

PATTERN FORMING INSTABILITIES

3-1-0

Detailed syllabus and Lecture-wise Break-up

Sr.	Topic	Hours
1.	Linear stability of spatially uniform state: Rayleigh-Benard convection	6
2.	Couette-Taylor flow, Faraday crispations	4
3.	Classification of Linear instabilities: stationary, oscillatory, structural instabilities with simple examples	6
4.	Nonlinear patterns in spatially extended systems	4
5.	Amplitude equations, method of multiple scales, Floquet theory	6
6.	Phenomenological models, Galerkin models, Eckhouse instability	6
7.	Competing patterns, Dynamics of dislocations	6
8.	Modelling Simple fluid instabilities	4
9.	Tutorials	6
10.	Mini-project	8
Total		56