

The University of Jordan

Accreditation & Quality Assurance Center

COURSE Syllabus

Course Name:
Algebraic Topology

1	Course title	Algebraic Topology
2	Course number	0301963
3	Credit hours (theory, practical)	3
	Contact hours (theory, practical)	3
4	Prerequisites/corequisites	None
5	Program title	Ph. D. in Mathematics
6	Program code	
7	Awarding institution	The University of Jordan
8	Faculty	Science
9	Department	Mathematics
10	Level of course	Elective specialization requirement
11	Year of study and semester (s)	2 nd year
12	Final Qualification	Ph.D. in Mathematics
13	Other department (s) involved in teaching the course	None
14	Language of Instruction	English
15	Date of production/revision	16.10.2020

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.

Prof. Hasan Z. Hdeib
Office number: 22107
E-mail: zahdeib@ju.edu.jo

17. Other instructors:

None

18. Course Description:

The homotopy relations, the fundamental group, covering spaces, fundamental group of a covering space, fundamental group of an orbit space, lifting theorems, Seifert-Van Kampen theorem, homology theory.

19. Course aims and outcomes:**A- Aims:**

- 1- To study the homotopy theory.
- 2- To find the fundamental groups for certain spaces, for instance the unit circle, and S^n .
- 3- To prove seifert-van kampen theorem.

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to achieve the following outcomes:

A. Knowledge and Understanding Skills: Student is expected to A1. Master the basic concepts of homotopy theory.

A2. Able to find the fundamental group of certain spaces using different methods.

B. Intellectual Analytical and Cognitive Skills: Student is expected to B1. State and prove seifert-van kampen theorem.

B2. Apply seifert-van kampen theorem in finding the fundamental groups.

C. Subject- Specific Skills: Student is expected to

C1. Use his informations to find the fundamental groups of different spaces.

D. Creativity /Transferable Key Skills/Evaluation: Student is expected to D1. Solve some problems in general topology using algebraic topology.

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Review	1+2				
Homotopy theory	3+6			Homework 1	
The fundamental group	7+8			Midterm Exam	
Covering spaces	9+10				
The fundamental group of a covering spaces	11				
The fundamental group of an orbit space	12			Homework 2	
Lifting theorems	13				
Seifert-van kampen theorem	14+15			Homework 3	

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

In order to succeed in this course, each student each student need to be an active participant in learning- both in class and out of class.

- Class time will be spent on lecture as well as discussion of homework problems and some group work
- To actively participate in class, you need to prepare by reading the text book and doing all assigned homework before class.
- You should be prepared to discuss your homework.
- You are encouraged to work together with other students and to ask questions and seek help from the professor, both in and out of class.

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

ILO/s	Learning Methods	Evolution Methods	Related ILO/s to the program
	Lectures	Exam	
	Published Papers	Presentations	
		Home work	

23. Course Policies:

Class attendance of students at the beginning of the lecture is recommended.

Assignment is given to the students at regular intervals for them to solve and submit. Late or no submission of assignments carries penalties or loss of grade points.

Absences recorded in each lecture with making excuses, if any.

24. Required equipment:**25. References:**

A- Required book (s), assigned reading and audio-visuals:

Elements of Algebraic Topology, James R. Munkres

B- Recommended books, materials, and media:

Algebraic Topology, Edwin H. Spanier.

26. Additional information:

Name of Course Coordinator : Prof. Hasan Hdeib Signature : ----- Date : 19/10/2020

Head of curriculum committee/Department : ----- Signature : -----

Head of Department : Prof. Mohammed Al Raqab Signature : -----

Head of curriculum committee/Faculty : Prof. Ahmaed Alzghoul Signature : -----

Dean : Prof. Fuad Kittaneh Signature : -----

Copy to:

Head of Department
Assistant Dean for Quality Assurance
Course File