COMPUTER ARCHITECTURE

1	Course Title:	COMPUTER ARCHITECTURE
2	Course Code:	BMB3002
3	Type of Course:	Compulsory
4	Level of Course:	First Cycle
5	Year of Study:	3
6	Semester:	6
7	ECTS Credits Allocated:	5.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Dr. Ögr. Üyesi Metin BİLGİN
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	Bilgisayar Müh. Bölüm Binası, 1. kat, oda 3 Tel.:+90 (224) 275 52 63 email: metinbilgin at uludag.edu.tr
17	Website:	
18	Objective of the Course:	Teaching basic ideas about modern computer architecture is the main aim. To teach concepts about CPU design and memory hierarchies.
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	

	1	Learns memory Hierarchy Design
	2	Learns Instruction-Level Parallelism
	3	Learns Data-Level Parallelism
	4	Learns Thread-Level Parallelism
	5	Learns Pipelining
	6	
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21	Course Content:

Course Content:

Week	Theoretical	Practice
1	One processor and multiple processor systems-Ahmdal's law	
2	Memory management: Virtual memory systems, paging and segmentation	
3	Cache memory systems and replacement algorithms	
4	Pipeline processor design	

5	Feedback pipelines, reservation tables and collision vector	
6	A comparison of RISC-CISC architectures	
7	Shared memory multiprocessor systems and Flynn's classification	
8	Bus based multiprocessor systems: Crossbar switch and multi-gate memory	
9	Interconnected networks: a-Dynamic Interconnected networks: Multistage Networks (Omega Network) b-Static Interconnected networks: Star, Ring, Mesh, Hypercube and Tree network	
10	Message Passing Interface (MPI)	
11	Point-to-point Communication	
12	Collective Communication	
13	Parallel algorithms for vector-matrix multiplication and matrix transpose	
14	Fox and Cannon algorithms for matrix multiplication	

22	Textbooks, References and/or Other Materials:	Computer Architecture, A Quantitative Approach, John L. Hennessy and David A. Patterson, Fifth Edition
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Final Exam	1	60.00
Contribution of Term (Year) Learning Activities to		40.00
Contribution of Final Exam to Success Grade		60.00
Measurement and Evaluation Techniques Used in the		

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	7.00	98.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	2.00	2.00
Others	0	0.00	0.00
Final Exams	1	2.00	2.00
Total Work Load			144.00
Total work load/ 30 hr			4.80
ECTS Credit of the Course			5.00

24 ECTS / WORK LOAD TABLE

25	**CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS**															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ÖK5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications					
Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**