

# **MB4PG11- SYSTEMATIC BACTERIOLOGY**

**Number of Hours / Week: 3**

**Credits: 3**

## **UNIT I**

Molecular taxonomy – G +C content, DNA – DNA hybridization, Plasmid profiles etc. DNA finger printing methods RFLP, RAPD, STRR & LTRR, REP, ERIC –PCR, rRNA. Types of rRNA - 23s rRNA, 16S rRNA & 5S rRNA. Importance of 16SrRNA in microbial identification and taxonomy. Introduction to Molecular phylogeny – tree terminology, software programs for making phylogenetic trees – MEGA, Phylip, RAPDistance. Introduction to Metagenomics

## **UNIT II**

Study of identifying characters- morphological and cultural; pathogenicity; epidemiology and laboratory identification of -Aerobic cocci such as Staphylococci, Streptococci and Neisseriae Anaerobic cocci, Gram positive bacilli. Corynebacterium, Bacillus, Anaerobic rods- Clostridia, Bacteroidaceae etc.

## **UNIT III**

Gram negative bacilli. Enterobacteriaceae- *E.coli*, Proteus, Klebsiella, Shigella Salmonella etc. Pseudomonas. Haemophilus. Pasteurella, Yersinia, Francisella, Bordetella. Brucella. Vibrios.

## **UNIT IV**

Spirochetes. Mycoplasma. Rickettsiae. Chlamydiae. Acid fast bacilli- Mycobacteria- *M.tuberculosis*, *M.leprae*, Non tuberculous mycobacteria. Actinomycetes- Nocardia, Actinomyces, Miscellaneous Bacteria- Listeria, Campylobacter, Helicobacter, Legionella, Acinetobacter etc.

## **References**

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2. Greenwood, D., Slack, R.C.B., Peutherer, J.F., and Barer, M.R. (2007). Medical Microbiology : A Guide to Microbial Infections: Pathogenesis, Immunity, Laboratory Diagnosis and Control. Elsevier Health Sciences UK. 17<sup>th</sup> ed
3. Topley, W.W.C., Wilson, G.S., Parker, T., and Collier, L.H. (1990). Topley and Wilson's Principles of Bacteriology, Virology and Immunology (Edward Arnold)
4. Zinsser, H., and Joklik, W.K. (1992). Zinsser microbiology (Lange) 20th ed.

5. Ananthanarayan, R., and Paniker, C.K.J. (2006). Textbook of microbiology(Orient Blackswan) 7<sup>th</sup> ed
6. Mackie, T.J., McCartney, J.E., and Collee, J.G. (1989). Mackie & McCartney practical medical microbiology. Churchill Livingstone, 13<sup>th</sup> ed
7. Jawetz, E., Melnick, J.L., and Adelberg, E.A. (1987). Review of medical microbiology (Appleton & Lange)
8. Talaro, K.P., Cowan, M.K., and Chess, B. (2009). Foundations in Microbiology (McGraw-Hill Higher Education)
9. Page, R.D.M., and Holmes, E.C. (1998). Molecular Evolution: A Phylogenetic Approach (Blackwell Science)
10. Primrose, S.B. (1998). Principles of genome analysis: a guide to mapping and sequencing DNA from different organisms (Blackwell Science) 2<sup>nd</sup> ed.
11. Adolph, K.W. (1996). Microbial Genome Methods (CRC Press)
12. Dunham, I. (2003). Genome Mapping And Sequencing (Horizon Scientific)
13. Brendan Wren (Ed), Nick Dorrell (2002) Functional Microbial Genomics. Volume 33, Methods in Microbiology, Academic Press, UK.
14. Primrose, S.B., and Twyman, R. (2009). Principles of Genome Analysis and Genomics (John Wiley & Sons) 3<sup>rd</sup> ed.