

**Title: Microbiology [2-1-0-3]**

**Content :**

- Introduction to microbiology and microbes, history & scope of microbiology
- Nutrition of bacteria, Nutrient transport mechanisms
- Bacterial cell division
- Bacterial growth, Diauxic growth, Chemostat, Monod equation
- Bacterial genetics: recombination in bacteria, plasmids, transformation, transduction and conjugation
- Bacterial Shape, Size, their role in microbial life
- Bacteriophages, Life cycle, Mechanisms for transition between different life cycles
- Quorum sensing and community behavior, Fratricides or kin killing
- Antibiotic persistence, tolerance and resistance, Evolution of antibiotic resistance
- Application of microbes in various fields

**Texts / References:**

1. Pelczar, M. J., Reid, R. D., & Chan, E. C. (2001). Microbiology (5th ed.). New York: McGraw-Hill.
2. Willey, J. M., Sherwood, L., Woolverton, C. J., Prescott, L. M., & Willey, J. M. (2011). Prescott's Microbiology. New York: McGraw-Hill.
3. Matthai, W., Berg, C. Y., & Black, J. G. (2005). Microbiology, Principles and Explorations. Boston, MA: John Wiley & Sons.