

GOVERNMENT GENERAL DEGREE COLLEGE, MANGALKOTE
DEPARTMENT OF BOTANY

ADD-ON COURSE:
TECHNIQUES IN MICROSCOPY
(Academic Session 2019-2020)



Dr. Pradipta Kumar Basu
OFFICER IN CHARGE, W.B.E.S.
Government General Degree College, Mangalkote
Dt. Purba Bardhaman, West Bengal- 713132

Course Design

Course background

- Holistic development of the participating students.
- Development of scientific temper among students.
- Understanding the practical applicability of different microscopes.

Requirements

- *Student-participants*: Internal. Compulsory for students of **B.Sc. Zoology (H)**.
- *Teachers*: Internal. Faculty members of Department of Botany, GGDC, Mangalkote. External faculty members, research scholars and scientists may be invited to conduct some classes depending on their willingness and availability.
- *Course Fee*: Nil.
- **Intake Capacity: 25**
- **Contact hours: 30 hrs**
- *Class/Lecture duration*: 01 hr.
- *Duration of Lab. work*: 06 hr.

Objectives of the course

Microscopy has become one of the most useful tools in life science. This course in Techniques in Microscopy begins with basics of microscopy, proceeds through various types of microscopy, covers the various methods for sample preparation and concludes with some of the latest advances in microscopy. In addition to lectures, it also provide lab so as to cover pragmatics of how to use microscope. Learners are expected to:

- (a) The thorough theoretical and practical knowledge about microscopy.
- (b) Enhance student's microscopic skills
- (c) Acquire the knowledge of dealing with microscopes with sample preparation.
- (d) Increase their self-confidence to work in the field of laboratory and research areas.

Career prospects

Students will develop skills in preparing sample for microscopic observations and know role of different microscopes in microbiology related works. Development of research aptitude will help them in their future aspirations. In terms of employability skills they can find positions in Microbiology based labs and industries.

Modern pedagogy

The course aims to foster heuristic and exploratory learning and is based on the principles of learning-by-doing. Continuous and comprehensive evaluation will help in reinforcement of the course objectives.

Process of continuous assessment and grading

It will be based on the following:

- Attendance of the students
- Multiple Choice Questions
- Viva-voce
- Lab. work



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Expected outcomes of the course

After completing the course, the students will have the knowledge and skills to do the following:

- Identify and understand the principle components of microscope.
- Understand the principles of optics that applied to microscopy.
- Set up and use of a microscope.
- Understand different types of microscope.
- Understand the process of sample preparation for microscopic observations.

Syllabus contents

Course contents (Theory)	Class/Lectures
Unit I: Introduction to microscopy <ul style="list-style-type: none">• History of microscopy• Units of Measurement	03
Unit II: Techniques of Light Microscopy <ul style="list-style-type: none">• Compound Light Microscopy• Dark-field Microscopy• Phase-Contrast Microscopy• Fluorescence Microscopy• Confocal Microscopy	10
Unit III: Techniques of Electron Microscopy <ul style="list-style-type: none">• Transmission Electron Microscopy• Scanning Electron Microscopy	06
Unit IV: Scanned-Probe Microscopy <ul style="list-style-type: none">• Scanning Tunneling Microscopy• Atomic Force Microscopy	02
Unit V: Preparation of Specimens for Light Microscopy <ul style="list-style-type: none">• Preparing Smears for Staining• Simple Stains• Special Stains	03
Total no. of lectures	24*

* Duration of 01 class/lecture = 01 hour.


Practical/Field Study/Project	
1	Laboratory Work for Basic Light Microscopy with Sample Preparation (06 hours)

Examination pattern:

1. Multiple Choice Questions – 10 marks
2. Viva voce/oral presentation – 10 marks
3. Lab. work – 10 marks

Full Marks: 30

Gradation pattern:


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Percentage of marks obtained	Grade
90-100	Excellent - A
70-89	Good - B
50-69	Fair - C
40-49	Not Eligible for Certificate - D

CERTIFICATE WILL BE PROVIDED BY THE COLLEGE AFTER COMPLETION OF COURSE



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Department of Botany

GOVERNMENT GENERAL DEGREE COLLEGE MANGALKOTE

(Affiliated to The University of Burdwan)

Certificate of Completion

This certificate is awarded to Mr./Missbearing Roll No.....of Semester.....of the session 2019-2020 of the Department of...Botany...,G.G.D.C.Mangalkote, for successfully completing Add-on Course entitled “TECHNIQUES OF MICROSCOPY” during his/her.....Semester study.

The candidate has fulfilled all requirements and specifications set by the institute.


Grade:

Dr. Akash Kedia
(Head, Department of Botany.)
G.G.D.C.Mangalkote

Dr.Pradipta Kumar Basu
(IQAC Coordinator)
G.G.D.C. Mangalkote

Dr.Raj Kumar Singh
(Officer In Charge)
G.G.D.C. Mangalkote

Grade for the certificate, 90-100% 'A', 70-89% 'B', 50-69% 'C' and 40-49% 'D'


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Date of issue: