



Wollo University
College of Natural Sciences
Department of Biology

A Course Guide for Introduction to Plant Tissue Culture and Propagation

I. General Information

A Course Guide for Intr. to Plant Tissue Culture and Propagation	COURSE TITLE: Intr. to Plant Tissue Culture and Propagation
Module Name: Optional III	COURSE CODE : Biol3131
MODULE CODE : Biol-M3132	COURSE ECTS : 3ECTS
MODULE NUMBER:	COURSE WEIGHT :
MUDULE CATEGORY:	Instructor's Contact Information:
MODULE ECTS:	Dr. Nasiruddin Ansari
YEAR : 3rd	E-mail: hinasru@gmail.com
SEMESTER : II	Phone: +251922937185
	Office Hours: Monday and Tuesday 9.00 to 11.00 AM
	Location: Classroom: CR 6227/6228
TARGET GROUP : III YEAR BIOLOGY MAJOR STUDENTS	III year ,II semester Biology major students

II Course Objectives

After completing the course, the students should be able to:

- Master the basic principles and skills regarding techniques, practices and procedures of plant tissue culture (Micropropagation), asepsis, laboratory plan, equipment and facilities, and green house growing.
- Discuss applications of plant tissue culture.
- Practice the most common methods of plant cell and tissue culture.
- Propagate rare and endangered plant species by laboratory method.
- Define the plant tissue culture
- Explain the history of plant tissue culture
- Describe the basic techniques related to pt. tissue culture
- Describe the different components of media
- Explain the procedure of media preparation
- Describe the callus induction
- Explain the callus culture
- Describe the plant transformation

III. Mode of Assessment Methods:

Tests	20%
Assignment.....	10%
Laboratory Activities and Reports.....	20%
Final written exam.....	50%
Total	100%.

IV. Course Policies

The instructor expects that students will have read the appropriate chapters in the reference books BEFORE the class. Students are responsible for all material covered in lecture, whether it comes directly from the text or not. Students arrive on time to class. We will conduct this class in an atmosphere of mutual respect. The instructor encourages your active participation in class discussions as well as in laboratory sessions. You should expect that if your conduct during class discussions seriously disrupts the atmosphere of mutual respect we expect in this class, you will not be permitted to participate further and penalized for your act. If you feel that you need individual help or would like to come by to talk (about this course or anything else), please come by my office during office hours, or schedule a time that is more convenient.

- Attending all class is **a must**
- Disabling a cellular phone is **a must**

V. References

1. Agrawal, R.L., 1998. Fundamentals of plant breeding and hybrid seed production. Oxford and IBH publishing, New Delhi.
2. Bhojwani, S. and M. Razdan, 1996. Plant tissue culture: Theory and Practice. Department of Botany University of Delhi. Amsterdams, the Netherlands, revised edition. pp. 26 –
3. George, E., M. Hall, G. Klerk (eds.), 2007. Plant propagation by tissue culture. 3 edition. vol.1
4. IAEA (International Atomic Energy Agency), 2004. Low cost options for tissue culture technology in developing countries. Proceedings of a technical meeting organized by the joint FAO/IAEA division of nuclear techniques in food and agriculture and held in Vienna, 26–30. http://www-pub.iaea.org/MTCD/publications/PDF/te_1384_web.pdf
5. Mineo, L., 1990. Plant tissue culture techniques. <http://www.ableweb.org/volumes/vol11/9-mineo.pdf>
6. PTL (PhytoTechnology Laboratories), 2008. African violet multiplication kit. <http://www.phytotechlab.com/pdf/AfricanVioletKit.pdf>
7. Seymour, W. Mitchell and M. Ahmad, 2003. A novel surface sterilization method for reducing microbial contamination of field grown medicinal explants intended for *in vitro* culture. Biotechnology Centre, U.W.I, Mona, Kingston 7, Ja. W.I. Part II

VI. Course Content

Week	Contents	Reference Materials
1	1. Introduction 1.1. Definition 1.2. Applications 1.3. History	George, E., M. Hall, G. Klerk (eds.), 2007. Plant propagation by tissue culture. 3 edition.vol.1
2	2. Facilities and supplies 2.1. Organization of a tissue culture laboratory 2.2. Equipment and supplies 2.3. Basic technique	George, E., M. Hall, G. Klerk (eds.), 2007. Plant propagation by tissue culture. 3 edition.vol.1
3	3. Tissue culture media 3.1. Media components 3.2. Media preparation 4. Callus and cell culture 4.1. Callus induction 4.2. Callus culture	George, E., M. Hall, G. Klerk (eds.), 2007. Plant propagation by tissue culture. 3 edition.vol.1
4.	4.3. Cell suspension culture 5. Micropropagation 5.1. Applications 5.2. Micropropagation types 5.3. Micropropagation stages	George, E., M. Hall, G. Klerk (eds.), 2007. Plant propagation by tissue culture. 3 edition.vol.1
5.	6. Organogenesis 7. Embryogenesis 8. Anther/microspore culture	George, E., M. Hall, G. Klerk (eds.), 2007. Plant propagation by tissue culture. 3 edition.vol.1
6.	9. Embryo culture 10. Protoplast culture 11. Somaclonal variation	George, E., M. Hall, G. Klerk (eds.), 2007. Plant propagation by tissue culture. 3 edition.vol.1
7.	12. Plant transformation 13. Germplasm preservation	George, E., M. Hall, G. Klerk (eds.), 2007. Plant propagation by tissue culture. 3 edition.vol.1
8.	Final Exam=50%	

Course Instructor

Dr. Nasiruddin Ansari

Name

Date

Signature

Department head

Dr. Moges Kibret

Name

Date

Signature