**ESOGU MECHANICAL ENGINEERING DEPARTMENT**

**COURSE INFORMATION FORM**

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| **Course Name** | **Course Code** |
| Heat Economy | 151817467 |

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| **Semester** | **Number of Course Hours per Week** | **ECTS** |
| **Theory** | **Practice** |
| 7 | 3 | 0 | 5 |

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| **Course Category (Credit)** |
| **Basic Sciences** | **Engineering Sciences** | **Design** | **General Education** | **Social** |
|  |  | X |  |  |

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| **Course Language** | **Course Level** | **Course Type** |
| Turkish | Undergraduate | Elective |

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| **Prerequisite(s) if any** | - |
| **Objectives of the Course** | To have a theoretical knowledge of the overall energy situation, understand the importance of residential and industrial insulation, learn insulation materials, be able to analyze on energy investments. |
| **Short Course Content** | Turkey's Overall Energy Situation, Energy Saving And Survey Methods, Energy And Mass Equations, Combustion Systems, Residential Heat Insulation, Insulation Material Selection, Piping Insulation, Residential Energy Economy, Industry Energy Economics, Economic Analysis Of Energy Investments |

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| **Learning Outcomes of the Course** | **Contributed PO(s)**  | **Teaching Methods \*** | **Measuring Methods \*\*** |
| **1** | Able to analyze the overall energy situation | 2, 4, 6, 7, 11 | 2, 11, 15 | D, E, G |
| **2** | Insulation materials, thermal insulation application by selecting the most suitable one can choose their thickness | 2, 4, 6, 7, 11 | 2, 11, 15 | D, E, G |
| **3** | To have the necessary knowledge about methods used in theevaluation of investments | 2, 4, 6, 7, 11 | 2, 11, 15 | D, E, G |
| **4** |  |  |  |  |
| **5** |  |  |  |  |
| **6** |  |  |  |  |

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| **Main Textbook** | Dağsöz A.K., “Sanayide Enerji Tasarrufu” İzocam Publish, 1991. “Sanayide Enerji Yönetimi” EİEİ Publication, 1997.TS825 |
| **Supporting References** | Enerji Analizi ve Yönetimi, A.Ü. Publication, Publication number:2115 Enerji analizi A.Ü. Publication, Publication number:2486 |
| **Necessary Course Material** | - |

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| **Course Schedule** |
| **1** | Turkey's Overall Energy Situation |
| **2** | Energy-Saving Methods |
| **3** | Energy And Mass Equations |
| **4** | Combustion Systems |
| **5** | Heat Insulation |
| **6** | Insulation Applications |
| **7** | Determination of the Economic Insulation Thickness |
| **8** | Mid-Term Exam |
| **9** | Insulation Plumbing Applications |
| **10** | Economic Analysis Methods |
| **11** | Economic Analysis Methods |
| **12** | Waste Heat Recovery |
| **13** | Waste Heat Recovery |
| **14** | Project Presentations |
| **15** | Project Presentations |
| **16,17** | Final Exam |

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| **Calculation of Course Workload** |
| **Activities** | **Number** | **Time (Hour)** | **Total Workload (Hour)** |
| Course Time (number of course hours per week) | 14 | 3 | 42 |
| Classroom Studying Time (review, reinforcing, prestudy,….) | 14 | 1 | 14 |
| Homework | 1 | 28 | 28 |
| Quiz Exam |  |  |  |
| Studying for Quiz Exam |  |  |  |
| Oral exam  |  |  |  |
| Studying for Oral Exam  |  |  |  |
| Report (Preparation and presentation time included) | 1 | 28 | 28 |
| Project (Preparation and presentation time included) |  |  |  |
| Presentation (Preparation time included) | 1 | 28 | 28 |
| Mid-Term Exam |  |  |  |
| Studying for Mid-Term Exam |  |  |  |
| Final Exam |  |  |  |
| Studying for Final Exam |  |  |  |
|  | **Toplam iş yükü** | **140** |
|  | **Toplam iş yükü / 30** | **4,666** |
|  | **Dersin AKTS Kredisi** | **5** |

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| **Evaluation** |
| **Activity Type** | **%** |
| Mid-term | 40 |
| Presentation | 60 |
| **Final Exam (Report)** |  |
| **Total** | 100 |

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| **RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO)** (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low) |
| **NO** | **PROGRAM OUTCOME** | **Contribution** |
| **1** | Sufficient knowledge of engineering subjects related to mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems. | 4 |
| **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. | 5 |
| **3** | Ability to design a complex system, a component and/or an engineering process under real life constraints or conditions, defined by environmental, economic and political problems; for that purpose an ability to apply modern design methods. | 3 |
| **4** | Ability to develop, select and use modern methods and tools required for engineering applications; ability to effectively use information technologies. | 5 |
| **5** | To investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpret experimental results. | 3 |
| **6** | Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence. | 5 |
| **7** | Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language. | 5 |
| **8** | Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement. | 4 |
| **9** | Understanding of professional and ethical issues and taking responsibility | 2 |
| **10** | Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development. | 4 |
| **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. | 5 |

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| **LECTUTER(S)** |
| **Prepared by** | Prof. Dr. Haydar ARAS  | - | - | - |
| **Signature(s)** |  |  |  |  |

**Date:** 17.11.2024