
B. Sc. Zoology Honors with Research 8th Semester

Microbiology & Parasitology

Course code ZOLR2822M

Credits. 4

Hours 64

Course Objectives:The course aims to:

1. Introduce students to microbiology and parasitology, their **history, pioneers, and scope**.
2. Familiarize students with microorganisms and parasites ' **classification, structure, and characteristics**.
3. Study **microscopy, staining, sterilization, and disinfection** techniques.
4. Explain microbes 'role in **human health, disease, industry, and biotechnology**.
5. Explain parasitology's **origin, evolution, adaptations, and host-parasite relationships**.

Learning Outcomes: By the end of this course, students will be able to:

1. Record the history and classification of microbiology.
2. Examine the use of culture, staining and preservation techniques in microbiology.
3. **Differentiate** between beneficial and pathogenic microbes, and **analyze** their roles in human health, disease, antibiotics, and resistance.
4. Analyze the applications of microbiology in industry, biotechnology, and medicine.
5. **Describe** parasitic adaptations, host–parasite relationships, zoonotic infections, and the biology of important human parasites (protozoa, helminths, nematodes).

Unit 1: Introduction to Microbiology

1.1: History and pioneers of microbiology (Pasteur, Koch, etc.). Scope and applications of microbiology.

1.2: Classification of microorganisms unto class level (viruses, archaea, bacteria, protozoa, fungi).

1.3: Microscopy and staining techniques.(TEM, SEM, & Phase contrast microscopy)

1.4: Sterilization & disinfection techniques.

Unit 2: Applied Microbiology

2.1: Microbes and Human Health: Pathogens vs. beneficial microbes, Microbiota & Probiotics.

2.2: Microbial diseases: AIDS, Dermatophytosis(Ringworm), Tuberculosis.

2.3: Antibiotics & Resistance

2.4: Industrial Microbiology- fermentation (ethanol, antibiotics, enzymes).

Unit 3: Introduction to Parasitology

3.1. Terms & definitions in parasitology

3.2. Origin, evolution and distribution of parasites in animal kingdom

3.3. Parasitic adaptations in ectoparasites & endoparasites.

3.4. Host parasite relationships & zoonosis.

Unit 4: Economically Important Parasites of Humans and Domestic Animals

4.1. Parasites of man (Plasmodium) poultry (Eimeria) & cattle (Babesia)

4.2. Trematode parasites of man (Schistosoma) fish (Diplozoon) & ruminants (Fasciola)

4.3. Cestode parasites of man (Diphyllobothrium) fish (Adenoscolex) & ruminants (Moneizia)

Government Degree College, Baramulla

4.4. Nematode parasites of man with emphasis on (Wucharia) aves (Heterakis) & ruminants (Haemonchus)

SUGGESTED READINGS

1. Arora, D. R and Arora, B. (2001) Medical Parasitology. II Edition. CBS Publications and Distributors.
1. E.R. Noble and G.A. Noble (1982) Parasitology: The biology of animal parasites. V Edition, Lea &Febiger
2. Ahmed, N., Dawson, M., Smith, C. and Wood, Ed. (2007) Biology of Disease. Taylor and Francis Group.
3. Parija, S. C. Textbook of medical parasitology, protozoology & helminthology (Text and colour Atlas), II Edition, All India Publishers & Distributers, Medical Books Publishers, Chennai, Delhi.
4. **Prescott, L.M. (2002) Microbiology.** 5th Edition, McGraw-Hill, New York