

Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
MAT371	Selected Topics I	5	3	0	0	3	5

Prerequisites	
Admission Requirements	

Language of Instruction	French
Course Type	Elective
Course Level	Bachelor Degree
Objective	The objective of this course is to study selected topics from five fundamental theories of Applied Mathematics: optimization theory, fixed point theory, approximation theory, game theory, and social choice theory.
Content	Within the framework of this course, the selected topics will first be studied through the fundamental concepts and results of the corresponding theories. Their historical development will then be discussed, followed by a presentation of the necessary mathematical tools and prerequisites. Finally, the methods and concepts studied will be applied to problems arising in fields such as data science, economics, physics, and numerical analysis.
References	Introduction to Global Optimization , R. Horst , P. M.Pardolas &N. V. Thoai , Kluwer Academic Publishers , The Princeton Companion to Applied Mathematics , Edited by Nicholas J. Higham , Princeton University Press , 2015 https://nhigham.com/2016/03/29/the-top-10-algorithms-in-applied-mathematics A gentle introduction to optimization / B. Guenin , J. Könemann , L. Tunçel Cambridge University Press Introductory Functional Analysis with Applications, E. Kreyszig, Wiley An Introduction to Real Analysis, T. Terzioğlu, ODTÜ Fonksiyonel Analizin Yöntemleri, T. Terzioğlu, Matematik Vakfı Fonksiyonel Analiz, E. Şuhubi, İTÜ Vakfı Bir Analizcinin Defeterinden Seçtikleri, T.Terzioğlu, Nesin Matematik Köyü Real Analysis with Economic Applications, Efe A. Ök, Princeton University Press Numerical Optimization , J. Nocedal & S. J. Wright, Springer , 1999. ve 2. basım Mutiagent Systems, by Yoav Shoham & Kevin Leyton-Brown, Cambridge, 2010 You can download from: http://www.masfoundations.org/download.html

Theory Topics

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