

**Gujarat University**  
**B.Sc. Microbiology**  
**Syllabus**  
**First Year B. Sc. Semester**  
**Microbiology**  
**(Skill Enhancement Course)**  
**Credits:02 (02 hrs/week, Total: 30 hrs)**

Effective from June-2023 Paper Code: SEC-DAS-126  
**Paper Name: Disinfection and Sterilization**

**Learning Outcomes:**

1. Provides basic knowledge of control of microorganisms.
2. Provides basic skills of disinfection and sterilization.
3. Helpful to those who works or wants to work in the field of general microbiology, medical & paramedical sciences, pharmaceuticals, agriculture, tissue culture, biotechnology, fermentation etc

**Unit-1 Introduction to Disinfection and Sterilization**

**Teaching hrs:**

**10**

- A Understanding of terms: Sterilization, Disinfection, Sanitization, Antisepsis, Antimicrobial agent (Germicide, Bactericide, Bacteriostatic)
- B Conditions/Factors influencing the effectiveness of antimicrobial agents
- C Control of microorganisms by chemical agents: Phenolics, Alcohols, Aldehydes, Halogens, Quaternary ammonium compounds, Sterilizing gases (Ethylene oxide, Beta-propiolactone, Vaporized hydrogen peroxide)
- D Control of microorganisms by physical agents: Moist Heat, Dry Heat, UV Radiation, Gamma Radiation

**Unit-2 Practicals**

**Teaching hrs:**

**20**

- 1 Disinfection of hands by washing with soap and water
- 2 Aseptic technique
  - a. Disinfection of table top/floor of the room by using Phenol/Lysol
  - b. Sterilization of inoculating wire loop, straight wire, tip of the forcep, glass spreader, mouth of test tube & flask etc. by direct heating in burner's flame.
  - c. Demonstration of aseptic transfer of bacterial culture
- 3 Disinfection of skin of fingertips by using alcohol/tincture of iodine
- 4 Principle, working knowledge and operation of hot air oven and autoclave
- 5 Sterilization of glassware in hot air oven
- 6 Sterilization of nutrient broth in an autoclave

**References:**

1. **Prescott, Harley and Klein's Microbiology**, JM Willey, LM Sherwood, CJ Woolverton, 9<sup>th</sup> Edition (2014), McGraw Hill Higher Education-USA
- 2 **Microbiology**, Pelczar JR., Chan ECS, Krieg NR, 5<sup>th</sup> Edition (1993), McGraw-Hill Book Company, NY.
3. **Principles of Microbiology**, R. M. Atlas, 2<sup>nd</sup> Edition (Indian Edition) (2015) McGraw Hill Education (India) Private Limited, New Delhi, India
4. **Medical Microbiology – A Guide to The Laboratory Diagnosis and Control of Infection**, Edited by Robert Cruickshank, 11<sup>th</sup> Edition (1972), The English Language Book Society