

MAT3440 Dynamical Systems

Spring 2025 by Snorre H. Christiansen

Plan

Subject to revision according to progression.
Last update: April 9, 2025.

Reference:

- Book: Hirsch, Morris W.; Smale, Stephen; Devaney, Robert L., Differential equations, dynamical systems, and an introduction to chaos. Third edition, Oxford, Academic Press, 2013.
- Notes by Ulrik Fjordholm on numerical methods.

Supplementary reading:

- Online notes by Jeffrey Rauch.

Ukeplan: Pensum refers to the book.

1. (Week 4) 22 – 23 january:
Lecture: chap. 1
Lecture: chap. 2
2. (Week 5) 29 – 30 january:
Exercises: chap. 1: 1, 5, 6, 8, 11, 15.
Lecture: chap. 3
3. (Week 6) 5 – 6 february:
Lecture: chap. 4
Lecture: chap. 5
4. (Week 7) 12 – 13 february:
Exercises: chap. 2: 6, 7. chap. 3: 2 (i, ii, iii), 6, 7. chap. 4: 3, 6.
Lecture: chap. 6
5. (Week 8) 19 – 20 february:
Lecture: chap. 7
Lecture: chap. 7
6. (Week 9) 26 – 27 february:
Exercises: chap. 5: 7, 13. chap. 6: 7. chap 7: 7.
Lecture: numerical methods
7. (Week 10) 5 – 6 march:
Lecture: numerical methods
Lecture: numerical methods
8. (Week 11) 12 – 13 march:
Exercises: section 7.5 questions 1 and 2 (from (a) to (h)) p. 155-156.
Lecture: chap. 8

9. (Week 12) 19 – 20 march:
Lecture: chap. 8
Lecture: chap. 9
10. (Week 13) 26 – 27 march:
Lecture: chap. 9
Lecture: chap. 10
11. (Week 14) 2 – 3 april:
Exercises: chap. 8: 6, 9. chap. 9: 6, 10.
Lecture: chap. 10
12. (Week 15) 9 – 10 april:
Lecture: chap. 10
Lecture: chap. 11
13. (Week 16) 16 – 17 april: Easter break.
14. (Week 17) 23 – 24 april:
Exercises: section 10.7 (BZ equation), chap. 10: 6,7.
Lecture: no lecture/self study.
15. (Week 18) 30 april:
Lecture: chap. 11
No lecture on thursday (1 may).
16. (Week 19) 7 – 8 may:
Exercises: section 11.4 (harvesting). chap. 11: 9.
Lecture: semester summary.
17. (Week 20) 14 – 15 may:
Lecture: repetition/exam work.
Lecture: repetition/exam work.

18. (Week 21) 21 – 22 may:
Exercises: Q & A
Lecture: self study.

Other

- Compulsory exercise: 20/03.
- Exam: 28/05.

References