | | | | | | | | | | | |
| 7 | Lists | | | | | | | | | | | | |
| 8 | Ara sınav | | | | | | | | | | | | |
| 9 | While loops | | | | | | | | | | | | |
| 10 | Misc. Topics II; str,int,float, and list. String formatting | | | | | | | | | | | | |
| 11 | Dictionaries | | | | | | | | | | | | |
| 12 | Text Files | | | | | | | | | | | | |
| 13 | Functions | | | | | | | | | | | | |
| 14 | Object-Oriented Programming | | | | | | | | | | | | |
| 15,16 | Graphics | | | | | | | | | | | | |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. |  | **x** |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **x** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **x** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  | **x** |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **x** |  |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  |  | **x** |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | **x** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **x** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  | **x** |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | **x** |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **x** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s): Dr. Öğr. Üyesi Gökhan DINDIŞ**

**Signature**: **Date:**

# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| **COURSE CODE** | 152412005 | **COURSE NAME** | Introduction to Aerial Vehicles |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 2nd | 3 | | - | - | | 3 | 5 | COMPULSORY (X) ELECTIVE ( ) | | English |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (**√) ] | | | | | **Social Science** |
|  | | X | | | X | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 20 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | | 4 | 40 |
| Project | | | |  |  |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 40 |
| **PREREQUIEITE(S)** | | | | | 152411xxx - Uçak Mühendisliğine Giriş (152411xxx - Introduction to Aeronautical Engineering) | | | | | |
| **COURSE DESCRIPTION** | | | | | Understanding aircraft morphology and performance characteristics, deriving necessary equations of motion and performance equations. | | | | | |
| **COURSE OBJECTIVES** | | | | | Understanding the standard atmosphere model, understanding aerostatic buoyancy and aerodynamic lift forces, understanding fixed-wing aircraft morphology, control surfaces and operating principles, deriving equations of motion with point-body approach, cruising, climbing, descending, take-off, landing, return flights in turbojet and piston-propeller aircraft. equations, determination of required performance parameters (L/D, W/S, T/W…) for minimum and maximum flight capabilities (maximum lift, maximum range, minimum turning radius, minimum descent rate,…), flight and performance envelopes understanding, understanding the Vn diagram, understanding the energy model. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | Derivation of performance equations of turbojet and piston-propeller airplanes, their use in design and analysis activities. | | | | | |
| **COURSE OUTCOMES** | | | | | Upon successful completion of the course, the student will have the following abilities:   * Learning basic aircraft elements, control surfaces and operating principles, * Derivation of standard atmosphere model equations, * Learning aerostatic lift and aerodynamic bearing forces, * Performance calculations for turbojet and piston-propeller airplanes | | | | | |
| **TEXTBOOK** | | | | | Uçuşa Başlangıç (Introduction To Flight), John D. Anderson, Jr., (Çev: Adil Yükselen), Nobel Akademik Yayıncılık, Nobel Akademik Yayıncılık | | | | | |
| **OTHER REFERENCES** | | | | | Yechout, T. R., & Morris, S. L. (2003). Introduction to aircraft flight mechanics:  Performance, static stability, dynamic stability, and classical feedback control.  Reston, VA: American Institute of Aeronautics and Astronautics. | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | Projector, overhead document projector, | | | | | |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Standard atmosphere |
| 2 | Standard atmosphere |
| 3 | Aerostatic lift (balloons and airships) |
| 4 | Fixed-wing aircraft morphology |
| 5 | Fixed-wing aircraft morphology |
| 6 | Aerodynamic lift and aerodynamic coefficients |
| 7 | Aerodynamic lift and aerodynamic coefficients |
| 8 | Equations of motion with point-body approach |
| 9 | Midterm |
| 10 | Steady state level flight performance equations |
| 11 | Steady state level flight performance equations |
| 12 | Climb and descent flight performance equations |
| 13 | Climb and descent flight performance equations |
| 14 | Turning flight performance equations |
| 15,16 | Turning flight performance equations |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. |  | **X** |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  | **X** |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **X** |  |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **X** |  |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | **X** |  |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. | **X** |  |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility | **X** |  |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | **X** |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. | **X** |  |  |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):**

**Signature**:

**Date:**

Dr. Öğr. Üyesi Zafer ÖZNALBANT 12.07.2021

# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| **COURSE CODE** | 152412006 | **COURSE NAME** | STATICS |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 2 | 3 | | 0 | 0 | | 3 | 3 | COMPULSORY (X) ELECTIVE ( ) | | ENGLISH |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (**√) ] | | | | | **Social Science** |
|  | | X | | |  | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 50 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 50 |
| **PREREQUIEITE(S)** | | | | | None | | | | | |
| **COURSE DESCRIPTION** | | | | | The course, Statics deals with forces acting on particles or rigid bodies at rest state. Forces are from a wide range covering forces in plane, forces in space, equilibrium, moment of a force, moment of a couple etc. Within the scope of this course, analyses on resultant forces are given. In addition to single bodies, force analyses in many-body systems such as structures and assemblies are taught. The course mainly needs a trigonometry background along with main physics concepts. | | | | | |
| **COURSE OBJECTIVES** | | | | | To provide the basic skills required of engineering students in mechanics of static structures. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | Basic knowledge and ability for analyzing static structures in engineering applications. | | | | | |
| **COURSE OUTCOMES** | | | | | 1. etermining force and moment components.  2.  nderstanding vector analysis, computing dot products, moments and resultants related to engineering problems.   1. roducing simple Free-Body-Diagrams for static structures. 2. olving equilibrium equations of static structures.   5.  inding member forces in many-body systems such as trusses, frames and structures. | | | | | |
| **TEXTBOOK** | | | | | R. C. Hibbeler, Engineering mechanics. Statics, Fourteenth edition. Hoboken, N.J: Pearson Prentice Hall, 2016. | | | | | |
| **OTHER REFERENCES** | | | | | J. L. Meriam and L. G. Kraige, Engineering mechanics. Statics. Hoboken, Wiley, 2010. | | | | | |

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| **TOOLS AND EQUIPMENTS REQUIRED** | None. |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | General Principles: Mechanics, Fundamental Concepts, Units of Measurement, The International System of Units, Numerical Calculations, General Procedure for Analysis |
| 2 | Force Vectors: Scalars and Vectors, Vector Operations, Vector Addition of Forces, Addition of a System of Coplanar Forces, Cartesian Vectors, Addition of Cartesian Vectors, Position Vectors |
| 3 | Equilibrium of a Particle: Force Vector, Dot Product, Condition for the Equilibrium of a Particle, The Free-Body Diagram, Coplanar Force Systems, Three-Dimensional Force Systems |
| 4 | Force System Resultants: Moment of a Force-Scalar Formulation, Cross Product, Moment of a ForceVector Formulation, Principle of Moments, Moment of a Force, Moment of a Couple |
| 5 | Force System Resultants: Simplification of a Force and Couple System, Further Simplification of a Force and Couple System, Reduction of a Simple Distributed Loading |
| 6 | Equilibrium of a Rigid Body: Conditions for Rigid-Body Equilibrium, Free-Body Diagrams, Equations of Equilibrium, Two- and Three-Force Members |
| 7 | Equilibrium of a Rigid Body: Free-Body Diagrams, Equations of Equilibrium, Constraints |
| 8 | Mid-Term Exam |
| 9 | Structural Analysis: Simple Trusses, The Method of Joints, Zero-Force Members, The Method of Sections, Space Trusses, Frames and Machines |
| 10 | Internal Forces: Internal Loadings Developed in Structural Members, Shear and Moment Equations and Diagrams, Relations between Distributed Load, Shear, and Moment, Cables |
| 11 | Friction: Dry Friction, Problems Involving Dry Friction, Wedges, Frictional Forces on Screws |
| 12 | Friction: Frictional Forces on Flat Belts, Frictional Forces on Collar Bearings, Pivot Bearings, and Disks, Frictional Forces on Journal Bearings, Rolling Resistance |
| 13 | Center of Gravity and Centroid: Center of Gravity, Center of Mass, and the Centroid of a Body, Composite Bodies, Resultant of a General Distributed Loading |
| 14 | Moments of Inertia: Definition of Moments of Inertia for Areas, Product of Inertia for an Area, Moments of Inertia for an Area about Inclined Axes, Mohr’s Circle for Moments of Inertia |
| 15,16 | Final Exams |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **X** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **X** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **X** |  |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  | **X** |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **X** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | **X** |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **X** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | **X** |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**: None. **2**: Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Assoc. Prof. Dr. Selim GÜRGEN

**Signature**:

**Date:** 25.05.2021



# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| --- | --- | --- | --- |
| **COURSE CODE** | 152412007 | **COURSE NAME** | ACADEMIC WRITING |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 2 | | 3 | | 0 | 0 | | 3 | 4 | COMPULSORY (X) ELECTIVE ( ) | | ENGLISH | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | |  | | |  | | | | | 100 | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 30 | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  | 30 | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 100 | |
| **PREREQUIEITE(S)** | | | | | | NONE | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Writing process, brainstorming, planning, drafting, revising, editing, paragraph writing, 5-paragraph essay, introduction, body and conclusion paragraphs, process essay, classification essay, cause-effect essay, comparison-contrast essay | | | | | | |
| **COURSE OBJECTIVES** | | | | | | Writing process, brainstorming, planning, drafting, revising, editing, paragraph writing, 5-paragraph essay, introduction, body and conclusion paragraphs, process essay, classification essay, cause-effect essay, comparison-contrast essay | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | Development of written communication skills  Introduction to the professional composition writing | | | | | | |
| **COURSE OUTCOMES** | | | | | | Having successfully completed this course, students should be able to write 5-paragraph or longer essays without borrowing information. | | | | | | |
| **TEXTBOOK** | | | | | | Karen Blanchard and Christine Root, Ready to Write More, Longman, 1997 | | | | | | |
| **OTHER REFERENCES** | | | | | | Ellen Lipp, From Paragraph to Term Paper, Macmillan, | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | | Ruled sheets of paper or a notebook | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Introduction to the course, purpose and expectations | | | | | | | | | | |
| 2 | The writing process | | | | | | | | | | |
| 3 | Subject, purpose and audience | | | | | | | | | | |
| 4 | Developing paragraphs | | | | | | | | | | |
| 5 | Unity and coherence in paragraphs | | | | | | | | | | |
| 6 | 5-Paragraph essay, introduction and conclusion paragraphs | | | | | | | | | | |
| 7 | Process essay | | | | | | | | | | |
| 8 | MIDTERM | | | | | | | | | | |
| 9 | Process essay | | | | | | | | | | |
| 10 | Process essay practice | | | | | | | | | | |
| 11 | Classification essay | | | | | | | | | | |
| 12 | Cause/Effect essay | | | | | | | | | | |
| 13 | Cause/Effect essay practice | | | | | | | | | | |
| 14 | Comparison/contrast essay | | | | | | | | | | |
| 15,16 | FINAL | | | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of aeronautical engineering problems. |  |  | **X** |
| 2 | Ability to determine, define, formulate and solve complex aeronautical engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  |  | **X** |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  |  | **X** |
| 4 | Ability to develop, select and use modern methods and tools required for aeronautical engineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate aeronautical engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  | **X** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  |  | **X** |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. | **X** |  |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  |  | **X** |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):**

**Signature**: **Date:** 29/06/2021



# ESOGÜ Mechanical Engineering Department COURSE INFORMATION FORM

|  |  |
| --- | --- |
| **SEMESTER** | SPRING |

|  |  |  |  |
| --- | --- | --- | --- |
| **COURSE CODE** | 152412008 | **COURSE NAME** | OCCUPATIONAL HEALTH and SAFETY 2 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 2 | 1 | | 0 | 0 | | 1 | 1 | COMPULSORY (X) ELECTIVE ( ) | | ENGLISH |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Mechanical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** |
|  | | 20 | | | 30 | | | | | 50 |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 40 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 60 |
| **PREREQUIEITE(S)** | | | | | NONE | | | | | |
| **COURSE DESCRIPTION** | | | | | Concept of Occupational Health and Safety and its development; Developments related to Occupational Health and Safety in the World and in Turkey; A general view of Occupational Health and Safety and culture of safety, the tasks belong to institutions, organizations and workers in forming the safety culture; National and international institutions, agreements related to Occupational Health and Safety; Occupational Health and Safety management systems; Danger and risk terms in Occupational Health and Safety; Risk management, evaluation and methodology, risk analysis and case studies; Occupational Health and Safety risk reasons (physical, chemical, biological…); Occupational accident, reasons, preventing and protecting principles; Occupational diseases, reasons, preventing and protecting principles; Ergonomy; First aid | | | | | |
| **COURSE OBJECTIVES** | | | | | To educate students on basic Occupational Health and Safety; to form safety culture; to give information about the aim and scope of 6331 numbered Occupational Health and Safety law; to give basic information about tasks, authority and responsibilities to provide Occupational Health and Safety in works; to educate employer and workers basically about right and obligation in work; student To provide following legal regulation and evaluating Occupational Health and Safety subject to students | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | Evaluation of Occupational Health and Safety in Aeronautical Engineering | | | | | |
| **COURSE OUTCOMES** | | | | | To learn Occupational Safety regulations and basic terms of Occupational Occupational accident definition, reasons and ability to use international accident evaluation methodologies  To learn national institutions related to Occupational Safety, Occupational Safety specialist authority and responsibilities | | | | | |

|  |  |
| --- | --- |
|  | To learn design and standarts of work equipments oriented to Occupational  Safety, education of health safety in works, documentation, OHSAS 18001  (TS 18001) Occupational Health and Safety quality standarts  To learn regulations related to occupation |
| **TEXTBOOK** | Özkılıç, Ö. (2005), İş Sağlığı ve Güvenliği Yönetim Sistemleri ve Risk Değerlendirme Metodolojileri, TİSK Yayınları, Ankara.Bahr, N.J., 1997. System Safety Engineering and Risk Assesment: A Practical Approach, Taylor&Francis, Ney York, 251 s. Hale, A. & Baram, M.,1998. Safety Management The Challenge of Change, Pergamon, Netherlands, 275 s.  Bayır, M., Ergül, M. (2006), İş Güvenliği, Alfa Aktüel Yayınları, s: 213, Bursa. İş Güvenliği Uzmanlığı Temel Eğitim Notları; Kanun, Tüzük ve  Yönetmelikler; Mevzuatlar; Ders Notları; Slaytlar, Videolar ve Fotoğraflar. |
| **OTHER REFERENCES** |  |
| **TOOLS AND EQUIPMENTS REQUIRED** | Computer and projector |

|  |  |
| --- | --- |
|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Information about Occupational Health and Safety regulations |
| 2 | Employer and worker legal right and liabilities |
| 3 | Legal results originated from work accidents and occupational diseases |
| 4 | Occupational Health and Safety commitees |
| 5 | Work area observation, work hygiene, work area [cleanliness](https://tureng.com/tr/turkce-ingilizce/cleanliness) and layout |
| 6 | Flaming, explosion, fire and fire protection |
| 7 | Electric, its hazards, risks and precautions |
| 8 | MIDTERM |
| 9 | Operating and protection principles in screened vehicles |
| 10 | Occupational Health and Safety in hand-lifted and transport work |
| 11 | Safety usage of work equipments and personal protector |
| 12 | Safety and health signs |
| 13 | Required Checks and correction required documents from the view of Occupational Health and Safety |
| 14 | Emergency action plans, exits, eviction and rescue |
| 15,16 | FINAL |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of aeronautical engineering problems. |  |  | **X** |
| 2 | Ability to determine, define, formulate and solve complex aeronautical engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  |  | **X** |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  |  | **X** |
| 4 | Ability to develop, select and use modern methods and tools required for aeronautical engineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate aeronautical engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  | **X** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  |  | **X** |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | **X** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **X** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility | **X** |  |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | **X** |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. | **X** |  |  |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Assoc. Prof. Işıl YAZAR

