**ENGINEERING MANAGEMENT MSc (non-thesis) PROGRAMME**

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| **First Year** |
| **I. Semester** |
| Code | Course Title | ECTS | T+P | Credit | C/E | Language |
| 506201506506301506 | [METHOD AND TIME STUDY](#EN3) | 7.5 | 3+0+0 | 3 | **C** | Turkish |
| 506201502506301502 | [ENGINEERING STATISTICS](#EN1) | 7.5 | 3+0+0 | 3 | **C** | Turkish |
|  | Elective Course-1 | 7.5 | 3+0+0 | 3 | E | Turkish |
|  | Elective Course-2 | 7.5 | 3+0+0 | 3 | E | Turkish |
|  | Total of I. Semester  | 30 |  | 12 |  |  |
| **II. Semester** |
| Code | Course Title | ECTS | T+P | Credit | C/E | Language |
| 506201503506301503 | [QUANTITATIVE METHODS IN DECISION MAKING](#EN2) | 7.5 | 3+0+0 | 3 | **C** | Turkish |
|  | Elective Course-3 | 7.5 | 3+0+0 | 3 | E | Turkish |
|  | Elective Course-4 | 7.5 | 3+0+0 | 3 | E | Turkish |
|  | Elective Course-5 | 7.5 | 3+0+0 | 3 | E | Turkish |
|  | Total of II. Semester  | 30 |  | 12 |  |  |
|  | TOTAL OF FIRST YEAR | 60 |  | 24 |  |  |

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| **Second Year** |
| **III. Semester** |
| Code | Course Title | ECTS | T+P | Credit | C/E | Language |
|  | Elective Course-6 | 7.5 | 3+0+0 | 3 | E | Turkish  |
|  | Elective Course-7 | 7.5 | 3+0+0 | 3 | E | Turkish |
|  | Elective Course-8 | 7.5 | 3+0+0 | 3 | E | Turkish |
|  | Elective Course-9 | 7.5 | 3+0+0 | 3 | E | Turkish |
|  | Total of III. Semester  | 30 |  |  |  |  |
| **IV. Semester** |
| Code | Course Title | ECTS | T+P | Credit | C/E | Language |
| 506202002506302002 | TERM PROJECT | 30 | 0+2+0 | - | **C** | Turkish |
|  | Total of IV. Semester | 30 |  |  |  |  |
|  | TOTAL OF SECOND YEAR | 60 |  |  |  |  |

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| **Elective Courses** |
| Code | Course Title | ECTS | T+P | Credit | C/E | Language |
| 506201501506301501 | [ENGINEERING MANAGEMENT AND ORGANIZATION](#EN16) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 506201501506301501 | [ENGINEERING MANAGEMENT AND ORGANIZATION](#EN15) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 506202511506302511 | [FACILITIES DESIGN](#EN14) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 506202507506302507 | [FINANCIAL MANAGEMENT](#EN17) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 506201505506301505 | [FORECASTING METHODS](#EN5) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 506202509506302509 | [HUMAN FACTORS ENGINEERING](#EN13) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 506202508506302508 | [HUMAN RESOURCE MANAGEMENT](#EN12)  | 7.5 | 3+0+0 | 3 | E | Turkish |
| 506202505506202505 | [MANAGEMENT INFORMATION SYSTEMS](#EN11) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 506201508506301508 | [PLANNING IN SUPPLY CHAIN](#EN6) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 506202501506302501 | [PRODUCTION PLANNING AND INVENTORY CONTROL](#EN8) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 506202504506302504 | [PROJECT MANAGEMENT AND TECHNIQUES](#EN10) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 506202503506302503 | [QUALITY IMPROVEMENT TOOLS](#EN9) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 506201509506301509 | [STATISTICAL PROCESS CONTROL](#EN7) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 506201504506301504 | [SYSTEM SIMULATION](#EN4) | 7.5 | 3+0+0 | 3 | E | Turkish |
| 506301510 | [STRATEGIC MANAGEMENT](#EN18) | 7.5 | 3+0+0 | 3 | E | Turkish |

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**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  506201502 | **TITLE** |  Engineering Statistics |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  | 0  | 0  | 3  | 7.5 | COMPULSORY( X ) | ELECTIVE(   ) | Turkish |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
| 2 | 1 |      |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 2 | 50 |
| Quiz |   |    |
| Homework | 1 | 15 |
| Project |   |    |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 35 |
| **PREREQUISITE(S)** |  \*\*\*\* |
| **SHORT COURSE CONTENT** |  Basics of Probability, important discrete and continuous probability distributions, Central Limit Theorem,basics of statistics, descriptive statistics, data collection methods, statistical analysis, the concept of sampling and sampling distributions, parameter and interval estimations, tests of hypotheses, one-way analysis of variance, linear regression and correlation analyses |
| **COURSE OBJECTIVES** |  Learning probability and statistical concepts, application of these concepts to real world problems. |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  The student will be able to identfy and apply probability and statsistical techniques to complex engineering problems related to industrial engineering. In this content; learning1. Basics of probability,2. Important discrete and continuous distributions,3. Basics of statistics,4. Data gathering, sampling and sampling methods,5. Hypotesis testing process,6. Analysis of variance process,7. Determination of the relationship between variableswill be provided |
| **LEARNING OUTCOMES OF THE COURSE** |  Learning basics of probability and statistics, determination and application of the techniques to the problems. |
| **TEXTBOOK** |  ÜNVER, Ö., GAMGAM, H., ALTUNKAYNAK, B. (2011) : Temel İstatistik Yöntemler, seçkin Yayıncılık san. ve Tic. A. Ş., Ankara |
| **OTHER REFERENCES** |  1. ÇİL, B. (2008) : İstatistik, Detay Yayıncılık, Ankara.2. Ross, Sheldon M. (Çev. Ed. S. Çelebioğlu, R. Kasap) (2012). Olasılık ve İstatistiğe Giriş, Nobel Akademik Yay. Eğt. Danışmalık Tic. Ltd. Şti. Ankara3. Montgomery, D.C., Runger, G.C., 2007, Applied Statistics and Probability for Engineers (4. bası), John Wiley & Sons, Inc., New York.,4. Devore, J. L., 2008 Probability and Statistics for Engineering and the Sciences, (7th ed.), Thomson Brooks/Cole Publishing Co., Belmont, CA, |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Probability and basic concepts, theorems |
| 2 |  Random variables and functions |
| 3 |  Expected value and moments |
| 4 |  Importanat discrete distributions |
| 5 |  Important continuous distributions |
| 6 | Midterm Examination 1 |
| 7 |  Statistics and basic concepts |
| 8 |  Descriptive statistics |
| 9 |  Sampling and sampling distributions |
| 10 |  Estimation |
| 11 | Midterm Examination 2 |
| 12 |  Tests of hypotheses |
| 13 |  Analysis of variance |
| 14 |  regression and correlation analyses |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[x]**  | **[ ]**  |

