ALGEBRAIC TOPOLOGY II

1	Course Title:	ALGEBRAIC TOPOLOGY II
2	Course Code:	MAT4078
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	4
6	Semester:	8
7	ECTS Credits Allocated:	6.00
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:	Prof. Dr. OSMAN BİZİM
15	Course Lecturers:	Prof. Dr. Osman Bizim
16	Contact information of the Course Coordinator:	Uludağ Üniversitesi, Fen-Edebiyat Fakültesi Matematik Bölümü, Görükle Bursa-TÜRKİYE 0 224 294 17 50 / obizim@uludag.edu.tr
17	Website:	
18	Objective of the Course:	The aim of this course to give the basic principals of algebraic topology.
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	

	1	Learns the concept of homotopy and its properties.
	2	Learns the homotopy relation and the homotopy theory of equivalence relation.
	3	Learns the fundamental groups.
	4	Learns free groups and Seifert-Van Kampen theorem.
	5	Learns covering spaces and their classification.
	6	Learns the homology theory and homology groups.
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21 Course Content:

Course Content:

Week	Theoretical	Practice
1	The concept of homotopy and its properties	
2	The homotopy relation and its properties.	
3	The fundamental groups and its applications, the fundamental groups of some surfaces	
4	Free groups and their properties	

5	The Seifert-Van Kampen theorem and its applications.	
6	Covering spaces and classification of covering spaces	
7	The lifting of curves to covering spaces, and its applications.	
8	The covering space maps and their properties	
9	The basic concepts of the theory of homotopy	
10	The homology groups and their properties	
11	The relations between fundamental group and first homology group.	
12	The homomorphisms of continuous functions and their properties.	
13	Exact homology sequences and their properties	
14	The homology groups of compact surfaces.	

22	Textbooks, References and/or Other Materials:	1. W. S. Massey, A Basic Course in Algebraic Toplogy, Springer-Verlag, 1991. 2. M.J. Greenberg, J.R. Harper, Algebraic Topolgy, A First Course, Addison-Wesley, 1981. 3. J. Munkres, Topology, Prentice-Hill, 2.Ed. 2000.
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Theoretical	0	0.00
Practicals/Labs	0	0.00
Self study and preperation	2	100.00
Homeworks	0	0.00
Projects	0	0.00
Field Studies	0	0.00
Midterm exams	1	100.00
Others	14	2.00
Final Exams	1	31.00

24 ECTS / WORK LOAD TABLE

Activites	Number	Duration (hour)	Total Work Load (hour)
Home work-project	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	4.00	56.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	21.00	21.00
Others	14	2.00	28.00
Final Exams	1	31.00	31.00
Total Work Load			178.00
Total work load/ 30 hr			5.93
ECTS Credit of the Course			6.00

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	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK2	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK3	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK4	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0

ÖK5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
ÖK6	5	5	5	5	5	5	5	5	5	5	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**