

Course Description Form			
Course Code and Name	5071329 Intelligent Optimization Techniques		
Course Semester	Fall-Spring		
Catalog Content	Intelligent optimization techniques in complex engineering problems, Ant algorithm, Annealing simulation algorithm, Tabu search algorithm, Genetic algorithms, Artificial neural networks		
Textbook	How to Solve It: Modern Heuristics 2nd ed. Revised and Extended, Michalewicz Zbigniew, Fogel David B., Springer-Verlag, 2004 -Intelligent Optimization Techniques, Pham, D.T., Karaboga, D., Springer Verlag, 1999 -Elements of Artificial Neural Networks, Kishan Mehrotra, Chilukuri K. Mohan and Sanjay Ranka, MIT Press, 1996		
Supplementary Textbooks	-		
Credit	9		
Prerequisites of the Course (Attendance Requirements)	-		
Type of the Course	Compulsory		
Instruction Language	Turkish		
Course Objectives	Learning of application of intelligent optimization techniques in complex engineering problems, Learning ant algorithm, Learning algorithm of annealing simulation, Learning of tabu search algorithm, Learning of genetic algorithms, Learning of artificial neural networks		
Course Learning Outcomes	<ol style="list-style-type: none"> 1. Learning the application of intelligent optimization techniques in complex engineering problems Learning ant algorithm 3. Learning the annealing simulation algorithm 4. Learning Tabu search algorithm Learning Genetic Algorithms 6. Learning of artificial neural networks 		
Instruction Methods	The mode of delivery of this course is face to face		
Weekly Schedule	<ol style="list-style-type: none"> 1. Week: Introduction to Optimization 2. Week: Linear Programming 3. Week: Traditional Search Methods 4. Week: Annealing Simulation 5. Week: Tabu Search 6. Week: Ants Algorithm 7. Week: Genetic Algorithm 8. Week: Fuzzy Logic 9. Week: Artificial Neural Networks 10. Week: Artificial Neural Networks 11. Week: Project work 12. Week: Project work 13. Week: Project work 14. Week: Project work 		
Teaching and Learning Methods <i>(These are examples. Please fill which activities you use in the course)</i>	Weekly Theoretical Course Hours Reading Tasks Studies Material Design and Implementation Report Preparing Preparing a Presentation Presentations Midterm Exam and Preperation for Midterm Exam Final Exam and Preperation for Final Exam		
Assessment Criteria		Numbers	Total Weighting (%)
	Midterm Exams	1	35
	Assignment	6	25
	Application		

	Projects						
	Practice						
	Quiz						
	Percent of In-term Studies (%)			60			
	Percentage of Final Exam to Total Score (%)			40			
	Attendance						
Workload	Activity	Total Number of Weeks	Duration (weekly hour)	Total Period Work Load			
	Weekly Theoretical Course Hours	14	3	42			
	Weekly Tutorial Hours	14	2	28			
	Reading Tasks	14	3	42			
	Studies	14	2	28			
	Material Design and Implementation	3	10	30			
	Report Preparing	6	2	12			
	Preparing a Presentation	3	5	15			
	Presentations	1	3	3			
	Midterm Exam and Preperation for Midterm Exam	1	10	10			
	Final Exam and Preperation for Final Exam	1	15	15			
	Other (should be emphasized)	0					
	Total Workload		0	0			
	Total Workload / 25			225			
	Course Credit (ECTS)			9			
	Contribution Level Between Course Learning Outcomes and Program Outcomes	No	Program Outcomes	1	2	3	4
1		Defines and applies basic sciences, mathematics, computing, engineering and computer science at a high level.					X
2		Has extensive and in-depth knowledge including the latest developments in the field.					X
3		Contributes to the solution of social, scientific and ethical problems encountered in the field and supports the development of these values.		X			
4		Reaches the latest information in a field and has the ability to comprehend these methods and skills to conduct research at a high level.					X
5		Conducts a comprehensive study that brings innovation to science or technology, develops a new scientific method or technological product/process, or applies a known method to a new field.					X

	6	Defines, designs, implements, concludes and manages an original research process independently.				X
	7	Contributes to the literature of science and technology by publishing the results of academic studies in prestigious academic settings.	X			
	8	Evaluates scientific and technological developments and transfers them to the society with scientific objectivity and ethical responsibility.	X			
	9	Makes a critical analysis, synthesis and evaluation of ideas and developments in the field of expertise.				X
	10	Communicates in written and oral effectively with the experts and wider scientific and social communities. Use decision making processes.				X
	11	Takes part in scientific research groups that require interdisciplinary problems to be solved.			X	
	12	Establishes and discusses in advanced written, oral and visual communication by using a foreign language at least at the level of C1 of European Language Portfolio.	X			
The Course's Lecturer(s) and Contact Informations		Name Surname: Prof. Dr. M. Ali AKCAYOL E-mail address: akcayol@gazi.edu.tr				