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| **Prepared by :**  |  A. Sermet ANAGÜN, Ph. D., ProfessorNimetullah BURNAK, Ph. D., Professor | **Date:** |  24/08/15 |

**Signature**:

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**ESKISEHIR OSMANGAZI UNIVERSITY**

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**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |        | **TITLE** |  Quantitative Methods in Decision Making |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  | 0  | 0  | 3  | 7,5 | COMPULSORY(   ) | ELECTIVE(   ) | Turkish |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
|   |   |      |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 2 | 60 |
| Quiz |   |    |
| Homework |   |    |
| Project |   |    |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 40 |
| **PREREQUISITE(S)** |  None |
| **SHORT COURSE CONTENT** |  The goal of the course is to model and solve the real life problems in a more realistic way by considering all aspects of the problem. |
| **COURSE OBJECTIVES** |  Decision theory, modeling, main concepts (parameter, decision variable, constraint, objective function), linear programming, solution methods, graphical solution, sensitivity analysis, transportation and assignment problems, multi criteria optimization, goal programming, decision making under uncertainty and risk. |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |        |
| **LEARNING OUTCOMES OF THE COURSE** |  By the end of this module students will be able to:solve decision problems under certainty and uncertaintyidentify and formulate engineering problemsapproach decision making problems in a more realistic waydo sensitivity analysis after obtaining the problem solutionslearn how to handle the qualitative factorsPlease write minimum four learning outcomes for the course. |
| **TEXTBOOK** |  1. Kara, İ. (2000). Doğrusal Programlama, Bilim Teknik, İstanbul2. Kara, İ. (). Doğrusal Olmayan Programlama, Bilim Teknik, İstanbul3. Winston, W. (1994). Operations Research, International Thomson, California4. Taha, H. (1971) Operations Research, McMillan, London |
| **OTHER REFERENCES** |  Related softwares: LINGO |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Decision problems- short introduction |
| 2 |  Modelling |
| 3 |  Mathematical modelling and examples |
| 4 |  Solution methods -analytic method |
| 5 |  Solution methods -graphical solution |
| 6 | Midterm Examination 1 |
| 7 |  Graraphical solution and sensitivity analysis |
| 8 |  Using softwares to solve models |
| 9 |  Transportation problems |
| 10 |  Transportation and assignment problems |
| 11 | Midterm Examination 2 |
| 12 |  Multicriteria decision making and goal programming |
| 13 |  Goal programming (cont.) |
| 14 |  Decision making under uncertainty and risk |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[ ]**  | **[ ]**  |

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| **Prepared by :**  |  Prof. Dr. Müjgan Sağır | **Date:** |  4.09.2015 |

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**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  506201506 | **TITLE** |  Method and Time Study |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  | 0  | 0  | 3  | 7,5 | COMPULSORY( x ) | ELECTIVE(   ) | Turkish |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
| x | x |  x  |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 2 | 25 |
| Quiz |   |    |
| Homework |   |    |
| Project | 1 | 20 |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 30 |
| **PREREQUISITE(S)** |        |
| **SHORT COURSE CONTENT** |  Definition and historical development of work study, applications of method study and diagrams and schemata, principles of micro-motion study, techniques of work measurement, time study, applications of time study, work sampling, management of productivity, synthetic motion-time systems. |
| **COURSE OBJECTIVES** |  Gain the ability of determine best alternative by analyzing the current method and developing alternative methods with the aim of efficiently usage of sources such as labor, machines, materials, energy. |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  Teach how to use sources efficiently such as labor, machines, materials, energy efficiently at the manufacturing and service environments. |
| **LEARNING OUTCOMES OF THE COURSE** |  1.The ability of determining and describing the problems at the current method and developing alternative solutions and solving. The ability of determining and describing the problems at the current method and developing alternative solutions and solving.2.Designing experiments for time study measurement, taking records, analyzing the results and interpreting Designing experiments for time study measurement, taking records, analyzing the results and interpreting3.The ability of working within a team to prepare a project at a company. The ability of working within a team to prepare a project at a company.4.The ability of communicating people from different disciplines during preparing the project.  |
| **TEXTBOOK** |  Kahya, E., 2009, İş Etüdü, ESOGU Endüstri Müh. Bölümü, Eskişehir. |
| **OTHER REFERENCES** |  1. Kanawaty, G.. (Çeviren : Z. Akal), 1997, İş Etüdü, Dördüncü (Düzeltilmiş) Basım, MPM Yayın No:29, Ankara.Kurt, M. ve Dağdeviren, M., 2003, İş Etüdü, Gazi Kitabevi, Ankara. |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Scope of the course, execution, assessment, description, importance of work study, human factor, factors that composing the total time of the work. |
| 2 |  The description and usage area of motion study, the methodology of motion study |
| 3 |  Motion study- video (mechanic processes, metal removing processes)Motion study- video (enhancements) |
| 4 |  Techniques that can be applied- schemataMicro-motion study, video (assembling) |
| 5 |  Work measurementTime study- recurrent, rare, constant etc. elements |
| 6 | Midterm Examination 1 |
| 7 |  Time study- Evaluation of normal time, standard time  |
| 8 |  Time study- video (example of time study) |
| 9 |  Evaluating standard time at machines that are fed automatically , video (automatic machines), and usage areas of time study. |
| 10 |  Work Sampling |
| 11 | Midterm Examination 2 |
| 12 |  The measurement and controlling of performance |
| 13 |  Synthetic motion-time systems (MTM-1) |
| 14 |  Presentations of projects |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[ ]**  | **[x]**  |

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| **Prepared by :**  |  Prof.Dr. Emin KAHYA | **Date:** |  28/10/2015 |

