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| antalya bilim Ã¼niversitesi ile ilgili gÃ¶rsel sonucu | | | | | **ECTS Course Description Form** | | | | | | | | | | | | | | | | | | | | | | |
| **PART I ( Senate Approval)** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Offering School** | **School of Engineering** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Offering Department** | **Industrial Engineering** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Program(s) Offered to** | **Industrial Engineering** | | | | | | | | | | | | | **Civil Engineering** | | | | | | | | | | | | | |
| **Computer Engineering** | | | | | | | | | | | | | **Mechanical Engineering** | | | | | | | | | | | | | |
| **Electrical and Electronics Engineering** | | | | | | | | | | | | | **Materials science and Nanotechnology** | | | | | | | | | | | | | |
| **Course Code** | **MATH 300** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Course Name** | **Numerical Analysis for Engineers** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Language of Instruction** | **English** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Type of Course** | *Elective* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Level of Course** | **Senior** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Hours per Week** | **Lecture: 3** | | | | | **Laboratory:** | | | | **Recitation:** | | **Practical: 1** | | | | | **Studio:** | | | | | **Other:** | | | | | |
| **ECTS Credit** | **6** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Grading Mode** | **Catalog** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Pre-requisites** | **-** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Co-requisites** | **-** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Registration Restriction** | *-* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Educational Objective** | *To understand the various types of numerical methods ,differentiate the capabilities and limitations of these methods and applications to different areas of Engineering problems* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Course Description** | *The solutions of linear/nonlinear equations, and systems, interpolation and polynomial approximation, numerical differentiation & integration, the solution of differential equations, curve fitting, numerical optimization* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Learning Outcomes** | **LO1** | | | *Ability to apply basic sciences in the field of engineering.*  *Ability to find the necessary numerical solution for the real world engineering problems*  *Ability to use MATLAB programming Language for the numerical solutions*  *Ability to develop new numerical methods or improve the existing ones by learning the defined ones.* | | | | | | | | | | | | | | | | | | | | | | | |
| **LO2** | | |
| **LO3** | | |
| **LO4** | | |
| **LO5** | | |
| **LO6** | | |
| **n..** | | |
| **PART II ( Faculty Board Approval)** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Basic Outcomes (University-wide)** | | **No.** | **Program Outcomes** | | | | | | | | | | **LO1** | | | **LO2** | | | **LO3** | | **LO4** | | | | **LO5** | | **LO6** |
| **PO1** | **Ability** to communicate effectively and write and present a report in Turkish and English. | | | | | | | | | | 🗸 🗸 🗸 🗸  🗸 🗸 🗸 🗸  🗸 🗸 🗸 🗸  🗸 🗸 🗸  🗸 🗸  🗸 🗸 🗸    🗸 🗸 🗸  🗸 🗸 🗸 🗸    🗸 🗸 | | | | | | | | | | | | | | |
| **PO2** | **Ability** to work individually, and in intra-disciplinary and multi-disciplinary teams. | | | | | | | | | |
| **PO3** | **Recognition** of the need for life-long learning and **ability** to access information, follow developments in science and technology, and continually reinvent oneself. | | | | | | | | | |