**Signature**: **Date:** 29/06/2021

 **ESOGÜ Aeronautical Engineering Department**

**COURSE CODE:** 152412XXX  **COURSE TITLE:** Turkish II

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Semester** | **Weekly Hours** | | | **COURSE** | | | | | | | |
| **Theoretical** | **Practical** | | **Credits** | | **ECTS** | | **Type** | | | |
| 2 | 2 | 0 | | 0 | | 2 | | Compulsory ( x) Elective ( ) | | | |
| Write the credit (for non-credit courses weekly hours) below (If necessary distribute the credits.). | | | | | | | | | | | |
| **Math and Basic Science** | | | **Electrical Engineering**  [mark () if there is high design content] | | | | **General Education** | | **Humanities** | | |
|  | | | ( ) | | | | 2 | |  | | |
| **Assessment** | | | **THEORETICAL-PRACTICAL COURSES** | | | | **LABORATORY COURSES** | | | | |
| **Midterm** | | | **Type** | **Number** | **%** | | **Activity Type** | | | **Number** | **%** |
| Midterm | 1 | 50 | | Quiz | | |  |  |
| Quiz |  |  | | Lab performance | | |  |  |
| Homework |  |  | | Report | | |  |  |
| Project |  |  | | Oral exam | | |  |  |
| Other (………) |  |  | | Other (………) | | |  |  |
| **Final** | | |  | 1 | 50 | |  | | |  |  |
| **Makeup exam (Oral/Written)** | | |  | | | |  | | | | |
| **Prerequisites** | | | - | | | | | | | | |
| **Brief content of the course** | | | The contents of this course are word information, word sorts, sentence and word order of Turkish, composition, kinds of oral and written composition, oral and written narration techniques, present problems of Turkish, text (poetry, novel, story, article, etc.) analyzing methods. | | | | | | | | |
| **Objectives of the course** | | | The subject of the course is to expose the value of Turkish language by giving information about development of Turkish language, to gain national language awareness, to develop reading and writing skills, to compare and contrast Turkish language to other languages, to compare and contrast language policy of developed countries to Turkish language policy, to gain skill of speaking. | | | | | | | | |
| **Contribution of the course towards professional education** | | | 1. Learn Turkish grammar 2. Develop the ability of using Turkish properly 3. Gain knowledge of present problems of Turkish 4. Be able to read and comprehend 5. Learn text analyzing methods 6. Learn about the Turkish language policy and be able to make comments on improving the policy 7. Gain writing skill 8. Gain speaking skill 9. Learn narration techniques 10. Be able to pronounce vowels 11. Be able to read phonetically right 12. Be able to write compositions 13. Be able to write on his/her ideas 14. Be able to talk on his/her ideas | | | | | | | | |
| **Outcomes of the course** | | |  | | | | | | | | |
| **Textbook of the course** | | | 1. Ergin, M. (1997). Üniversiteler İçin Türk Dili. İstanbul: Bayrak   Yayınları   1. Kaplan, M. (1993). Kültür ve Dil. İstanbul: Dergâh Yayınları (8. baskı) 2. Fuat, M. (2001). Dil Üstüne. İstanbul: Adam Yayınları 3. Aksan, D. (1984). Türkçe’nin Gücü. Ankara: Bilgi Yayınevi (4. baskı) 4. Karamanlıoğlu, A. F. (1984). Türk Dili. İstanbul: Dergâh Yayınları6. Anday, M. C. (1996). Dilimiz Üstüne Konuşmalar. İstanbul: Yapı Kredi Yayınları 5. Karaağaç, G. (2002). Dil Tarih ve İnsan. Ankara: Akçağ Yayınevi 6. Aksan, D. (2003). Dil Şu Büyülü Düzen. Ankara: Bilgi Yayınevi9. Banarlı, N. S. (2002). Türkçe’nin Sırları. İstanbul: Kubbealtı Neşriyatı   10. Parlatır,İ. & Korkmaz, Z. & Gülensoy, T. & Zülfikar, H. & Birinci, N. | | | | | | | | |

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| --- | --- | --- |
|  | | (2005). Türk Dili ve Kompozisyon. Ankara: Ekin Yayınları |
| **Other reference books** | |  |
| **Required material for the course** | |  |
|  | **WEEKLY PLAN OF THE COURSE** | | |
| **Week** | **Topics** | | |
| 1 | Word information | | |
| 2 | Word sorts | | |
| 3 | Sentence and word order of Turkish | | |
| 4 | Sentence and word order of Turkish | | |
| 5 | Composition | | |
| 6 | Composition | | |
| 7 | Kinds of oral and written composition | | |
| 8 | Midterm | | |
| 9 | Midterm | | |
| 10 | Oral and written narration techniques | | |
| 11 | Oral and written narration techniques | | |
| 12 | Present problems of Turkish | | |
| 13 | Text (poetry, novel, story, article, etc.) analyzing methods | | |
| 14 | Text (poetry, novel, story, article, etc.) analyzing methods | | |
| 15,16 | Final | | |

**Contribution of the course to the program outcomes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **NO** | **OUTCOMES OF THE PROGRAMME** | **4** | **3** | **2** | **1** |
| 1 | Adequate knowledge of mathematics, science and Electrical and Electronic Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving problems of Electrical and Electronic Engineering |  |  |  | **x** |
| 2 | Ability to identify complex engineering problems in Electrical and Electronic Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods. |  |  |  | **x** |
| 3 | Having skills to apply modern design methods to design a complex system, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Electrical and Electronic Engineering. |  |  |  | **x** |
| 4 | Having skills to develop, select and apply modern techniques and tools needed for Electrical and Electronic Engineering applications, skills to use information technology effectively. |  |  |  | **x** |
| 5 | Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of Electrical and Electronic Engineering problems |  |  |  | **x** |
| 6 | Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas. |  |  |  | **x** |
| 7 | Communicating effectively in oral and written form both in Turkish and English. | **x** |  |  |  |
| 8 | Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing |  | **x** |  |  |
| 9 | Understanding of professional and ethical responsibility |  |  |  | **x** |
| 10 | Information on project management, change management and risk management practices, awareness on entrepreneurship, innovation and sustainable development. |  |  |  | **x** |
| 11 | Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions. |  |  |  | **x** |

**Scale for assessing the contribution of the course to the program outcomes:**

**4: High 3: Medium 2: Low 1:None Name of Instructor(s):**

**Signature(s)**: **Date:**

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# ESOGU AERONAUTICAL ENGINEERING DEPARTMENT COURSE INFORMATION FORM

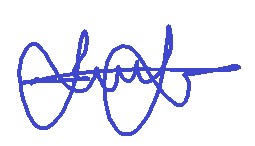
|  |  |
| --- | --- |
| **SEMESTER** | AUTUMN |

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| --- | --- | --- | --- |
| **COURSE CODE** | 152413001 | **COURSE NAME** | DIFFERENTIAL EQUATIONS |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 3 | | 3 | | 0 | 0 | | 3 | 5 | COMPULSORY (X) ELECTIVE ( ) | | English | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
| X | | |  | | | X | | | | |  | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 40 | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 60 | |
| **PREREQUIEITE(S)** | | | | | | NONE | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Differential equations and solutions, first-order differential equations and solution methods, applications of first-order differential equations, higher order differential equations and solution methods, Laplace transform and applications, linear differential equation systems. | | | | | | |
| **COURSE OBJECTIVES** | | | | | | The main of the course is to introduce the basic terminology of differential equations and to examine, how differential equations are derived in an attempt to formulate, or describe, physical phenomena in terms of mathematics. | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | To apply theoretical and practical knowledge on solving and modeling of engineering problems by using sufficient knowledge of engineering subjects related with mathematics. | | | | | | |
| **COURSE OUTCOMES** | | | | | | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | | | | | | |
| **TEXTBOOK** | | | | | | Özer, N. ve, Eser, D. “Diferensiyel Denklemler”, Eskişehir. | | | | | | |
| **OTHER REFERENCES** | | | | | | A Palm, W.J., A Yunus A. Cengel, D., “Differential Equations for Engineers and Scientists”, McGraw-Hill Education | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | | Blackboard, computer and projection | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Definition and classification of differential equations, first-order differential equations, separable equations, homogeneous equations and solution methods | | | | | | | | | | |
| 2 | Exact differential equations and solution methods, integrating factors | | | | | | | | | | |
| 3 | Linear and nonlinear differential equation and solution methods | | | | | | | | | | |
| 4 | Higher-degree differential equations, substitutions. | | | | | | | | | | |
| 5 | Applications of first-order differential equations | | | | | | | | | | |
| 6 | Higher-order differential equations and solution methods, differential equations with the dependent and independent variables, | | | | | | | | | | |
| 7 | Linear differential equations, linear dependence and linear independence, homogeneous linear equations and solution methods | | | | | | | | | | |
| 8 | Midterm Exam | | | | | | | | | | |
| 9 | Midterm Exam | | | | | | | | | | |
| 10 | Solutions of non- homogeneous linear equations and linear differential equations with constant coefficients, Cauchy-Euler and Lagrange equations and solution methods | | | | | | | | | | |
| 11 | Laplace transform and applications | | | | | | | | | | |
| 12 | Inverse Laplace transform and applications | | | | | | | | | | |
| 13 | Linear differential equation systems | | | | | | | | | | |
| 14 | Solution methods of the linear differential equation systems | | | | | | | | | | |
| 15,16 | Final Exam | | | | | | | | | | |

|  |  |  |  |  |
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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **X** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **X** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. | **X** |  |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  | **X** |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  | **X** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  |  | **X** |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | **X** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility | **X** |  |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Dr. Öğr. Üy. S. Fehmi DİLTEMİZ

**Signature**: **Date:** 06/05/2022

# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

|  |  |
| --- | --- |
| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152413002 | **COURSE NAME** | MECHANICS OF MATERIALS |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 3 | | 4 | | 0 | 0 | | 4 | 6 | COMPULSORY (X) ELECTIVE ( ) | | ENGLISH | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | | X | | |  | | | | |  | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 50 | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 50 | |
| **PREREQUIEITE(S)** | | | | | | None | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Introduction to stress and strain concepts. Concept of analysis and design. Joints. Introduction to determinate and indeterminate problems and composites. Stress concentrations, simple optimization, linearly elastic and elastic-perfectly plastic problems in axial loading, torsion, and pure bending cases. Transverse loading and bending of beams. Analysis of shear stresses. | | | | | | |
| **COURSE OBJECTIVES** | | | | | | To give the basics of stress analysis and design and to prepare them for higher level stress analysis courses. | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | Basic knowledge and ability for stress analyses and design in engineering applications. | | | | | | |
| **COURSE OUTCOMES** | | | | | | 1. Understanding stress and strain concepts. 2. Understanding the loading modes. 3. Analyzing the structures in terms of stress and strain aspects. 4. Gaining the basics of structural design. | | | | | | |
| **TEXTBOOK** | | | | | | F. P. Beer and E. R. Johnston, Jr., "Mechanics of Materials", Mc Graw-Hill Book, 1992. | | | | | | |
| **OTHER REFERENCES** | | | | | | R. C. Hibbeler, "Mechanics of Materials" Prentice-Hall International Edition, 1994. | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | | None. | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Introduction | | | | | | | | | | |
| 2 | Pure Axial Loading | | | | | | | | | | |
| 3 | Pure Axial Loading | | | | | | | | | | |
| 4 | Pure Torsion | | | | | | | | | | |
| 5 | Pure Torsion | | | | | | | | | | |
| 6 | Pure Bending | | | | | | | | | | |
| 7 | Pure Bending | | | | | | | | | | |
| 8 | Mid-Term Exam | | | | | | | | | | |
| 9 | Transverse Loading (or Bending with Shear) | | | | | | | | | | |
| 10 | Eccentric Axial Loading and Bending | | | | | | | | | | |
| 11 | Unsymmetric Bending | | | | | | | | | | |
| 12 | General Combined Loadings (Axial Loading/Torsion/Bending) | | | | | | | | | | |
| 13 | Stress Transformations | | | | | | | | | | |
| 14 | Deflection in Beams, Strain Energy | | | | | | | | | | |
| 15,16 | Final Exams | | | | | | | | | | |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **X** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **X** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **X** |  |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  | **X** |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **X** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | **X** |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **X** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | **X** |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**: None. **2**: Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Assoc. Prof. Dr. Selim GÜRGEN

**Signature**: **Date:** 25.05.2021

# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152413003 | **COURSE NAME** | DYNAMICS |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 3 | 3 | | 0 | 0 | | 3 | 4 | COMPULSORY (X) ELECTIVE ( ) | | ENGLISH |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (**√) ] | | | | | **Social Science** |
|  | | X | | |  | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 50 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 50 |
| **PREREQUIEITE(S)** | | | | | None | | | | | |
| **COURSE DESCRIPTION** | | | | | Dynamics of particles and rigid bodies, applications of free-body diagrams, Newton's second law, the impulse-momentum method and the workenergy principle to solve dynamic problems in mechanical systems. | | | | | |
| **COURSE OBJECTIVES** | | | | | The objective of the course is to introduce the physical principles to the analysis of particle and rigid-body motion problems. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | Knowledge acquired and skills developed in this class are used extensively in later engineering courses. | | | | | |
| **COURSE OUTCOMES** | | | | | By the end of this course, students will be able to:   * draw the free-body diagram for a particle or for a rigid body in plane motion * relate linear and angular impulse to changes in the linear and angular momentum of a particle; * relate the work done by one or more forces to changes in the kinetic energy of a particle; * implement the concepts of force/acceleration, impulse/momentum, and work/energy to closed systems of particles; * relate the motion of one location on a rigid body to that of another; and * extend the concepts of force/acceleration, impulse/momentum, and work/energy to one or more rigid bodies. | | | | | |
| **TEXTBOOK** | | | | | Vector Mechanics for Engineers – Dynamics, F.P. Beer, E.R. Johnston, P.J. Cornwell | | | | | |
| **OTHER REFERENCES** | | | | | Engineering Mechanics – Dynamics, R.C. Hibbeler | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | None. | | | | | |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Introduction, basic terms |
| 2 | Particle kinematics; rectilinear motion (position-velocity-acceleration, relative and dependant motions, uniform rectilinear and uniform accelerated rectilinear motions), curvilinear motion (position-velocityacceleration, relative motion, recatangular components), derivatives of vector functions |
| 3 | Particle kinematics; projectile motion, tangential-normal and radial-transverse components |
| 4 | Particle kinetics; Newton’s 2nd law of motion: linear momentum, equations of motion, dynamic equilibrium, free-body diagrams, normal-tangential and radial-transverse components (equations of motion), angular momentum |
| 5 | Particle kinetics; Newton’s 2nd law of motion: conservation of angular momentum, particle trajectory under a central force, radial-transverse components (equations of motion), Newton’s law of universal gravitation |
| 6 | Particle kinetics; Energy and Momentum Methods: work-energy principle, power and efficiency |
| 7 | Particle kinetics; Energy and Momentum Methods: potential energy, conservative forces (motions governed by conservative forces), conservation of energy, impulsive motion, impulse-momentum principle |
| 8 | Mid-Term Exam |
| 9 | Particle kinetics; Energy and Momentum Methods: impact, direct-oblique central impacts, problems involving multiple principles |
| 10 | Systems of particles: applying Newton’s law and momentum principles, motion of the mass center, angular momentum about the mass center, conservation of momentum |
| 11 | kinetic energy, work-energy principle and conservation of energy, impulse-momentum principle, steady stream of particles, mass gaining or losing streams |
| 12 | Kinematics of rigid bodies; translation, rotation, general plane motion, absolute and relative velocity acceleration in plane motion, instant center of rotation, motions relative to a rotating frame (planar and 3D) |
| 13 | Plane motion of rigid bodies: Forces and accelerations |
| 14 | Plane motion of rigid bodies: Energy and momentum principles |
| 15,16 | Final Exams |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **X** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **X** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **X** |  |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  | **X** |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **X** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | **X** |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **X** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | **X** |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**: None. **2**: Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Assoc. Prof. Dr. Selim GÜRGEN