**Signature**:

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**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  506201504 | **TITLE** |  SYSTEM SIMULATION |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  | 0  | 0  | 3  | 5 | COMPULSORY(   ) | ELECTIVE( X ) | TURKISH |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
| 0 | 1 |  2  |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 1 | 30 |
| Quiz |   |    |
| Homework |   |    |
| Project | 1 | 30 |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 40 |
| **PREREQUISITE(S)** |        |
| **SHORT COURSE CONTENT** |  The aplication of simulation to industrial systems is taught. Basic concepts, tools and algorithms of discrete-event simulation modeling/analysis. Use of a specific computer simulation language (ARENA). Analysis of simulation output. |
| **COURSE OBJECTIVES** |  - To teach students the basic concepts and algorithms of discrete-event simulation modeling/analysis- To introduce them to a specific computer simulation language (Arena).- To enable them to apply their probability and statistics knowledge to simulation modeling, input and output data analysis. |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  The application of computer simulation to industrial settings is taught.  |
| **LEARNING OUTCOMES OF THE COURSE** |  After successfully completing the course, students should be able to do the following: 1. Understand the definition of simulation and how to develop and analyze a simulation model. 2. Understand the fundamental logic, structure, components and management of simulation modeling. 3. Demonstrate knowledge of how to use Arena. 4. Build a simulation model with basic operations and inputs. 5. Perform statistical analysis of output from terminating simulation. |
| **TEXTBOOK** |  Kelton, W. David, Sadowski, Randall P., and Swets, Nancy B. (2010). Simulation with Arena, Fifth Edition. McGraw-Hill Higher Education. |
| **OTHER REFERENCES** |  Banks, Jerry and J.S. Carson, II., B.L. Nelson and D.M. Nicol, (2010). Discrete Event System Simulation, fifth edition, New Jersey, Prentice-Hall. |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Course Introduction |
| 2 |  Overview of Simulation  |
| 3 |  Simulation and Modeling  |
| 4 |  Fundamental Simulation Concepts |
| 5 |  A Guided Tour through Arena |
| 6 | Midterm Examination 1 |
| 7 |  Modeling Basic Operations and Inputs  |
| 8 |  Find and Fixing Errors and Input Analysis |
| 9 |  Problem Solving Using ARENA |
| 10 |  More Simulation Model  |
| 11 | Midterm Examination 2 |
| 12 |  More Simulation Model  |
| 13 |  Statistical Analysis of Output from Terminating Simulations |
| 14 |  Project Presentation |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[ ]**  | **[ ]**  |

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| **Prepared by :**  |  Servet HASGÜL | **Date:** |  10.10.2015 |

**Signature**:



**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  506201505 | **TITLE** |  Forecasting Methods |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  | 0  | 0  | 3  | 7,5 | COMPULSORY(   ) | ELECTIVE( x ) | Turkish |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
| 1 | 2 |      |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 1 | 35 |
| Quiz |   |    |
| Homework | 1 | 20 |
| Project |   |    |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 45 |
| **PREREQUISITE(S)** |  --- |
| **SHORT COURSE CONTENT** |  This course is intended to provide knowledge about forecasting process, features of forecasting methods, selecting the appropriate method, discussion of qualitative and quantitive methods and analysis of forecasting accuracy using various measures. |
| **COURSE OBJECTIVES** |  The main objective of the course is to teach design of forecasting process for production and service systems, selecting the appropriate forecasting method, investigating the factors of method selection and various forecasting methods. |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  Ability of making accurate predictions for capacity planning in production and service systems. |
| **LEARNING OUTCOMES OF THE COURSE** |  1. Learning forecasting process.2. Ability of selecting appropriate method for the structure of existing production/service system.3. Ability of forecasting using the appropriate method.4. Ability of analysis using various accuracy measures. |
| **TEXTBOOK** |  1.Kadılar, Cem, SPSS uygulamalı zaman serileri analizine giriş, Ezgi Kitapevi, Ankara, 2005.2.R.G. Murdick, B. Render, R.S. Russell, “Service Operations Management”, Allyn and Bacon:USA, 1990.3.J.H. Wilson, B. Keating, “Business Forecasting”, 2nd edition, IRWIN: USA, 1994. |
| **OTHER REFERENCES** |  Related Software (Minitab,SPSS etc.) |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Forecasting and forecasting process |
| 2 |  Selection of forecasting methodFactors of method selection   |
| 3 |  Accuracy Measures |
| 4 |  Qualitative Methods |
| 5 |  Time Series Methods |
| 6 | Midterm Examination 1 |
| 7 |  Time Series Methods |
| 8 |  Time Series Methods |
| 9 |  Causal and Relational Methods |
| 10 |  Causal and Relational Methods |
| 11 | Midterm Examination 2 |
| 12 |  Presentation of projects |
| 13 |  Presentation of projects |
| 14 |  Presentation of projects |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[ ]**  | **[ ]**  |

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| **Prepared by :**  |  Doç. Dr. Ezgi A. Demirtaş | **Date:** |  05/10/2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  506301508 | **TITLE** |  PLANNING IN SUPPLY CHAIN  |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** |    |    |    | 3  | 7.5 | COMPULSORY(   ) | ELECTIVE( X ) | Turkish |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
|   | 1 |  2  |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 1 | 30 |
| Quiz |   |    |
| Homework |   |    |
| Project | 1 | 30 |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 40 |
| **PREREQUISITE(S)** |        |
| **SHORT COURSE CONTENT** |  Main concepts about supply chain management, analysis of supply chain, planning tasks along supply chain planning process, example applications.  |
| **COURSE OBJECTIVES** |  The main aim of the course is to give an opinion about planning and techniques in supply chain management.  |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |        |
| **LEARNING OUTCOMES OF THE COURSE** |  By the end of this module students will be able to:1.Know main concepts about supply chain management.2.Know the importance of integration, coordination, and collaboration 3.Know the importance of communication in the supply chain.4.Analyze a supply chain.5.Know the key performance measurements.6.Know the supply chain planning matrix.7.Design a model of supplier selection. 8.Know about long-term planning in supply chain. 9.Know about mid-term planning in supply chain.10.Know about short-term planning in supply chain.11.Plan tasks along supply chain  |
| **TEXTBOOK** |  Simchi-Levi, D., Kaminsky, P. and Simchi-Levi, E., (2003).Designing and Managing the Supply Chain: Concepts, Strategies, and Case Studies, McGraw-Hill /Irwin.U.S. ISBN: 0-07-119896-2.  |
| **OTHER REFERENCES** |  1. Ballou, R.H., (2004), Business Logistics/Supply Chain Management. Prentice Hall. New Jersey. ISBN: 0-13-066184-8.2. Hartmut Stadtler and Christoph Kilger (eds), (2000). Supply Chain Management and Advanced Planning: Concepts, models, software and case studies, Springer, New York. ISBN: 3-540-67682.3. Gianpaolo G.,Laporte G. and Musmanno R., (2003), John Wiley &Sons. UK. ISBN: 0-470-84917-7.4. Harrison, T.P., Lee, H.L., Neale, J.J.(eds), (2005).The Practice of Supply Chain Management Where Theory and Application Converge. ISBN 0-387-24099-3. |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Main concepts about logistics, supply chain management. Conflicting goals  |
| 2 |  The importance of integration, coordination ond cooperation. Key performance factors  |
| 3 |  Planning tasks along supply chain  |
| 4 |  The importance of supply chain management. Examples from big firms  |
| 5 |  Logistics network configuration, basic models. Location selection problem.      |
| 6 | Midterm Examination 1 |
| 7 |  Logistics network configuration, basic models. Warehouse location selection |
| 8 |  Inventory management, methods for coping with the bullwhip effect |
| 9 |  Distribution strategies. Cross-docking  |
| 10 |  Strategic alliances. Outsourcing, Third Party Logistics, 4PL. |
| 11 | Midterm Examination 2 |
| 12 |  Strategic alliances. Retailer-Supplier partnership (RSP)  |
| 13 |  Examples: Project presentations  |
| 14 |  Examples: Project presentations  |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[x]**  | **[ ]**  |

