**Ankara University
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**Open Courseware**

syllabus

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| Code and name of the course | MTH231 Differential Equations |
| Instructor(s) | Asist. Prof. Dr. Gizem Seyhan Öztepe |
| Level | Undergraduate |
| Course Duration | 3 hour/week |
| Course describtion | Introduction to differential equations (Definitions and terminology), Solutions and Existence-Uniqueness theorems, First order differential equations (separable and linear equations), Exact equations-Integrating Factors, Homegenous equations-Bernoulli equation, Differential Equations wth Linear Coefficients, Differential equations as models, Modelling with first order differential equations, Higher-order differential equations, Homogenous differential equations with constant coefficients , Undeterminate coefficient methods, Variation of Parameters, Cauchy Euler equation, Linear differential systems, Laplace transforms and properties, Inverse Laplace transforms and Solving initial value problems with Laplace transform |
| Course aims & Objectivties | In almost every branch of science, it is necessary to establish a mathematical model that has the properties of the desired problems. Such a model often comes as an equation involving dependent variables or variables and their derivatives relative to the independent variable. Such equations are called differential equations. Our aim is to classify the differential equations and to study the methods developed to find solutions of these equations and to model the problems that come out in real life with the aid of differential equations. |
| Language of Instruction | English |
| Prerequisites | - |
| Recommended Sources | 1. Logan, J. David. A first course in differential equations. Springer, 2015.
2. Zill, Dennis G. A first course in differential equations with modeling applications. Cengage Learning, 2012.
3. Ross, Shepley L. Differential Equations. New York: John Wiley&Sons, 1984.
4. Nagle, R. Kent, et al. Fundamentals of differential equations and boundary value problems. New York: Addison-Wesley, 1996.
5. Bronson, Richard. Schaum's outline of theory and problems of differential equations. McGraw-Hill, 1994.
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| Course credit | 3 |
| Laboratuvar |  |
| Others-1 |  |