COURSE IDENTIFICATION FORM

Course Code and Name: IM5073 INTUITIVE METHODS				**Department of :** CIVIL ENGINEERING / MASTER PROGRAMME			
Semester	**Theoretic Hour**	**Practice Hour**	**Total Hour**	**Credits**	**ECTS**	**Education Language**	**Type: Compulsory Elective**
Atumn/Spring	3	0	3	3	5	Turkish	Optional
Prerequisite (s)							
Instructor						**Mail :** **Web :**	
Course Assistant						**Mail :** **Web :**	
Groups / Classes							
Course Aim	to introduce students to heuristic methods used in solving various optimization problems. To provide them with an understanding of how and why these methods work, when they should be used, and their superiority over each other and traditional approaches such as mathematical programming.						
Course Goals	The goal of this course is to teach students the basic knowledge and concepts of heuristic optimization methods.						
Course Learning Outs and Proficiencies	• Students can define the optimization problem (decision variables, objective function, constraints). • They can provide efficient solutions to optimization problems using heuristic methods. • They can list and define heuristic methods. • They can choose the appropriate heuristic method for a given problem.						
Course Basic and Auxiliary Contexts	• Christos Papadimitriou and Kenneth Steiglitz. Combinatorial Optimization: Algorithms and Complexity • El-Ghazali Talbi. Metaheuristics: From Design to Implementation. Wiley, 2009. • Michalewicz, Zbigniew, Fogel, David B. How to Solve It: Modern Heuristics. Springer, 2004. • Fred Glover, Gary Kochenberger, Handbook of Metaheuristics.						
Methods of Give a Lecture	Face to Face						

Assessment Criteria		**If Available, to Sign (x)**	**General Average Percentage (%) Rate**
	Midterm Exam	**X**	**50**
	1. Quiz		
	2. Quiz		
	3. Quiz		
	4. Quiz		
	Oral Examination		
	Practice Examination (Laboratory, Project etc.)		
	Final Exam	**X**	**50**

Semester Course Plan

Week	Subjects
1	Introduction, introduction to the course, optimization concept
2	Classical and intuitive optimization, features and inspirations of intuitive approach
3	Genetic Algorithm
4	Artificial Immune Systems
5	Particle Swarm Optimization
6	Artificial Bee Colony Algorithm
7	Ant Colony Algorithm
8	Social Impact Theory Based Optimization Algorithm
9	Midterm Exam
10	Electromagnetic Field Optimization
11	Intuitive coding and solution of a real engineering problem-1
12	Intuitive coding and solution of a real engineering problem-2
13	Student project presentations
14	General Exam-Presentations