



**LEAD CITY UNIVERSITY, IBADAN**  
**Faculty of Sciences**  
**Department of Microbiology/Biology**

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**COURSE PARTICULARS**

**Course Title:** Botanical techniques

**Course Code:** BOT 212

**Lecturers:-**

**Name:** Dr. B.A. Bamkefa

**Qualification:** B.Sc, M.Sc and Ph.D University of Ibadan, Nigeria

**Phone number:** 08035268612

**Area of specialization:** Botany, Phytopathology and Nematology

**Name:** Prof Allan Femi Lana

**Qualification:** B. Sc, M. Sc and Ph.D

**Phone number:** 08126262172

**Area of specialization:** Nematology and Virology

**Course description:** Botanical techniques is an experimental course where students have their hands on desk. It is a course essential for all students in the Education Biology department, biology and microbiology. The course entails the general use of microtome, microscope and plant tissue culture.

**Course Objectives:** To ensure students are able to use common equipment in plant biology.

**LECTURE PLAN**

**Teaching Plan:**

Weeks1- 2: Use of microscope, types, magnification and maintenance  
Week 3: Use of microtome, types and advantages  
Weeks 4 - 6: Plant sectioning and staining  
Weeks 7 - 9: Micropropagation and importance  
Weeks 10 - 12: Various methods to improve plant quality growth

**Course Requirement/Assessment:**

**Assessment**

Class attendance	5 marks
Tests and Assignments	35marks
Final Examination	60 marks
Total	100 marks

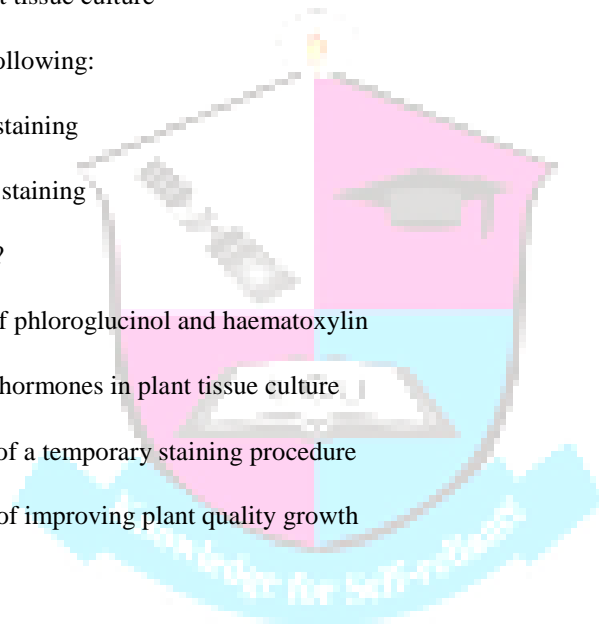
**Reading List:**

Dutta T. C. (2010) Botany for Degree students 6<sup>th</sup> edition

**Section B:**

**Tutorial Questions:**

1. Describe the various ways maintaining microscope in a humid environment
2. List five types of microscopes you know and describe measures taken to reduce error in their usage
- 3a. What is a microtome? List the types commonly available.
- b. State the advantages of microtome sectioning over free hand sectioning
4. Discuss reasons for the following in plant tissue:
  - i, sectioning
  - ii, staining
  - iii, clearing
  - iv, fixing
- 5a. What do you understand by the word micropropagation
- b. List the importance of plant tissue culture
6. Compare and contrast the following:
  - i, Temporary and permanent staining
  - ii, progressive and regressive staining
- 7a. What is negative staining?
- b. Discuss the peculiarities of phloroglucinol and haematoxylin
8. Discuss the role of growth hormones in plant tissue culture
9. Give a schematic diagram of a temporary staining procedure
10. Discuss various methods of improving plant quality growth



**MARKING GUIDE**

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|--|------------------------|
| 1. Description of microscope maintenance                 | 20 marks               |
| 2. Different types of microscopes                        | 10 marks               |
| Precautions to reduce error                              | 10 marks               |
|  | Total = 20 marks       |
| 3. Defining microtome                                    | 5 marks                |
| Available types  | 5 marks                |
| b, Advantages over free hand sectioning                  | 10 marks               |
|  | Total = 20 marks       |
| 4. Reasons for sectioning, staining, clearing and fixing | 5 marks x 4 = 20 marks |

5. Micropropagation description 5 marks  
 b. Its importance 15 marks

Total = 20 marks

6. Comparing i.e similarities of each 5 marks x 2 = 10 marks  
 Contrasting i.e differences of each 5 marks x 2 = 10 marks

Total = 20 marks

7. Defining negative staining 5 marks  
 Peculiarities of each stain 7.5 marks x 2 = 15 marks

Total = 20 marks

8. Growth hormones and roles of each 20 marks  
 9. Diagrammatic sketch of staining procedure 20 marks  
 10. Methods of improving plant quality growth 20 marks

