

EN250 Introductory Quantitative Biology

Professor Arthur Ritter

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Office Hours: by appointment

Professor Nikolay Strigul

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Office Hours: by appointment

Lectures: Tuesdays and Thursdays, 11:00 am-12:15pm, Babbio Center 219

Homeworks: There will be weekly homework assignments.

Exams: There will be Midterm and Final Exams.

Grading:

- Homework assignments: 30 %
- Midterm: 30 %
- Final: 40 %

General comments:

This course is intended for engineering students at the freshman level. The objectives of the course include: Create links across disciplinary boundaries, drawing math, engineering and biology together. Interest engineers in biology and give them a biological knowledge base uniquely appropriate to engineers. Provide both engineers and scientists with a series of applications of mathematics to natural systems that will stimulate and motivate students in the more detailed study of math to come later in their curriculum. Specific outcomes of the course will be: Students will show a deep understanding of selected topics in quantitative biology. The students gain an ability to describe physical reality in mathematical terms in a way that transfers to improved performance in engineering science classes. Students will gain an appreciation for how engineering and mathematical methods can be applied to biology, and therefore will demonstrate an increased interest in related areas, such as by taking related courses as electives, such as in biomedical engineering or environmental engineering, or by choosing to major in those areas. The students will have a deeper understanding of the utility of specific mathematical approaches, which will improve their understanding of and interest in learning of those topics in later courses such as mathematics and probability and statistics.

Weeks 1-7 - Professor Ritter

Weeks 8-14 - Professor Strigul

Course program (coming soon):

***Week 1.* - Introduction to Quantitative Biology.**

***Week 2.* - Basic Genetics.**

***Week 3.* - Cellular Organization and Transport 1.**

***Week 4.* - Cellular Organization and Transport 2.**

***Week 5.* - Cellular Organization and Transport 3.**

***Week 6.* - Human Physiology 1.**

***Week 7.* - Human Physiology 2.**

***Week 8.* - Ecology and Ecotoxicology 1.**

***Week 9.* - Ecology and Ecotoxicology 2.**

***Week 10.* - Ecology and Ecotoxicology 3.**

***Week 11.* - Ecology and Ecotoxicology 4.**

***Week 12.* - Biological Diversity and Evolution 1.**

***Week 13.* - Biological Diversity and Evolution 2.**

***Week 14.* - Biological Diversity and Evolution 3.**