

Marmara University - Institute of Pure and Applied Sciences
Computer Engineering Department - Doctor of Philosophy - Curriculum

1. SEMESTER					
No	Course Code	Course Title	T	U	ECTS
1	CSExxxx	Elective - 1	3	0	8
2	CSExxxx	Elective - 2	3	0	8
3	CSExxxx	Elective - 3	3	0	8
4	CSExxxx	Elective - 4	3	0	8
TOTAL			12	0	32

2. SEMESTER					
No	Course Code	Course Title	T	U	ECTS
1	CSExxxx	Elective - 5	3	0	8
2	CSExxxx	Elective - 6	3	0	8
3	CSExxxx	Elective - 7	3	0	8
4	FBE-ES	Institute Elective	3	0	4
TOTAL			9	2	28

Scientific Preparation: 1. SEMESTER					
No	Course Code	Course Title	T	U	ECTS
1	CSE2025	Data Structures	3	2	8
2	CSE3015	Digital Logic Design	3	2	7
3	CSE3033	Operating Systems	3	2	7
4	CSE3055	Database Systems	3	2	7
5	CSE2023	Discrete Computational Structures	3	0	6

Scientific Preparation: 2. SEMESTER					
No	Course Code	Course Title	T	U	ECTS
1	CSE2038	Systems Programming	2	2	7
2	CSE2046	Analysis of Algorithms	3	0	6
3	CSE3038	Computer Organization	3	2	7
4	CSE3044	Software Engineering	3	2	7
5	CSE3064	Formal Languages and Automata Theory	3	0	6

ELECTIVE COURSES (7xxx)

No	Course Code	Course Title	T	U	ECTS
1	CSE7001	Advanced Database Systems	3	0	8
2	CSE7002	Software Processes	3	0	8
3	CSE7003	Object Oriented Design and Programming	3	0	8
4	CSE7004	Combinatorial Optimization	3	0	8
5	CSE7005	Mathematics for Computer Science	3	0	8
6	CSE7006	Design and Analysis of Algorithms	3	0	8
7	CSE7007	Advanced Engineering Mathematics	3	0	8
8	CSE7009	Computational Complexity	3	0	8
9	CSE7010	Probability and Random Processes	3	0	8
10	CSE7011	Cryptography	3	0	8
11	CSE7013	Digital Signal Processing	3	0	8
12	CSE7014	Wireless Network Protocols	3	0	8
13	CSE7015	Digital Image Processing	3	0	8
14	CSE7016	Computer Vision	3	0	8
15	CSE7017	Automata Theory	3	0	8
16	CSE7018	Performance Evaluation of Computer Networks	3	0	8
17	CSE7019	Advanced Computer Architecture	3	0	8

ELECTIVE COURSES (7xxx)

No	Course Code	Course Title	T	U	ECTS
18	CSE7020	Advanced Computer Networks	3	0	8
19	CSE7021	Parallel Processing	3	0	8
20	CSE7022	Advanced Operating Systems	3	0	8
21	CSE7024	Distributed Systems	3	0	8
22	CSE7025	Nature-Inspired Computing	3	0	8
23	CSE7026	Task Scheduling in Distributed Systems	3	0	8
24	CSE7027	Optical Networks	3	0	8
25	CSE7028	Cluster Computing	3	0	8
26	CSE7029	Machine Learning	3	0	8
27	CSE7030	Text Processing	3	0	8
28	CSE7031	Semantics of Programming Languages	3	0	8
29	CSE7033	Advanced Computer Graphics	3	0	8
30	CSE7034	Neural Networks	3	0	8
31	CSE7035	Multimedia Systems	3	0	8
32	CSE7036	Pattern Recognition	3	0	8
33	CSE7037	Electronic Commerce Technologies	3	0	8
34	CSE7038	Bio-Inspired Artificial Intelligence	3	0	8

ELECTIVE COURSES (7xxx)

No	Course Code	Course Title	T	U	ECTS
35	CSE7039	Digital Forensics	3	0	8
36	CSE7041	Embedded Systems	3	0	8
37	CSE7045	Data Mining	3	0	8
38	CSE7046	Bioinformatics	3	0	8
39	CSE7047	Information Retrieval and Web Search	3	0	8
40	CSE7048	Web Mining	3	0	8
41	CSE7049	Fault Tolerant Computing	3	0	8
42	CSE7050	Artificial Intelligence	3	0	8
43	CSE7051	Knowledge Based Systems	3	0	8
44	CSE7052	Natural Language Processing	3	0	8
45	CSE7053	Social Network Analysis	3	0	8
46	CSE7054	Topics in Cloud Computing	3	0	8
47	CSE7056	Blockchain Programming	3	0	8
48	CSE7057	Computational Genomics	3	0	8
49	CSE7059	Multi-Agent Systems	3	0	8
50	CSE7096	Special Topics in Computer Engineering I	3	0	8
51	CSE7097	Special Topics in Computer Engineering II	3	0	8
52	CSE7098	Special Topics in Computer Engineering III	3	0	8
53	CSE7099	Special Topics in Computer Engineering IV	3	0	8

ELECTIVE COURSES (8xxx)

No	Course Code	Course Title	T	U	ECTS
1	CSE8001	Stochastic Process	3	0	8
2	CSE8002	Detection and Estimation	3	0	8
3	CSE8003	Learning Automata	3	0	8
4	CSE8004	Reinforcement Learning	3	0	8
5	CSE8005	Data Warehouses and Olap	3	0	8
6	CSE8006	Evolutionary Computing	3	0	8
7	CSE8007	Multicore Computing	3	0	8
8	CSE8009	Nonlinear Programming	3	0	8
9	CSE8010	Queeing Theory	3	0	8
10	CSE8011	Graph Theory	3	0	8
11	CSE8012	Scheduling for Emerging Parallel Arch.	3	0	8
12	CSE8014	Computational Molecular Biology	3	0	8
13	CSE8015	Advanced Internet Services	3	0	8
14	CSE8016	Vehicular Networks	3	0	8
15	CSE8017	Game Theory in Computer Engineering	3	0	8
16	CSE8018	Theory of Combinatorics	3	0	8
17	CSE8019	Deep Learning	3	0	8
18	CSE8096	Advanced Topics in Computer Eng. I	3	0	8
19	CSE8097	Advanced Topics in Computer Eng. II	3	0	8

INSTITUTE ELECTIVE (8xxx)

No	Course Code	Course Title	T	U	ECTS
1	FBE8002	Advanced Research Methods	3	0	4
2	FBE8004	Teaching and Learning in Science and Engineering	3	0	4