# COURSE DESCRIPTION FORM

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| **Course Code and Name** | MATH 102 Mathematics II |
| **Course Semester** | 2 |
| **Catalog Data of the Course ( Course Content)** | The applications of definite integral, sequences, convergence tests for series and positive series, limits and derivatives of multivariable functions, double integral |
| **Textbook of the Course** | Genel Matematik-1, Anar, İ.E., 2013<br>Genel Matematik-2, Anar, İ.E., 2013 |
| **Supplementary Textbooks** | Thomas' Calculus, 12<sup>th</sup> Edition, Volume 1 / George B. Thomas, Maurice D. Weir, Joel R. Hass, 2011<br>Thomas' Calculus, 12<sup>th</sup> Edition, Volume 2 / George B. Thomas, Maurice D. Weir, Joel R. Hass, 2012 |
| **Credit  (ECTS)** | 6 |
| **Prerequisites of the Course** | There is no prerequisite or co-requisite for this course. |
| **Type of the Course** | Compulsory |
| **Instruction Language of the Course** | English |
| **Course Objectives** | To be able to learn and apply the concept of integral, to apply convergence tests for positive quadratic series, to be able to calculate limits and derivatives of multivariable functions and calculate double integral. |
| **Learning Outcomes** | 1. Learn applications of definite integral.<br>2. Students will learn the sequence and series concept and examine their convergence with some tests.<br>3. Learn to find limits, continuity and derivatives of multivariable functions.<br>4. Learn to calcualte double integral |
| **Instruction Method** | The type of this course is face to face. |
| **Weekly Schedule of the Course** | 1. Week: Applications of definite integral: Calculation of area<br>2. Week: Calculation of volume (cross section, disc and shell methods).<br>3. Week: Calculation of length of an arc and surface area of revolution.<br>4. Week: Polar Coordinates : Definition, drawing of an arc, calculation of area, length of an arc and surface area of revolution.<br>5. Week: Improper integrals and its rules of convergence.<br>6. Week: Sequences : Definition, types, monotone and finite sequences, subsequence, convergence and divergence of sequences.<br>7. Week: Series : Definition, convergence and divergence, posite series and convergence tests.<br>8. Week: Alternating series, absolute and conditional convergence, power series, radius and interval of convergence<br>9. Week: Power Series, Taylor and Maclaurin Series<br>10. Week: Multivariable functions : Definition, domain of definition, graphs, limit and continuity of functions of two variables, partial differentiation<br>11. Week: Transformation of the region and jacobiens.<br>12. Week: Double integrals : Definition, properties, computation, bölge dönüşümleri.<br>13. Week: Fubini's theorems<br>14. Week: Double Integrals in Polar coordinates<br>15. Week: Final Exam |
| **Assesment Tasks**<br>*(The time spent for the activities listed here will determine the amount of credit required.)* | Weekly theoretical course hours 4<br>Hours per week 0<br>Reading Activities 4<br>Internet browsing, library work 2<br>Designing and implementing materials 0<br>Report preparing 0<br>Preparing a Presentation 0<br>Presentations 0<br>Preparation of Midterm and Midterm Exam 12<br>Final Exam and Preparation for Final Exam 24 |

| Assesment Criteria | | Sayısı | Toplam Katkısı (%) | |
|---|---|---|---|---|
| | Midterm Exams | 1 | 60 | |
| | Assignment | 0 | 0 | |
| | Practice | 0 | 0 | |
| | Projects | 0 | 0 | |
| | Practise | 0 | 0 | |
| | Quizes | 0 | 0 | |
| | Percent of In-term Studies to Year- to Year (%) | 0 | 60 | |
| | Percentage of Final Exam to Total Score (%) | 1 | 40 | |
| | Attendance | | | |

| Workload of the Course | | Efficiency | Total Number of Weeks | Duration (weekly hour) | Total Period Work Load |
|---|---|---|---|---|---|
| | Weekly Theoretical Course Hours | | 14 | 4 | 56 |
| | Hours Per Week | | 0 | 0 | 0 |
| | Reading Tasks | | 11 | 4 | 44 |
| | Internet Browsing, Library Work | | 11 | 2 | 22 |
| | Designing and Implementing Materials | | | | 0 |
| | Report Preparing | | 0 | 0 | 0 |
| | Preparing a Presentation | | | | 0 |
| | Presentations | | 0 | 0 | 0 |
| | Midterm Exam and Preperation for Midterm Exam | | 1 | 12 | 12 |
| | Final Exam and Preperation for Final Exam | | 1 | 24 | 24 |
| | Other | | | | 0 |
| | Total Workload | | | | 158 |
| | Total Workload / 25 | | | | 6,32 |
| | Course Credit (ECTS) | | | | 6 |

| Contribution Level Between Course Outcomes and Program Outcomes | | No | Program Learning Outcomes | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| | | 1 | PLO1 | | | | x | |
| | | 2 | PLO2 | | | | x | |
| | | 3 | PLO3 | | | | | x |
| | | 4 | PLO4 | | | | x | |
| | | 5 | PLO5 | | | x | | |
| | | 6 | PLO6 | | | | x | |
| | | 7 | PLO7 | | | | x | |
| | | 8 | PLO8 | | | | x | |
| | | 9 | PLO9 | | | | x | |
| | | 10 | PLO10 | | | | x | |

| Names of Lecturers and e-mails of Lecturers | Mathematics Department Teaching Members  E-mail address: fefmatematik@gazi.edu.tr  Phone: 2021051 |
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| No | Program Learning Outcomes |
|---|---|
| 1 | To train individuals who are contemporary, entrepreneur and have unique and aesthetic values, self- confidence and capable of independent decision-making. |
| 2 | To enable the student to gain the ability of relating mathematics with the other sciences.. |
| 3 | To teach mathematical thinking methods in order to improve the ability to express mathematics both orally and in writing. |
| 4 | To train individuals who are knowledgeable about the history of mathematics and the production of scientific knowledge and can follow developments in these disciplines. |
| 5 | To provide necessary equipments to take positions such areas as banking, finance, econometrics, and actuarial. |
| 6 | To acquire ability to solve problems encountered in real life by means of mathematical modeling using mathematical methods. |
| 7 | To provide ability to do necessary resource researches in the areas of mathematics and to use accessed information. |
| 8 | To give appropriate training in such areas as in computer programming and creating algorithms in order to take parts in developing IT sector. |
| 9 | To gain substructure to be able to study at graduate level. |
| 10 | To enable the student to gain the ability of relating mathematics with the other sciences. |