BISC-407, Population Dynamics, Fall 2021

Lecture:	Wed	11:30-12:20	AQ 3159
	Fri	10:30-12:20	AQ 4120
Tutorial:	Mon (D101)	13:30-14:20	AQ 3148.1
	Mon (D102)	14:30-15:20	AQ 3148.1

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Office Location: Shrum Science, B8227
Office Hours: Monday, 11:00-12:00, Wednesday 13:00-14:00, & by appointment

Pre-requisites: BISC 102 and either BISC 204 or GEOG 215, all with a grade of C- or better.

Course Description: Using a combination of theory and applied exercises students will explore various facets of population biology and evaluate the factors influencing the natural fluctuation and regulation of plant and animal populations.

Grade Breakdown:

Tutorial	15%
Assignments	15%
Final project	10%
Midterm Exam (Fri, Oct 15)	25%
Final Exam	35%

Letter Grade Distribution:

≤ 50	50−	55−	60−	65−	70−	75−	80−	85−	90−	95−
F	D	C-	C	C+	B-	B	B+	A-	A	A+

Final grades may be curved in a fair and impartial manner, with distribution reflecting the performance and effort of the class.

General:

- Attached to the end of this document is a tentative course schedule. This will be updated throughout the term.

- Exams are closed book, closed notes, unless instructed otherwise.

- No makeup assignments or exams will be given.

Course Schedule:

To be updated as we progress.

Week	Content	Tutorial Topic	Reading
Sept 6	Welcome and Introduction, Introduction to Maxima, Population growth	No tutorial	Ch. 1
Sept 13	Population growth, Model construction, One locus selection	Introduction to Maxima	Ch. 2, 3.1–3.3
Sept 20	Graphical analyses, Equilibria	Writing functions	Ch. 4, 5.1–5.2
Sept 27	Stability	Graphing	5.3
Oct 4	Stability, Applications of the theory	Finding equilibria and assessing stability	5.3
Oct 11	Midterm review, Midterm	Thanksgiving	
Oct 18	Dispersal, Introduction to matrix algebra	More stability analyses	Primer 2
Oct 25	Matrix algebra, General solutions for multi-variable linear models	Allee Effects	7.1–7.3
Nov 1	Solving linear equations, Introduction to demography	Matrix algebra	7.4, Ch. 10
Nov 8	Demography continued, Lotka-Volterra competition	Eigenvectors	Ch. 10, 8.1-8.2
Nov 15	Multi-variable stability analysis, Spread of disease	Dispersal between patches	8.3
Nov 22	Predator-prey models, Probability theory, Discrete probability distributions	Competition between two species	Primer 3
Nov 29	Continuous probability distributions, Simulation models	Predator-prey models	
Dec 6	No lectures	Simulation	