

**Department of Mathematics**

**Faculty of Science**

**MATH 713 (206713) TOPOLOGY**

**3(3-0-6)**

**Prerequisite**            Consent of the instructor

**Course Descriptions :**

Topological spaces. Cartesian Product Topology. Connectedness and path - connectedness. Identification Topology. Separation Axioms. Convergence. Compactness.

<b>Course Contents</b>	<b>No. of Lecture Hours</b>
1. Topological space	4
1.1 Topological space and subspaces.	
1.2 Basis for a given topology.	
1.3 Continuous maps, open maps, closed maps.	
1.4 Homeomorphism.	
2. Cartesian Product	4
2.1 Cartesian product topology.	
2.2 Slices in cartesian product.	
- Continuity of maps.	
3. Connectedness	7
3.1 Connectedness.	
3.2 Components.	
- Local connectedness.	
- Path - connectedness.	
4. Identification Topology	6
4.1 Identification topology.	
4.2 Subspaces.	
- General theorems.	
- Spaces with equivalent relations.	
- Quotient spaces.	
- Weak topologies.	

<b>Course Contents</b>	<b>No. of Lecture Hours</b>
5. Separation Axioms	10
5.1 Housdorff spaces	
5.2 Regular spaces.	
- Normal spaces.	
- Urysohn's characterization of normality.	
- Tietze's characterization of normality.	
- Completely Regular Spaces.	
6. Convergence	7
6.1 Sequences and nets	
6.2 Filterbases in spaces	
- Convergence properties of filterbases	
- Closure in term of filterbases	
- Continuity convergence in Cartesian Products	
- Maximal Filterbases	
7. Compactness	7
7.1 Compact spaces.	
7.2 Special properties of compact spaces.	
- The Tychonoff theorem.	
- countable compactness.	
- Local compactness.	
<b>Total</b>	<b>45</b>