**T.C. ESKİŞEHİR OSMANGAZİ UNIVERSITY**



**ENGINEERING AND ARCHITECTURE FACULTY**

**AERONAUTICAL ENGINEERING DEPARTMENT**

# COURSE INFORMATION FORM

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| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152413004 | **COURSE NAME** | MATERIALS SCIENCE |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | | **TYPE** | **LANGUAGE** | |
| 3 | | 3 | | 0 | 0 | | 3 | 5 | | COMPULSORY (X) ELECTIVE ( ) | English | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Subjects**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | | X | | | ( ) | | | | |  | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | **Quantity** | | **%** | |
| Mid-Term | | | 1 | | 40 | |
| Quiz | | |  | |  | |
| Homework | | |  | |  | |
| Project | | |  | |  | |
| Report | | |  | |  | |
| Others (………) | | | 1 | | 20 | |
|  | | |  | |  | |
| **FINAL EXAM** | | | | | |  | | | 1 | | 40 | |
| **PREREQUIEITE(S)** | | | | | |  | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Internal Structure of Materials, Crystalline Structure, Crystal Defects,  Miller Indices, Phase Rules, Alloys, Phase Diagrams, Corrosion, Wear,  Mechanical Behaviour of Materials: Hardness, Tensile Test, Compression Test, Bending and Torsion Test, Creep, Stress Relaxation Test, Impact Test and Fatigue | | | | | | |
| **COURSE OBJECTIVES** | | | | | | To instruct the fundamental informations about materials, to estimate reliable suggestions about performance of materials and life on service | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | 1.Structure and constitution of materials  2.Definition of material’s properties | | | | | | |
| **COURSE OUTCOMES** | | | | | | Knowledge of materials structure and properties, interpration of materials properties, adaptation of theoretical knowledge to practical applications, experimental studies of materials science, design of materials, determining of working conditions of engineering materials | | | | | | |
| **TEXTBOOK** | | | | | | Malzeme Bilimi ve Mühendisliği, Çev. Kenan Genel, Nobel Yayın, 2014 | | | | | | |
| **OTHER REFERENCES** | | | | | | 1. Elements of Materials Science and Engineering, Vlack, L.H.V., Addison-   Wesley Pub.Co., 1995   1. Malzeme Bilimi ve Mühendisliği, Smith, W.F., Çev.Kınıkoğlu, N., lit.   3.Malzeme bilgisi I-II, Bargel, Çev. Güleç, Ş., Tübitak Yayınları,1987  4.Malzemelerin Yapı ve özellikleri, I-II-III-IV, Moffat, W.G., Pearsall, G.W., Çev. Onaran, K., İTÜ Yayınları, 1992 | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | |  | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Internal Structure of Materials | | | | | | | | | | |
| 2 | Crystalline Structure, Crystal Defects | | | | | | | | | | |
| 3 | Miller Indices | | | | | | | | | | |
| 4 | Phase Rules, Alloys | | | | | | | | | | |
| 5 | Phase Diagrams | | | | | | | | | | |
| 6 | Mechanical Behaviour of Materials,: Hardness | | | | | | | | | | |
| 7 | Tensile Test and Compression Test | | | | | | | | | | |
| 8 | Mid-Term Examination | | | | | | | | | | |
| 9 | Mid-Term Examination | | | | | | | | | | |
| 10 | Bending and Torsion Test | | | | | | | | | | |
| 11 | Creep | | | | | | | | | | |
| 12 | Corrosion and Wear, | | | | | | | | | | |
| 13 | Stress Relaxation Test | | | | | | | | | | |
| 14 | Impact and Fatigue Test | | | | | | | | | | |
| 15,16 | Final Exam | | | | | | | | | | |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and mechanical engineering; an ability to apply theoretical and practical knowledge on solving and modeling of mechanical engineering problems. | **[ ]** | **[X]** | **[ ]** |
| 2 | Ability to determine, define, formulate and solve complex mechanical engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **[ ]** | **[X]** | **[ ]** |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. | **[ ]** | **[X]** | **[ ]** |
| 4 | Ability to develop, select and use modern methods and tools required for mechanical engineering applications; ability to effective use of information technologies. | **[X]** | **[ ]** | **[ ]** |
| 5 | In order to investigate mechanical engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **[X]** | **[ ]** | **[ ]** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | **[ ]** | **[ ]** | **[X]** |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. | **[ ]** | **[ ]** | **[X]** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **[X]** | **[ ]** | **[ ]** |
| 9 | Understanding of professional and ethical issues and taking responsibility | **[X]** | **[ ]** | **[ ]** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. | **[ ]** | **[X]** | **[ ]** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. | **[ ]** | **[ ]** | **[X]** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | | |  |  |

**Prepared by:** Dr. Öğr. Üy. S. Fehmi DİLTEMİZ **Date:** 09/05/2022

**Signature(s)**:



# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152413005 | **COURSE NAME** | FUNDAMENTALS OF ELECTRICITY AND ELECTRONICS |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 3 | 3 | | 0 | 0 | | 3 | 4 | COMPULSORY (X) ELECTIVE ( ) | | ENGLISH |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (**√) ] | | | | | **Social Science** |
|  | |  | | | X | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 40 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 60 |
| **PREREQUIEITE(S)** | | | | | None | | | | | |
| **COURSE DESCRIPTION** | | | | | Basic concepts, resistive circuits, resistivity, Kirchhoff's current and voltage laws, Electric power and energy, nodal analysis, mesh analysis, Thevenin Equivalent, Maximum Power Transfer, operational amplifiers, first order circuits, second order circuits, frequency domain analysis, active and reactive power, Semiconductors and pn-junctions, Transistors, Solar cells, Electric Motors, and Electrical safety | | | | | |
| **COURSE OBJECTIVES** | | | | | 1- Providing basic information about electricity, electronic components, power, energy, solar cells and electrical machinery 2- Providing basic information about electrical safety | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | Sufficient knowledge of engineering subjects related with mathematics, science and mechanical engineering | | | | | |
| **COURSE OUTCOMES** | | | | | 1- Ability to analyze resistive and first order electric circuits 2- Ability to analyze ac RLC circuits 3- Understanding of semiconductor switches and solar cells. 4- Basic information about electric motors and electric safety. | | | | | |
| **TEXTBOOK** | | | | | Bobrow, L S., “Fundamentals of Electrical Engineering”, Rinehart and Winston, Inc. 1985. | | | | | |
| **OTHER REFERENCES** | | | | | Any circuit analysis book | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | none | | | | | |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Importance of electricity and electronics in engineering, Basic concepts, Electric Current |
| 2 | Sources, Ohm's Law, resistivity, Kirchhoff's current law, Electric power and energy |
| 3 | Nodal analysis |
| 4 | Kirchhoff's voltage law, mesh analysis |
| 5 | Thevenin and Norton Equivalents, Maximum Power Transfer, operational amplifiers |
| 6 | Inductance, Capacitance, first order circuits |
| 7 | Second order circuits, frequency domain analysis, impedance, active and reactive power |
| 8 | Midterm |
| 9 | Semiconductors and pn-junctions |
| 10 | Diode circuits, Transistors |
| 11 | Transistor as a switch |
| 12 | Solar cells |
| 13 | Electric Motors |
| 14 | Electrical safety |
| 15,16 | Final Exam |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. |  | **X** |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  | **X** |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  | **X** |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  | **X** |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | **X** |  |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | **X** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **X** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Doç. Dr. Işıl Yazar

**Signature**:

**Date:**



# T.C. ESKİŞEHİR OSMANGAZİ UNIVERSITY ENGINEERING AND ARCHITECTURE FACULTY AERONAUTICAL ENGINEERING DEPARTMENT

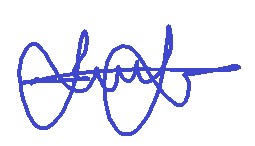
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| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152413006 | **COURSE NAME** | Linear Algebra |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 3 | | 3 | | 0 | 0 | | 3 | 4 | COMPULSORY (x) ELECTIVE ( ) | | ENGLISH | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | |  | | | X | | | | |  | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 30 | |
| 2nd Mid-Term | | | | 3 | 30 | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 40 | |
| **PREREQUIEITE(S)** | | | | | | None | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Linear equations and matrices, solving linear systems, vector spaces, inner product spaces, linear transformations, determinants, eigenvalues and eigenvectors | | | | | | |
| **COURSE OBJECTIVES** | | | | | | To be able to use matrices and vectors, to apply basic methods to solve linear systems, to make matrix and vector operations in n-dimensional space, to be able to make eigen-decomposition. | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | In this course students learn how to use matrices and vectors in order to solve related basic engineering problems. Also this course is necessary to understand the important topics taught in the other Aeronautical engineering classes. | | | | | | |
| **COURSE OUTCOMES** | | | | | | 1. Students can find the solution of linear equation and system. 2. Students can use matrices and vectors in confidence. 3. Students can easily find a vector sets spanning different real vector spaces.   Students can make eigen-decomposition on matrix. | | | | | | |
| **TEXTBOOK** | | | | | | **B. Kolman, D. R. Hill, *Elementary Linear Algebra*, Prentice Hall, 8th edition, 2004.** | | | | | | |
| **OTHER REFERENCES** | | | | | | 1. D. C Lay, *Linear Algebra and Its Applications*, Addison Wesley Longman, Inc., 2n edition 1997. 2. **D. Poole, *Linear Algebra - a Modern Introduction*, Thomson Brooks/Cole, 2006** | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | |  | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Linear systems and matrices | | | | | | | | | | |
| 2 | Solving linear systems | | | | | | | | | | |
| 3 | Special matrices and finding inverses | | | | | | | | | | |
| 4 | LU decomposition | | | | | | | | | | |
| 5 | Vector Spaces | | | | | | | | | | |
| 6 | Subspaces and linear independence | | | | | | | | | | |
| 7 | Span and linear independence | | | | | | | | | | |
| 8 | Midterm | | | | | | | | | | |
| 9 | Midterm | | | | | | | | | | |
| 10 | Homogeneous systems | | | | | | | | | | |
| 11 | Inner product spaces | | | | | | | | | | |
| 12 | Linear Transformations and transformation matrices | | | | | | | | | | |
| 13 | Determinants | | | | | | | | | | |
| 14 | Eigenvalues and eigenvectors | | | | | | | | | | |
| 15,16 | Final | | | | | | | | | | |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Adequate knowledge of mathematics, science and Aeronautical Engineering; ability to practice theoretical and practical knowledge of these areas into modeling and solving complex problems of Aeronautical Engineering |  |  |  |
| 2 | Ability to identify complex engineering problems in Aeronautical Engineering and related fields, for this purpose having skills to formulate, select and apply appropriate methods. |  |  |  |
| 3 | Having skills to apply modern design methods to design a complex system, process, equipment or product that should work under realistic conditions and constraints and satisfy specific requirements concerning the Aeronautical Engineering. |  |  |  |
| 4 | Having skills to develop, select and apply modern techniques and tools needed to analyze and solve complex applications in Aeronautical Engineering, skills to use information technology effectively. |  |  |  |
| 5 | Skills to design and conduct tests, collect data, analyze results, and interpret data for the experimental investigation of complex problems in Aeronautical Engineering |  |  |  |
| 6 | Ability to function effectively as an individual and as a member of teams within the discipline and in multidiscipline areas. |  |  |  |
| 7 | Communicating effectively in oral and written form both in Turkish and English. Effective report writing and understanding written reports, preparing design and manufacturing reports, making effective presentations, skills to give and receive clear and concise instructions. |  |  |  |
| 8 | Awareness of the necessity of lifelong learning, access to information, monitoring developments in science and technology and the ability to self-renewing |  |  |  |
| 9 | Understanding of professional and ethical responsibility |  |  |  |
| 10 | Information on project management, change management and risk management practices, awareness on entrepreneurship and innovation, knowledge on sustainable development. |  |  |  |
| 11 | Information about universal and societal effects of engineering applications on health, safety and environment; awareness of the legal consequences of engineering solutions. |  |  |  |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

Instructor(s): **Dr. Öğr. Üy. S. Fehmi DİLTEMİZ**

**Signature**: **Date:** 05 / 05 / 2022

# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152413007 | **COURSE NAME** | ATATÜRK İLKELERİ VE İNKILÂP  TARİHİ I |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 3 | 2 | | 0 | 0 | | 2 | 2 | COMPULSORY (X) ELECTIVE ( ) | | TURKISH |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Mechanical Engineering Profession**  **[if it contains considerable design, mark with (**√) ] | | | | | **Social Science** |
|  | |  | | |  | | | | | X |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 40 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 60 |
| **PREREQUIEITE(S)** | | | | |  | | | | | |
| **COURSE DESCRIPTION** | | | | | Tarih açısından Türk Devriminin temellerini, Türk devrimin tarihi gelişimi, zaman dizinsel eksende karşılaştırmalı olarak ele alınarak, Tam bağımsızlık ve Ulusal egemenlik kavramlarını irdelemekte, verilen savaşım genç bireylere aktarılmaktadır. | | | | | |
| **COURSE OBJECTIVES** | | | | | Öğrencilerin, Atatürk ilke ve devrimlerine bağlı, laik, demokratik ve çağdaş değerleri benimseyen ve koruyan bireyler olarak yetişmelerini sağlamak. Bu ders boyunca öğrencilere, demokrasinin çağımızın en iyi yaşam tarzı olduğu kavratılır, demokrasinin korunması ve geliştirilmesi bilinci kazandırılır. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | Kişilik gelişimini tamamlama sürecinde tam bağımsızlık ve ulusal egemenlik kavramları ile bilinçlenme işleminin tamamlanmaktadır. Dersin genel anlamda, kendini gerçekleştiren, kültürlü, gündeme duyarlı olan eleştirel yaklaşımı benimsemiş, yapıcı ve çözüm odaklı birey oluşturma sürecinde katkısı gözlenmiştir | | | | | |
| **COURSE OUTCOMES** | | | | | Sosyal bilimlere ilişkin bilgilerini uygulama becerisi Verileri analiz edebilme, değerlendirebilme ve tasarlama becerisi Disiplinler arası bir takıma liderlik edebilme becerisi Yaşama karşılaştırmalı bakabilme becerisi, mesleki ve etik sorumluluğu anlama, etkin yazılı ve sözlü iletişim becerisi Verilerin ulusal ve küresel tesiri ile sonuçlarını anlama becerisi Hayat boyu öğrenimin önemini kavrama ve uygulama becerisi Mesleki güncel konuları izleme becerisi Bağımsız ya da danışman yönetiminde bilimsel araştırma yapabilme becerisi | | | | | |
| **TEXTBOOK** | | | | | Gazi Mustafa Kemal Atatürk, Nutuk (Söylev), C. I-II, TTK., Ankara, 1986. İmparatorluktan Ulus Devlete Türk İnkılâp Tarihi, Cemil Öztürk (ed.), Ank., 2011. | | | | | |

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| **OTHER REFERENCES** | Niyazi Berkes, Türkiye’de Çağdaşlaşma, İstanbul, 1978. Enver Ziya  Karal, Atatürk ve Devrim (Konferanslar ve Makaleler), TTK., Ankara,   1. Enver Ziya Karal, Atatürk’ten Düşünceler, MEB. Yay., Ankara, 2. Bernard Lewis, Modern Türkiye’nin Doğuşu, Çev.M.Kıratlı, TTK., Ankara, 1970. Ahmet Mumcu, Tarih Açısından Türk Devriminin Temelleri ve Gelişimi, Ankara, 1976. |
| **TOOLS AND EQUIPMENTS REQUIRED** | Projeksiyon Makinesi, Harita, Fotoğraf, İstatistikî Tablolar, Grafikler |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Atatürk İlkeleri ve İnkılâp Tarihi dersini okutmanın amacı ve İnkılâp kavramı |
| 2 | Osmanlı İmparatorluğu'nun Yıkılışını ve Türk inkılâbını Hazırlayan Sebeplere Toplu Bakış |
| 3 | Osmanlı İmparatorluğu'nun Parçalanması (Trablusgarp, Balkan Savaşları ve Birinci Dünya Savaşı) |
| 4 | Mondros Ateşkes Antlaşması |
| 5 | İşgaller Karşısında Memleketin Durumu ve Mustafa Kemal Paşa'nın Tepkisi |
| 6 | Mustafa Kemal Paşa'nın Samsun'a Çıkışı, Milli Mücadele İçin İlk Adım, Kongreler Yolu İle Teşkilatlanma |
| 7 | Kuva-yı Milliye ve Misak-ı Milli |
| 8 | Ara sınav |
| 9 | Türkiye Büyük Millet Meclisi’nin Açılması |
| 10 | Türkiye Büyük Millet Meclisi’nin İstiklal Savaşı'nın Yönetimini ele alması |
| 11 | Sakarya Zaferine Kadar Milli Mücadele; Eğitim ve Kültür Alanında Milli Mücadele |
| 12 | Sakarya Savaşı ve Büyük Taarruz |
| 13 | Mudanya’dan Lozan'a |
| 14 | Özet |
| 15,16 | Yarıyıl sonu sınavı |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. |  |  | **X** |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  |  | **X** |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  |  | **X** |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  | **X** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **X** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | **X** |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  | **X** |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):**

