Wollo University
College of Natural Science
Department of Biotechnology

Program	*Biotechnology*
Module name	*Environmental Biotechnology*
Module number	*14*
Module Code	*Biot-M4141*
Courses Title	*Biosafety, Intellectual Property Right and Bioethics*
Courses code	*Biot4143*
CHr/ECTS	*2/3*
Year/ Semester	*IV/II*
Instructor	*Chanie D.*

Course Description:

The Biosafety course is designed to give participants a thorough grounding in all aspects of biosafety for environmental release and commercialization of genetically engineered organisms. It will cover the theory and practice of environmental risk assessment and management, and commercialization of genetically engineered organisms. It will cover the theory and practice of environmental risk assessment and management, and communication of benefits and risks of agricultural biotechnology applications. A major component of the program will provide practical experience in biosafety evaluation through the real world case studies covering a diverse group of crops, genes, and potential environmental concerns.

Course Objectives:

- At end of this course, the students will be able to understand the Biosafety Issues and GMO

Course Content:

Chapters	Contents	References
1	**1. Introduction, History and Definitions** 1.1. Biosafety definition and history 1.2. Biosafety Issues/Concerns Worldwide 1.2.1. Benefits and Risks of Biotechnology	• WHO (1993). Laboratory Biosafety Manual. World Health Organization.
2	**2. Biosafety Policy** 2.1. Introduction 2.2. Principles of risk assessment, risk management and risk communication 2.2. International Treaties/Agreements in Biosafety ✓ Biosafety and Agricultural Biotechnology Instruments ✓ International Binding Instruments on Biosafety ✓ Non-Binding Instruments on Biosafety ✓ Other Agreements 2.3. Goals of the treaty	• Diane O., Ph.D. Fleming and Debra Long Hunt (2006). Biological Safety: Principles And Practices (Biological Safety: Principles & Practices). ASM Press; 4 editions.

3	**3. Intellectual Property Rights and Bioethics** 3.1. Intellectual Property 3.2. Bioethics 3.3. Factors Affecting Biodiversity, Invasiveness, and Gene Flow 3.3.1. Factors Affecting Biodiversity 3.3.2. Invasiveness 3.3.3. Gene Flow 3.4. Possible Influences of Transgenic Crops on Non-target Organisms	• Abu Bakar Abdul Majeed (2002). Bioethics: Ethics in the Biotechnology Century Kuala Lumpur Malaysia.
4	**4. Planned Introduction Procedures of Genetically Modified Organisms (GMOs) and Safety Protocols** 4.1. Introduction 4.2. Transgenic Safety Protocols 4.3. Transgenic /GMO/ Introduction and Testing Procedures 4.3.1. Gather Basic Information 4.3.2. Testing GMOs Under Containment 4.3.3. Confined Field Trial 4.3.4.Postharvest Restrictions and Monitoring 4.4. Release GMOs into the environment 4.3. Post releasing monitoring of GMOs	• British Medical Association (1992). Our Genetic Future: The Science and Ethics of Genetic Technology. Oxford: Oxford University Press
5	**5. Analysis and Building of Biosafety Regulatory Framework** 5.1. Introduction 5.2. Bioregulatory Mechanisms for GM Crops 5.3. Implementation of Biosafety Regulatory Frameworks	• Furrhttp://www.amazon.com/CRC-
6	**6. Economics of Biosafety Costs** 6.1. Introduction 6.2. The Benefits and Costs of Biosafety 6.3. Implications for Resource Allocation 6.4. Economic Issues In Designing a National Biosafety Policy 6.5. Economics of Biosafety costs to implement a biosafety program and regulatory costs for GMO product approval and commercialization.	• British Medical Association (1992). Our Genetic Future: The Science and Ethics of Genetic Technology. Oxford: Oxford University Press.
7	**7. Biosafety Guidelines and Regulation** 7.1. Introduction **7.2.** Bases and Scopes of Biosafety Guidelines 7.3. Visit to Transgenic Field Trials and Farmers growing GMOs 7.4. Public perception, Communication and Outreach in Biosafety Capacity Building and Information Resources in Biosafety	• Diane O., Ph.D. Fleming and Debra Long Hunt (2006). Biological Safety: Principles And Practices (Biological Safety: Principles & Practices). ASM Press; 4 editions Keith.

Delivery methods:

➢ Lecture on theory, making various exercises alone or in a small group, reports and assignments.

Evaluation:

- ✓ Quiz .....=5%
- ✓ Tests ..... 2x15=30%
- ✓ Assignments ……..……..... 20%
- ✓ Attendance ……..... 5%
- ✓ Final Exam…….....<u>40%</u>

Total..... <u>100%</u>