136C11 Fundamentals Of Microbiology Practicals Summary

Course Units

Unit 1: Cleaning Of Glass Wares, Glp And Sterilization

• Microbiological good laboratory practice and safety. Sterilization and assessment of sterility–Autoclave
• hot air oven
• and membrane filtration.

Unit 2: Gain Knowledge On Media Preparation And Cultural Characteristics

• Media preparation: Liquid media
• solid media
• semi-solid media
• agar slants
• agar deeps
• agar plates.

Unit 3: Learn The Pure Culture Technique

• Preparation of basal
• differential
• enriched
• enrichment
• transport
• and selective media preparation - Quality control of media
• growth supporting properties
• sterility check of media. Pure culture techniques: Streak plate
• pour plate
• decimal dilution.

Unit 4: Learn The Microscopic Techniques And Staining Methods

• Culture characteristics of microorganisms: Growth on different media
• growth characteristics
• and description. Demonstration of pigment production. Microscopy: Light microscopy and bright field microscopy.

Unit 5: Stain And Staining Methods

• Staining techniques: Smear preparation
• simple staining

• Gram’s staining and endospore staining. Study on Microbial Diversity using Hay Infusion Broth-Wet mount to show different types of microbes and hanging drop.

Course Outcomes

CO1: Practice sterilization methods; learn to prepare media and their quality control.

CO2: Learn streak plate, pour plate and serial dilution and pigment production of microbes.

CO3: Understand Microscopy methods, different Staining techniques and motility test.

CO4: Observe culture characteristics of microorganisms.

CO5: Study on Microbial Diversity using Hay Infusion Broth-Wet mount

Text Books

1. James G Cappucino and N. Sherman MB(1996). A lab manual Benjamin Cummins, New York 1996.
2. Kannan. N (1996). Laboratory manual in General Microbiology. Palani Publications.
3. Sundararaj T (2005). Microbiology Lab Manual (1st edition) publications.
4. Gunasekaran, P. (1996). Laboratory manual in Microbiology. New Age International
5. R C Dubey and D K Maheswari (2002). Practical Microbiology. S. Chand

Reference Books

1. Atlas.R (1997). Principles of Microbiology, 2nd Edition, Wm.C.Brown publishers.
2. Amita J, Jyotsna A and Vimala V (2018). Microbiology Practical Manual. (1st Edition). Elsevier India
3. Talib VH (2019). Handbook Medical Laboratory Technology. (2nd Edition). CBS
4. Wheelis M, (2010). Principles of Modern Microbiology, 1st Edition. Jones and Bartlett Publication.
5. Lim D. (1998). Microbiology, 2nd Edition, WCB McGraw Hill Publications.

Web Resources

1. http://www.biologydiscussion.com/micro-biology/sterilisation-and-disinfection-methods-and-principles-microbiology/24403.
2. https://www.ebooks.cambridge.org/ebook.jsf?bid=CBO9781139170635
3. https://www.grsmu.by/files/file/university/cafedry//files/essential_microbiology.pdf
4. https://microbiologyinfo.com/top-and-best-microbiology-books/
5. https://www.cliffsnotes.com/studyguides/biology/microbiology/introduction-to-microbiology/a-brief-history-of-microbiology