**Signature**:

**Date:**



# ESOGU AERONAUTICAL ENGINEERING DEPARTMENT COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| **COURSE CODE** | 152414001 | **COURSE NAME** | Numerical Methods |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 4 | | 3 | | 0 | 0 | | 3 | 4 | COMPULSORY (X) ELECTIVE ( ) | | English | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Mechanical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | |  | | | X | | | | |  | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 40 | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 60 | |
| **PREREQUIEITE(S)** | | | | | | NONE | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Approximations and errors. Roots of equations. System of algebraic equations, eigenvalues and eigenvectors. Curve fitting, interpolation, least squares. Numerical differentiation and integration. | | | | | | |
| **COURSE OBJECTIVES** | | | | | | At the end of this course, the students will   * learn the basic concepts of mathematical modeling, programming, approximations and round-off errors, truncation errors, * learn the evaluation of roots of equations, * learn basic concepts of solving linear algebraic equations, Gauss elimination, Gauss-Jordan, Gauss-Seidel methods, * learn basic concepts of numerical differentiation and integration - learn basic concepts of numerical solution of ordinary differential equations Runge-Kutta methods, multistep methods, boundary value problems | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | Students who successfully complete this course will be able to solve engineering problems with numerical methods. | | | | | | |
| **COURSE OUTCOMES** | | | | | | Student, who passed the course satisfactorily will be able to   * solve mechanical engineering problems using numerical techniques, * analyze errors due to digital computation, * compute integral and derivative of functions, * solve differential equations using numerical techniques, | | | | | | |
| **TEXTBOOK** | | | | | | Steven C. Chapra, Raymond P. Canale, “Numerical Methods for Engineers”, McGraw-Hill. | | | | | | |
| **OTHER REFERENCES** | | | | | | Numerical Methods by R.W. Hornbeck | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | | Computer and suitable programing language (MATLAB, Fortran, C, C+, python, etc.) | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Programming, flow charts and algorithms | | | | | | | | | | |
| 2 | Error analysis, truncation errors, introduction to selected programing language | | | | | | | | | | |
| 3 | Taylor series | | | | | | | | | | |
| 4 | Finding roots of single-variable functions numerically | | | | | | | | | | |
| 5 | Numerical solution of linear system equations | | | | | | | | | | |
| 6 | Finding maximum and minimum values of single-variable functions | | | | | | | | | | |
| 7 | Curve fitting | | | | | | | | | | |
| 8 | Midterm exam | | | | | | | | | | |
| 9 | Midterm exam | | | | | | | | | | |
| 10 | Numerical integration | | | | | | | | | | |
| 11 | Numerical differentiation | | | | | | | | | | |
| 12 | Numerical solution of ordinary differential equations | | | | | | | | | | |
| 13 | Boundary value problems | | | | | | | | | | |
| 14 | Eigenvalue – Eigenvector problems | | | | | | | | | | |
| 15,16 | Final Exam | | | | | | | | | | |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **X** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **X** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. | **X** |  |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  | **X** |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  | **X** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  |  | **X** |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | **X** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility | **X** |  |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):**

**Signature**: **Date:**

**T.C. ESKİŞEHİR OSMANGAZİ UNIVERSITY ARCHITECTURE AND ENGINEERING FACULTY**

**AERONAUTICAL ENGINEERING DEPARTMENT**

# COURSE INFORMATION FORM

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| **SEMESTER** | S  PRING |

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| **COURSE CODE** | 152414002 | **COURSE NAME** | Engineering Thermodynamics |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | | **TYPE** | **LANGUAGE** |
| 4 | 3 | | 0 | 0 | | 3 | 5 | | COMPULSORY (X ) ELECTIVE ( ) | English |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering Subjects**  **[if it contains considerable design, mark with (√)**  **]** | | | | | **Social Science** |
|  | |  | | | ( ) | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | **Quantity** | | **%** |
| Mid-Term | | | 1 | | 40 |
| Quiz | | |  | |  |
| Homework | | |  | |  |
| Project | | |  | |  |
| Report | | |  | |  |
| Others (………) | | |  | |  |
|  | | |  | |  |
| **FINAL EXAM** | | | | |  | | | 1 | | 60 |
| **PREREQUIEITE(S)** | | | | |  | | | | | |
| **COURSE DESCRIPTION** | | | | | Basic concepts of thermodynamics, Pure substance, the first law of thermodynamics for closed systems and control volumes, Carnot cycle and the second law of thermodynamics. | | | | | |
| **COURSE OBJECTIVES** | | | | | To give students detailed knowledge of basic thermodynamic principles and their applications, the importance of heat and work, heat engines, refrigeration systems, heat pump systems, cycles, power generation systems and major components used in these systems and their analyses, and give basic information about losses and efficiencies. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | The students will be capable to analyze energy conversion systems and thermal power plants, understand losses, calculate overall efficiencies, follow and understand the new developments in the power plant technology area, and put their skills in practice in the field of power plant technology. | | | | | |
| **COURSE OUTCOMES** | | | | | 1. Capable to know the basic concepts of Thermodynamics. 2. Recognizes the phases of pure substances, phase-change processes and property diagrams for phase-change processes. 3. Manages the use of thermodynamic property tables. 4. Applies the first law of thermodynamics to closed systems and control volumes 5. Calculates the thermal efficiencies and coefficients of performance of heat engines, refrigerators and heat pumps | | | | | |
| **TEXTBOOK** | | | | | Yunus Ali Çengel and Michael A. Boles, “ Thermodynamics: An Engineering Approach ”, Seventh Edition, McGraw-Hill Book Company, 2011. | | | | | |
| **OTHER REFERENCES** | | | | | . | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | |  | | | | | |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Introduction to Engineering Thermodynamics – I. Basic Concepts of Thermodynamics. |
| 2 | Pure substance, its phases, phase change processes, property diagrams |
| 3 | Property tables, the ideal-gas equation of state, compressibility factor. |
| 4 | Heat, work, the first law of Thermodynamics for closed systems. |
| 5 | The internal energy, enthalpy, and specific heats of ideal gases |
| 6 | The first law of Thermodynamics for control volumes , steady-flow engineering devices. |
| 7 | Transient control volumes |
| 8 | Mid-Term Examination |
| 9 | Mid-Term Examination |
| 10 | Reversible and irreversible processes, Carnot cycle |
| 11 | The Carnot heat engine, the Carnot refrigerator and heat pump. |
| 12 | The Carnot heat engine, the Carnot refrigerator and heat pump |
| 13 | Second-law analysis of engineering systems. |
| 14 | Second-law analysis of engineering systems. |
| 15,16 | Final Exam |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and Mechanical engineering; an ability to apply theoretical and practical knowledge on solving and modeling of Mechanical engineering problems. | X |  |  |
| 2 | Ability to determine, define, formulate and solve complex Mechanical engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  | X |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  |  | X |
| 4 | Ability to develop, select and use modern methods and tools required for Mechanical engineering applications; ability to effective use of information technologies. |  |  | X |
| 5 | In order to investigate Mechanical engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  | X |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | X |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | X |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | X |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility | X |  |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Prepared by:** Dr. Öğr. Üy. S. Fehmi DİLTEMİZ **Date: 05/05/2022**

**Signature(s)**: 

**T.C. ESKİŞEHİR OSMANGAZİ UNIVERSITY ENGINEERING AND ARCHITECTURE FACULTY AERONAUTICAL**



**ENGINEERING DEPARTMENT**

# COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| **COURSE CODE** | 152414003 | **COURSE NAME** | Aerospace Materials |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | | **TYPE** | **LANGUAGE** |
| 4 | 3 | | 0 | 0 | | 3 | 5 | | COMPULSORY (X ) ELECTIVE () | ENGLİSH |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Engineering Subjects**  **[if it contains considerable design, mark with (√) ]** | | | | | **Social Science** |
|  | |  | | | (**√** ) | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | **Quantity** | | **%** |
| Mid-Term | | | 1 | | 10 |
| Quiz | | |  | |  |
| Homework | | | 1 | | 60 |
| Project | | |  | |  |
| Report | | |  | |  |
| Others (………) | | |  | |  |
|  | | |  | |  |
| **FINAL EXAM** | | | | |  | | | 1 | | 30 |
| **PREREQUIEITE(S)** | | | | | --- | | | | | |
| **COURSE DESCRIPTION** | | | | | *While introducing the materials used in lectures Aerospace Industry, firstly all Aerospace industry products and technologies used on land, in the air and in the sea are introduced. For this purpose, the material group is first considered and its application in the sector is introduced.* | | | | | |
| **COURSE OBJECTIVES** | | | | | *Considering today's technology as the engine of the locomotive and space and aviation as the sector,*   * *Introduction of newly developed materials* * *These materials "Aerospace Industry Practices"* * *recognize the technological developments reflected in the civilian sector through these applications* * *As an engineer, to be able to design new designs in this light of development and to be able to perceive existing developments* * *To have knowledge about the industrial facilities in the sector and to have information about their possibilities so that they can establish relations between the topics seen and learned and the topics in the sector.* | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUCATION** | | | | | If a contemporary mechanical engineer reaches the ball in today's information age and the importance of sharing information is considered, students who take this course will make a valuable contribution to their vocational training by getting the most up-to-date information on the topic of locomotives. This up-to-date is about both engineering materials and Aerospace Industry Technologies. | | | | | |
| **COURSE OUTCOMES** | | | | | Through this course, because it is the fastest growing technology, aerospace, professional literature, is considered to be updated very often. | | | | | |
| **TEXTBOOK** | | | | | * Aerospace Industry Material Lecture Notes (Kuşhan M.C.)      * Composite Materials for Aircraft Applications (Deo R.B.) | | | | | |

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|  | A’dan Z’ye Dünya Uçakları ve Helikopterleri, KUŞHAN M.C. |
| **OTHER REFERENCES** | * Recent Advantages in Aircraft Technology, AGARWAL K.      * Uçaklar ve Helikopterler, ŞAHİN K.      * Uçak Ana Elemanları, ÖZŞAHİN E. |
| **TOOLS AND EQUIPMENTS REQUIRED** | Equipment of PPT presentation |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Aerospace Industry Material and Classification in General |
| 2 | Metals as Aerospace Industry Materials |
| 3 | Composites as Aerospace Industry Materials |
| 4 | Composites as Aerospace Industry Ceramics |
| 5 | Composites as Aerospace Industry Plastics |
| 6 | RAM |
| 7 | Vehicle Armour |
| 8 | Mid-Term Examination |
| 9 | Mid-Term Examination |
| 10 | Airctaft Ballistic Protection Products |
| 11 | Pyrotechnic |
| 12 | Fuselage of aircraft and helicopters |
| 13 | Fuselage of tank |
| 14 | Fuselage of ship and submarine |
| 15,16 | Final Exam |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **[X]** | **[ ]** | **[ ]** |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **[X]** | **[ ]** | **[ ]** |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. | **[X]** | **[ ]** | **[ ]** |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **[x]** | **[ ]** | **[ ]** |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **[ ]** | **[X]** | **[ ]** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | **[ ]** | **[X]** | **[ ]** |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. | **[X]** | **[ ]** | **[ ]** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **[X]** | **[ ]** | **[ ]** |
| 9 | Understanding of professional and ethical issues and taking responsibility | **[X]** | **[ ]** | **[ ]** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. | **[X]** | **[ ]** | **[ ]** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. | **[X]** | **[ ]** | **[ ]** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Prepared by:** Prof. Dr. Melih Cemal Kushan **Date: 16/ 05 / 2022**



# ESOGU AERONAUTICAL ENGINEERING DEPARTMENT COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| **COURSE CODE** | 152414004 | **COURSE NAME** | Fluid Mechanics |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 4 | 3 | | 0 | 0 | | 3 | 5 | COMPULSORY (X) ELECTIVE ( ) | | English |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Mechanical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** |
|  | |  | | | X | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 40 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 60 |
| **PREREQUIEITE(S)** | | | | | NONE | | | | | |
| **COURSE DESCRIPTION** | | | | | Introductory concepts and definitions, The continuity equation, Euler equations of motion, Hydrostatics, Navier-Stokes equations, Some solutions of Navier-Stokes equations, The Bernoulli equation, Engineering applications of the Bernoulli equation, Momentum theorems, Dimensional analysis, Analysis of flow in pipes and over surfaces, Laminar and turbulent boundary layers, Potential flow, Lift around cylinder, Flow around source/sink doublets. | | | | | |
| **COURSE OBJECTIVES** | | | | | Derivations of continuity equation, Euler’s equations of motion, NavierStokes equations, Bernoulli equation, momentum equations used in Fluid Mechanics, and their usage and utilization in engineering applications. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | Students who successfully complete this course will be able to model the fluid characteristics about an aircraft and wing, establish a mathematical model and solve the potential flow problems around a body, solve NavierStokes equation with numerical method approaches. | | | | | |
| **COURSE OUTCOMES** | | | | | Students who passed the course satisfactorily will be able to (1) define fundamental equations of fluid mechanics, (2) recognize the streamlines and stream function, (3) analyze hydrostatic problems, (4) Comprehends some exact solutions of the Navier-Stokes Equations, (5) Identifies dimensionless parameters employed in fluid mechanics. | | | | | |
| **TEXTBOOK** | | | | | Çengel Y., Cimbala J.M., “Akışkanlar Mekaniği Temelleri ve uygulamaları”, Palme Yayıncılık. | | | | | |
| **OTHER REFERENCES** | | | | | Frank M. White, “Akışkanlar Mekaniği”, McGraw-Hill Book Company. | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | |  | | | | | |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Introduction to Fluid Mechanics, Concepts and Definitions |
| 2 | Hydrostatics |
| 3 | The Continuity Equation, Streamlines and Stream Function |
| 4 | Euler’s Equation of Motion |
| 5 | Bernoulli Equation, Engineering Applications of the Bernoulli Equation. |
| 6 | Derivation of Navier-Stokes Equations |
| 7 | Some Solutions of Navier-Stokes Equations |
| 8 | Midterm Exam |
| 9 | Midterm Exam |
| 10 | Momentum Theorems |
| 11 | Dimensional Analysis |
| 12 | Turbulent Pipe Flow |
| 13 | Flow Around Source, Creation of Lift Around a Cylinder |
| 14 | Flow Around Sink/Source Doubles |
| 15,16 | Final Exam |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **X** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **X** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  |  | **X** |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  | **X** |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **X** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | **X** |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility | **X** |  |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):**

**Signature**: **Date:**

**T.C. ESKİŞEHİR OSMANGAZİ UNIVERSITY**



**ENGINEERING AND ARCHITECTURE FACULTY**

**AERONAUTICAL ENGINEERING DEPARTMENT**

# COURSE INFORMATION FORM

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| SEMESTER | SPRING |

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| **COURSE CODE** | 152414005 | **COURSE NAME** | Measurement Technique |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | | |
| 4 | | 3 | | 0 | 0 | | 3 | 4 | COMPULSORY ( x ) ELECTIVE ( ) | | English | | |
| **COURSE CATAGORY** | | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering**  **[if it contains considerable design, mark with (****)]** | | | | | | **Social Science** | |
|  | | |  | | | x ( ) | | | | | |  | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | | **%** | |
| Mid-Term | | | | 1 | | 50 | |
| Quiz | | | |  | |  | |
| Homework | | | |  | |  | |
| Project | | | |  | |  | |
| Report | | | |  | |  | |
| Others (………) | | | |  | |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | | 50 | |
| **PREREQUIEITE(S)** | | | | | |  | | | | | | | |
| **COURSE DESCRIPTION** | | | | | | General principles of measurement techniques, SI units, Analysis of results, ISO tolerances, gauges, strain gauges, dimension, hardness, force, torque measurement, surface roughness, gear, vibration, noise, pressure, temperature and flow measurement. | | | | | | | |
| **COURSE OBJECTIVES** | | | | | | Students who successfully pass this course gain knowledge, skill and competency about measurement in mechanical engineering. | | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | Students learn measurement and applications in mechanical engineering. They can design and solve the new problems about measurement. | | | | | | | |
| **COURSE OUTCOMES** | | | | | | By the end of this module students will be able to:   1. Recognize basic measurement devices related to engineering subjects, 2. Analyze measurement results, 3. Has knowledge of measuring instruments to be used in various applications. | | | | | | | |
| **TEXTBOOK** | | | | | | Ölçme Tekniği, Tezcan Şekercioğlu, Birsen Yayınevi, 2016 | | | | | | | |
| **OTHER REFERENCES** | | | | | | Ölçme Tekniği, Osman F. Genceli, Birsen Yayınevi, 2015  Mechanical Measurement, Figliola and Beasley, Wiley, 2011 | | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | | Computer, Lecture Notes, Book, Projector | | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | | |
| 1 | General principles of measurement techniques | | | | | | | | | | | |
| 2 | SI units | | | | | | | | | | | |
| 3 | Analysis of measurement results | | | | | | | | | | | |
| 4 | Dimension measurement | | | | | | | | | | | |
| 5 | ISO tolerances | | | | | | | | | | | |
| 6 | Control gauges | | | | | | | | | | | |
| 7 | Strain gauges | | | | | | | | | | | |
| 8 | Mid-Term Examination | | | | | | | | | | | |
| 9 | Mid-Term Examination | | | | | | | | | | | |
| 10 | Hardness measurement | | | | | | | | | | | |
| 11 | Force and torque measurement | | | | | | | | | | | |
| 12 | Surface roughness measurement, and Gear measurement | | | | | | | | | | | |
| 13 | vibration and noise measurement, and Pressure measurement | | | | | | | | | | | |
| 14 | Temperature measurement, and Flow measurement | | | | | | | | | | | |
| 15,16 | Final Exam | | | | | | | | | | | |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and mechanical engineering; an ability to apply theoretical and practical knowledge on solving and modeling of mechanical engineering problems. |  | **x** |  |
| 2 | Ability to determine, define, formulate and solve complex mechanical engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  | **x** |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  |  | **x** |
| 4 | Ability to develop, select and use modern methods and tools required for mechanical engineering applications; ability to effective use of information technologies. | **x** |  |  |
| 5 | In order to investigate mechanical engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  | **x** |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **x** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | **x** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **x** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **x** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **x** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  | **x** |  |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Prepared by:** Dr. Öğr. Üy. S. Fehmi DİLTEMİZ **Date:** 09.05.2022

