



Chaotic Dynamical Systems

Mathematics

Instructor Name: Prof. Anima Nagar

Institute: IIT Delhi

Department: Mathematics

About Instructor: The instructor is a faculty at the Mathematics Dept. of IIT Delhi. Her primary area of research is in Topological Dynamics.

Pre Requisites: : A good course in Real Analysis, Metric Spaces.

Core/Elective: : Elective

UG/PG: : Both

Industry Support : None

Course Intro: : The aim of this course is to provide insight into elementary topics and current studies in the theory of chaotic dynamical systems. The focus will be on providing the students with basics in the area and introduce them to the fundamentals in this field. This course discusses the various definitions of Mathematical Chaos in elementary analytical way.

COURSE PLAN

SL.NO	Week	Module Name
1	1	Analysis of the dynamics
2	2	Dynamics of one-dimensional maps of both the interval and the circle
3	3	Recurrence and minimality
4	4	Elementary bifurcations
5	5	Sarkovskiĭ's theorem
6	6	Li Yorke chaos and Scrambled sets
7	7	Transitivity and Devaney Chaos
8	8	Stronger forms of Transitivity
9	9	Symbolic Dynamics
10	10	Topological Entropy
11	11	Higher Dimensional Dynamics
12	12	Toral Automorphisms and Henon Map