**Department :** **Clinical Laboratory Sciences**

**Course Number : CLS 311**

**Course Title : Basic Microbiology**

**Credit Hours : 3 + 1 = 4**

**Course Description:**

This course provides the students with basic theoretical and practical aspects of various groups of microorganisms to include bacteriology, virology, mycology, and Parasitology as well as basic concepts of immunology and epidemiology. It also introduces the basic concepts of disinfectants, antiseptics, preservatives, Ames test, methods of sterilization, aseptic techniques and general microbial control.

**CLS 311: Lectures Outline**

**Weeks Subjects**

1. General introduction to Microbiology

Historical background and Classification of

Microorganisms

2. Introduction to Viruses:

Classification, morphology and structure, Replication and

Pathogenicity

3. Introduction to Fungi:

Classification, morphology and structure, Replication and

Pathogenicity

4. Introduction to Parasites:

Classification, General Characteristics of parasites and

Medically important Parasites

5. Introduction to Bacteria:

Classification, Morphology and Structures

6. Bacterial Structures

7. Microbial Growth requirements:

Nutritional requirements, Physical requirements,

Types of bacteria according to energy production

8. Bacterial Growth:

Growth curve, Constant and synchronous growth

9. Bacterial Metabolism: Catabolic Pathways and regulation

10. Bacterial Genetics:

Mutation and mutagenic agents ,&Ames test

Gene transfer ,PCR ,& genetic engineering

11. Bacterial Genetics continued ….

12. Microbial Control:

Principles, Disinfectants, antiseptics, and preservatives

Physical and chemical methods of sterilization Aseptic

techniques

13. Microbial control continued…

14. Pathogenicity of Infectious Diseases

15. Normal Microbial flora

**CLS 311: Laboratory Schedule**

**Weeks Subjects**

1. Introduction to Microbiology laboratory techniques and

safety rules

2. Introduction to Microscopy

Types of Microscopes.

3. Examination of Stained Smear and Wet

Preparation.

4. Microscopic examination of Eucaryotic microoganisms .

5. Staining of Bacterial Cells ( simple staining )

6. Staining of Bacterial Cells ( differential staining )

7. Preparation and Types of Culture Media

8. Bacterial Culture Techniques

Colonial Morphology

9. Bacterial Count ( Total & Viable )

10. Factors Affecting Microbial Growth

11. Physical and chemical methods used in microbial

control

12. **Revision**

13. **FINAL PRACTICAL EXAMINATION**

**Assessments:**

Mid Term Examination: Written 20

Mid Term Examination: Practical 15

Attendance and Reports: 5

Final Practical Examination: 20

Final Theoretical Examination: 40

**References:**

1. Cossart, P., P. Boquet, S. Normark, and R. Rappuolo. **Cellular Microbiology**. ASM Press, Washington, DC, 2000.
2. Kaufmann, S. H. E., A. Sher and R. Ahmed. **Immunology of Infectious Diseases**. ASM Press, Washington, DC, 2001.
3. Madigan, M. T., Martinko, J. M., and J. Parker. **Brock Biology of Microorganisms**. Prentice Hall, Upper Saddle River, NJ, 1997
4. Mims, C., A. Nash, and J. Stephen. **Mims' Pathogenesis of Infectious Disease**. Academic Press, San Diego, CA. 2001.
5. Prescott,L. M., J. P. Harley, and D. A. Klein. **Microbiology** (3rd edition) Wm. C. Brown Publishers, Dubuque, IA, 1996.
6. Salyers, A. A. and D. D. Whitt. **Bacterial Pathogenesis. A Molecular Approach**. ASM Press, Washington, DC, 1994.
7. Tortora, G. J., B. R. Funke, and C. L. Case. **Microbiology, An Introduction**. (7th edition) Benjamin Cummings, San Francisco, 2002.