**Signature(s):**

# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| **COURSE CODE** | 152414006 | **COURSE NAME** | MACHINE ELEMENTS |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 4 | 3 | | 0 | 0 | | 3 | 5 | COMPULSORY (X) ELECTIVE ( ) | | ENGLISH |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (**√) ] | | | | | **Social Science** |
|  | | X | | |  | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 50 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 50 |
| **PREREQUIEITE(S)** | | | | | None | | | | | |
| **COURSE DESCRIPTION** | | | | | Machine elements, calculations, shapings, basis of applications, in constructional activities; welded joints, shaft-hub joints, pins and pivot pins, bolt joints, screw mechanisms, springs. | | | | | |
| **COURSE OBJECTIVES** | | | | | Description of machine elements; To give capability for strength of materials by using basic engineering data, standards and design criteria. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | The aim is to provide necessary data and capability for calculation of strength of materials by basic engineering data, standards and design criteria on design of machine elements. | | | | | |
| **COURSE OUTCOMES** | | | | | 1. Can recognize the machine elements and application basics. 2. Can comment on strength of material calculations by basic engineering data for machine elements   1. Can apply the constructional data for machine elements shaping. 2. Can calculate the steady strength of machine elements. 3. Can design shaft-hub joints, pin and pivot pins joints, bolt joints, screw mechanism and springs. 4. Can evaluate the production of designed machine elements and observe the improvements and updating the data. | | | | | |
| **TEXTBOOK** | | | | | SHIGLEY, J.E., Mechanical Engineering Design (Metric Edition), McGraw-Hill Book Company, 1986. | | | | | |
| **OTHER REFERENCES** | | | | | AKKURT, M., Makine Elemanları Cilt I, Birsen Yayınevi, İstanbul, 1990. | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | None. | | | | | |

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| --- | --- |
|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Methods of calculation of strength of machine elements |
| 2 | Steady strength, the calculation of machine elements under dynamic and static load |
| 3 | Welded joints, Types of welded joints, rules of weld constructional basis |
| 4 | Calculation of strength of welding seams |
| 5 | Shaft-hub joints, profiled shaft and hub joints, pins, pivot pins |
| 6 | Shaft-hub joints |
| 7 | Forced shaft-hub joints |
| 8 | Mid-Term Exam |
| 9 | Forced shaft-hub joints |
| 10 | Bolt joints, Calculation methods for bolt strength |
| 11 | Pre-loaded bolt joints; Actuator bolts |
| 12 | Pre-loaded bolt joints; Actuator bolts |
| 13 | Springs |
| 14 | Springs |
| 15,16 | Final Exams |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **X** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **X** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **X** |  |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  | **X** |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **X** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | **X** |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **X** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | **X** |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**: None. **2**: Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Assoc. Prof. Dr. Selim GÜRGEN

**Signature**:

**Date:** 16.05.2022

# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| --- | --- | --- | --- |
| **COURSE CODE** | 152414007 | **COURSE NAME** | ATATÜRK İLKELERİ VE İNKILÂP  TARİHİ II |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 4 | 2 | | 0 | 0 | | 2 | 2 | COMPULSORY (X) ELECTIVE ( ) | | TURKISH |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Mechanical Engineering Profession**  **[if it contains considerable design, mark with (**√) ] | | | | | **Social Science** |
|  | |  | | |  | | | | | X |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 40 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 60 |
| **PREREQUIEITE(S)** | | | | |  | | | | | |
| **COURSE DESCRIPTION** | | | | | Tarih açısından Türk Devriminin temellerini, Türk devrimin tarihi gelişimi, zamandizinsel eksende karşılaştırmalı olarak ele alınarak, Tam bağımsızlık ve Ulusal egemenlik kavramlarını irdelemekte, verilen savaşım genç bireylere aktarılmaktadır. | | | | | |
| **COURSE OBJECTIVES** | | | | | Öğrencilerin, Atatürk ilke ve devrimlerine bağlı, laik, demokratik ve çağdaş değerleri benimseyen ve koruyan bireyler olarak yetişmelerini sağlamak. Bu ders boyunca öğrencilere, demokrasinin çağımızın en iyi yaşam tarzı olduğu kavratılır, demokrasinin korunması ve geliştirilmesi bilinci kazandırılır. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | Kişilik gelişimini tamamlama sürecinde tam bağımsızlık ve ulusal egemenlik kavramları ile bilinçlenme işleminin tamamlanmaktadır. Dersin genel anlamda, kendini gerçekleştiren, kültürlü, gündeme duyarlı olan eleştirel yaklaşımı benimsemiş, yapıcı ve çözüm odaklı birey oluşturma sürecinde katkısı gözlenmiştir | | | | | |
| **COURSE OUTCOMES** | | | | | Sosyal bilimlere ilişkin bilgilerini uygulama becerisi Verileri analiz edebilme, değerlendirebilme ve tasarlama becerisi Disiplinler arası bir takıma liderlik edebilme becerisi Yaşama karşılaştırmalı bakabilme becerisi, mesleki ve etik sorumluluğu anlama, etkin yazılı ve sözlü iletişim becerisi Verilerin ulusal ve küresel tesiri ile sonuçlarını anlama becerisi Hayat boyu öğrenimin önemini kavrama ve uygulama becerisi Mesleki güncel konuları izleme becerisi Bağımsız ya da danışman yönetiminde bilimsel araştırma yapabilme becerisi | | | | | |
| **TEXTBOOK** | | | | | Gazi Mustafa Kemal Atatürk, Nutuk (Söylev), C. I-II, TTK., Ankara, 1986. | | | | | |

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| **OTHER REFERENCES** | Fatma Acun (Ed.), Atatürk ve Türk İnkılâp Tarihi, Ankara, 2010. Niyazi Berkes, Türkiye’de Çağdaşlaşma, İstanbul, 1978. Enver Ziya Karal,  Atatürk ve Devrim (Konferanslar ve Makaleler), TTK., Ankara, 1980.  Enver Ziya Karal, Atatürk’ten Düşünceler, MEB. Yay., Ankara, 1981.  Bernard Lewis, Modern Türkiye’nin Doğuşu, Çev.M.Kıratlı, TTK., Ankara, 1970. Ahmet Mumcu, Tarih Açısından Türk Devriminin Temelleri ve Gelişimi, Ankara, 1976. |
| **TOOLS AND EQUIPMENTS REQUIRED** | Projeksiyon Makinesi, Harita, Fotoğraf, İstatistikî Tablolar, Grafikler |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Türk İnkılâbının Stratejisi |
| 2 | Sevr ve Lozan Barış Antlaşması |
| 3 | Siyasi Alanda İki Büyük İnkılâp |
| 4 | Çok Partili Hayata Geçme Denemesi ve Bazı İç Siyasi Olaylar (TCF ve Takrir-i Sükûn Dönemi) |
| 5 | Türk Hukuk İnkılâbı |
| 6 | Eğitim ve Kültür İnkılâbı |
| 7 | İktisat Alanında Yapılan İnkılâplar |
| 8 | Ara Sınav |
| 9 | Sosyal Yapıda ve Sağlık Alanında İnkılâplar |
| 10 | Türkiye Cumhuriyeti’nin Dış Politikası |
| 11 | Üniversite Gençliğine Yönelik Psikolojik Harekât Tehdidi |
| 12 | Atatürk İlkeleri ve Bu İlkelere Yönelik Tehditler |
| 13 | Yükseköğretim Alanındaki Faaliyetler ve Üniversite Reformu |
| 14 | Özet |
| 15,16 | Yarıyıl Sonu Sınavı |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. |  |  | **X** |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  |  | **X** |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  |  | **X** |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  | **X** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **X** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | **X** |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  | **X** |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):**

**Signature**:

**Date:**

|  |  |
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| **SEMESTER** | AUTUMN |

# ESOGÜ Aeronautical Engineering Course Information Form

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| **COURSE CODE** | 152415001 | **COURSE NAME** | Fundamentals of Aerodynamics |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | | **TYPE** | **LANGUAG E** |
| 5 | 3 | | 0 | 0 | | 3 | 5 | | COMPULSORY ( X) ELECTIVE () | Turkish |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering Subjects [if it contains considerable design, mark with (****)** | | | | | **Social Science** |
|  | |  | | | X | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | **Quantity** | | **%** |
| Mid-Term | | | 1 | | 30 |
| Quiz | | |  | |  |
| Homework | | | 4 | | 10 |
| Project | | | 1 | | 10 |
| Report | | |  | |  |
| Others (Class Notes) | | | 1 | | 10 |
|  | | |  | |  |
| **FINAL EXAM** | | | | |  | | | 1 | | 40 |
| **PREREQUIEITE(S)** | | | | | Differential Equations, Fluid Mechanics, Numerical Methods | | | | | |
| **COURSE DESCRIPTION** | | | | | A Brief History of Aviation, Fundamental Equations of Aerodynamics,  Inviscous Flow, Incompressible Flow over Airfoil, Incompressible Flow  Over Finite Wing, 3-dimensional Incompressible Flow | | | | | |
| **COURSE OBJECTIVES** | | | | | In this course, it is aimed to express the basic principles of aerodynamics with equations, to recognize inviscous and incompressible flow, to explain the finite and infinite wing theory and to solve the equations in this context both analytically and numerically. It is aimed to reinforce the objectives with the notes and assignments kept in the lectures. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | It provides to understand the main reasons of flight. It contributes to offering suggestions for better flights in terms of aerodynamic forces and implementing these suggestions. | | | | | |
| **COURSE OUTCOMES** | | | | | Defines and solves the basic equations of aerodynamics and the equations of inviscous flows. Identify and formulate changes related to incompressible flow in the infinite wing and the finite wing. Extracts the differences between 3-dimensional and 2-dimensional incompressible flows. | | | | | |
| **TEXTBOOK** | | | | | ANDERSON. (2016). Fundamentals of aerodynamics (6th ed.). McGrawHill Education. | | | | | |
| **OTHER REFERENCES** | | | | | Peiqing Liu. (2022). A General Theory of Fluid Mechanics. Springer.  Aerodynamics for Engineering Students, Sixth Edition, Houghton et al., Elsevier | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | Projector, computer, textbook, A4 notebook, pencil, eraser, ruler, calculator | | | | | |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Brief history of aviation |
| 2 | Basic concepts in aerodynamics |
| 3 | Basic principles in aerodynamics |
| 4 | Basic equations in aerodynamics |
| 5 | Inviscous flows |
| 6 | Incompressible and inviscous flows over airfoil |
| 7 | Incompressible and viscous flows over airfoil |
| 8 | Midterm Exam |
| 9 | Incompressible and inviscous flows on a finite wing |
| 10 | Incompressible and viscous flows on a finite wing |
| 11 | 3-dimensional incompressible flows |
| 12 | Theoretical and experimental solutions for aerodynamic problems |
| 13 | Numerical solutions for aerodynamic problems |
| 14 | Project-homework presentations |
| 15,16 | Final |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and  Aeronautical engineering: an ability to apply theoretical and practical knowledge on solving and modeling of Aeronautical engineering problems. | X |  |  |
| 2 | Ability to determine, define, formulate, and solve complex Aeronautical engineering problems; for that purpose, an ability to select and use convenient analytical and experimental methods. | X |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economic and political problems; for that purpose an ability to apply modern design methods. |  | X |  |
| 4 | Ability to develop, select and use modern methods and tools required for Aeronautical engineering applications; ability to effective use of information technologies. |  | X |  |
| 5 | In order to investigate Aeronautical engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  | X |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | X |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | X |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | X |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  | X |  |
| 10 | Awareness of project, risk, and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | X |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment, and security in global and social scale; an awareness of juridical results of engineering solutions. |  | X |  |
| **1**: None. **2**: Partially contribution. **3**: Completely contribution. | |  |  |  |

**Prepared by:** Prof. Dr. Kürşad Melih GÜLEREN **Date: 13/02/2023**

**Signature(s)**:

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| AUTUMN |

# ESOGÜ Aeronautical Engineering Course Information Form

**SEMESTER**

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| **COURSE CODE** | 152415002 | **COURSE NAME** | Heat Transfer |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | | **TYPE** | **LANGUAG E** |
| 5 | 3 | | 0 | 0 | | 3 | 5 | | COMPULSORY ( X) ELECTIVE () | Turkish |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering Subjects [if it contains considerable design, mark with (****)** | | | | | **Social Science** |
|  | |  | | | X | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | **Quantity** | | **%** |
| Mid-Term | | | 1 | | 30 |
| Quiz | | |  | |  |
| Homework | | | 4 | | 10 |
| Project | | | 1 | | 10 |
| Report | | |  | |  |
| Others (Class Notes) | | | 1 | | 10 |
|  | | |  | |  |
| **FINAL EXAM** | | | | |  | | | 1 | | 40 |
| **PREREQUIEITE(S)** | | | | | Differential Equations, Numerical Methods | | | | | |
| **COURSE DESCRIPTION** | | | | | Heat conduction, heat convection, radiation. | | | | | |
| **COURSE OBJECTIVES** | | | | | Understanding the physical mechanisms that are the basic of heat transfer types and the derivation of the basic equations and and create a method in order to calculate the energy transferred per unit of time. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | Basic physical mechanisms of convection, conduction and radiation. Gain ability to solve and analyze heat transfer problems using empirical correlations, analytical solutions, the practical charts and graphs | | | | | |
| **COURSE OUTCOMES** | | | | | Have knowledge about heat transfer mechanisms and heat properties of environment. Have ability to solve methods which are used in analysis of heat transfer problems. | | | | | |
| **TEXTBOOK** | | | | | Fundamentals of Thermal - Fluid Sciences, by Y.A. Cengel and R.H. Turner, McGraw Hill Higher Education | | | | | |
| **OTHER REFERENCES** | | | | | F. P. Incropera ve D. P. Dewitt, “Isı ve Kütle Geçişinin Temelleri,” Türkçe Çevirisi, Literatür Yayıncılık. | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | Projector, computer, textbook, A4 notebook, pencil, eraser, ruler, calculator | | | | | |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Introduction to heat conduction, fundamentals of conduction, convection, and radiation |
| 2 | One dimensional heat conduction in steady state |
| 3 | One dimensional heat conduction in steady state |
| 4 | Fins |
| 5 | Transient heat conduction |
| 6 | Introduction to heat convection |
| 7 | External Flow |
| 8 | Midterm Exam |
| 9 | External Flow, Internal Flow |
| 10 | Internal Flow |
| 11 | Natural convection |
| 12 | Introduction to radiation, basic methods, and properties |
| 13 | Radiation heat transfer exchange between surfaces |
| 14 | Radiation heat transfer exchange between surfaces |
| 15,16 | Final Exam |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and  Aeronautical engineering: an ability to apply theoretical and practical knowledge on solving and modeling of Aeronautical engineering problems. | X |  |  |
| 2 | Ability to determine, define, formulate, and solve complex Aeronautical engineering problems; for that purpose, an ability to select and use convenient analytical and experimental methods. | X |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economic and political problems; for that purpose an ability to apply modern design methods. |  | X |  |
| 4 | Ability to develop, select and use modern methods and tools required for Aeronautical engineering applications; ability to effective use of information technologies. |  | X |  |
| 5 | In order to investigate Aeronautical engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **X** |  |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | X |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | X |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **X** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  | **X** |  |
| 10 | Awareness of project, risk, and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment, and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**: None. **2**: Partially contribution. **3**: Completely contribution. | |  |  |  |