| **PO4** | **Knowledge** of project management, risk management, innovation and change management, entrepreneurship, and sustainable development. | | | | | | | | | |
| **PO5** | **Awareness** of sectors and **ability** to prepare a business plan. | | | | | | | | | |
| **PO6** | **Understanding** of professional and ethical responsibility and **demonstrating** ethical behavior. | | | | | | | | | |
| **Faculty Specific Outcomes** | | **PO7** | An ability to identify, formulate, and solve engineering problems | | | | | | | | | |
| **PO8** | An ability to use the techniques, skill, and modern engineering tools necessary for engineering practice | | | | | | | | | |
| **PO9** | The broad education necessary to understand the impact of engineering solutions in a global and societal context | | | | | | | | | |
| **PO10** |  | | | | | | | | | |
| **PO11** |  | | | | | | | | | |
| **PO12** |  | | | | | | | | | |
| **Discipline Specific Outcomes (program)** | | **PO13** |  | | | | | | | | | |
| **PO14** |  | | | | | | | | | |
| **PO15** |  | | | | | | | | | |
| **PO16** |  | | | | | | | | | |
| **PO17** |  | | | | | | | | | |
| **PO18** |  | | | | | | | | | |
| **Specialization Specific Outcomes** | | **PO N….** | *Ability to create algorithmic solutions to inspect, improve and enhance*  *existing systems by means of analytical approaches* | | | | | | | | | |
| **PART III ( Department Board Approval)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Course Subjects, Contribution of Course Subjects to Learning Outcomes, and Methods for Assessing Learning of Course Subjects** | | | **Subjects** | **Week** | | | |  | | | | | | **LO1** | | | **LO2** | | | **LO3** | | **LO4** | | | | **LO5** | | **LO6** | |
| **S1** |  | | | | *Modeling and Solving of Mathematic Problems* | | | | | | *D1-D2-D3* | | | *D1-D2-D3* | | | *D1-D2-D3* | | *D1-D2-D3* | | | |  | |  | |
| **S2** |  | | | | *Number representation, round-off error, truncation error* | | | | | | *D1-D2-D3* | | | *D1-D2-D3* | | | *D1-D2-D3* | | *D1-D2-D3* | | | |  | |  | |
| **S3** |  | | | | *The Solution of Nonlinear Equations - Close Methods* | | | | | | *D1-D2-D3* | | | *D1-D2-D3* | | | *D1-D2-D3* | | *D1-D2-D3* | | | |  | |  | |
| **S4** |  | | | | *The Solution of Nonlinear Equations –Open Methods* | | | | | | *D1-D2-D3* | | *D1-D2-D3* | | | *D1-D2-D3* | | *D1-D2-D3* | | | |  | |  | | |
| **S5** |  | | | | *The Solution of Root of Polynomial* | | | | | | *D1-D2-D3* | | *D1-D2-D3* | | | *D1-D2-D3* | | *D1-D2-D3* | | | |  | |  | | |
| **S6** |  | | | | *The Solution of Linear Systems, Matrices and Gauss Siedel* | | | | | | *D1-D2-D3* | | *D1-D2-D3* | | | *D1-D2-D3* | | *D1-D2-D3* | | | |  | |  | | |
| **S7** |  | | | | *The Solution of Nonlinear Systems* | | | | | | *D1-D2-D3* | | *D1-D2-D3* | | | *D1-D2-D3* | | *D1-D2-D3* | | | |  | |  | | |
| **S8** |  | | | | *Finite Differences* | | | | | | *D1-D2-D3* | | *D1-D2-D3* | | | *D1-D2-D3* | | *D1-D2-D3* | | | |  | |  | | |
| **S9** |  | | | | Interpolation | | | | | | *D1-D2-D3* | | *D1-D2-D3* | | | *D1-D2-D3* | | *D1-D2-D3* | | | |  | |  | | |
| **S10** |  | | | | *Numerical Differentiation* | | | | | | *D1-D2-D3* | | *D1-D2-D3* | | | *D1-D2-D3* | | *D1-D2-D3* | | | |  | |  | | |
| **S11** |  | | | | *Numerical Integration* | | | | | | *D1-D2-D3* | | *D1-D2-D3* | | | *D1-D2-D3* | | *D1-D2-D3* | | | |  | |  | | |
|  | | | **S12** |  | | | | *Curve Fitting* | | | | | | *D1-D2-D3* | | *D1-D2-D3* | | | *D1-D2-D3* | | *D1-D2-D3* | | | |  | |  | | |
|  | | | **S13** |  | | | | *The Solution of Differential Equations* | | | | | | *D1-D2-D3* | | *D1-D2-D3* | | | *D1-D2-D3* | | *D1-D2-D3* | | | |  | |  | | |
|  | | | **S14** |  | | | | *Numerical Optimization* | | | | | | *D1-D2-D3* | | *D1-D2-D3* | | | *D1-D2-D3* | | *D1-D2-D3* | | | |  | |  | | |
