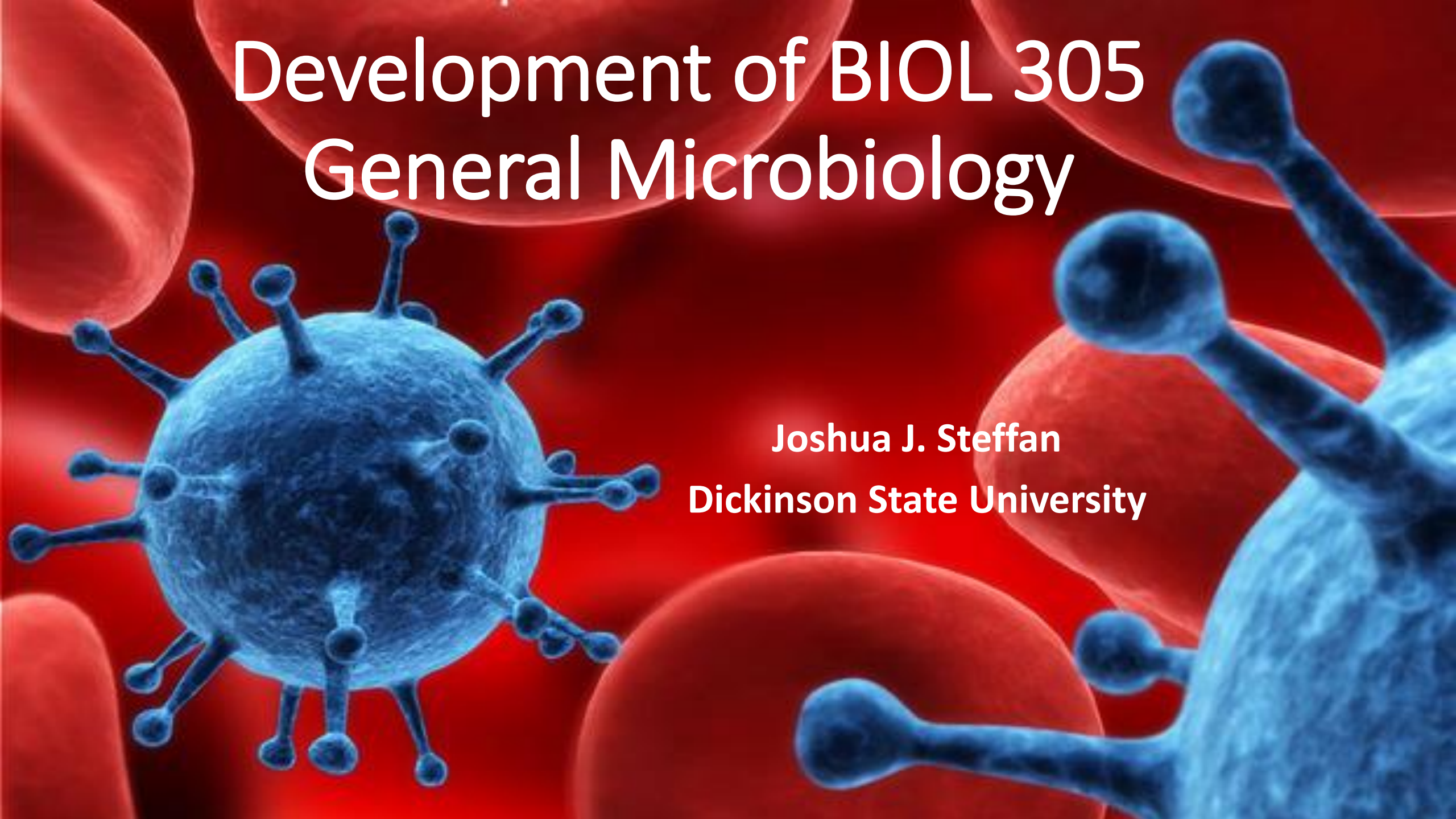
Development of BIOL 305 General Microbiology



Joshua J. Steffan

Dickinson State University

Background

Previous Offering: BIOL 302 Microbiology and BIOL 302L Microbiology Lab

- 3+1 Credit (3 hrs lecture; 2 hrs laboratory per week)
- Separate course grades

- Served: Environmental Health and Nursing Majors; Biology (elective)

- Inherent lab problem: students must return (out of the normal class time) to view/analyze results)…often without instructor present

- Other challenges: Nursing majors did not take any basic biology course before enrolling in Microbiology
  - Nursing majors need to have basic biology introduction (2-3 weeks)
  - Looking for different things out of a Microbiology course
    - Hospital/clinic settings vs. environmental vs. public heath vs. research

Goal of Sumer Fellowship

- Create a new Course: BIOL 305; General Microbiology
  - Intended for Biology and Environmental Health Majors
- Splits the “Science” majors from the “Nursing” majors
- Modify content and focus on areas most desirable per career goals
- 2 semesters of Biology Pre-Req.
  - Eliminates the need to cover basic biological principles
  - Cover more material