**Prepared by:** Prof. Dr. Kürşad Melih GÜLEREN **Date: 13/02/2023**

**Signature(s)**:



# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152415003 | **COURSE NAME** | ELASTICITY |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 5 | | 3 | | 0 | 0 | | 3 | 4 | COMPULSORY (X) ELECTIVE ( ) | | English | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | | X | | |  | | | | |  | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 40 | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 60 | |
| **PREREQUIEITE(S)** | | | | | | - | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Concepts of stress and strain in 3-D. Transformations of stress and strain in  2D and 3D. Stress-strain and strain-displacement relations. Generalized Hooke's law. Energy methods. Castigliano's theorem. Problems in 2D elasticity. Plane stress and plane strain applications. | | | | | | |
| **COURSE OBJECTIVES** | | | | | | This course lays down the fundamentals of linear elasticity. It introduces the advanced methods for the analysis of deformable bodies and educates students to apply this knowledge in the solution of aerospace engineering problems. It also equips students with the necessary background to design aerosystems and components. | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | The course will provide the basics about elastic structures and support the students about understanding of aerostructures. | | | | | | |
| **COURSE OUTCOMES** | | | | | | Understanding stress and strain in 3D.  Understanding the loadings.  Analyzing the structures in terms of stress and strain aspects.  Gaining the basics of aerostructural design. | | | | | | |
| **TEXTBOOK** | | | | | | A.C. Ugural and S.K. Fenster, "Advanced Strength and Applied Elasticity" Prentice Hall PTR, 3rd Edition, 1995, ISBN: 0-13-137589-X | | | | | | |
| **OTHER REFERENCES** | | | | | | B.K. Donaldson, "Analysis of Aircraft Structures" Mc Graw-Hill Book  Company, 1993, ISBN: 0-07-112591-4  S.Timoshenko and J.N. Goodier, "Theory of Elasticity", Mc Graw-Hill  Book Company, 3rd Edition, 1982, ISBN: 0-07-Y85805-5 | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | | - | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Analysis of Stress in 2-D and 3-D | | | | | | | | | | |
| 2 | Variation of stress within a body in 2-D and 3-D; Principal stresses in 2-D and 3-D | | | | | | | | | | |
| 3 | Stress-Strain Relations | | | | | | | | | | |
| 4 | Equations of compatibility; Generalized Hooke's Law | | | | | | | | | | |
| 5 | Energy Methods; Strain Energy | | | | | | | | | | |
| 6 | Principles of Work and Energy; Castigliano's Theorem | | | | | | | | | | |
| 7 | 2D Problems in Elasticity | | | | | | | | | | |
| 8 | MIDTERM EXAMS | | | | | | | | | | |
| 9 | Plane strain problems | | | | | | | | | | |
| 10 | Plane stress problems | | | | | | | | | | |
| 11 | Thermal stresses | | | | | | | | | | |
| 12 | Torsion of Non-circular Bars | | | | | | | | | | |
| 13 | General solution of the torsion problem | | | | | | | | | | |
| 14 | Torsion of thin-walled members of open cross-section | | | | | | | | | | |
| 15,16 | FINAL EXAMS | | | | | | | | | | |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **X** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **X** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **X** |  |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  | **X** |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **X** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | **X** |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **X** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | **X** |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Assoc. Prof. Dr. Selim GÜRGEN

**Signature**:  **Date:** 23.12.2022



# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152415004 | **COURSE NAME** | FUNDAMENTALS of CONTROL SYSTEMS |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 5 | 3 | | 0 | 0 | | 3 | 5 | COMPULSORY (X) ELECTIVE ( ) | | ENGLISH |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** |
|  | |  | | | X | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 50 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 50 |
| **PREREQUIEITE(S)** | | | | |  | | | | | |
| **COURSE DESCRIPTION** | | | | | The course aims to provide the student the knowledge of designing systems which can be automatically controlled and of making design changes to a system to increase its performance. The specific topics addressed are: Classical control theory in the frequency and time domains, stability- performance methods based on Bode/Nyquist and root-locus diagrams, representation in state space, reduction of multiple subsystems, application of feedback analysis and design to physical systems with feedback. | | | | | |
| **COURSE OBJECTIVES** | | | | | 1) Introduction to design, analysis, and synthesis of control systems. To teach the fundamental concepts of mathematical modeling and Control of engineering systems | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | Demonstration of how to apply what is learned theoretically in the field of control engineering. The course aims to provide the ability to analyze the performance of engineering systems and design controllers to improve the performance. | | | | | |
| **COURSE OUTCOMES** | | | | | By the end of this module students will be able to learn: 1) to obtain mathematical modeling of engineering systems, 2) system representation by block diagrams, 3) time response analysis of dynamic systems, 4) stability analysis of systems, 5) performance specifications and analysis, 6) frequency response of a system and frequency response analysis of existing systems (Bode & Nyquist methods), 7) Root Locus method for the control system design and analysis, 8) proportional, integral, and derivative (PID) control, 9) knowledge of MATLAB “Control Toolbox” commands. | | | | | |
| **TEXTBOOK** | | | | | Control Systems Engineering, Norman S. Nise | | | | | |

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| **OTHER REFERENCES** | 1. Otomatik Kontrol Sistemleri, Benjamin C. Kuo & Farid Golnaraghi 2. Modern Control Engineering, Ogata, K. 3) Otomatik Kontrol /   Sistem Dinamiği ve Denetim Sistemleri, İbrahim Yüksel |
| **TOOLS AND EQUIPMENTS REQUIRED** | MATLAB, Computer |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Introduction to Control Systems |
| 2 | Math. Modeling: Modeling in the Time Domain (Modeling, Approximations & Linearization |
| 3 | Mathematical Modeling: Modeling in the Time Domain (Mechanical, Electrical, Electromechanical, Thermal & Hydraulic Elements & Systems) |
| 4 | Math. Modeling: Modeling in the Frequency Domain (Laplace Transform Review) |
| 5 | Math. Modeling: Modeling in the Frequency Domain (Transfer Functions, Impedance Approach) |
| 6 | Block Diagrams |
| 7 | State-Space Model, State-Space Model Conversion to/From Transfer Functions |
| 8 | MIDTERM |
| 9 | Time Response (Stability, Routh Hurwitz Criteria) |
| 10 | Time Response (Feedback Control & Steady-State Errors) |
| 11 | Time Response (First, Second and Higher Order System Responses, Effects of Nonlinearities) |
| 12 | Frequency Response Analysis (Bode Plots) |
| 13 | Frequency Response Analysis (Nyquist Diagram) |
| 14 | Controller design with Root Locus curve |
| 15,16 | FINAL EXAM |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **X** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  | **X** |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **X** |  |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  |  | **X** |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | **X** |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **X** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Associate Prof. Isil YAZAR

|  |  |
| --- | --- |
| **Signature**: | **Date:** 25/12/2022 |
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# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152415005 | **COURSE NAME** | MANUFACTURING TECHNOLOGIES |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 5 | | 3 | | 0 | 0 | | 3 | 5 | COMPULSORY (X) ELECTIVE ( ) | | English | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | | X | | |  | | | | |  | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 40 | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 60 | |
| **PREREQUIEITE(S)** | | | | | | - | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Introduction. Casting. Powder metallurgy. Metal working; hot working and cold working processes. Chip removal processes. Non-traditional machining processes. Welding. Additive manufacturing. | | | | | | |
| **COURSE OBJECTIVES** | | | | | | The objective of this course is to teach students the descriptions of manufacturing processes. Students are to learn to identify the processes and to perform simple calculations like machining time in metal removal processes, etc. | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | In this course, students will learn about manufacturing and applications as well as how to produce aerostructures by using manufacturing methods and selection of method for a specific application. | | | | | | |
| **COURSE OUTCOMES** | | | | | | Understanding of manufacturing methods in aerospace industry  Understanding the selection of a manufacturing processes for a specific application  Developing a manufacturing process of aerostructures  Developing professional skills to solve technical problems | | | | | | |
| **TEXTBOOK** | | | | | | E. P. DeGarmo, J. T. Black and R. A. Kohser, Materials and Processes in Manufacturing, MacMillan. | | | | | | |
| **OTHER REFERENCES** | | | | | | S. Kalpakjian, Manufacturing Processes for Engineering Materials, Addison Wesley. | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | | - | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Introduction | | | | | | | | | | |
| 2 | Casting | | | | | | | | | | |
| 3 | Powder metallurgy | | | | | | | | | | |
| 4 | Metal working: general description | | | | | | | | | | |
| 5 | Hot working processes | | | | | | | | | | |
| 6 | Cold working processes | | | | | | | | | | |
| 7 | Chip removal; general description, drilling and reaming | | | | | | | | | | |
| 8 | MIDTERM EXAMS | | | | | | | | | | |
| 9 | Turning and related operations, milling, broaching | | | | | | | | | | |
| 10 | Gear cutting, abrasive machining | | | | | | | | | | |
| 11 | Non-traditional machining processes | | | | | | | | | | |
| 12 | Non-traditional machining processes | | | | | | | | | | |
| 13 | Welding | | | | | | | | | | |
| 14 | Additive Manufacturing | | | | | | | | | | |
| 15,16 | FINAL EXAMS | | | | | | | | | | |

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| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **X** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **X** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **X** |  |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  | **X** |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **X** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | **X** |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **X** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | **X** |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Assoc. Prof. Dr. Selim GÜRGEN

**Signature**:  **Date:** 23.12.2022



# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152415006 | **COURSE NAME** | Aircraft Performance |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 5 | | 3 | | 0 | - | | 3 | 3 | COMPULSORY (X) ELECTIVE ( ) | | English | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | | X | | | X | | | | |  | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 40 | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 60 | |
| **PREREQUIEITE(S)** | | | | | | 152415xxx - Uçak Mühendisliğine Giriş (152411xxx - Introduction to Aeronautical Engineering) | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Understanding aircraft morphology and performance characteristics, deriving necessary equations of motion and performance equations. | | | | | | |
| **COURSE OBJECTIVES** | | | | | | Understanding the standard atmosphere model, understanding aerostatic buoyancy and aerodynamic lift forces, deriving equations of motion with point-body approach, cruising, climbing, descending, take-off, landing, return flights in turbojet and piston-propeller aircraft. equations, determination of required performance parameters (L/D, W/S, T/W…) for minimum and maximum flight capabilities (maximum lift, maximum range, minimum turning radius, minimum descent rate,…), flight and performance envelopes understanding, understanding the Vn diagram, understanding the energy model. | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | Derivation of performance equations of turbojet and piston-propeller airplanes, their use in design and analysis activities. | | | | | | |
| **COURSE OUTCOMES** | | | | | | Upon successful completion of the course, the student will have the following abilities:   * Derivation of standard atmosphere model equations, * Learning aerostatic lift and aerodynamic bearing forces, * Performance calculations for turbojet and piston-propeller airplanes | | | | | | |
| **TEXTBOOK** | | | | | | John D. Anderson, Jr., Uçuşa Başlangıç (Introduction To Flight), Çev: Adil  Yükselen, Nobel Akademik Yayıncılık, | | | | | | |
| **OTHER REFERENCES** | | | | | | Yechout, T. R., & Morris, S. L. (2003). Introduction to aircraft flight mechanics:  Performance, static stability, dynamic stability, and classical feedback control.  Reston, VA: American Institute of Aeronautics and Astronautics. | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | | Projector, overhead document projector, | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Basic properties of fluids, and standard atmosphere, | | | | | | | | | | |
| 2 | Fundamentals of propulsion | | | | | | | | | | |
| 3 | Dynamic similarity, Reynold and Mach numbers | | | | | | | | | | |
| 4 | Flow around airfoil @ one AoA, pitot-static tube and airspeed measurement, | | | | | | | | | | |
| 5 | Aerostatic and aerodynamic forces, dimensional analysis, aerodynamic coefficients | | | | | | | | | | |
| 6 | Introduction to aircraft performance, equations of motion for point-mass model,  Calculation of performance parameters of steady state level flight turbojet aircraft, | | | | | | | | | | |
| 7 | Calculation of performance parameters of steady state level flight turbojet aircraft, | | | | | | | | | | |
| 8 | Midterm | | | | | | | | | | |
| 9 | Calculation of performance parameters of steady state level flight propeller aircraft, | | | | | | | | | | |
| 10 | Calculation of performance parameters of steady state level flight propeller aircraft, | | | | | | | | | | |
| 11 | Climb and descent flight performance equations | | | | | | | | | | |
| 12 | Turning flight performance equations | | | | | | | | | | |
| 13 | Performance parameters calculation with energy model | | | | | | | | | | |
| 14 | Performance parameters calculation with energy model | | | | | | | | | | |
| 15,16 | Final | | | | | | | | | | |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. |  | **X** |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  | **X** |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **X** |  |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **X** |  |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | **X** |  |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. | **X** |  |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility | **X** |  |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | **X** |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. | **X** |  |  |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):**

**Signature**: **Date:**

Ass. Prof. Zafer ÖZNALBANT, PhD 14.01.2023



**T.C. ESKİŞEHİR OSMANGAZİ UNIVERSITY**

**ENGINEERING AND ARCHITECTURE FACULTY**

**AERONAUTICAL ENGINEERING DEPARTMENT**

# COURSE INFORMATION FORM

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| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152415007 | **COURSE NAME** | PRODUCTION PLANNING |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | | **TYPE** | **LANGUAGE** |
| 5 | | 3 | | 0 | 0 | | 3 | 3 | | COMPULSORY ( ) ELECTIVE (X) | English |
| **COURSE CATAGORY** | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Engineering Subjects**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** |
|  | | |  | | | ( ) | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | **Quantity** | | **%** |
| Mid-Term | | | 1 | | 40 |
| Quiz | | |  | |  |
| Homework | | |  | |  |
| Project | | |  | |  |
| Report | | |  | |  |
| Others (………) | | |  | |  |
|  | | |  | |  |
| **FINAL EXAM** | | | | | |  | | | 1 | | 60 |
| **PREREQUIEITE(S)** | | | | | | --- | | | | | |
| **COURSE DESCRIPTION** | | | | | | Demand forecasting, Aggregate Production Planning, Material Requirement Planning, Stock Control, Project Management | | | | | |
| **COURSE OBJECTIVES** | | | | | | Demand forecasting, Aggregate Production Planning, Material Requirement Planning, Stock Control, Project Management | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | Aeronautical engineer a contemporary and knowledge sharing to reach the ball to forward the importance of today's information age, given that the locomotive of this course the student technologies based on the most current information in a matter of professional training contribute very valuable. | | | | | |
| **COURSE OUTCOMES** | | | | | | * An ability to perform demand forecasting using different techniques in the business enterprise * An ability to prepare the aggregate production planning in the business enterprise An ability to perform and revise master production schedule in the business enterprise | | | | | |
| **TEXTBOOK** | | | | | | The Fundamentals of Production Planning and Control, Stephen Chapman | | | | | |
| **OTHER REFERENCES** | | | | | | PRODUCTION PLANNING & CONTROL, D.R. Kiran | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | | --- | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Production and Production Management Definition | | | | | | | | | | |
| 2 | Historical Background and Approach to Production Management Systems | | | | | | | | | | |
| 3 | Production Management Activities | | | | | | | | | | |
| 4 | Production Management Functional Structure | | | | | | | | | | |
| 5 | Plastics as Defense Technology Materials | | | | | | | | | | |
| 6 | Factors Affecting Product Design and product design | | | | | | | | | | |
| 7 | The Importance of Demand Forecasts | | | | | | | | | | |
| 8 | Mid-Term Examination | | | | | | | | | | |
| 9 | Enterprise Resource Planning | | | | | | | | | | |
| 10 | Enterprise Resource Planning | | | | | | | | | | |
| 11 | Application of Demand Forecasts | | | | | | | | | | |
| 12 | Stock Concept and Business Economy | | | | | | | | | | |
| 13 | Stock Control Methods | | | | | | | | | | |
| 14 | Inventory Control Models | | | | | | | | | | |
| 15,16 | Final Exam | | | | | | | | | | |

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| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **[X]** | **[ ]** | **[ ]** |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **[X]** | **[ ]** | **[ ]** |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. | **[X]** | **[ ]** | **[ ]** |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **[ ]** | **[X]** | **[ ]** |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **[X]** | **[ ]** | **[ ]** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | **[ ]** | **[X]** | **[ ]** |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. | **[X]** | **[ ]** | **[ ]** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **[X]** | **[ ]** | **[ ]** |
| 9 | Understanding of professional and ethical issues and taking responsibility | **[X]** | **[ ]** | **[ ]** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. | **[X]** | **[ ]** | **[ ]** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. | **[X]** | **[ ]** | **[ ]** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Prepared by:** Prof. Dr. Melih Cemal Kushan **Date:**

