Miami-Dade COMMUNITY COLLEGE

Common Course Number: BOT-1010-L

Course Title: Botany Laboratory

Catalog Course Description: Laboratory for BOT-1010.

Credit Hours Breakdown: 1 lecture hour

Prerequisite: none

Corequisite: BOT-1010, with C grade or better

Course Competencies:

Competency 1: The Microscope.

Upon successful completion of this course, the student will be able to use the light microscope in a botany laboratory setting by:

1.1 Identifying and stating the functions of the primary parts of a compound microscope.

1.2 Showing the proper use the microscope by being able to (a) carry a microscope properly, (b) focus a slide on a microscope, (c) prepare a wet mount, (d) determine total magnification of the various objective lenses and the ocular lens.

Competency 2: The Plant Cell

Upon successful completion of this course, the student will be able to study of a typical plant cell using the light microscope by:

2.1 Showing whether a cell is prokaryotic or eukaryotic on the basis of its structure.

2.2 Preparing a wet mount of botanical material to view under a compound light microscope

2.3 Describing the structure and function of cellular organelles visible with a light microscope

Competency 3: Study of Plant Mitosis,

Upon successful completion of this course, the student will be able to describe normal somatic cell division in plants by:

3.1 Describing/explaining the events associated with the cell cycle in plants.

3.2 Describe the events associated with plant mitosis

3.3 Distinguishing the mitotic phases in prepared plant slides.

Competency 4: Examine Plant cell and tissue types

Upon successful completion of this course, the student will be able to describe the different tissue types in plants by:

4.1 Identifying the characteristics of parenchyma, collenchyma, sclerenchyma, epidermis and vascular tissue in fixed plant slides.

4.2 Explain the structural variations exhibited by the cell types that form different tissues

Competency 5: Examination of Plant Roots

Upon successful completion of this course, the student will be able to describe and explain the function of the roots in plants by:

5.1 Enumerating the functions of roots

5.2 Describing the structural and functional differences between a yap and fibrous root system

5.3 Describing and explaining the structure of roots

5.4 Describing the origin of secondary and adventitious roots

Competency 6: Examination of Plant stems

Upon successful completion of this course, the student will be able to understand the structure and function of plant stems by:

6.1 Explaining the structure and function of stems

6.2 Describing the external features of woody stems

6.3 Describing the primary structure of monocot stems

6.4 Describing the secondary growth of stems

Competency 7: Examination of Leaves.

Upon successful completion of this course, the student will be able to understand the different kind and types of leaf structures in plants by:

7.1 Explaining and describing the different types of leaf venation

7.2 Describing the internal anatomy of leaves of monocots and dicots

7.3 Explaining the significance of anatomical differences in leaf anatomy

7.4 Explaining the adaptations of leaves of mesophytes, xerophytes and hydrophytes

7.5 Describing/explaining the structural basis of leaf abscission

Competency 8: Examination of Eubacteria and Cyanobacteria

Upon successful completion of this course, the student will be able to understand the differences between Ecubacteria and cyanobacteria by:

8.1 Explaining and distinguishing features of members of the kingdom Eubacteria.

8.2 Defining the differences between bacteria and cyanobacteria.

8.3 Identifying representative examples of bacteria and cyanobacteria

8.4 Identifying and explaining the significance of root nodules in Legumes and the concept of nitrogen fixation by bacteria

Competency 9: Examination of Fungi

Upon successful completion of this course, the student will be able to understand the characteristics of the Kingdom Fungi by:

9.1 Describing the characteristic features of the Kingdom Fungi

9.2 Discussing /explaining the variation in structure and sequence of events for sexual and asexual reproduction for the tree major divisions of the kingdom Fungi .

Competency 10: Examination of Bryophytes

Upon successful completion of this course, the student will be able to understand the distinguishing features of mosses and liverworts by:

10.1 Describing/explaining the life histories and related reproductive structures of mosses and liverworts.

10.2 Describing the distinguishing features and structures of mosses and liverworts

Competency 11: Examination of Seedless Vascular plants

Upon successful completion of this course, the student will be able to understand the basic differences and similarities between seedless vascular plants by:

11.1 Discussing the similarities and differences between ferns and other similar plants with the same life cycle.

11.2 Explaining the life cycles of seedless vascular plants

11.3 Describing the distinguishing features of the Psilophyta (whisk ferns), Equisetophyta (horsetails), Lycopodophyta (club mosses), And Pteridophyta (ferns).

Competency 12: Gymnosperms Biology

Upon successful completion of this course, the student will be able to understand the distinguishing features of gymnosperm plants by:

12.1 Describing/naming the distinguishing features of gymnosperm plants

12.2 Explaining the life cycle of pine, a representative gymnosperm

12.3 Explaining some adaptations of pine to cold, dry environments

12.4 Identifying the parts and functions of gymnosperm cones

12.5 Identifying the parts and functions of a gymnosperm seed

Competency 13: Angiosperm Biology

Upon successful completion of this course, the student will be able to understand the distinguishing features of angiosperm plants by:

13.1 Explaining/describing the life cycle of angiosperms

13.2 Describing the events associated with the development of microspores, megaspores, seed and fruit

13.3 Naming and describing the parts of a flower

13.4 Describing some of the variation seen in fruit types from examples in lab

13.5 Explaining why angiosperms are considered the most advanced land plants