Topology MTH7011

Programme: M.Sc. (Mathematics) Year:2018-19 Semester: Odd
Course : Core Credits : 04 Hours : 40

Course Context and Overview (100 words):
This course introduces topology, covering topics fundamental to modern analysis and geometry. It deals with subjects like topological spaces and continuous functions, connectedness, compactness, separation axioms.

Prerequisites Courses: Analysis I

Course outcomes (COs):

On completion of this course, the students will have the ability to:
CO1 Understand terms, definitions and theorems related to topology.
CO2 Demonstrate knowledge and understanding of concepts such as open and closed sets, interior, closure and boundary.
CO3 Create new topological spaces by using subspace, product and quotient topologies.
CO4 Use continuous functions and homeomorphisms to understand structure of topological spaces.
CO5 Demonstrate knowledge and understanding of metric spaces.

Course Topics:

Topics	**Lecture Hours**	
UNIT – I		
1.1 Topological spaces, Examples of Topological spaces, Subspace topology, continuous functions.	5	10
1.2 Product topology, metric topology, quotient topology.	5	
UNIT – II		12
2.1 Connected space, connected spaces of real line, component and local connectedness.	5	
2.2 Compact spaces, compact sunspaces of real line, limit point compactness and local compactness.	7	
UNIT – III		10
1.1 The countability axioms, First countable spaces and second countable spaces,	5	
1.2 Separability Lindelof spaces,	5	
UNIT – IV		8
1.1 Separation axiom, Normal spaces.	3	

Topics	Lecture Hours	
1.2 , The Urysohn Lemma, The Tietze extension theorem, Tychnoff theorem	5	

Textbook (IEEE format):
Text Book:
J. R. Munkres, Topology, 2nd Edition, Pearson Education (India), 2001**.**

references

H. L. Royden, Real Analysis, 3rd edition, Prentice Hall of India, 1995.

G.F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill, New York, 1963.

J. L. Kelley, General Topology, Van Nostrand, 1955.

Additional Resources (NPTEL, MIT Video Lectures, Web resources etc.): NPTEL, MIT Video Lectures.

Evaluation Methods:

Item	Weightage
Quiz	20%
Midterm	30%
Final Examination	50%

Course Instructors' name: Dr. Pratibha Garg