Course Description Form	
Course Code and Name	CENG469 GENETIC ALGORITHMS AND PROGRAMMING (TECH.ELECT.)
Course Semester	7
Catalog Content	Biological structures, Genetic algorithms: the basics of programming and machine learning, search strategies, mathematical foundation.
Textbook	An Introduction to Genetic Algorithms, Melanie Mitchell, MIT Press, 1996.
Supplementary Textbooks	- Genetic Algorithms, Goldberg, Dorling Kindersley Pvt Ltd., 2008. - Genetic Algorithms Concepts and Designs, Man, Kim-Fung, Tang, Kit Sang, Kwong, Sam, Springer, 1999.
Credit	6
Prerequisites of the Course (*Attendance Requirements*)	-
Type of the Course	Technical Elective
Instruction Language	English
Course Objectives	To provide knowledge about biological structures, Genetic algorithms: the basics of programming and machine learning, search strategies, mathematical foundation.
Course Learning Outcomes	Students who successfully complete this course have knowledge on the following topics: Biological structures, Genetic algorithms: the basics of programming and machine learning, search strategies, mathematical foundation.
Instruction Methods	The mode of delivery of this course is face to face
Weekly Schedule	1.Week: Introduction to biological structures 2.Week: Genetic algorithms 3.Week: Genetic algorithms 4.Week: Basics of programming and machine learning 5.Week: Machine learning algorithms 6.Week: Search strategies 7.Week: Mathematical foundations 8.Week: Learning systems randomness 9.Week: Microscopic dynamic systems 10.Week: Microscopic dynamic system models 11.Week: Schema theory 12.Week: Genetic programming 13.Week: Tree-based genetic programming 14.Week: Applications
Teaching and Learning Methods (*These are examples. Please fill which activities you use in the course*)	Weekly theoretical course hours: 3 Reading Activities Internet browsing, library work Preparation of Midterm and Midterm Exam Final Exam and Preparation for Final Exam

Assessment Criteria		Numbers	Total Weighting (%)	
	Midterm Exams	1	30	
	Assignment	5	30	
	Application	0	0	
	Projects	0	0	
	Practice	0	0	
	Quiz	0	0	
	Percent of In-term Studies (%)		60	

	Percentage of Final Exam to Total Score (%)		40				
	Attendance						

	Activity	Total Number of Weeks	Duration (weekly hour)	Total Period Work Load
Workload	Weekly Theoretical Course Hours	14	3	42
	Weekly Tutorial Hours	0	0	0
	Reading Tasks	14	3	42
	Studies	14	2	28
	Material Design and Implementation	0	0	0
	Report Preparing	0	0	0
	Preparing a Presentation	0	0	0
	Presentations	0	0	0
	Midterm Exam and Preparation for Midterm Exam	1	15	15
	Final Exam and Preparation for Final Exam	1	24	24
	Other (should be emphasized)	0	0	0
	Total Workload			151
	Total Workload / 25			6.04
	Course Credit (ECTS)			6

	No	Program Outcomes	1	2	3	4	5
Contribution Level Between Course Learning Outcomes and Program Outcomes	1	Sufficient knowledge on mathematics, science and computer engineering; ability to apply theoretical and practical knowledge in these areas to model and solve engineering problems				X	
	2	Ability to identify, define, formulate and solve complex engineering problems; ability to choose and apply appropriate analysis and modelling methods for these purposes				X	
	3	Ability to design a complex system, process, device, software, algorithm, or product under realistic constraints and circumstances to meet certain requirements; ability to apply modern design techniques for this purpose					X
	4	Ability to choose, develop and use modern techniques and tools necessary for engineering applications; ability to effectively use computing technologies				X	
	5	Ability to design and implement systems or experiments to solve engineering problems, collect and interpret data to evaluate and analyze the results of solutions					X
	6	Ability to work effectively in intradisciplinary and interdisciplinary teams or individually		X			
	7	Ability to efficiently prepare, evaluate and interpret reports	X				
	8	Ability to make presentations and conduct effective verbal and written communication in Turkish and English	X				

#		1	2	3	4	5
9	Awareness of the necessity of lifelong learning; ability to access information, follow scientific and technological developments; ability to perpetually renew oneself				X	
10	Awareness of professional and ethical responsibility, ability to act in accordance with ethical principles				X	
11	Ability to apply knowledge on project management, risk management and change management		X			
12	Awareness of entrepreneurship and innovation, ability to design and build		X			
13	Ability to devise local and global solutions to contemporary issues considering the effects of engineering applications on health, environment and security			X		
14	Awareness of the legal consequences of engineering solutions		X			
15	Ability to apply knowledge on software development process and documentation rules					X
16	Knowledge on standards used in engineering applications			X		
17	Awareness of occupational health and security, information security and privacy		X			

The Course's Lecturer(s) and Contact Information	Prof. Dr. M. Ali AKCAYOL akcayol@gazi.edu.tr