

**MICRO 60 Course Outline as of Fall 2010****CATALOG INFORMATION**

Dept and Nbr: MICRO 60 Title: FUNDMTL MICROBIOLOGY

Full Title: Fundamentals of Microbiology

Last Reviewed: 5/8/2023

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	4.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	4.00	Lab Scheduled	3.00	5	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	6.00		Contact Total	105.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 210.00

Title 5 Category: AA Degree Applicable

Grading: Grade or P/NP

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

**Catalog Description:**

Survey of the major concepts of microbiology with emphasis on those related to infectious disease. Basic techniques for cultivation and identification of micro-organisms.

**Prerequisites/Corequisites:**

Completion of CHEM 60 and BIO 10

**Recommended Preparation:****Limits on Enrollment:****Schedule of Classes Information:**

Description: Survey of the major concepts of microbiology with emphasis on those related to infectious disease. Basic techniques for cultivation and identification of micro-organisms.

(Grade or P/NP)

Prerequisites/Corequisites: Completion of CHEM 60 and BIO 10

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>		Effective:	Inactive:
	C	Natural Sciences	Fall 1981	
<b>CSU GE:</b>	<b>Transfer Area</b>		Effective:	Inactive:
	B2	Life Science	Fall 1981	
	B3	Laboratory Activity		
<b>IGETC:</b>	<b>Transfer Area</b>		Effective:	Inactive:
<b>CSU Transfer:</b>	Transferable	Effective:	Fall 1981	Inactive:
<b>UC Transfer:</b>		Effective:		Inactive:

### **CID:**

### **Certificate/Major Applicable:**

Major Applicable Course

## **COURSE CONTENT**

### **Outcomes and Objectives:**

Upon successful completion of this course, students will be able to:

1. Define microorganism and categorize microbes by domain and kingdom.
2. Describe the history of the discovery of the microbial world.
3. Relate microbial causality of disease to Koch's Postulates.
4. Describe the basic chemical activities essential to life.
5. Describe the structure of prokaryotic and eukaryotic cells.
6. Contrast genetic mutation, recombination, conjugation, transformation, transduction.
7. Describe viruses, their relation to cells, and vaccinations.
8. Compare various mechanisms of pathogenicity.
9. Describe the function of the immune system and its relation to disease.
10. Relate environmental influences on host resistance to public health measures.
11. Perform basic microbiological laboratory techniques.

### **Topics and Scope:**

1. History of microbiology
  - A. Discovery, microscopy, staining
  - B. Koch's Postulates and causality
  - C. Scientific method as it applies to microbiology
  - D. Microbiology and world civilizations
2. Unity of life
  - A. Cells and chemistry
  - B. Structure and function of nucleic acids
  - C. Structure and function of proteins
  - D. Energy metabolism
  - E. Prokaryotes and eukaryotes
  - F. Antibiotics and selective toxicity
3. Taxonomy and identification

- A. DNA based methodologies
- B. Epidemiology
- C. Select normal flora and pathogens
- 4. Microbial genetics
  - A. Mutation and recombination
    - 1. plasmids, conjugation, transduction, transformation
    - 2. biotechnology
  - B. Antibiotic paradox
- 5. Virus
  - A. Discovery and definitions
  - B. Interactions with host cell
  - C. Anti-viral vaccination and chemotherapy
  - D. Retrovirus, HIV disease, cancer
- 6. Prions
- 7. Host's role in disease
  - A. Symbiosis
  - B. Non-specific resistance
  - C. The immune system and immunization
  - D. Environmental influences on host resistance
- 8. Lab exercises
  - A. Laboratory safety and sanitation
  - B. Laboratory techniques
    - 1. aseptic techniques
    - 2. bacterial culture (liquid and solid medium)
    - 3. microscopy and staining techniques
    - 4. preparation and sterilization of media
    - 5. analyses of bacteria in water samples and on the human skin
    - 6. antibiotic sensitivity
    - 7. metabolic tests and bacterial identification
    - 8. ELISA (enzyme-linked immunosorbent assay)

**Assignment:**

- 1. Reading assignments from text, averaging one chapter per week; additional reading assignments averaging 5-10 pages per week
- 2. Research paper- involves library or internet research and 10 minute oral presentation
- 3. Examinations: objective and essay questions, 3 midterms, 2 lab practical exams, and a final
- 4. Laboratory experiments, data collection, demonstration of sterile and culture technique

**Methods of Evaluation/Basis of Grade:**

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Research paper
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Writing 10 - 20%
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**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

None

Problem solving  
0 - 0%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations  
0 - 0%

**Exams:** All forms of formal testing, other than skill performance exams.

Multiple choice, completion, essay, quizzes, lab practicals

Exams  
80 - 90%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

Oral presentation of research paper

Other Category  
0 - 5%

**Representative Textbooks and Materials:**

Microbiology: An Introduction, 10th edition, G.J. Tortora, B.R. Funke and C.L. Case, 2009

Microbiology: A Systems Approach, 2nd edition, M.K.Cowan and K.P. Talaro, McGraw-Hill, 2009

Instructor prepared lab manual