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| **Prepared by :**  |  Doç.Dr. İnci SARIÇİÇEK | **Date:** |  12.06.2015 |

**Signature**:



**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**

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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  506201509 | **TITLE** |  Statistical Process Control |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  | 0  | 0  | 3  | 7,5 | COMPULSORY(   ) | ELECTIVE( x ) | Turkish |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
| 1 | 2 |      |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 2 | 55 |
| Quiz |   |    |
| Homework | 1 | 10 |
| Project |   |    |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 35 |
| **PREREQUISITE(S)** |  --- |
| **SHORT COURSE CONTENT** |  Quality and historical background, economics of quality, basic seven tools, elements of statistical process control control charts for variables, control charts for attributes, OC Curve, process capability analysis, acceptance sampling plans |
| **COURSE OBJECTIVES** |  By the end of this module students will be able to:1. Recognize Quality Management 2. Apply knowledge of mathematics, science, and engineering3. Understand quality problems, to formulize and solve them,4. Use statistical process control techniques in different areas,5. Economic assessment of quality studies,6. Apply acceptance sampling plans,7. Use the necessary software in quality related problems, 8. Understand professional and ethical responsibility and use contemporary issues9. Gain Effective written and oral communication |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  The students will be able to use and apply SPC techniques and acceptance sampling plans in their professions. |
| **LEARNING OUTCOMES OF THE COURSE** |  Applications of SPC techniques and acceptance sampling plans |
| **TEXTBOOK** |  MONTGOMERY, D. C.:(2005), Introduction to Statistical Quality Control, (5. bası), John Wiley & Sons, Inc., NewYork. |
| **OTHER REFERENCES** |  •BURNAK, N, 1997, Toplam Kalite Yönetimi-İstatistiksel Süreç Kontrolu, Osmangazi Üniv.,TEKAM yayın no:TS-97-008-NB, Eskişehir.•GRANT, E. L., LEAVENWORTH, R. S., (1996), Statistical Quality Control, (7. bası), McGraw-Hill, Inc. NewYork, •IŞIĞIÇOK, E.( 2005) : İstatistiksel Kalite Kontrol, Ezgi Kitabevi, Bursa. |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Quality and historical background      |
| 2 |  Total Quality management |
| 3 |  Economics of Quality |
| 4 |  Basic seven tools |
| 5 |  Basics of statistical process control |
| 6 | Midterm Examination 1 |
| 7 |  Control Charts for Attributes |
| 8 |  Control Charts for Attributes |
| 9 |  Control Charts for Variables |
| 10 |  Control Charts for Variables |
| 11 | Midterm Examination 2 |
| 12 |  Control Charts for Variables |
| 13 |  Process Capability Analysis |
| 14 |  Gage R&R Studies |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[ ]**  | **[ ]**  |

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| **Prepared by :**  |  Prof. Dr. Nimetullah BURNAK/Doç. Dr. Ezgi A. Demirtaş | **Date:** |  12/06/2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  506202501 | **TITLE** |  PRODUCTION PLANNING AND INVENTORY CONTROL |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  | 0  | 0  | 3  | 5 | COMPULSORY( X ) | ELECTIVE( ) | TURKISH |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
| 0 | 1 |  2  |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 1 | 30 |
| Quiz |   |    |
| Homework |   |    |
| Project | 1 | 30 |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 40 |
| **PREREQUISITE(S)** |        |
| **SHORT COURSE CONTENT** |  Production Systems, Production Management and Production Planning Concepts, Demand Forecasting, Stock Control Systems, Aggregate Production Planning, Master Production Scheduling, Materials Requirements Planning, Capacity and Inventory Planning, Production activity control.  |
| **COURSE OBJECTIVES** |  Our objectives are to develop an understanding of the following skills: 1) To educate students who see the necessity of adopting developing planning techniques and will adopt these techniques. 2) To give an ability of planning to enable economic production. 3) To educate managers who are aware of the importance of stock control and can do conscious applications. 4) experience in making operations planning and control decisions. |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  This course is designed as a graduate course in Engineering Management. Development of problem-solving ability and analytical thinking ability with respect to production planning issues. |
| **LEARNING OUTCOMES OF THE COURSE** |  Students should be able to articulate and apply the following tools and practices of production planning and inventory control: 1) Classify production systems and recognize the production system applied in the establishment they will work for, 2) Forecast future demands by taking previous demands into consideration, 3) Do basic production planning tecniques, 4) Determine economic production and economic order quantity  |
| **TEXTBOOK** |  Jacobs, F.R., Berry, W., Whybark, D., Vollmann, T., (2011). Manufacturing Planning and Control for Supply Chain Management. McGraw Hill, 6th Ed..  |
| **OTHER REFERENCES** |  Silver, E.A., Pyke, D.F., Peterson, R., (1998). Inventory management and production planning and scheduling. New York: Wiley, 3rd Edition. |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Production concepts, Production systems and its classification  |
| 2 |  Traditional and modern production systems, Enterprise Resource Planning (ERP) |
| 3 |  Manufacturing Planning and Control (MPC) system |
| 4 |  Demand management, Forecasting techniques |
| 5 |  Sales and Operations (Aggregate) Planning (SOP) |
| 6 | Midterm Examination 1 |
| 7 |  Aggregate production planning strategies |
| 8 |  Master Production Scheduling (MPS)  |
| 9 |  Material Requirements Planning (MRP) |
| 10 |  Capacity planning and management  |
| 11 | Midterm Examination 2 |
| 12 |  Order point inventory control methods  |
| 13 |  Production activity control  |
| 14 |  Project Presentation |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[ ]**  | **[ ]**  |

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| **Prepared by :**  |  Servet HASGÜL | **Date:** |  10.10.2015 |

**Signature**:

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**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  506202503 | **TITLE** |  Quality Improvement Tools |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  | 0  | 0  | 3  | 7,5 | COMPULSORY(   ) | ELECTIVE( x ) | Tuskish |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
| x | x |  x  |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 1 | 30 |
| Quiz |   |    |
| Homework |   |    |
| Project | 1 | 30 |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 40 |
| **PREREQUISITE(S)** |  - |
| **SHORT COURSE CONTENT** |  Quality concept, problem solving tools, control charts, one-way analysis of variance, two-way analysis of variance, design of experiments, 6-sigma approach |
| **COURSE OBJECTIVES** |  Intoducing the quality improvement tools |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  Selecting quality imrovement tools in terms of quality problems, applying the tools, and evaluating the results |
| **LEARNING OUTCOMES OF THE COURSE** |  1. Learning the quality concept Kalite kavramını öğrenme.2. Able to apply quality improvement tools3. Able to use and apply control charts4. Able to perform one-way and two-way analysis of variance5. Able to understand 6-sigma approach Problem belirleme araçlarını kullanabil Kontrol grafiklerini uygulayabilme. Tek ve çok faktörlü varyans analizini gerçekleştirebilme. Deney tasarımını öğrenme. Taguchi yöntemini ka 6-sigma sürecini kavrama.    |
| **TEXTBOOK** |  Montgomery, D.C. (2009). Introduction to Statistical Quality Control, John Wiley & Sons. |
| **OTHER REFERENCES** |  Barrantine, L.B. (1999). An Introduction to Design of Experiments, ASQ Quality Press.Henderson, G.R. (2006). Six Sigma: Quality Improvement with MINITAB, Wiley.Erbaş , S.O., Olmuş, H. (2005). Deney Düzenleri ve İstatistiksel Analizleri, Gazi Kitapevi, Ankara |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Quality Concept and Historical Background |
| 2 |  Problem solving tools (Histogram, Pareto Diagram, Cause-Effect Diagram) |
| 3 |  Problem solving tools (Forms, Scatter Diagram, Stratification) |
| 4 |  Control charts for variables and attributes |
| 5 |  Special control charts |
| 6 | Midterm Examination 1 |
| 7 |  Introduction to analysis of variance |
| 8 |  Multiple comparisons |
| 9 |  Two-way analysis of variance      |
| 10 |  Experiment concept and type of experiments  |
| 11 | Midterm Examination 2 |
| 12 |  Introduction to design of experiments |
| 13 |  6-Sigma approach |
| 14 |  6-Sigma Applications |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[ ]**  | **[ ]**  |

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| **Prepared by :**  |  Prof. Dr. A. Sermet ANAGÜN | **Date:** |  01/09/2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  50620254 | **TITLE** |  Project Management and Techniques |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  | 0  | 0  | 3  | 7,5 | COMPULSORY(   ) | ELECTIVE( x ) | Turkish |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
|   | x |      |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 1 | 30 |
| Quiz |   |    |
| Homework |   |    |
| Project | 1 | 30 |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 40 |
| **PREREQUISITE(S)** |        |
| **SHORT COURSE CONTENT** |  Basic concepts of project management, Gantt Chart, network models of a project, CPM, PERT, reducing project time, resource scheduling, project planning and tracking with MS Project. |
| **COURSE OBJECTIVES** |  To explain project management fundamentals, to teach how the project handbook prepares, to teach MS Project. |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  Planning and tracking of a real life project by using MS Project. |
| **LEARNING OUTCOMES OF THE COURSE** |  Notification about the basic concepts of project management, application of modellling and solving of real life problems, comments of reports obtained by MS Project. |
| **TEXTBOOK** |  1-Project Management, C.F. Gray, E.W. Larson, 2000, Mc Graw Hill, 496 p. 2-Adım Adım Microsoft Project 2002, C. Chatfield, T. Johnson, 2002, Ankara, Arkadaş Yayınevi, 443 s. |
| **OTHER REFERENCES** |  1-Critical Path Analysis 5.ed., K. Lockyer, J. Gordon, 1991, Pitman Publishing, 244 p. |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Basic Concepts of Project Management |
| 2 |  Organisation Types, Preparation of Project Hand Book |
| 3 |  Gantt Chart |
| 4 |  Network models of the project, FAT |
| 5 |  FDT |
| 6 | Midterm Examination 1 |
| 7 |  CPM |
| 8 |  Scheduling with seperable activity |
| 9 |  PERT |
| 10 |  Introduction to MS Project 2013 |
| 11 | Midterm Examination 2 |
| 12 |  Time-Cost Analysis |
| 13 |  Scheduling of Resources |
| 14 |  MS Project 201 |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[ ]**  | **[ ]**  |

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| **Prepared by :**  |  Asist.Prof.Dr.Tuğba Saraç | **Date:** |  12.10.2015 |

**Signature**:

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**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  506202505 | **TITLE** |  MANAGEMENT INFORMATION SYSTEMS |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  | 0  | 0  | 3  | 5 | COMPULSORY(   ) | ELECTIVE( X ) | TURKISH |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
| 0 | 1 |  2  |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 1 | 30 |
| Quiz |   |    |
| Homework |   |    |
| Project | 1 | 30 |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 40 |
| **PREREQUISITE(S)** |        |
| **SHORT COURSE CONTENT** |  Overview of management information systems (MIS), Data, information, system, planning, control, organization and management concepts, Types of information systems, Tools for developing information system, Data base management systems, MIS planning, design, implementation and operating. Decision making and MIS supports for management, Determining information requirement. |
| **COURSE OBJECTIVES** |  1. To teach main management information concepts and applications 2. To give the ability to evaluate the MIS needs of a company 3. Ability to design a required MIS system 4. To introduce them to a specific database management system (Access). |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  To provide an introduction to management information systems that students will find vital to their professional success |
| **LEARNING OUTCOMES OF THE COURSE** |  Students should be able to do the following: 1) Know the main concepts about information systems, 2) Have knowledge about basic MIS applications, 3) Have insight about reports and decision supports systems, 4) Be able to define MIS needs using system analysis, 5. Be able to design databases based on defined requirements (Access) |
| **TEXTBOOK** |  Gökçen H., 2011, H. Yönetim Bilgi Sistemleri: Analiz ve Tasarım Perspektifi, Afşar Matbacılık, Ankara, 450 p. |
| **OTHER REFERENCES** |  Laudon, K. C., Laudon, J. P., & Brabston, M. E. (2013). Management information systems: Managing the digital firm (6th Cdn. ed.). Toronto, ON: Pearson Education Canada Inc. ISBN: 9780133259438 |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Course Introduction and Overview of Management Information Systems (MIS) |
| 2 |  Data, information, knowladge, system, organization and management concepts      |
| 3 |  The new role of information systems in organizations |
| 4 |  Types of information systems (Transaction processing systems, Office automation systems) |
| 5 |  Management information systems, Decision support systems, Expert systems |
| 6 | Midterm Examination 1 |
| 7 |  Tools for developing information system, Data flow diagrams, Decision tables and decision trees |
| 8 |  Database management systems |
| 9 |  Access and Structured query language |
| 10 |  MIS planning, design, implementation and operating |
| 11 | Midterm Examination 2 |
| 12 |  Decision making and MIS supports for management |
| 13 |  Sample of MIS applications |
| 14 |  Project Presentation |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[ ]**  | **[ ]**  |

