



Course Syllabus
Gyanmanjari science college
Semester-1(M.Sc.)

Subject: Topology-MSCMA11503

Type of course: Major

Prerequisite: Topological spaces, Base and sub base, Homeomorphisms.

Rationale: The field of topology is a branch of mathematics that studies the properties of spaces that are preserved under continuous deformations, such as stretching, bending, and twisting, but not tearing or gluing.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P		C	Theory Marks		Practical Marks		
			ESE		MSE	V	P	ALA	
4	0	0	4	60	30	10	20	30	150

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.



Continuous Assessment:

Sr. No	Active Learning Activities	Marks
1.	Theme based poster : Faculty will provide specific theme to students and students will prepare specific theme based poster.	10
2.	Chain notes : Faculty will provide a topic on that students have to prepare a series based on topic in chart form in hard copy and upload it to moodle.	10
3.	Problem Solving: Faculty will Provide a problem definition that students have to prepare a chart form in hard copy and upload it to moodle.	10
4.	Quiz : Faculty will assign Unit wise 10 MCQS and students need to solve mcqs and select the right answer in moodle.	10
5.	Presentation : Faculty will assign topics and students will prepare presentations(Slideshow/video) and upload them to moodle	10
Total		50



Course Content:

Unit No.	Course content	Hrs	% Weightage
1.	Chapter : 1 > Topological spaces. Neighborhoods. > Topology generated by a collection of subsets. > Base and sub-base for a given topology.	15	25
2.	Chapter : 2 > Topological Subspaces. Continuous functions. > Homeomorphisms. Continuity and limits of sequences.	15	25
3.	Chapter : 3 > Closed sets, closure and limit points. > T ₀ , T ₁ and T ₂ spaces. > Interior, exterior and boundary of a set.	15	25
4.	Chapter : 4 > Connected spaces. Connected subsets of the real line. > Continuous images of connected spaces, Separated spaces.	15	25

Suggested Specification table with Marks (Theory) : 60

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	10%	40%	20%	10%	20%	0

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.



Course Outcome:

After learning the course the students should be able to:	
CO1	Understand of topological spaces as a generalization of metric spaces.
CO2	Explore the concept of continuity for functions defined on topological spaces.
CO3	Know the different separation axioms in topological spaces, such as T_0 , T_1 , T_2 spaces.
CO4	Enhance their problem-solving abilities by working with examples.

Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

Reference Books:

- [1] Munkres J. M. :Topology: A First Course, PHI (1978)
- [2] Kelley J.L.: General Topology, Van Nostrand Company, Inc. (1955)
- [3] Sims B. T.: Foundations of Topology, Collier MacMillan International Edition, (1976)

