336C61 Appled Practical Summary

Course Units

Unit 1: Toassess The Water Quality And Potability

• 1.
• Physical, chemical, and microbiological assessment of water and potability test forwater.
• ■ Physical – Color
• pH
• ■ Chemical - alkalinity
• acidity
• DO
• BOD
• COD ■ Microbiological – MPN index (Presumptive
• Completed and Confirmatory test) 2.
• Study of air microflora by settle plate method.

Unit 2: Enumeration Of Bacteria From Milk And Milk Quality

• 3.
• Isolation and identification of bacteria and fungi from fruits and vegetables 4.
• Direct microscopic count of milk.
• 5.
• Methylene blue reductase test and Resazurin test 6.
• Microbiological examination of milk by SPC.

Unit 3: To Investigate Various Extracellular Enzyme Producers In Soil

• 7.
• Isolation of extracellular enzyme producers –Amylase, protease, lipase 8.
• Microbiological assay of antibiotics by cup plate method and other methods 9.
• Isolation of Rhizobium/ Azotobacter/ phosphate solubilizing organisms 10.
• Preparation of biofertilizers – Demonstration

Unit 4: Improve Knowledge On Plant Pathogens

• 11.
• Study of plant pathogens- Tikka Disease, Red rot of sugarcane, Citrus canker, Blight of paddy.
• 12.
• Study of fungi - Mucor, Curvularia, Alternaria, Rhizopus, Aspergillus

Unit 5: Preparation Of Probiotics And Prebiotics

• 13.
• Isolation of constituent flora of fermented milk.

• 14.
• Growth of probiotic LAB in broth, milk and whey.
• 15.
• Preparation of probiotic fermented milks like dahi, yoghurt, lassi and whey drink.
• 16.
• Effect of prebiotics on the growth of LAB in milk and broth.
• 17.
• Survivability of probiotic organisms in fermented milks.
• 18.
• Antimicrobial potential of the functional dairy products.

Course Outcomes

CO1: Assess the microbial quality of water and relate the experimental results to the prescribed standards by the statutory bodies

CO2: Evaluate the quality of milk and enumerate bacteria in milk by standard plate count method

CO3: Identify extracellular enzyme producing and nitrogen fixing microorganism form soil and to prepare a biofertilizer.

CO4: Identifyvarious plant pathogenic bacteria

CO5: Synthesize probiotic fermented milks using microorganisms

Text Books

1. Cappucino J and Sherman N.(2010). Microbiology: A Laboratory Manual. 9th Edition. Pearson Education Limited.

2. Kannan. N. (1996). Laboratory manual in General Microbiology. Palani Publications.

3. R C Dubey and D K Maheswari.(2002). Practical Microbiology. S. Chand Publishing.

4. Neelima Garg, K.L. Garg, K.G. Mukerji (2010).Laboratory Manual of Food Microbiology, Wiley publication

5. Aneja, KR.(2010). Experiments in Microbiology, Plant pathology and Biotechnology. New Age International (P) Limited.

Reference Books

1. Christon J. Hurst Editor in Chief, Ronald L. Crawford, Jay L. Garland, David A. Lipson, Aaron L. Mills, Linda D. Stetzenbach (2007). Manual of Environmental Microbiology, Third Edition,Wiley publication.

2. James G Cappucino and Natalie Sherman.(2016). Microbiology – A laboratory manual. 4th Edition. The Benjamin publishing company, New York.

3. Marylynn V. Yates, Cindy H. Nakatsu, Robert V. Miller, Suresh D. Pillai 2016). Manual of Environmental Microbiology, 4th Edition,ASM press.

4. Burns, Richard G (2005). Environmental MicrobiologyA Laboratory Manual, 2nd Edition .Lippincott Williams & Wilkins, Inc.

5. Ian Pepper, Charles Gerba, Jeffrey Brendecke (2004). Environmental Microbiology-A laboratory manual, Elsevier.

Web Resources

1. https://micobenotes.com/fields-of-microbiology/
2. https://bio.libretexts.org
3. https://www.google.com
4. https://www.sfamjournals.onlinelibrary.wiley.com
5. https://www.degruyter.com