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| **Prepared by :**  |  Servet HASGÜL | **Date:** |  10.10.2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  506202508 | **TITLE** |  Human Resource Management  |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  | 0  | 0  | 3  | 7,5 | COMPULSORY(   ) | ELECTIVE( \* ) | Turkish |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
| 2 | 1 |      |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 1 | 40 |
| Quiz |   |    |
| Homework | 1 | 10 |
| Project |   |    |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 50 |
| **PREREQUISITE(S)** |        |
| **SHORT COURSE CONTENT** |  Human resource management, definition, importance, factors forcing change in HRM, Business Analysis, Employee recruitment and selection, training management and career development, business valuation process and methods, blue-collar job evaluation system design, performance evaluation process and methods, charge management, staff valuation system design      |
| **COURSE OBJECTIVES** |  Explain the importance of Human Resource Management, labor motivation, give the ability to set up job evaluation and performance appraisal systems  |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  Gain the skills of how to set up valuation systems to in order to provide motivation and productivity of the labor skills |
| **LEARNING OUTCOMES OF THE COURSE** |  1. Ability to set up a business and / or performance appraisal system 2. Gain ethics of the protection of human rights with business and performance appraisal system |
| **TEXTBOOK** |  Kahya, E., 2013, İş Değerlemesi ve Ücret Sistemi, Ders Notları, ESOGÜ Endüstri Müh. Bölümü, Eskişehir. Kahya, E., 2013, Performans Değerlemesi, Ders Notları, ESOGÜ Endüstri Müh. Bölümü, Eskişehir.  |
| **OTHER REFERENCES** |  Acar, N., İnsan Kaynakları Yönetimi, MPM Yayın No: 640, 2000, AnkaraSabuncuoğlu, Z., İnsan Kaynakları Yönetimi, Ezgi Kitabevi, 2000, Bursa.  |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Course scope, execution, evaluationTransition to the Human Resources Management (HRM)  |
| 2 |  Factors forcing change in HRM, HRM functions and the basic principles |
| 3 |  Human Resources Planning |
| 4 |  job analysis |
| 5 |  Employee recruitment and selection |
| 6 | Midterm Examination 1 |
| 7 |  Education management and career development |
| 8 |  Business Valuation - Process and Methods of Education management and career development |
| 9 |  Blue-collar job evaluation system |
| 10 |  White-collar job evaluation system |
| 11 | Midterm Examination 2 |
| 12 |  Performance appraisal - Process and Methods |
| 13 |  Blue-collar performance appraisal system |
| 14 |  The staff appraisal system design |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[x]**  | **[ ]**  |

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| **Prepared by :**  |  Prof.Dr. Emin KAHYA | **Date:** |  10.09.2015 |

**Signature**:

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**ESKISEHIR OSMANGAZI UNIVERSITY**

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**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  506202509 | **TITLE** |  HUMAN FACTORS ENGINEERING |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  | 0  | 0  | 3  | 7,5 | COMPULSORY( x ) | ELECTIVE(   ) | TURKISH |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
|   |   |      |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 1 | 30 |
| Quiz |   |    |
| Homework |   |    |
| Project | 1 | 30 |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 40 |
| **PREREQUISITE(S)** |  - |
| **SHORT COURSE CONTENT** |  Description and objectives, energy requirements, fatigue and break, times environmental factors (climate, noise, vibration, lighting), display and control elements, ergonomics layout design, check list |
| **COURSE OBJECTIVES** |  The main objective of the course, is to introduce the methods to be aligned with people related to work place conditions , tools and equipment |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  Workplace, tools, equipment factors and ensuring the alignment of human factors in the workplace, protection of human health and increase productivity |
| **LEARNING OUTCOMES OF THE COURSE** |  1. To identify problems in the workplace, develop alternative solutions in order to improve the physical conditions of the workplace.. 2. To design experiments for workplace conditions (noise, heat, dust, etc.), taking measurements, analyzing the results and interpretation3. To gain ability to effectively work in team |
| **TEXTBOOK** |  Babalık, F.C., 2011, Mühendisler İçin Ergonomi İşbilim, Üçüncü Baskı, Dore Yayıncılık Bursa, 585s. |
| **OTHER REFERENCES** |  Sabancı, A. ve Sümer, S.K., 2011, Ergonomi, İkinci Basım, Nobel Yayıncılık Ltd.Şti., Ankara, 472s. |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Course scope, execution, evaluationdefinition of ergonomics, the importance of ergonomics, the classification of jobs |
| 2 |  Jobs based on energy  |
| 3 |  Energy requirement |
| 4 |  Fatigue and break times |
| 5 |  The effects of environmental factors -Climate |
| 6 | Midterm Examination 1 |
| 7 |  Noise and Vibration |
| 8 |  Other factors (Lighting, Harmful materials etc.) |
| 9 |  Display and control elements |
| 10 |  Ergonomic workplace arrangements |
| 11 | Midterm Examination 2 |
| 12 |  Office ergonomics  |
| 13 |  Special topics in ergonomics (monotony, shift working, etc.) |
| 14 |  Check lists |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[ ]**  | **[ ]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[ ]**  | **[ ]**  |

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| **Prepared by :**  |  Associate Prof. Dr. Berna ULUTAŞ | **Date:** |  31/08/2015 |

