| COURSE DESCRIPTION FORM | |
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| **Course Code and Name** | MATH 101 Mathematics I |
| **Course Semester** | 1 |
| **Catalog Data of the Course ( Course Content)** | The concepts of function, limit, continuity, derivative and integral. |
| **Textbook of the Course** | Genel Matematik-1, Anar, İ.E., 2013 |
| **Supplementary Textbooks** | Thomas' Calculus, 12th Edition, Volume 1 / George B. Thomas, Maurice D. Weir, Joel R. Hass, 2011 |
| **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 learn the concept of function and to operate with functions, to learn the concepts of limit, continuity, derivative and integral. |
| **Learning Outcomes** | 1. Students can know definiton of functions and some special functions. 2. Students can calculate limit of function and some special trigonometric limits. 3. Students can take the derivative of function. 4. Students can solve problems of absolute and local extremums, maxima and minima. 5. Students can take defined and indefinite integrals of the some special functions. |
| **Instruction Method** | The type of this course is face to face. |
| **Weekly Schedule of the Course** | 1. Week: Introduction: Sets, Real numbers, intervals, inequalities, neighbourhoods, coordinates 2. Week: Functions: Definition function, definition and image of sets, injections, surjections and inverse functions, combinations of functions. 3. Week: Special Functions: Definitions of rational, irrational, trigonometric, inverse trigonometric, exponenetial, logarithmic and hyperbolic functions. 4. Week: Limit of Function: Definition of limit, right and left-hand limit, fundamental theorems about limits, some special and trigonometric limits. 5. Week: Continuity of Functions: Definition of continuity, fundamental properties of continuous funcitons, discontinuties and its types 6. Week: Concept of derivative: Definition and presence, rules of derivative, derivative of composite, inverse,and trigonometric functions. 7. Week: Differentiation of exponenetial, logarithmic, hyperbolic and inverse hyperbolic functions, closed and parametric functions, higher order derivatives. 8. Week: Application of Differentiation: Geometrical interpretation of differentiaition, absolute and local extremums, maxima and minima problems. 9. Week: Physical interpretation of differentiaition, concavity Rolle's theorem and mean value theorems. Elimination of uncertainties by using l`Hospital rule, asymptotes of an curve. 10. Week: Graphic Drawing: Graphs of rational, irrational, exponenetial, logarithmic, trigonometric, hyperbolic and parametric functions. 11. Week: The Definition of Riemann Integrals and their properties 12. Week: Indefinite Integral : Differentiation of a function, definition of indefinite integral, propereties, basic integration formulas. 13. Week: Methods of Computing Integral : Integration by substitution, parts. 14. Week: Integral of Partial fractions, trigonometric and hyperbolic functions, integration by some special substitution. 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 | | |
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| 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<br>E-mail address: fefmatematik@gazi.edu.tr<br>Phone: 2021051 |
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| No | Program Learning Outcomes |
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| 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. |