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**
Midterm Exam	1	40.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	2	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		

24	**ECTS / WORK LOAD TABLE**

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

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**				