**Signature**:

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**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  506202511 | **TITLE** |  Facilities Design |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  | 0  | 0  | 3  | 7.5 | COMPULSORY(   ) | ELECTIVE( x ) | Turkish |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
| 1 | 2 |      |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 1 | 30 |
| Quiz | 8 | 24 |
| Homework | 2 | 6 |
| Project |   |    |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 40 |
| **PREREQUISITE(S)** |        |
| **SHORT COURSE CONTENT** |  The concepts of facilities, planning and design process; locational analysis; basic layout modes and layout of factories; systematical layout planning; gathering; analyzing; processing and converting of necessary data into layout plans; materials handling systems; computer aided layout techniques; mathematical models in layout planning; recent trends in layout planning. |
| **COURSE OBJECTIVES** |  information flow, material handling concepts and their interrelationship as infrastructure of production systems, as well as, approaches, criteria and techniques employed in locational analysis.•To make aware of necessary knowledge and expertise on analysis, improve, restore and even design of such systems. |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  •Comprehension of the infrastructure of production systems.•Improvement of the skills to communicate with any person in production systems, teamwork, data gathering-processing, consequently analysis, producing –evaluating and reporting of solution alternatives. |
| **LEARNING OUTCOMES OF THE COURSE** |  Contribution to integrate the knowledge and skills obtained from previous courses•Application of OR techniques to facilities planning.•Getting acquainted with basic proficiency to prepare projects.• Getting aware of recent management technologies and current trends like artificial intelligence. |
| **TEXTBOOK** |  İşlier, A. Attila, Tesis Planlaması, Eskişehir Osmangazi Üniversitesi, Mühendislik Mimarlık Fakültesi, Endüstri Mühendisliği Bölümü, 1997 |
| **OTHER REFERENCES** |  •Erkut, H. ve Baskak, M., Tesis Planlaması, İrfan Yayımcılık, 1997•Tompkins/White/Bozer/Frazelle/Tanchoco/Trevino, Facilities Planning, John Wiley&Sons, Inc., 1996. |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Introduction to course and execution plan. |
| 2 |  Basic concepts (Facilities, location-loft, distance metrics, location criteria, materials handling, capacity and strategic planning) |
| 3 |  Basic data for analysis and design (how to gather, arrange and use them) |
| 4 |  Solution Process (Engineering Problem, Problem Solution, Design Planning and Facilities, Installation) |
| 5 |  Location (Facilities Location and Multi-Criteria, Single and Multi Facilities Problems)      |
| 6 | Midterm Examination 1 |
| 7 |  Other Criteria in Single Facility Problem, Sensitivity, and Generalization of the Problem (Storage, Location-Allocation Problems) |
| 8 |  Layout Problem And Its Solution (Prototype Layouts) |
| 9 |  Systematic Facilities Layout |
| 10 |  Manual Layout Techniques |
| 11 | Midterm Examination 2 |
| 12 |  Specific Issues in Layout Planning (Storage, Auxiliary Facilities, Layout for Service Sector, Graph Theoretic Solutions, Dynamic Layout Models, Simulation, Artificial Intelligence and Fuzzy Methods)  |
| 13 |  Specific Issues in Layout Planning (Continued) |
| 14 |  Recent Trends in Layout |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[x]**  | **[ ]**  |

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| **Prepared by :**  |  Prof. Dr. A. Attila İŞLİER | **Date:** |  12.06.2015 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

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**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  506201501 | **TITLE** |  ENGINEERING MANAGEMENT AND ORGANIZATION |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  |    |    | 3  | 7,5 | COMPULSORY( X ) | ELECTIVE(   ) | Turkish |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
|   | X |      |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 2 | 30 |
| Quiz |   |    |
| Homework |   |    |
| Project |   |    |
| Report |   |    |
| Seminar |   |    |
| Other (Participation to the course) |   | 30 |
| **Final Examination** | 40 |
| **PREREQUISITE(S)** |        |
| **SHORT COURSE CONTENT** |  The fundamental concepts of management and organization, introduction to organization, the historical development of management and organization, the netwok forms, the effective organizations, and introduction to organizational behavior.  |
| **COURSE OBJECTIVES** |  To recognize the field of management and organization with a multi-disciplinary view. |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  It will contribute to enhance the effectiveness and efficiency of the engineering practices in organizational environments.  |
| **LEARNING OUTCOMES OF THE COURSE** |  At the end of this course, the student will be able to1. Explain the fundamental concepts of management and organization,2. Classify the fundamental organization variables, 3. Explain the historical development of management and organization,4. Describe the network forms,5. Classify the practices of effective organizations,6. Explain the fundemental subjects of organizational behavior.  |
| **TEXTBOOK** |  Koçel, Tamer (2015) İşletme Yöneticiliği. 16. Baskı. İstanbul: Beta Basım Yayım Dağıtım. Mirze, S. Kadri (2016) İşletmelerde Organizasyon Tasarımı ve Yapılandırma: Sosyal, İnsani ve Fiziksel Yapılandırma. İstanbul: Beta Basım Yayım Dağıtım |
| **OTHER REFERENCES** |  Berber, Aykut (2013) Klasik Yönetim Düşüncesi: Geleneksel ve Klasik Paradigmalarla Klasik ve Neo-Klasik Örgüt Teorileri. İstanbul: Alfa Yayınevi Sargut, Selami ve Özen, Şükrü (2013) Örgüt Kuramları. 3. Baskı. Ankara: İmge Kitabevi  |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  The Fundamental Concepts of Management and Organization |
| 2 |  Introduction to Organization I: Division of Labor, Specialization, and Departmentalization |
| 3 |  Introduction to Organization II: Coordination, Hierarchy, and Formalization  |
| 4 |  The Historical Development of Management and Organization I: Classical and Neoclassical Perspectives |
| 5 |  The Historical Development of Management and Organization II: Open System Perspectives |
| 6 | Midterm Examination 1 |
| 7 |  The Network Forms I: Outsourcing, and Virtual Organization |
| 8 |  The Network Forms II: Strategic Alliances, and Organizing Across Borders  |
| 9 |  The Effective Organizations I: Organizational Learning, and Knowledge Management  |
| 10 |  The Effective Organizations II: Strategic Management, and Corporate Governance  |
| 11 | Midterm Examination 2 |
| 12 |  Introduction to Organizational Behavior I: Communication, Power, and Leadership  |
| 13 |  Introduction to Organizational Behavior II: Groups, and Motivation |
| 14 |  Introduction to Organizational Behavior III: Conflict, and Change |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[x]**  | **[ ]**  |

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| **Prepared by :**  |  Assistant Professor Umut KOÇ | **Date:** |  06.05.2016 |

**Signature**:

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**ESKISEHIR OSMANGAZI UNIVERSITY**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES**

**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |  506202507 | **TITLE** |  Financial Management |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  | -  | -  | 3  | 7,5 | COMPULSORY(   ) | ELECTIVE( X ) | Türkçe |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
|   |   |  X  |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 1 | 40 |
| Quiz |   |    |
| Homework |   |    |
| Project |   |    |
| Report |   |    |
| Seminar |   |    |
| Other (     ) |   |    |
| **Final Examination** | 60 |
| **PREREQUISITE(S)** |        |
| **SHORT COURSE CONTENT** |  To define financial management, its objectives and organization of corporate finance, financial analysis and methods, financial planning and instruments, to manage need of working capital at corporations, cash management, stocks management and account receivable management  |
| **COURSE OBJECTIVES** |  To teach students importance of purpose of financial management and how they analyze corporation’s financial situation and organize corporation’s shot-term assets |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  To analyze balance sheet and financial situation of corporation, and to make future financial projection  |
| **LEARNING OUTCOMES OF THE COURSE** |  Learn the importance of financial management and objectives.To make financial analysis.To make financial planning.To prepare the cash budget.To make identification and selection of financing alternatives.To solve financial problems. |
| **TEXTBOOK** |  Financial management |
| **OTHER REFERENCES** |  Büker, S., Aşıkoğlu R., Sevil G., B. (2000). Finansal Yönetim. Eskişehir: SakaryaCeylan, A., (2003). İşletmelerde Finansal Yönetim. Bursa: Ekin Kitabevi.Berk, N. (2001). Finansal Yönetim. İstanbul: Türkmen Kitabevi |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Definition and objective of finance management |
| 2 |  Organization of finance department |
| 3 |  Ratio analysis |
| 4 |  Cash flow statement at financial analysis |
| 5 |  Financial planning |
| 6 | Midterm Examination 1 |
| 7 |  Budgets |
| 8 |  Planning and controlling of profitability |
| 9 |  Working capital management |
| 10 |  Cash management  |
| 11 | Midterm Examination 2 |
| 12 |  Inventory management |
| 13 |  Account receivables management |
| 14 |  Short-term financial resources |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[ ]**  | **[x]**  |

