Master of Chemical and Life Sciences Program
College of Computer, Mathematical, and Natural Sciences

CLFS 609D: Microbiology

Syllabus

Module 1
History of Microbes and Microbiology
  Recognizing the existence and significance of microscopic life
  Paleomicrobiology: learning from rocks, skeletons, and the ancient texts

Module 2
The Microbial Kingdoms
  Bacteria, Protists, Fungi, Viruses and others
  Structure, Taxonomy, and Characteristic Features

Module 3
Microbial Metabolism
  Catabolism
  Various sources of carbon and energy
  Biosynthesis

Module 4
Microbial Genetics
  The structure and function of microbial genomes
  Reproduction
  Evolution
  Mutation and Acquisition

Module 5
Microbes in the Living World
  Environment
  Pollution
  Commensal – Extracellular and Intracellular
  The basics of bacterial, parasitic, fungal, viral and other infectious diseases
  Plants, Animals, and Humans
Module 6
Humans and Microbes
Foods and Spoilage
Co-evolution and Human Adaptations
Saccharomyces cerevisiae, Helicobacter, Syphilis, Typhus.

Module 7
Microbial Biotechnology
  Antibiotics, and other natural products of microbes
  Microbes as cloning and expression vehicles

Module 8
Extreme Microbiology
  The first living things on Earth
The formation of the modern biosphere
  The search for extraterrestrial life