

MA 510: Selected Topics (Mathematical Modeling) — Course Calendar

Spring 2026 Course Calendar

The table below lists the planned schedule for this course. See the [course syllabus](#) for additional course information. Typos are possible. You are responsible for tracking university closures, final exam schedules, etc. through the [NC State University Academic Calendar](#).

Due dates for assignments should be confirmed through Moodle, always check the assignments themselves for specific dates. These due dates are tentative based on the start of the semester; dates may change on Moodle without changing on this schedule.

MA 510: Selected Topics (Mathematical Modeling) — Spring 2026 Course Calendar

Week	Date Range	Lecture / Session	Sections Covered	Assignments
1	Jan 12 – Jan 16	Orientation and introduction to modeling, technology setup and Matlab basics	Course orientation; set up Matlab Online; Lecture 1.1 Introduction to modeling; Technology Lesson 1: Intro to Matlab/Octave	Please introduce yourself in the course forum!
2	Jan 19 – Jan 23	Further lessons in Matlab. <i>Martin Luther King Jr. Day</i>	Technology Lesson 2: variables and basic plotting	Technology Exercise 1 (F) *all technology exercises stay open until the end of the semester, but this is the recommended date*
3	Jan 26 – Jan 30	Exponential and logistic growth	Lecture 1.2 More about exponential growth; Lecture 1.3 The Rule of 72; Lecture 1.4 The logistic model	Technology Exercise 2 (F); Group choice for written HW 1 (F)
4	Feb 02 – Feb 06	Wrap up Module 1 and start Module 2	Lecture 1.5 Mantis population problem; Technology Lesson 3 (systems of linear equations in Matlab); Lecture 2.1 Least squares, part 1	Quiz 1.1 (due M)
5	Feb 09 – Feb 13	Least squares, proportionality, and log-log plots	Lecture 2.2 Least squares, part 2; Lecture 2.3 Proportionality;	Quiz 1.2 (due M); Technology Exercise 3 (M); Module 1 Written

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			Lecture 2.4 Log–log plots	Homework (due F); Technology Exercise 4 (F)
6	Feb 16 – Feb 20	Dimensional analysis and difference equations. <i>Wellness Day</i>	Lecture 2.5 Dimensional analysis; Lecture 2.6 Difference equations; Lecture 2.6 supplement	Quiz 2.1 (due M); Technology Exercise 5 (M); Technology Exercise 6 (F)
7	Feb 23 – Feb 27	Logistic maps and supply–demand models	Lecture 2.7 Discrete logistic map; Lecture 2.8 Supply and demand	Quiz 2.2 (due W); Review for Test 1; Take Test 1 (Modules 1-2)
8	Mar 02 – Mar 06	Wrap up Module 2 and start Module 1	Begin differentiation review (Lecture 3.0.1)	Quiz 2.3 (due M); Midterm 1 (Modules 1–2; window in Week 8, closes W)
9	Mar 09 – Mar 13	Differentiation review and population models	Lecture 3.0.2 Differentiability, part 2; Lecture 3.1 Using dP/dt with population models; Lecture 3.2 Equilibrium solutions and phase lines	Module 2 Written Homework (due F)
10	Mar 16 – Mar 20	Spring Break		
11	Mar 23 – Mar 27	Stability and bifurcations	Lecture 3.3 Stability: sinks, sources, and nodes; Lecture 3.4 Bifurcations	Quiz 3.1 (due W)
12	Mar 30 – Apr 03	Climate modeling, Buffon's Needle Problem, and Predator-Prey	Lecture 3.5 Basic energy balance model (EBM) for Earth; Lecture 3.6 Buffon's needle and Monte Carlo methods; start Module 4 with Lecture 4.1 Predator–prey equations, part 1	Quiz 3.2 (due M)
13	Apr 06 – Apr 10	Predator–prey continued, Euler's method, and SIR model	Lecture 4.2 Predator–prey with competition; Lecture 4.3 Euler's method; Lecture 4.4 SIR epidemic model	Module 3 Written Homework (due Su)
14	Apr 13 – Apr 17	Transition matrices and Markov chains		Technology Exercises 7–9 (predator–prey

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			Lecture 4.5 Transition matrices; Lecture 4.6 Markov chains	and SIR) (M); Technology Exercise 10 (Transition matrices) (W)
15	Apr 20 – Apr 24	Google PageRank; Pooled Testing	Lecture 4.7 Google PageRank	Quiz 4.1 (due M); Work on the Pooled Testing activity
16	Apr 27 – Apr 28	Course wrap-up	Wrap-up of transition-matrix and Markov-chain applications; pooled testing project; begin Test 2 window	Quiz 4.2 (due W); Review for Test 2; Take Test 2 (Modules 3-4); Module 4 Homework: Pooled Testing (due next Tuesday)

Final exams for courses with set meeting times are determined before the semester begins; find your final exam schedule here: [NC State University Final Exam Calendar](#) for the date and time of all of your final exams. I recommend that you schedule the final exam for this course early in the semester.