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| **Prepared by :**  |        | **Date:** |  06/05/2016 |

**Signature**:

**T.R.**

**ESKISEHIR OSMANGAZI UNIVERSITY**

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**COURSE INFORMATION FORM**



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| **DEPARTMENT** |  **INDUSTRIAL ENGINEERING (MSc)** | **SEMESTER** |   |

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| **COURSE** |
| **CODE** |        | **TITLE** |  Strategic Management |

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| **LEVEL** | **HOUR/WEEK** | **Credit** | **ECTS** | **TYPE** | **LANGUAGE** |
| **Theory** | **Practice** | **Laboratory** |
|  **MSc** | 3  |    |    | 3  | 7,5 | COMPULSORY(   ) | ELECTIVE( X ) | Turkish |
| **CREDIT DISTRIBUTION** |
| **Basic Science** | **Basic Engineering** | **Knowledge in the discipline****[if it contains considerable design content, mark with (√)]** |
|   |   |      |
| **ASSESSMENT CRITERIA** |
| **SEMESTER ACTIVITIES** | **Evaluation Type** | **Number** | **Contribution** **( % )** |
| Midterm | 2 | 30 |
| Quiz |   |    |
| Homework |   |    |
| Project |   |    |
| Report |   |    |
| Seminar |   |    |
| Other (participation to the course) |   | 30 |
| **Final Examination** | 40 |
| **PREREQUISITE(S)** |        |
| **SHORT COURSE CONTENT** |  Introduction to strategic management, the process of strategic management, environment analyses, competitive strategies, corporate strategies, international business, organizational design, and corporate governance. |
| **COURSE OBJECTIVES** |  To recognize the field of strategic management with a multi-disciplinary view. |
| **COURSE CONTRIBUTION TO THE PROFESSIONAL EDUCATION** |  It will contribute to enhance the effectiveness and efficiency of the business practices in organizational environments. |
| **LEARNING OUTCOMES OF THE COURSE** |  At the end of this course, the student will be able to 1. Explain the fundamental concepts of strategic management,2. Explain the process of strategic management,3. Classify environment analyses, 4. Describe competitive strategies,5. Classify corporate strategies,6. Define international business,7. Explain organizational design,8. Describe corporate governance.. |
| **TEXTBOOK** |  Ülgen, Hayri ve Mirze, S. Kadri (2014) İşletmelerde Stratejik Yönetim. 7. Baskı. İstanbul: Beta Basım Yayım Dağıtım. |
| **OTHER REFERENCES** |  Pearce II, John A. ve Robinson , Jr., Richard B. (2015) Stratejik Yönetim: Geliştirme, Uygulama ve Kontrol. (Çev: Mehmet Barca). 12. Baskı. Ankara: Nobel Yayıncılık |

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| **COURSE SCHEDULE (Weekly)** |
| **WEEK** | **TOPICS** |
| 1 |  Introduction to Strategic Management |
| 2 |  The Process of Strategic Management  |
| 3 |  External Analysis: Industry Structure, Competitive Forces, and Strategic Groups |
| 4 |  Internal Analysis: Resources, Capabilities, and Core Competencies |
| 5 |  Competitive Strategies I: Cost Leadership, Differentiation, and Integration Strategy |
| 6 | Midterm Examination 1 |
| 7 |  Competitive Strategies II: Innovation and Entrepreneurship  |
| 8 |  Corporate Strategies I: Veritical Integration and Diversification |
| 9 |  Corporate Strategies II: Mergers and Acquisitions, and Strategic Alliances |
| 10 |  International Business I: Internationalization Models |
| 11 | Midterm Examination 2 |
| 12 |  International Business II: International Business Strategies |
| 13 |  Organizational Design: Structure, Culture, and Control  |
| 14 |  Corporate Governance |
| 15,16 | Final Examination |

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| **CONTRIBUTION OF THE COURSE LEARNING OUTCOMES TO THE INDUSTRIAL ENGINEERING MSc PROGRAM LEARNING OUTCOMES** | **CONTRIBUTION LEVEL** |
| **NO** | **LEARNING OUTCOMES (MSc)**  | **3**High | **2**Mid | **1**Low |
| **LO 1** | Accessing deep and advanced knowledge through scientific researches in the field of Industrial Engineering, ability to evaluate, interpret and implement the knowledge. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 2** | Having comprehensive knowledge about actual techniques and methods in engineering as well as their constraints. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 3** | Completion and implementation of uncertain, limited or missing data through scientific methods in addition ability to use knowledge belongs to various disciplines. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 4** | Awareness of new and developing Industrial Engineering practices, ability to investigate and learn them as needed. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 5** | Ability to define and formulate problems related to industrial engineering and skills for developing methods to solve the problems and using innovative methods during solutions. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 6** | Developing new and/or original methods and conceptions; ability to design systems or processes and ability to develop innovative solutions in designs. | **[ ]**  | **[x]**  | **[ ]**  |
| **LO 7** | Ability to work efficiently in disciplinary and multidisciplinary teams, skills for taking the lead in the teams and developing solution approaches under complicate conditions; ability to work independently and take responsibility. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 8** | Ability to use a language for verbal and written communication. | **[ ]**  | **[ ]**  | **[x]**  |
| **LO 9** | Ability to transmit results and processes of studies systematically and definitively to national/international, verbal/written platforms which are inside or outside the relevant field. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 10** | To be informed of social, environmental, health, security and law aspects of engineering practices besides project management and business life practices and awareness of constraints caused by them. | **[x]**  | **[ ]**  | **[ ]**  |
| **LO 11** | Awareness of considering social, scientific and ethical principles during data collection, interpretation, announcement stages besides all vocational activities. | **[ ]**  | **[x]**  | **[ ]**  |

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| **Prepared by :**  |  Assist. Prof.Dr. Umut KOÇ | **Date:** |        |

**Signature**: