

MIDDLESEX COUNTY COLLEGE  
EDISON, NEW JERSEY

Course Title: **Plants, People and Culture**

Catalog #: **Bio.103**

Class Hours: 2

Laboratory Hours: 2

Credit Hours: 3

Department Chair: \_\_\_\_\_ Division Dean: \_\_\_\_\_ Date: 2007-2008

<b><u>Author</u></b>	<b><u>Title</u></b>	<b><u>Publisher</u></b>	<b><u>Copyright</u></b>
<b>Levetin, Estelle Mc Mahon, Karen</b>	<b>Plants and Society 5<sup>th</sup> Edition</b>	<b>W.C. Brown</b>	<b>2007</b>
<b>Bogner, Barbara Gerow, Trace Olubayi, Olubayi</b>	<b>Laboratory Manual For For Plants, People and Culture, 3<sup>rd</sup> edition</b>	<b>MCC Press</b>	<b>2007</b>

Recommended for non-science majors.

Catalog Description:

This is a general one-semester introductory course in plant biology. Some topics to be included are basic plant structures and functions, psychoactive drugs, plant poisons, medicinal uses, as well as economic and ornamental uses. Plants and their impact on society from both a contemporary and historical perspective will be examined. Inquiry based laboratory exercises, audiovisual materials, research using the Internet and current readings are included.

Goals:

This course is intended to provide students with knowledge of the uses of plants in their daily lives, the historical and current impact of plants on human cultures, the general structures of plants and their functions, and the diversity of plant forms in the world. Assigned readings, class discussions, inquiry based and hands on laboratory activities will be utilized to achieve these goals. Videotapes, live and preserved plant specimens, botanical models, the Internet, and a field trip will augment student knowledge. A combination of quizzes, exams, a research report, homework assignments, and evaluation of in class contributions will assess student performances.

Objectives of the course: Behavioral

The Students will:

1. Be able to explain the importance of plants to their everyday lives with respect to such areas as crop production, diet, health, building and paper products, and ornamental usage.
2. Examine the influence of plants on human cultures from a historical perspective. The impact of agriculture, medicinal and religious uses of plants, and other plant products upon the advancement of civilizations will be surveyed.
3. Demonstrate creativity by engaging in such activities as designing novel mechanisms for pollination and seed dispersal. Students will also develop their own plant classification schemes.
4. Be able to explain the relationship between the practice of Western Science and the accumulated knowledge of plants of indigenous peoples around the world and how this relationship has changed over time.
5. Critically examine the claims of proponents of herbal medicine and medicinal applications of psychoactive drugs. Students will evaluate the evidence for such claims using the Scientific Method.
6. Consider moral and ethical implications of using psychoactive drugs, plant poisons and herbal remedies as a substitute for traditional medicines, deforestation, and the introduction of exotic plants.
7. Be required to present written responses to discussion questions, to write a research report, and to prepare for and participate in a debate that focuses on current ethical issues about plants.
8. Be assigned selected readings of articles, which will be on reserve in the MCC library. Students will access information from both the library and the Internet to complete assignments and projects.
9. Define and analyze problems arising from the human impact on plant diversity, e.g. destruction of forests, agricultural practices.
10. Develop efficient time management strategies as they complete research for their reports and prepare for their debates. Students will submit preliminary outlines and a list of references.
11. Describe the uses of plants in other societies and relate this to the value systems that those societies hold.

## UNIT 1 – PLANTS IN OUR LIVES

- A. Plants and Human Society
  1. Uses as food, clothing, shelter, and fuel
- B. Definition of Botany
  1. Scientific and Literary
  2. Subdisciplines
  3. What is a plant?
- C. Importance and Basic Features of Angiosperms
- D. Basic Characteristics of Living Things
- E. Molecules of Life – Carbohydrates, Proteins, Lipids, Nucleic Acids
  1. Simple definitions
  2. Importance to plants and animals

## UNIT 2 – PLANTS FOR BODY AND MIND

- A. Medicinal Plants
  1. History of plants in medicine
  2. Therapeutically important compounds in plants
  3. Herbal medicines
  
- B. Psychoactive Plants
  1. Classification as stimulants, hallucinogens and depressants
  2. Plants with psychoactive properties
  3. History and biological effects of representative plants from each family
  4. Peyote and Mescal
  5. Marijuana
  
- C. Poisonous Plants
  1. Notable poisonous plants
  2. Poisonous plants in the wild
  3. Poisonous plants in the backyard
  4. Poisonous plants in the home

## UNIT 3 – DOMESTICATION OF PLANTS

- A. Origins of Agriculture
  1. Foraging societies
  
- B. Feeding a Hungry World
  1. The green revolution
  2. Plant genetic diversity
  3. Biotechnology
  
- C. Stimulating Beverages
- D. Economic Botany
  1. Wood and wood products
  2. Fibers
  3. Paper
  
- E. Ornamental Plants
- F. Ethnobotany
  1. Regional and indigenous people's knowledge of plants
  2. Interactions of indigenous knowledge and modern science
  3. Role of indigenous plant uses in sustainable development
  4. Ethical issues in ethnobotany (intellectual property rights)

## UNIT 4 – PLANT PHYSIOLOGY

- A. Plant transport mechanisms
  1. Absorption of water and minerals
  2. Transpiration
  3. Movement of sugars
  4. Roles of osmosis
  
- B. Photosynthesis
  1. Solar energy

- 2. The role of photosynthetic pigments
- 3. The light reactions
- 4. Production of carbohydrates
- C. Cellular Metabolism
  - 1. Energy use in plants
  - 2. The role of ATP
  - 3. Cell Respiration
- D. Defense Mechanisms
  - 1. Structural defenses
  - 2. Chemical defenses

#### UNIT 5 – PLANT REPRODUCTION

- A. Flowers
  - 1. Basic Structure
  - 2. Diversity
- B. Pollination
  - 1. Wind and water pollination
  - 2. Animal pollination: Attracting pollinators
- C. Seed Dispersal
  - 1. Seed structure
  - 2. Seed dispersal mechanisms
- D. The role of fruit
- E. Plant Propagation

#### UNIT 6 – PLANTS AROUND THE WORLD

- A. Ecology
  - 1. Biomes
  - 2. Exotic plants

**Middlesex County College  
Bio 103 Lab Schedule  
Fall 2003**

**Lab**

**Lab Exercise**

**1.**

**Plant Food Activity**

**2.**

**Plant Cell + Computer Time**

3. **Jungle Day**
4. **Tree Walk + Computer Time  
Start Cloning Plant**
5. **Finish Cloning a Plant**
6. **Transpiration**
7. **Photosynthesis**
8. **How Does Seed Grow**
9. **Herbal Remedies  
Plant Growth and Anatomy**
10. **Finish Plant Growth and Anatomy  
Finish Herbal Remedies**
11. **Duke Gardens**
12. **Flowing Plant Activity**
13. **Open Week – No Thursday Class**
14. **Seed Dispersal**
15. **Lab Clean Up and Final Exam**