

MBIO 3472 Microbial Systematics

Students registering for this course must ensure they satisfy the following minimum technological requirements:

1. A computing device where one can create and edit documents,
2. An internet connection capable of streaming videos and downloading software, and
3. Access to a web-cam and microphone.

As classically done for this course, lecture notes are not provided to students. All students are responsible for all material provided verbally and in shared slides during live lectures. Students must take down their own notes during each class. Only specific complex figures will be provided prior to each class.

Course Outline

(Topics may be deleted or new topics may be added)

Introduction

- Systematics: The characterization and taxonomy of microorganisms
- Taxonomy: Classification, identification, and nomenclature of microorganisms
- Characterization of prokaryotes

Phenetic Systems of Bacterial Classification

- Traditional characterization: Bergey's system of classification
- Numerical taxonomy

Phylogenetic (Phyletic) Classification

- Hybridization and phyletic relatedness
- DNA-DNA hybridization
- 16S rRNA sequence analysis (Woese's phylogeny)

Polyphasic approach to bacterial systematics

The Archaea Domain

-Physiological groups comprising the Archaea

The Eubacteria: Relationship between Woese's Phyletic groupings and Bergey's

The Anoxygenic Phototrophs

- Comparison of anoxygenic phototrophic bacteria
- Nutritional versatility of purple bacteria

The Purple Bacteria Phylum (*Proteobacteria*)

The Gram Negative Aerobes (*Pseudomonas*, *Rhizobiaceae*)

The Gram Negative Facultative Anaerobes

The Gram negative, anaerobic, fermentative Eubacteria: Classification and relatedness to Gram positive phylum

The Gram positive phylum: Major phyletic groups, unicellular spore formers, the high GC Gram positive organisms

Course evaluation:

Practice Quiz: 5 points

Midterm test: 25 points

Final exam (Cumulative): 70 points

Each exam will be closed book. Students are not allowed to access any materials in any way during the exam. The exams are designed to test your knowledge and critical thinking.

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