I. Topological equivalence and bifurcations: [K] ch. 2, [P] ch. 4,8

1.1 Topological equivalence of dynamical systems
1.2 Poincare linearization
1.3 Hyperbolic fixed points
1.4 Bifurcation diagrams
1.5 Normal forms
1.6 Center manifolds

II Local bifurcations: [K] ch. 3,5,8 [P] ch. 8

2.1 Saddle–node bifurcation
2.2 Hopf bifurcation
2.3 Projection method for center manifold reduction
2.4 Codim-2 bifurcations

III Symmetric bifurcation theory: [H] ch. 3,4

3.1 Groups
3.2 Group representations
3.3 ODEs with symmetry: the equivariant branching lemma
3.4 Example: bifurcations in a box
3.5 Hopf bifurcations with symmetry

IV Pattern formation: [H] ch. 5,7,8

4.1 Convection and Turing patterns
4.2 Steady-state bifurcations on a lattice
4.3 Amplitude equations
4.4 Pattern instabilities
**Recommended texts**


[H] Rebecca Hoyle, *Pattern formation* (CUP, 2006)