Semester	AUG 2022
Open to semester	7,13
Course code	**MT4114**
Course title	**Algebraic Topology**
Credits	4 /
Course Coordinator & participating faculty (if any)	Diganta Borah
Nature of Course	Lectures
Pre-requisites	Group Theory, Point Set Topology
Objectives (goals, type of students for whom useful, outcome etc)	In this course, we will learn two algebraic invariants of a topological space—fundamental group and homology—which help us to classify topological spaces. This course would be useful for students interested in pure branches of mathematics such as algebra, complex analysis, geometry, number theory, representation theory etc.
Course contents (details of topics /sections with no. of lectures for each)	1. Review of quotient spaces (3 Lec) 2. Paths and homotopy, fundamental groups, the fundamental group of a circle (6 Lec) 3. Free groups and free products, van Kampen theorem, applications to CW complexes (6 Lec) 4. Covering spaces, lifting properties, classification of covering spaces, deck transformations (6 Lec) 5. Simplicial homology, singular homology, homotopy invariance, exact sequences and excision (8 Lec) 6. Degree, cellular homology, Mayer-Vietoris sequences, homology with coefficients (8 Lec) 7. Axioms for homology (1 Lec)
Evaluation /assessment	End-Sem Examination-30% Mid-Sem Examination-30% Others-40%%
Suggested readings (with full list of authors, publisher, year,	1. A. Hatcher, Algebraic topology, Cambridge, 2002

edn etc.)	2. W. S. Messy, A basic course in algebraic topology, Springer, 1991 3. J. Munkres, Topology, Prentice Hall, 2000 4. J. Munkres, Elements of Algebraic Topology, Westview Press 1996 5. E. H. Spanier, Algebraic Topology, Springer 1996