

Dynamical Systems and Mathematical Modeling Graduate Certificate

This certificate prepares students to describe, formulate and analyze real world problems in mathematical terms. Students will be exposed to a broad range of applicable analytical tools arising in different areas of mathematics such as Dynamical Systems, Partial Differential Equations, etc. Examples that can be treated with these tools include mathematical models that describe the swinging of a clock pendulum, the flow of water in a pipe, the random motion of particles in the air, and the number of fish each springtime in a lake, predator-prey model, Keynesian cross model of a national economy, binocular rivalry in visual perception, opinion dynamics, and protein dynamics.

Program Requirements

- At least 12 credit hours
- All courses must be taken for a grade.
- A grade point average of 3.0 or above is required for the completion of the certificate.
- All four courses must be taken at Miami University.

Prerequisites:

- A grade of C- or better in MTH 222, MTH 245 (MTH 246 or MTH 347), MTH 252, MTH 331, and MTH 441/541 or their equivalents (MTH 441/541 is only required for MTH 655 and this prerequisite can be waived by permission of the instructor).

Code	Title	Credit Hours
Select at least three of the following:		9
MTH 532	Optimization	
MTH 533	Applied Linear Algebra	
MTH 555	Introduction to Partial Differential Equations	
MTH 595	Introduction to Applied Nonlinear Dynamics	
Select enough additional courses from the following list, or from the list above, to meet the hours requirement:		3-4
MTH 535	Mathematical Modeling Seminar	
MTH 551	Introduction to Complex Variables	
MTH 655	Advanced Differential Equations	
Total Credit Hours		12-13