| **Assessment Methods, Weight in Course Grade, Implementation and Make-Up Rules** | | | **No.** | **Type** | | | | | | **Weight** | | **Implementation Rule** | | | | | **Make-Up Rule** | | | | | | | | | | | | |
| **A1** | **Exam** | | | | | | *30% Midterm, 40% Final* | | *Exams will be announced 2 weeks ago and applied in class.* | | | | |  | | | | | | | | | | | | |
| **A2** | **Quiz** | | | | | | *10%* | | *Pop-up quizzes will be given.* | | | | |  | | | | | | | | | | | | |
| **A3** | **Homework** | | | | | | *20%* | | *At the end of each chapter hw problems will be assigned and collected after a week.* | | | | |  | | | | | | | | | | | | |
| **A4** | **Project** | | | | | |  | |  | | | | |  | | | | | | | | | | | | |
| **A5** | **Report** | | | | | |  | | - | | | | | - | | | | | | | | | | | | |
| **A6** | **Presentation** | | | | | |  | | - | | | | | - | | | | | | | | | | | | |
| **A7** | **Attendance/ Interaction** | | | | | |  | | - | | | | | - | | | | | | | | | | | | |
| **A8** | **Class/Lab./**  **Field Work** | | | | | |  | | - | | | | | - | | | | | | | | | | | | |
| **A9** | **Other** | | | | | |  | |  | | | | |  | | | | | | | | | | | | |
| **TOTAL** | | | | | | | **100%** | | | | | | | | | | | | | | | | | | | |
| **Evidence of Achievement of Learning Outcomes** | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Method for Determining Letter Grade** | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Teaching Methods, Student Work Load** | | | **No** | **Method** | | | | | **Explanation** | | | | | | | | | | | | | | | **Hours** | | | | | |
| ***Time applied by instructor*** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **1** | **Lecture** | | | | |  | | | | | | | | | | | | | | | 3 hours 40 minutes in week | | | | | |
| **2** | **Interactive Lecture** | | | | |  | | | | | | | | | | | | | | |  | | | | | |
| **3** | **Recitation** | | | | |  | | | | | | | | | | | | | | |  | | | | | |
| **4** | **Laboratory** | | | | |  | | | | | | | | | | | | | | | 50 minutes | | | | | |
| **5** | **Practical** | | | | |  | | | | | | | | | | | | | | |  | | | | | |
| **6** | **Field Work** | | | | |  | | | | | | | | | | | | | | |  | | | | | |
| ***Time expected to be allocated by student*** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **7** | **Project** | | | | |  | | | | | | | | | | | | | | |  | | | | | |
| **8** | **Homework** | | | | |  | | | | | | | | | | | | | | | 3 hours in a week | | | | | |
| **9** | **Pre-class Learning of Course Material** | | | | |  | | | | | | | | | | | | | | | 1 hour in a week | | | | | |
| **10** | **Review of Course Material** | | | | |  | | | | | | | | | | | | | | | 1 hour in a week | | | | | |
| **11** | **Studio** | | | | |  | | | | | | | | | | | | | | |  | | | | | |
| **12** | **Office Hour** | | | | |  | | | | | | | | | | | | | | |  | | | | | |
| **TOTAL** | | | | | |  | | | | | | | | | | | | | | | | | | | | |
| **IV. PART** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Instructor** | | | **Name** | | | | | | Asst. Prof. Sevgi Şengül Ayan | | | | | | | | | | | | | | | | | | | | |
| **E-mail** | | | | | | sevgi.sengul@antalya.edu.tr | | | | | | | | | | | | | | | | | | | | |
| **Phone Number** | | | | | | 05444402893 | | | | | | | | | | | | | | | | | | | | |
| **Office Number** | | | | | | A1-38 | | | | | | | | | | | | | | | | | | | | |
| **Office Hours** | | | | | |  | | | | | | | | | | | | | | | | | | | | |
| **Course Materials** | | | **Mandatory** | | | | | |  | | | | | | | | | | | | | | | | | | | | |
| **Recommended** | | | | | |  | | | | | | | | | | | | | | | | | | | | |
| **Other** | | | **Scholastic Honesty** | | | | | |  | | | | | | | | | | | | | | | | | | | | |
| **Students with Disabilities** | | | | | |  | | | | | | | | | | | | | | | | | | | | |
| **Safety Issues** | | | | | |  | | | | | | | | | | | | | | | | | | | | |
| **Flexibility** | | | | | |  | | | | | | | | | | | | | | | | | | | | |