

Syllabus for MAP4103-0001.fa20

Mathematical Modeling

Instructor: Nick Cogan

Course Information

Course Hours	10:10AM–11:00AM MWF
Location	TBD
Credit Hours	3
Prerequisites	MAC 2313 (C- or better), MAP 2302 (C- or better), MAS 3105 (C- or better), PHY 2048C (C- or better)

Course Description

Modeling encompasses everything that is not a direct tool for solving or simulating equations. This course explores the origin, utility, and refinement of mathematical models in applied contexts.

Instructor Information

Name	Nick Cogan
Title	Brennan Professor
Email	cogan@math.fsu.edu
Office	Mathematics, 002-E (Enter Love from East Parking lot, turn right, first door on right)
Office Hours	TBD

Learning Objectives

1. Understand the scientific framework of modeling
2. Apply scaling laws and dimensional analysis
3. Derive models (mostly ODEs) from principles
4. Perform steady-state, linearization, phase plane, bifurcation, and numerical analyses

5. Use models to analyze real-world systems
6. Refine models based on analysis and comparison

Course Materials

No required texts. Recommended readings:

- *A Concrete Approach to Mathematical Modelling* by Mike Mesterton-Gibbons
- *Applied Mathematics* (4th ed.) by J. David Logan
- *Nonlinear Dynamics and Chaos* by Steven H. Strogatz

Student Responsibilities

Responsibilities

Students should log on to Canvas regularly, engage with the course material, and submit assignments by the due dates. All work must be individual and follow the FSU Academic Honor Policy.

Grading Policy

Grading Scale

Homework and projects are graded on a 0–3 scale:

- 3 – Very Good
- 2 – Good
- 1 – Poor
- 0 – Unsuccessful

Final Grade:

- S – Average of 2 and above
- U – Average of 1 and below

Technology Requirements

Technology

Canvas access, high-speed internet, and software for Matlab, R, Python, etc. Help available if needed. Visit Canvas Support.

Course Policies

Communication / Netiquette

Respectful, professional communication in discussions and emails. Avoid slang, emoticons, and all caps. Use correct spelling and grammar.

Participation and Lateness

Excused absences include illness, family emergencies, jury duty, religious holidays, and university activities.

Homework Policy

Due dates announced in class and on Canvas.

University Policies

Attendance

Same excused absences as above.

Academic Honor

See full policy at FSU Academic Honor Policy.

Disabilities

Contact oas@fsu.edu or visit Office of Accessibility Services for accommodations.

Additional Resources

Resources

- **Panama City Campus:** sds@pc.fsu.edu, Student Disability Services
- **Tutoring:** tutor@fsu.edu, ACE Tutoring Services

Syllabus Change Policy

Change Policy

This syllabus is a guide and subject to change with advance notice.