**Signature(s)**:



# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | AUTUMN |

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| **COURSE CODE** | 152415008 | **COURSE NAME** | BEGINNING FRENCH 1 |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 5 | | 3 | | 0 | 0 | | 3 | 3 | COMPULSORY ( ) ELECTIVE (X) | | FRENCH | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | |  | | |  | | | | | X | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 50 | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 50 | |
| **PREREQUIEITE(S)** | | | | | | None | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Se présenter et parler de soi. Parler de sa famille.Proposer de faire quelque chose. | | | | | | |
| **COURSE OBJECTIVES** | | | | | | Saluer (registre formel et informel) Demander une informationes sur une personne. | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | Communication skills in a foreign language (French) Understanding a foreign culture (French) | | | | | | |
| **COURSE OUTCOMES** | | | | | | 1. Introduction of self in French and providing info about self. 2. Asking for personal information and comprehending it. 3. Description of the physical appearance of a person. 4. Uses expression of time. | | | | | | |
| **TEXTBOOK** | | | | | | Francofolie I | | | | | | |
| **OTHER REFERENCES** | | | | | | Grammaire progressive du français. | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | | none | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Se présenter et parler de soi. | | | | | | | | | | |
| 2 | Présenter quelqu’un. | | | | | | | | | | |
| 3 | Saluer registre formel et informel. | | | | | | | | | | |
| 4 | Demander quelque chose (registre formel et informel) | | | | | | | | | | |
| 5 | Informations sur une personne. | | | | | | | | | | |
| 6 | Parler de son caractères et de ses gouts. | | | | | | | | | | |
| 7 | Parler de sa famille. | | | | | | | | | | |
| 8 | MIDTERM | | | | | | | | | | |
| 9 | Raconter des moments de la vie quotidienne. | | | | | | | | | | |
| 10 | Demander, donner l’heure. | | | | | | | | | | |
| 11 | Proposer de faire quelque chose. | | | | | | | | | | |
| 12 | Donner des ordres. | | | | | | | | | | |
| 13 | Quelques verbes irreguliers. | | | | | | | | | | |
| 14 | Quelques verbes irreguliers. | | | | | | | | | | |
| 15,16 | FINAL EXAM | | | | | | | | | | |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. |  |  | **X** |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  |  | **X** |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  |  | **X** |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  | **X** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **X** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | **X** |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  |  | **X** |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):**

**Signature**: **Date:** 25/12/2022



# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

|  |  |
| --- | --- |
| **SEMESTER** | AUTUMN |

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| --- | --- | --- | --- |
| **COURSE CODE** | 152415009 | **COURSE NAME** | GERMAN 1 |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 5 | | 3 | | 0 | 0 | | 3 | 3 | COMPULSORY ( ) ELECTIVE (X) | | GERMAN | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | |  | | |  | | | | | X | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 50 | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 50 | |
| **PREREQUIEITE(S)** | | | | | |  | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Content of the course: Artikel, Singular und Plural, das Präsens, trennbare und untrennbare Verben, starke Verben, die Zahlen, die Zeit, die  Wortstellung, Präpositionen mit dem Dativ, Präpositionen mit dem Akkusativ, Wechselpräpositionen, Fragepronomen, Personalpronomen, Possessivpronomen, Modalverben | | | | | | |
| **COURSE OBJECTIVES** | | | | | | The main aim of this course is to help students to get the basics of the German grammar | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | By the end of this course student will be able to: 1. Read, write and understand simple German | | | | | | |
| **COURSE OUTCOMES** | | | | | | 1. Introduction of self in French and providing info about self. 2. Asking for personal information and comprehending it. 3. Description of the physical appearance of a person. 4. Uses expression of time. | | | | | | |
| **TEXTBOOK** | | | | | | Schulz-Griesbach: Deutsch für Ausländer., Dreyer-Schmitt: Lehr- und Übungsbuch der deutschen Grammatik, Vlachos N.: Exakt 1-2, Schulz-  Sundermeyer: Deutsche Sprachlehre für Ausländer, Mahler G., Schmitt R.:  Wir lernen Deutsch, 1-2 | | | | | | |
| **OTHER REFERENCES** | | | | | |  | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | |  | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Der Artikel, das Verb | | | | | | | | | | |
| 2 | Konjugation Praesens, Personalpronomen | | | | | | | | | | |
| 3 | Die Nomen, Singular und Plural | | | | | | | | | | |
| 4 | Fragepronomen, der Akkusativ | | | | | | | | | | |
| 5 | Der Satz, die Zahlen | | | | | | | | | | |
| 6 | Praesens der starken Verben | | | | | | | | | | |
| 7 | Trennbare Verben | | | | | | | | | | |
| 8 | MIDTERM | | | | | | | | | | |
| 9 | Wiederholung und Übungen | | | | | | | | | | |
| 10 | Praepositionen mit dem Dativ | | | | | | | | | | |
| 11 | Praepositionen mit dem Akkusativ | | | | | | | | | | |
| 12 | Der Dativ | | | | | | | | | | |
| 13 | Possessivpronomen | | | | | | | | | | |
| 14 | Possessivpronomen | | | | | | | | | | |
| 15,16 | FINAL EXAM | | | | | | | | | | |

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| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. |  |  | **X** |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  |  | **X** |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  |  | **X** |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  | **X** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **X** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | **X** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):**

**Signature**: **Date:** 25/12/2022

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| **SEMESTER** | SPRING |

# ESOGÜ Aeronautical Engineering Course Information Form

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| **COURSE CODE** | 152416001 | **COURSE NAME** | Compressible Aerodynamics |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | | **TYPE** | **LANGUAG E** |
| 6 | 3 | | 0 | 0 | | 3 | 5 | | COMPULSORY ( X) ELECTIVE () | Turkish |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering Subjects [if it contains considerable design, mark with (****)** | | | | | **Social Science** |
|  | |  | | | X | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | **Quantity** | | **%** |
| Mid-Term | | | 1 | | 30 |
| Quiz | | |  | |  |
| Homework | | | 4 | | 10 |
| Project | | | 1 | | 10 |
| Report | | |  | |  |
| Others (Class Notes) | | | 1 | | 10 |
|  | | |  | |  |
| **FINAL EXAM** | | | | |  | | | 1 | | 40 |
| **PREREQUIEITE(S)** | | | | | Differential Equations, Fluid Mechanics, Numerical Methods, Fundamentals of Aerodynamics | | | | | |
| **COURSE DESCRIPTION** | | | | | Fundamentals of Compressible Flow, Normal Shock Waves and Related  Topics, Oblique Shock and Expansion Waves, Compressible Flows in  Nozzle-Diffuser and Wind Tunnels, Subsonic Compressible Flows over  Wings, Supersonic Flow and Numerical Methods, Hypersonic Flow Fundamentals | | | | | |
| **COURSE OBJECTIVES** | | | | | This course aims to express the basic principles of compressible aerodynamics with equations, distinguish between normal and oblique shock waves, describe compressible flow in different platforms, develop supersonic flows and related numerical methods, and become familiar with hypersonic flows. It is aimed to reinforce the objectives with the notes and assignments kept in the lectures. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | It provides to understand the basic reasons for the flying of high-speed aircraft. It helps in correctly identifying and analyzing the aerodynamic forces that affect the design of transonic and supersonic vehicles. In this sense, it contributes to offering suggestions and implementing these suggestions. | | | | | |
| **COURSE OUTCOMES** | | | | | Explain the concept of compressible flow. Know the differences between normal and oblique shock and makes related equation inferences. Can identify different application areas of compressible flow. Apply the theories and related equations in subsonic and supersonic flows. Can use numerical methods in this framework. | | | | | |
| **TEXTBOOK** | | | | | ANDERSON. (2016). Fundamentals of aerodynamics (6th ed.). McGrawHill Education. | | | | | |
| **OTHER REFERENCES** | | | | | Peiqing Liu. (2022). A General Theory of Fluid Mechanics. Springer.  Aerodynamics for Engineering Students, Sixth Edition, Houghton et al., Elsevier | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | Projector, computer, textbook, A4 notebook, pencil, eraser, ruler, calculator | | | | | |

|  |  |
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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Basic concepts of compressible flow |
| 2 | Normal shock waves |
| 3 | Normal shockwave equations |
| 4 | Oblique shock waves |
| 5 | Oblique shock waves equations |
| 6 | Expansion waves |
| 7 | Compressible flow applications |
| 8 | Midterm Exam |
| 9 | Compressible flows in nozzle, diffuser and wind tunnels |
| 10 | Subsonic compressible flows over the wing |
| 11 | Supersonic flows |
| 12 | Numerical methods for supersonic flows |
| 13 | Hypersonic flows |
| 14 | Project-homework presentations |
| 15,16 | Final Exam |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and  Aeronautical engineering: an ability to apply theoretical and practical knowledge on solving and modeling of Aeronautical engineering problems. | X |  |  |
| 2 | Ability to determine, define, formulate, and solve complex Aeronautical engineering problems; for that purpose, an ability to select and use convenient analytical and experimental methods. | X |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economic and political problems; for that purpose an ability to apply modern design methods. |  | X |  |
| 4 | Ability to develop, select and use modern methods and tools required for Aeronautical engineering applications; ability to effective use of information technologies. |  | X |  |
| 5 | In order to investigate Aeronautical engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  | X |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | X |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | X |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | X |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  | X |  |
| 10 | Awareness of project, risk, and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | X |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment, and security in global and social scale; an awareness of juridical results of engineering solutions. |  | X |  |
| **1**: None. **2**: Partially contribution. **3**: Completely contribution. | |  |  |  |

**Prepared by:** Prof. Dr. Kürşad Melih GÜLEREN **Date: 13/02/2023**

**Signature(s)**:

**T.C. ESKİŞEHİR OSMANGAZİ UNIVERSITY**



**ENGINEERING AND ARCHITECTURE FACULTY**

**AERONAUTICAL ENGINEERING DEPARTMENT**

# COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| **COURSE CODE** | | 152416002 | | | | **COURSE NAME** | | | Aerospace Structures | | |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Laboratory** | | | **Credit** | **ECTS** | | **TYPE** | **LANGUAGE** |
| 6 | 3 | | 0 | 0 | | | 3 | 5 | | COMPULSORY (X) ELECTIVE () | English |
| **COURSE CATAGORY** | | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Engineering Subjects**  **[if it contains considerable design, mark with (****) ]** | | | | | | **Social Science** |
|  | |  | | | ( ) | | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | | **%** |
| Mid-Term | | | | 1 | | 20 |
| Quiz | | | |  | |  |
| Homework | | | | 1 | | 40 |
| Project | | | |  | |  |
| Report | | | |  | |  |
| Others (………) | | | |  | |  |
|  | | | |  | |  |
| **FINAL EXAM** | | | | |  | | | | 1 | | 40 |
| **PREREQUIEITE(S)** | | | | | --- | | | | | | |
| **COURSE DESCRIPTION** | | | | | Material properties. The main structural elements in the aircraft. Loads on the plane. V-N diagrams. Aircraft loads. Structural analysis of aircraft infrastructures. frames, wing sections. Elastic stability: Column buckling, buckling of flat and curved panels, buckling analysis of stiffened closed section box beams, post-buckling behavior of stiffened straight and curved panels. | | | | | | |
| **COURSE OBJECTIVES** | | | | | The student who takes the course will have the necessary information about the examination of the conditions that determine the design of aircraft structures and the analysis of aerospace structures. | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | The most important detail for an aircraft engineer is to be able to do the engineering design expected from him in the best way. As a product, of course, the most important design is an airplane, helicopter or aircraft design. This feature, which is the most important feature that he will gain with his education, will be gained with this course. | | | | | | |
| **COURSE OUTCOMES** | | | | | * Makes the definition of air platforms. * Knows and classifies these platforms. * Knows and classifies airplanes and helicopters. * Knows trunk analysis methods. | | | | | | |
| **TEXTBOOK** | | | | | Aircraft Structures, David J. Peery | | | | | | |
| **OTHER REFERENCES** | | | | | A to Z; World Planes, Helicopters, Unmanned Aerial Vehicles, Engines and Equipment. Kushan M.C. | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | --- | | | | | | |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Main structural elements in aircraft and spacecraft, their functions. Flexible truss structures used in space applications |
| 2 | Flexural analysis of tapered and non-tapered open-section beams: stiffener loads, web shear flows, shear center. |
| 3 | Flexural and torsional analysis of tapered and non-tapered wing and fuselage and spacecraft structures as closed-section multi cell box beams. Usual assumptions for such structures in the analysis of stiffener loads, shear flow, shear center and angle of twist. |
| 4 | Production Management Functional Structure |
| 5 | Plastics as Defense Technology Materials |
| 6 | Bending of unsymmetrical sections with emphasis on unsymmetrical wing-box cross-sections |
| 7 | The stability (local buckling) of wing and fuselage skin panels as flat and curved plates under compression, bending, shear, and combined loading; local buckling of round tubes |
| 8 | Mid-Term Examination |
| 9 | Post-buckling behavior of stiffened flat and curved plates : effective width concept used in the analysis of wing and fuselage skin panels |
| 10 | Failure criteria for isotropic brittle and ductile materials. |
| 11 | Application of Demand Forecasts |
| 12 | Stock Concept and Business Economy |
| 13 | Stock Control Methods |
| 14 | Inventory Control Models |
| 15,16 | Final Exam |

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| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **[X]** | **[ ]** | **[ ]** |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **[X]** | **[ ]** | **[ ]** |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. | **[X]** | **[ ]** | **[ ]** |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **[ ]** | **[X]** | **[ ]** |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **[X]** | **[ ]** | **[ ]** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | **[ ]** | **[X]** | **[ ]** |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. | **[X]** | **[ ]** | **[ ]** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **[X]** | **[ ]** | **[ ]** |
| 9 | Understanding of professional and ethical issues and taking responsibility | **[X]** | **[ ]** | **[ ]** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. | **[X]** | **[ ]** | **[ ]** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. | **[X]** | **[ ]** | **[ ]** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Prepared by:** Prof. Dr. Melih Cemal Kushan **Date:**

**Signature(s)**:



# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| --- | --- | --- | --- |
| **COURSE CODE** | 152416003 | **COURSE NAME** | Aircraft Stability and Control |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Laboratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 6 | | 3 | | 0 | 0 | | 3 | 5 | COMPULSORY (X) ELECTIVE ( ) | | English | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | | X | | | X | | | | |  | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 40 | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 60 | |
| **PREREQUIEITE(S)** | | | | | | 152413xxx – Differential Equations  152413003 – Dynamic  152415xxx – Fundamentals of Aerodynamic  152415xxx – Aircraft Performance | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Understanding the dynamic behavior of the aircraft as a rigid body, derivation of equations of motion under standard atmosphere and flat earth assumption, analysis of static and dynamic stability properties, understanding of linear and non-linear analyses | | | | | | |
| **COURSE OBJECTIVES** | | | | | | It is aimed that students taking this course will have the knowledge about the following topics:   * Understanding the aircraft static and dynamic characteristics, * Understanding the aerodynamics and control derivatives, * Derivation of the airplane equations of motion, * Analysis of the aircraft's time-dependent response, * Understanding of longitudinal and lateral linear analysis, | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | Defining the stability and control capabilities needed in the aircraft design phase, analyses of the stability and control capabilities of an existing aircraft | | | | | | |
| **COURSE OUTCOMES** | | | | | | Upon successful completion of the course, the student will have the following abilities:   * Ability to analyze aircraft static stability, * Ability to analyze aircraft dynamic stability, * Ability to analyze the response of aircraft to control input and atmospheric disturbances | | | | | | |
| **TEXTBOOK** | | | | | | Rober C Nelson, Flight Stability and Automatic Control  Bernard Etkin, Lloyd Duff Reid, Dynamics of Flight: Stability and Control | | | | | | |
| **OTHER REFERENCES** | | | | | | Yechout, T. R., & Morris, S. L. (2003). Introduction to aircraft flight mechanics: Performance, static stability, dynamic stability, and classical feedback control.  Reston, VA: American Institute of Aeronautics and Astronautics. | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | | Projector, overhead document projector, | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Lecture details, Basic definitions | | | | | | | | | | |
| 2 | Static and dynamic stability | | | | | | | | | | |
| 3 | Longitudinal static stability,  Contributions of aircraft components,  Longitudinal control,  Stick-fixed neutral point | | | | | | | | | | |
| 4 | Lateral-Directional static stability,  Contributions of aircraft components, Lateral-Directional control | | | | | | | | | | |
| 5 | Aircraft equations of motion I: force and moment (dynamic) equations | | | | | | | | | | |
| 6 | Aircraft equations of motion I: kinematic equations | | | | | | | | | | |
| 7 | Linearization of equations of motion | | | | | | | | | | |
| 8 | Midterm | | | | | | | | | | |
| 9 | Stability derivatives | | | | | | | | | | |
| 10 | Longitudinal motion dynamic analysis | | | | | | | | | | |
| 11 | Longitudinal motion short period and long period (phugoid) approaches | | | | | | | | | | |
| 12 | Lateral-Directional motion dynamic analysis | | | | | | | | | | |
| 13 | Lateral-Directional motion roll, spiral, Dutch-roll mode approaches | | | | | | | | | | |
| 14 | Aircraft response to control or atmospheric inputs | | | | | | | | | | |
| 15,16 | Final Exam | | | | | | | | | | |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **X** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **X** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **X** |  |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **X** |  |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | **X** |  |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. | **X** |  |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility | **X** |  |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  | **X** |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  | **X** |  |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):**

