# Practical Plan

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| **Name of the college:** Government College of Arts, Science and Commerce, Sanquelim- Goa | | |
| **Name of Faculty:** Ms. Shubha Shivdas Kauthankar | **Subject:** Botany | |
| **Paper code: BOC 107- Microbiology and Plant Pathology** | **Program: T.Y.B.Sc.** | **Division: -** |
| **Academic year: 2024- 2025** | **Semester: V** | **Total Practicals/Labs: 15X4= 60 Hours** |
| **Credits: 2 (4 Hours)** | | |

**Course Objectives: 1. The course deals with basic and advanced concepts of microbiology and plant pathology.**

**2. It aims to create awareness of the occurrence and economic value of various microbes; their interactions and impact on living organisms.**

**3. The laboratory exercises provide basic skills in isolation and handling of microorganisms and its relevant applications.**

**Course Outcome: 1. Acquire the knowledge of basic and advance concepts used in Microbiology and Plant Pathology**

**2. Discuss the significance of microorganisms.**

**3. Describe methods of Microbe preservation.**

**4. Diagnose common plant diseases and device control measures.**

**Student Learning Outcome: 1. Gain knowledge of sterilization methods, biohazards and biosafety measures.**

**2. Gain knowledge of methods for cultivation, preservation and maintenance of microbial cultures.**

**3. Understand the role and relevance of beneficial microorganisms and their applications in day to day life.**

**4. Understand the fundamental basis of plant-microbe interaction that leads to plant diseases and measures to be adopted for plant health management.**

**5. Acquire skills in isolation and handling of microbes.**

| Month | Practicals/Labs Scheduled Date | No. of Practicals/Labs planned | List of Experiments | Reference books |
|---|---|---|---|---|
| July 2024 | 08/07/2024 | 2 (4 Hours) | Working and handling of equipment used in microbiology laboratory. | Gunasekaran, P. 1995. Laboratory Manual in Microbiology<br>Dubey, R.C. and Maheshwari, D.K. 2002. Practical Microbiology<br>Aneja, K.R. 1993. Experiments in Microbiology, Plant Pathology and Tissue Culture<br>Sambamurty, A.V.S.S. 2006. Text Book of Plant Pathology<br>Dubey, R.C. and Maheshwari, D.K. 1999. A Text Book of Microbiology |
| July 2024 | 15/07/2024 | 2 (4 Hours) | Determination of microbial (yeast) population size using serial dilution technique and total count using haemocytometer; relationship between dilution and cell count. | |
| July 2024 | 22/07/2024 | 2 (4 Hours) | Study of bacterial motility by hanging drop method | |
| July 2024 | 29/07/2024 | 2 (4 Hours) | Preparation of liquid and solid (plates and slants) culture media – Nutrient Broth, Nutrient Agar and Potato Dextrose Agar | |
| August 2024 | 05/08/2024 | 2 (4 Hours) | Isolation of microorganisms from air; study of colony characteristics of bacteria and fungi; preparation of pure culture of bacteria by streak plate method to obtain isolated colonies; streaking on slants | |
| August 2024 | 12/08/2024 | 2 (4 Hours) | Evaluation of effectiveness of different agents on hand washing (sanitizer, handwash, dettol and alcohol). | |
| August 2024 | 19/08/2024 | 2 (4 Hours) | Screening for amylase producing microorganisms in soil using starch agar by serial dilution spread plate method | |
| August 2024 | 26/08/2024 | 2 (4 Hours) | Analysis of water sample to determine its potability (presumptive test, confirmed test and completed test | |
| September 2024 | 02/09/2024 | 2 (4 Hours) | Testing quality of milk by methylene blue dye reduction test. | |
| September 2024 | 16/09/2024 | 2 (4 Hours) | Demonstration of fermentation by yeast for preparation of idli and sanna | |
| September 2024 | 23/09/2024 | 2 (4 Hours) | Screening for antimicrobial activity of plant extracts by agar well/disc diffusion method (extracts of neem, garlic and lemon grass; positive and negative control). | |

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| September 2024 | 30/09/2024 | 2 (4 Hours) | Study of causal organism, symptoms, disease cycle and control measures of plant diseases (viral, bacterial and fungal – one each). | |
| October 2024 | 07/10/2024 | 2 (4 Hours) | Demonstration of Koch's postulates for a bacterial/fungal pathogen. | |
| October 2024 | 14/10/2024 | 2 (4 Hours) | Anatomy/mounting of spores of fungus infected specimens (rust, blight and rot) | |
| October 2024 | 21/10/2024 | 2 (4 Hours) | Image analysis of infected field., Revision. | |

***Assessment Rubrics**

| Component | Max Marks |
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| ISA 1 | 10 |
| ISA 2 | 10 |
| Practical | 50 |
| Project | - |
| Semester End Exam | 80 |