

**FACULTY OF SCIENCES  
DEPARTMENT OF MICROBIOLOGY  
SECOND SEMESTER, 2017/2018 ACADEMIC SESSION**

**COURSE PARTICULAR**

**Course Title: PLANT TISSUE CULTURE**

**Course Code: BOT 413**

**Units: 2**

**Name : Adegbehingbe K.**

**Qualifications: Bsc. Biology , Msc. Zoology (Parasitology)**

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**Area of Specialization: Public-Health Parasitologist& Biologist.**

**Section A:**

**Introduction:** Plant tissue culture is a fourth year course. It is a compulsory course for students in the Education Biology department.

**Objectives:**

- 1.To learn various protocols of plant cell, tissue, and organ culture.
2. To understand the scientific principles underlying the protocols.
3. To learn the application of plant tissue culture technology for clonal propagation, and plant improvement, recovering plants from transformed cells, and production of valuable plant biochemicals.

**Course Description: BOT 413:** The Plant Tissue Culture introduces students the concepts and techniques of plant cell, tissue, and organ cultures. Applications of plant tissue technology for clonal propagation and plant improvement, recovering plants from transformed cells, and production of valuable plant biochemical are discussed.

**Teaching Plan:**

Weeks 1 & 2: Introduction to plant tissue culture

Week 3: History of plant cell culture

Week 4: Types of tissues culture

Week 5: Plant tissue culture techniques

Week 6: Plant tissue culture application and relevance  
Week 7: Culture cell division and secondary metabolites  
Week 8&9: Organogenesis  
Week 10: Tissue culture media preparation.  
Week 11 Plant cell cultivation as a biotechnological method  
Week 12: Factors necessitate the growth of tissue culture  
Week 13: Germplasm  
Week 14: Revision

**Course Requirement/Assessment:**

Continuous Assessment Test	30%
Terminal Examination	70%
Total	100%

**Reading List:** Reece, Jane B., Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, and Robert B. Jackson."Angiosperm Reproduction and Biotechnology." Campbell Biology. 9th ed. San Francisco, CA: Benjamin Cummings, 2011. 860. Print.

Lorraine Mineo (1990) Plant Tissue Culture Techniques.

**Tutorial Questions**

- 1a. Define the term tissue culture.
- b. Describe how the process of tissue culture is done in plant.
- c. State four types of tissue culture.
  
- 2a. Explain the term “ totipotency”
- b. Describe cell line in plant culturing.
- c. Outline ways of maintenance of cell line.
  
3. Write a concise notes on history of Plant tissue culture.
  
- 4 a. State three advantages of synthetic seeds and two limitation.
- b. State three reasons tissue culture is used for plants.
  
- 5a. Explain cell suspension culture.

b. Describe general procedure for plant tissue culture.

6. Explain the role of culture media in tissue culturing with examples.

7a. Describe the term "organogenesis"

b. State and explain five factors affecting organogenesis.

8. Explain why anthers are preferred to microspores in production of Androgenic haploids.

9a. Highlight seven importance of tissue culture.

b. State four secondary metabolites produced during tissue culture.

10a. Describe four ways which cell division can be suppressed in plant tissue culturing.

b. Explain briefly method of conservation of germplasm.