

| | | | | | |
|--|--|------------------|-----------------------------------|------------------------------------|----------------|
| Department Department of Mathematics | | | Academic Year 2022-2023 | Date 01/12/2022 | |
| Course Unit Code MATH3113 | Course Unit Title Introduction to Integral Equations | | Semester/Year Fall / 3 | Number of ECTS Credits 5 | |
| Language of Instruction | Turkish | | | | |
| Type of Course Unit | Elective | | | | |
| Prerequisites and co-requisites | - | | | | |
| Address of course | - | | | | |
| Local Credit | Theoretical | Practical | Laboratory | Presentation | Project |
| 3 | 2 | 2 | - | - | - |
| Name of Lecturers | Associated Professor Tuba GÜLŞEN | | | | |
| Assistants | - | | | | |

| | |
|-----------------------|---|
| Course content | Definition of integral equations, history and classification, integral equations with parameters, solution function and integral equations, integral equilibrium transformation and applications of differential equations, differential equilibrium transformation and applications of constant equations, Fredholm integral equations and applications with integral quaternions, integral equations of Degenerics, Solvent core (resolvent). |
|-----------------------|---|

| Weekly Detailed Course Contents | |
|---------------------------------|---|
| Week | Topic |
| 1 | Definition, history and classification of integral equations |
| 2 | Integral equations with parameters |
| 3 | Providing solution function and integral equation |
| 4 | Conversion of differential equations into integral equations |
| 5 | Conversion of differential equations into integral equations and their applications |
| 6 | Conversion of integral equation to differential equation |
| 7 | Conversion of integral equations to differential equations and their applications |
| 8 | Fredholm integral equations with fixed core |
| 9 | General application |
| 10 | Fixed-core Fredholm integral equations and their applications |
| 11 | Integral equations with degenerate cores |
| 12 | Integral equations with degenerate cores and their applications |
| 13 | Solvent core (resolvent) |
| 14 | A brief evaluation of the course content and topics |

| | |
|-------------------------|----------------------------------|
| Course Resources | Integral Equations (Yavuz AKSOY) |
|-------------------------|----------------------------------|

| | | | |
|--|--|----------|----------------|
| Assessment Methods and Criteria | In-Term studies | Quantity | Percentage (%) |
| | Mid-Term Exams | 1 | 40 |
| | Quizzes | - | - |
| | Assignments | - | - |
| | Projects | - | - |
| | Term assignment | - | - |
| | Laboratory | - | - |
| | Other | - | - |
| | Final exam | 1 | 60 |
| On Assessment Methods and | A grade of success; the relative evaluation system or the discretion of the instructor. In order to be taken into consideration in the courses in which the relative evaluation system and | | |

| | |
|-----------------|--|
| Criteria | teaching staff's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the letter grades of the success grades are determined by the consent of the instructor teaching the table by 100 points by the Senate using the distribution of the final grade of success. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course |
|-----------------|--|

| | | |
|--|---------------------------------------|-----|
| Percentage of Course Category (%) | Mathematics and Basic Sciences | 100 |
| | Computer Sciences | 0 |
| | Programming Design | 0 |
| | Social sciences | 0 |

| | |
|-------------------------------------|--|
| Course Outcome | Students will have basic knowledge about the definition, classification, solution of integral equations and relations between differential equations and integral equations |
| Aims of the course | 1. To create the necessary information infrastructure for the students on the Introduction to Integral Equations. 2. To provide the students with the knowledge of integral equations, which can produce the most appropriate solutions for equations and problems. |
| The way of processing course | Face to face |

| Relation of the course with program outcomes | | | | |
|--|--|---|---|---|
| Learning outcomes | | 1 | 2 | 3 |
| 1 | To have advanced theoretical and applied knowledge in a way to prioritize the scientific approach supported by textbooks containing up-to-date information in the field, application tools and other resources | | | |
| 2 | Adapting and transferring the knowledge gained in the field to secondary education | | X | |
| 3 | Ability to independently carry out an advanced study in the field | | | |
| 4 | Be aware of the necessity of lifelong learning and continuously improve their professional knowledge and skills. | | | X |
| 5 | Using a foreign language at least at the European Language Portfolio B1 General Level, following the information in the field and being able to communicate with colleagues | | | |
| 6 | To be able to use information and communication technologies together with computer software at minimum advanced level of European computer license required by the field. | | | |
| 7 | Have the ability to make oral and written presentation in native language | | | |
| 8 | Having the ability to understand spoken English and use English at reading level | | | |
| 9 | To have the ability to assimilate mathematical concepts and understand the relationships between them, to recognize different aspects of the same concepts and relationships | | | |
| 10 | To have the ability to define and formulate the relationships between items in non-mathematical disciplines in the language of mathematics. | | | X |
| 11 | To have the ability to use mathematical knowledge in different problems | | | |
| 12 | Having the ability to develop computer programs using mathematical knowledge | | | |
| Contribution of the course: 1:No 2:Partially 3:Completely | | | | |

Preparer: Associated Professor **Ahu ERCAN**
Preparation date: 01/12/2022