Course Design

- BIOL 305; 4 credits
  - Lecture and Lab are one grade
    - If the student fails, they retake both…intricately related
  - Unique scheduling, allowing for instructor to be present after microorganisms grow for 24-48 hours
    - 50 minute lectures MWF
    - 2 hr lab on Tuesday
    - 1 hr lab on Thursday
      - This extra laboratory hour, allows class to analyze and discuss results from Tuesday's lab
  - Students are in the class each day of the week
    - Students tend to keep up with material better (continuity)
      - Engaged, tight-knit group of students

Course Themes (Lecture & Lab)

- Bacterial and Viral Structure/Anatomy
- Bacterial Genetics
- Microbial Growth, Growth Control, and Antibiotics
- **Bacterial Metabolism**
- Bacterial Replication
- **Environmental Microbiology**
- **Food Microbiology**
- Pathogenicity & Infection
- Epidemiology
- **Veterinary Microbiology**
- Virus, Prion, and Bacterial Diseases
- **Biotechnology**
- **Astromicrobiology**

Unique to BIOL 305

Need classroom activities?

Microbial Discovery Activities illustrate to classroom teachers and students the power of the microbial world in everyday life. Developed for middle and high school classrooms, all activities promote further understanding of the National Science Education Standards (NSES). All activities are inquiry-based and engage student participants in their own learning.

ASM Microbial Discovery Workshops

ASM's Committee on K-12 Education sponsors workshops at national and regional science teacher conferences such as National Teachers Association.

AstroMicroBiology Workshop at the National Association of Biology Teachers 2008 Professional Development Confe
Attend ASM/NASA-Sponsored Sessions at NABT 2008.
October 15-18, 2008
Memphis, Tennessee

How did life originate and evolve? Is there life elsewhere in the Universe? What is the future of life?

Join the NASA Astrobiology Institute and the American Society for Microbiology at for a day of exploration into the world of

ASTROBIOLOGY!

Astrobiologists study microbial life on Earth to learn more about the potential for life elsewhere in the Universe. They study hyp atmosphere, microbes living in extreme habitats on Earth as analogs for extraterrestrial life and guides to the search for life els habitats.

This all day event will be held during the NABT Professional Development Conference on SATURDAY, OCTOBER 18th. This is a g hands-on workshops featuring classroom-ready activities in "astroMICRObiology."

Refreshments will be served... so join NAI and ASM for a "Microbial Lunch!"

https://astrobiology.nasa.gov/nai/

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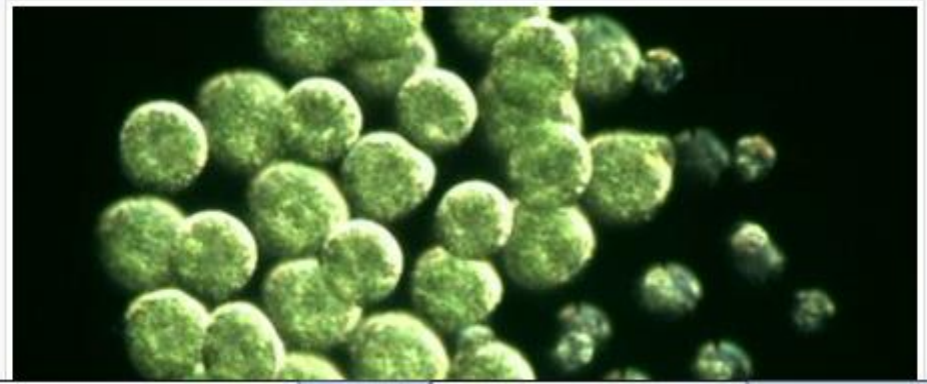
Algae Fitness and Multicellular Life



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SPOTLIGHT

May 4 - Comparative Tectonics and Geodynamics of Venus, Earth, and Rocky Exoplanets

May 13 - Abstract Submission Deadline for 78th Annual Meeting of the Meteoritical Society

May 25 - 1st Advanced School on Exoplanetary Science

May 28 - Emerging Researchers in Exoplanet Science Symposium

National Aeronautics and Space Administration

NASA

Astrobiology in Your Classroom

Life on Earth ...and elsewhere?

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Educator Resource Guide

HANDS-ON ACTIVITIES FOR GRADES 5–8

MICROBIOLOGY AND MOLECULAR BIOLOGY REVIEWS, Mar. 2010, p. 121–156 Vol. 74, No. 1
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Space Microbiology

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Graduate student Jeff Bowman examines "frost flowers", microbially-enriched ice crystals on the Arctic sea ice.

WELCOME TO ASTROBIOLOGY AT THE UNIVERSITY OF WASHINGTON

Results

- New course was approved and offered Fall Semester 2014
- 12 Students
  - Required for only three students (Environmental Health Majors)
  - Taken as an Elective for other nine students
- Biology curriculum now requires BIOL 305 for Biology Majors starting in Fall 2014 catalog