**Signature**: **Date:**

Ass. Prof. Zafer ÖZNALBANT, PhD 16.01.2023



# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| --- | --- | --- | --- |
| **COURSE CODE** | 152416004 | **COURSE NAME** | PROPULSION SYSTEMS |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 6 | 3 | | 0 | 0 | | 3 | 5 | COMPULSORY (X) ELECTIVE ( ) | | ENGLISH |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** |
|  | |  | | | X | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 50 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 50 |
| **PREREQUIEITE(S)** | | | | |  | | | | | |
| **COURSE DESCRIPTION** | | | | | Introduction to Propulsion (Propulsion, Units and Dimensions,  Operational Conditions and Standard Atmosphere, Air Breathing Engines, Aircraft Performance). Aircraft Gas Turbine Engine (Thrust Equation, Thrust Efficiency, Gas Turbine Engine Components, Brayton Cycle).  Parametric Cycle Analysis of Ideal Engines (Engine Parametric Cycle  Analysis, Ideal Ramjet, Ideal Turbojet, Ideal Turbofan). Component Performance (Change in Gas Properties, Pressure Recovery in Air Intake and Diffuser, Compressor and Turbine Efficiency, Combustion Chamber Efficiency and Pressure Loss, Exhaust Nozzle Loss, Shaft Mechanical Efficiency, Component Performance Criteria). Parametric Cycle Analysis of Real Engines (Turbojet, Turbofan). Engine Performance Analysis (Gas Generator, Turbojet Engine, Turbofan Engine). | | | | | |
| **COURSE OBJECTIVES** | | | | | Understanding how thrust is produced in jet engines,  Calculating the ideal performance of all engine and engine components under different design conditions,  Making performance calculations in conditions other than the design point, Understanding the amount of performance variation due to component losses in real conditions,  To acquire the ability to use this information in the design process. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | Propulsion systems, system components and working principles will be learned. | | | | | |
| **COURSE OUTCOMES** | | | | | 1. To understand how different aircraft engines are classified and to know the differences between them 2. Understanding how thrust is produced in aircraft engines 3. Understanding the key performance parameters of aircraft engines 4- To know how to use thermodynamic cycles in aircraft engine performance analysis | | | | | |

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| --- | --- |
|  | 1. Calculate the ideal performances of the aircraft engine and its   components under design point conditions   1. Considering the losses in engine components, knowing their reflections on overall performance and understanding the effects of component performance 2. Calculating engine performance in real conditions and considering losses 3. Performing and evaluating aircraft engine performance analysis |
| **TEXTBOOK** | Elements of Propulsion: Gas Turbines and Rockets, Mattingly, J.D., AIAA Education Series, 2006. |
| **OTHER REFERENCES** | Aerothermodynamics of Gas Turbine and Rocket Propulsion, Third Edition, G. C. Oates, AIAA Education Series, 1997 |
| **TOOLS AND EQUIPMENTS REQUIRED** | Computer |

|  |  |
| --- | --- |
|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Introduction to Propulsion (Propulsion, Units and Dimensions, Operational Conditions and Standard Atmosphere, Air Breathing Engines, Aircraft Performance) |
| 2 | Aircraft Gas Turbine Engine (Thrust Equation, Thrust Efficiency, Gas Turbine Engine Components, Brayton Cycle) |
| 3 | Parametric Cycle Analysis of Ideal Engines (Engine Parametric Cycle Analysis, Ideal Ramjet) |
| 4 | Parametric Cycle Analysis of Ideal Engines (Ideal Turbojet) |
| 5 | Parametric Cycle Analysis of Ideal Engines (Ideal Turbofan) |
| 6 | Component Performance (Change in gas properties, Pressure Recovery in Air Intake and Diffuser, Compressor and Turbine Efficiency, Combustion Chamber Efficiency and Pressure Loss, Exhaust Nozzle Loss) |
| 7 | Component Performance (Summary of Component Performance Metrics, Component Performance with Variable Cp), Parametric Cycle Analysis of Real Engines (Turbojet) |
| 8 | MIDTERM |
| 9 | Parametric Cycle Analysis of Real Engines (Turbojet with Afterburner) |
| 10 | Parametric Cycle Analysis of Real Engines (Seperated Exhaust Flow Turbofan) |
| 11 | Engine Performance Analysis (Input, Gas Generator) |
| 12 | Engine Performance Analysis (Turbojet Engine) |
| 13 | Engine Performance Analysis (Turbofan Engine) |
| 14 | Review |
| 15,16 | FINAL EXAM |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **X** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **X** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **X** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **X** |  |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  |  | **X** |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | **X** |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **X** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Associate Prof. Isil YAZAR

**Signature**: **Date:** 25/12/2022

# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| **COURSE CODE** | 152416005 | **COURSE NAME** | MECHANICAL VIBRATIONS |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** |
| 6 | 3 | | 0 | 0 | | 3 | 4 | COMPULSORY (\* ) ELECTIVE ( ) | | ENGLISH |
| **COURSE CATAGORY** | | | | | | | | | | |
| **Basic Science** | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (**√) ] | | | | | **Social Science** |
|  | | X | | | X | | | | |  |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | | | **Evaluation Type** | | | | **Quantity** | **%** |
| 1st Mid-Term | | | | 1 | 50 |
| 2nd Mid-Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Report | | | |  |  |
| Others (………) | | | |  |  |
| **FINAL EXAM** | | | | |  | | | | 1 | 50 |
| **PREREQUIEITE(S)** | | | | | - | | | | | |
| **COURSE DESCRIPTION** | | | | | Kinetics of vibration, single-degree of freedom system, vibration isolation, two degrees of freedom system, dynamic vibration absorber, multi-degree of freedom system,torsional vibration. | | | | | |
| **COURSE OBJECTIVES** | | | | | The objective of the course is to provide the student with the ability to model mechanical systems and determine their natural frequencies, grasping the basics of the theory of vibration isolation. | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUCATION** | | | | | The main aim of the course is to prevent the system from being damaged by using/and applying vibration isolation theory. | | | | | |
| **COURSE OUTCOMES** | | | | | I. Be able to recognize and identify the problems of Mechanical Systems. II. Defining the problem.   1. Calculating and analyzing the problems by using necessary formulas. 2. Evaluating the results. 3. Evaluating the solution by considering the calculation results. 4. Be able to apply the vibration isolation theory. | | | | | |
| **TEXTBOOK** | | | | | Mechanical Vibrations Lecture Notes, Prof.Dr. Zeki Kıral | | | | | |
| **OTHER REFERENCES** | | | | | 1. Rao, S. S. Mechanical Vibrations. 3rd ed. Addison Wesley, 1995. 2. Beer, Ferdinand Pierre. Vector Mechanics for Engineers. McGraw-Hill, 1988. 3. Williams, James H., Jr. Fundamentals of Applied Dynamics. John Wiley & Sons, Inc., 1996. | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | - | | | | | |

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|  | **COURSE SYLLABUS** |
| **WEEK** | **TOPICS** |
| 1 | Kinetics of vibration |
| 2 | Single-degree of freedom systems |
| 3 | Rayleigh method |
| 4 | Undamped vibration problems |
| 5 | Damped vibrations logarithmic decrement |
| 6 | Forced vibration |
| 7 | Forced vibration problems |
| 8 | EXAM |
| 9 | Vibration isolation |
| 10 | Two degrees of freedom system |
| 11 | Dynamic vibration absorber |
| 12 | Multi-degree of freedom system |
| 13 | Torsional vibration |
| 14 | Continous systems |
| 15,16 | Final Exam |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **x** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **x** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  | **x** |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  |  |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  |  |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  | **x** |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  |  |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):** Assoc. Prof. Dr M. Alper Sofuoğlu

**Signature**: 

**Date:** 14.02.2023

# ESOGÜ AERONAUTICAL ENGINEERING DEPARTMENT COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| **COURSE CODE** | 152416006 | **COURSE NAME** | PRACTICAL TRAINING 1 |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | |  | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 6 | | 0 | | 0 | 0 | | 0 | 3 | COMPULSORY (X ) ELECTIVE ( ) | | TURKISH | |
| **COURSE CATAGORY** | | | | | | | | | | |  | |
| **Basic Science** | | | **Basic Engineering** | | | **Mechanical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | |  | | | X | | | | |  | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | |  | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | |  |  | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | |  | 100 | |
| **PREREQUIEITE(S)** | | | | | | NONE | | | | |  | |
| **COURSE DESCRIPTION** | | | | | | Practical training | | | | |  | |
| **COURSE OBJECTIVES** | | | | | | Organization Application | | | | |  | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | Organization Application | | | | |  | |
| **COURSE OUTCOMES** | | | | | | Organization Application | | | | |  | |
| **TEXTBOOK** | | | | | |  | | | | |  | |
| **OTHER REFERENCES** | | | | | |  | | | | |  | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | |  | | | | |  | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Organization Application | | | | | | | | | | |
| 2 | Organization Application | | | | | | | | | | |
| 3 | Organization Application | | | | | | | | | | |
| 4 | Organization Application | | | | | | | | | | |
| 5 | Organization Application | | | | | | | | | | |
| 6 | Organization Application | | | | | | | | | | |
| 7 | Organization Application | | | | | | | | | | |
| 8 | MIDTERM | | | | | | | | | | |
| 9 | Organization Application | | | | | | | | | | |
| 10 | Organization Application | | | | | | | | | | |
| 11 | Organization Application | | | | | | | | | | |
| 12 | Organization Application | | | | | | | | | | |
| 13 | Organization Application | | | | | | | | | | |
| 14 | Organization Application | | | | | | | | | | |
| 15,16 | FINAL EXAM | | | | | | | | | | |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | **X** |  |  |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. | **X** |  |  |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. | **X** |  |  |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. | **X** |  |  |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. | **X** |  |  |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | **X** |  |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. | **X** |  |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility | **X** |  |  |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. | **X** |  |  |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. | **X** |  |  |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):**

**Signature**: **Date:** 13/02/2023

# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| **COURSE CODE** | 152416007 | **COURSE NAME** | BEGINNING FRENCH 2 |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 6 | | 3 | | 0 | 0 | | 3 | 3 | COMPULSORY ( ) ELECTIVE (X) | | FRENCH | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | |  | | |  | | | | | X | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 50 | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 50 | |
| **PREREQUIEITE(S)** | | | | | | Beginning French I | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Acheter quelque chose.Parler du temps qu’il fait.Raconter quelque chose au passAcheter quelque chose.Parler du temps qu’il fait.Raconter quelque chose au passé. | | | | | | |
| **COURSE OBJECTIVES** | | | | | | Demander et donner des indications.Commander un repas.Décrire un appartement. | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | Communication skills in a foreign language (French) Understanding a foreign culture (French) | | | | | | |
| **COURSE OUTCOMES** | | | | | | 1.Ordering food at a restaurant 2. Describing a house or building. 3.  Telling about an event from past 4. Writing a message or letter to a friend.  5. Handling communication for shopping and traveling | | | | | | |
| **TEXTBOOK** | | | | | | Francofolie I | | | | | | |
| **OTHER REFERENCES** | | | | | | Grammaire progressive du français. | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | | none | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Acheter quelque chose:Demander le prix et payer. | | | | | | | | | | |
| 2 | S’orienter:Demander et donner des indications. | | | | | | | | | | |
| 3 | Commander un repas. | | | | | | | | | | |
| 4 | Décrire un appartement. | | | | | | | | | | |
| 5 | Proposer et accepter un rendez-vous. | | | | | | | | | | |
| 6 | Faire des suppositions. | | | | | | | | | | |
| 7 | Etablir des comparaisons. | | | | | | | | | | |
| 8 | MIDTERM | | | | | | | | | | |
| 9 | Parler du temps qu’il fait. | | | | | | | | | | |
| 10 | Raconter quelque chose au passé. | | | | | | | | | | |
| 11 | Parler de ce qui va passer. | | | | | | | | | | |
| 12 | Organiser un voyage et réserver ses places. | | | | | | | | | | |
| 13 | Ecrire un message amical.(lettre,courriel) | | | | | | | | | | |
| 14 | Ecrire un message amical.(lettre,courriel) | | | | | | | | | | |
| 15,16 | FINAL EXAM | | | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. |  |  | **X** |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  |  | **X** |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  |  | **X** |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  | **X** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **X** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  | **X** |  |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. |  |  | **X** |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
| **1**:None. **2**:Partially contribution. **3**: Completely contribution. | |  |  |  |

**Instructor(s):**

**Signature**: **Date:** 25/12/2022

# ESOGÜ Aeronautical Engineering Department COURSE INFORMATION FORM

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| **SEMESTER** | SPRING |

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| **COURSE CODE** | 152416008 | **COURSE NAME** | GERMAN 2 |

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| **SEMESTER** | | **WEEKLY COURSE PERIOD** | | | | | **COURSE OF** | | | | | |
| **Theory** | | **Practice** | **Labratory** | | **Credit** | **ECTS** | **TYPE** | | **LANGUAGE** | |
| 6 | | 3 | | 0 | 0 | | 3 | 3 | COMPULSORY ( ) ELECTIVE (X) | | GERMAN | |
| **COURSE CATAGORY** | | | | | | | | | | | | |
| **Basic Science** | | | **Basic Engineering** | | | **Aeronautical Engineering Profession**  **[if it contains considerable design, mark with (****) ]** | | | | | **Social Science** | |
|  | | |  | | |  | | | | | X | |
| **ASSESSMENT CRITERIA** | | | | | | | | | | | | |
| **MID-TERM** | | | | | | **Evaluation Type** | | | | **Quantity** | **%** | |
| 1st Mid-Term | | | | 1 | 50 | |
| 2nd Mid-Term | | | |  |  | |
| Quiz | | | |  |  | |
| Homework | | | |  |  | |
| Project | | | |  |  | |
| Report | | | |  |  | |
| Others (………) | | | |  |  | |
| **FINAL EXAM** | | | | | |  | | | | 1 | 50 | |
| **PREREQUIEITE(S)** | | | | | | GERMAN I | | | | | | |
| **COURSE DESCRIPTION** | | | | | | Demonstrativpronomen, Wechselpräpositionen, reflexive Verben, das  Präteritum, das Perfekt, Ergänzung der Deklination, Verben mit Präpositionen, der Genitiv | | | | | | |
| **COURSE OBJECTIVES** | | | | | | The main aim of this course is to help students to get the basics of the German grammar. | | | | | | |
| **ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION** | | | | | | By the end of this course student will be able to: 1. Read, write and understand simple German | | | | | | |
| **COURSE OUTCOMES** | | | | | | Read, write and understand simple German | | | | | | |
| **TEXTBOOK** | | | | | | Schulz-Griesbach: Deutsch für Ausländer. Dreyer-Schmitt: Lehr- und  Übungsbuch der deutschen Grammatik, Vlachos N.: Exakt 1-2, Schulz-  Sundermeyer: Deutsche Sprachlehre für Ausländer, Mahler G., Schmitt R.:  Wir lernen Deutsch, 1-2 | | | | | | |
| **OTHER REFERENCES** | | | | | |  | | | | | | |
| **TOOLS AND EQUIPMENTS REQUIRED** | | | | | |  | | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | | | | |
| **WEEK** | **TOPICS** | | | | | | | | | | |
| 1 | Demonstrativpronomen | | | | | | | | | | |
| 2 | Demonstrativpronomen | | | | | | | | | | |
| 3 | Wechselpräpositionen | | | | | | | | | | |
| 4 | Wechselpräpositionen | | | | | | | | | | |
| 5 | Reflexive Verben | | | | | | | | | | |
| 6 | Reflexive Verben | | | | | | | | | | |
| 7 | Reflexive Verben | | | | | | | | | | |
| 8 | MIDTERM | | | | | | | | | | |
| 9 | Das Präteritum, das Perfekt | | | | | | | | | | |
| 10 | Ergänzung der Deklination | | | | | | | | | | |
| 11 | Verben mit Präpositionen | | | | | | | | | | |
| 12 | Der Genitiv | | | | | | | | | | |
| 13 | Der Genitiv | | | | | | | | | | |
| 14 | Der Genitiv | | | | | | | | | | |
| 15,16 | FINAL EXAM | | | | | | | | | | |

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| **NO** | **PROGRAM OUTCOMES** | **3** | **2** | **1** |
| 1 | Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. |  |  | **X** |
| 2 | Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods. |  |  | **X** |
| 3 | Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods. |  |  | **X** |
| 4 | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies. |  |  | **X** |
| 5 | In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results. |  |  | **X** |
| 6 | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. |  | **X** |  |
| 7 | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. |  |  | **X** |
| 8 | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | **X** |  |  |
| 9 | Understanding of professional and ethical issues and taking responsibility |  |  | **X** |
| 10 | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. |  |  | **X** |
| 11 | Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions. |  |  | **X** |
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