MABALACAT CITY COLLEGE

INSTITUTE OF ARTS AND SCIENCES

First Semester A.Y. 2023-2024

Outcome-Based Teaching and Learning Plan and Module Guide for *(General Botany-FUNCORE 101)*

VISION: Mabalacat City College envisions itself to be the top choice in the community it serves for quality education and training by 2025.	**MISSION:** The Mission of Mabalacat City College is to meet the needs of its community as a center for learning aiming for open admission policy.

COURSE DESCRIPTION:

This course deals with life processes of plants, include germination, growth, anatomy and differentiation, metabolism, photosynthesis, stress physiology, flowering, fruiting and plant natural products. It also provides in molecular techniques used in plant biotechnology and in vitro plant culture and multiplication.

PROGRAM INTENDED LEARNING OUTCOMES (PILO) (BASED IN CMO NO. 49 S. 2017):

1. Develop an in-depth understanding of the basic principles governing the science of life;
2. Utilize techniques/procedures relevant to biological research work in laboratory or field settings;
3. Apply basic mathematical and statistical computations and use of appropriate technologies in the analysis of biological data; and
4. Extend knowledge and critically assess current views and theories in various areas of the biological sciences.

PRE-REQUISITE: None

NUMBER OF UNITS: 3 units Lecture/ 2 units Laboratory units

COURSE INTENDED LEARNING OUTCOMES:

At the end of the course, students should be able to:

1. Acquire general knowledge about the morphology, anatomy, physiology, development, evolution, and ecology of plants to be used for everyday life and future careers;
2. Differentiate gymnosperms, monocotyledons, and dicotyledons;
3. Understanding and using terminology associated with plant biology;
4. Analyzing and recognizing the fundamental relationship between form and function in plants and in identifying relationships between plants and their environment;
5. Develop an appreciation for diversity of plant life, understand the importance of plants and identify benefits that the study of botany has brought to human society;
6. Perform good laboratory practices in plant biology and sterile in vitro plant culture.

COURSE OUTLINE

WEEK	Topic	Learning Materials (with references following OER plagiarism and IPR policies)	Intended Learning Outcomes (ILO)	Assessment Tasks (Requirements with schedule or time allotment)	Sustainable Development Goals (SDG) Coherence
GLOBAL, NATIONAL, LOCAL KNOWLEDGE					

1-2	**The World of Plants** 1. The importance of plants 2. Plant characteristics and diversity 3. Plant and people - Ethnobotany and economic botany - Natural plant products	**1. Lectures Notes** **2. Powerpoint presentation** **3.Suggested Web Readings** https://flexbooks.ck12.org/cbook/ck-12-biology-flexbook-2.0/section/9.2/primary/lesson/importance-of-plants-bio https://plantscapers.com/7-reasons-why-plants-are-valuable-and-important/ https://www.ck12.org/biology/plant-characteristics/lesson/Plant-Characteristics-MS-LS/ https://www.sparknotes.com/biology/plants/characteristics/section1/ https://www.biologydiscussion.com/plants/diversity-in-plant-life-with-diagram/5526 http://botanicaldimensions.org/what-is-ethnobotany/	Explain the importance of plants, it's characteristics and diversity, and it's ethnobotanical usage	Recitation Oral Quiz Seatwork	**SDG No. 3** Good Health and Well Being **SDG No. 4** Quality Education **SDG No. 14** Life below Water **SDG No. 15** Life on Land

		4. Suggested Videos to view https://www.youtube.com/watch?v=LYqivnCkE7w https://www.youtube.com/watch?v=8-G7D_sy7qE			
3-5	**Plant Structure, Growth, and Development** 1. The primary plant body 2. Morphological features of plant body: Vegetative organs: root, stem and leaf 3. Basic types of plant cells - Meristematic tissues - Parenchyma, collenchyma and sclerenchyma cells	**1. Lectures Notes** **2. Powerpoint presentation** **3.Suggested Web Readings** http://bio1520.biology.gatech.edu/growth-and-reproduction/plant-development-ii-primary-and-secondary-growth/ http://bio1520.biology.gatech.edu/growth-and-reproduction/plant-development-i-tissue-differentiation-and-function/ https://courses.lumenlearning.com/boundless-biology/chapter/the-plant-body/	Explain the plant structure, growth and development Identify and understand the vegetative organs of the plants Explain the different types of plant cells	Recitation Quiz Seatwork/Group dynamics Laboratory experiment – microscopy and histologic examination (per batch)	**SDG No. 4** Quality Education **SDG No. 14** Life below Water **SDG No. 15** Life on Land

	- Vascular tissues Secondary growth in plants	https://courses.lumenlearning.com/wm-biology2/chapter/plant-tissues-and-organs/ **4. Suggested Videos to view** https://www.youtube.com/watch?v=NSV8UlYdpqU https://www.youtube.com/watch?v=Y4MJVYpHNeU		With F2F and online post-lab	
6	**Plant Life Cycle and Reproductive Structures** 1. Meiosis and alternation of generations 2. Cone and flower structure 3. Seed structure 4. Seed germination	**1. Lectures Notes** **2. Powerpoint presentation** **3.Suggested Web Readings** http://www-plb.ucdavis.edu/courses/bis/1c/text/Chapter12nf.pdf https://www.msnucleus.org/membership/html/k-6/lc/plants/5/lcp5_5a.html https://courses.lumenlearning.com/wm-biology2/chapter/angiosperms-versus-gymnosperms/	Explain the plant life cycle and reproductive structures	Recitation Quiz Seatwork/Group dynamics Laboratory experiment –	**SDG No. 4** Quality Education **SDG No. 14** Life below Water **SDG No. 15** Life on Land

		https://ib.bioninja.com.au/higher-level/topic-9-plant-biology/untitled-3/seed-structure.html https://byjus.com/biology/seed-germination/ **4. Suggested Videos to view** https://www.youtube.com/watch?v=iWaX97p6y9U https://www.youtube.com/watch?v=ExaQ8shhkw8		microscopy (per batch) With F2F and online post-lab	
7-8	**Plant Metabolism and Water Transport** 1. Photosynthesis 2. Respiration 3. Water and its movement through the plant 4. Transport of minerals and solutes	**1. Lectures Notes** **2. Powerpoint presentation** **3.Suggested Web Readings** https://www.livescience.com/51720-photosynthesis.html https://www2.estrellamountain.edu/faculty/farabee/biobk/BioBookPS.html	Discuss the plant metabolism and water transport	Recitation Quiz Seatwork/Group dynamics	**SDG No. 4** Quality Education **SDG No. 14** Life below Water **SDG No. 15** Life on Land

	from soil to roots, stem and leaves	http://www.phschool.com/science/biology_place/biocoach/cellresp/intro.html http://bio1520.biology.gatech.edu/nutrition-transport-and-homeostasis/plant-transport-processes-i/ https://www.siyavula.com/read/science/grade-10-lifesciences/support-and-transport-systems-in-plants/05-support-and-transport-systems-in-plants-05 **4. Suggested Videos to view** https://www.youtube.com/watch?v=sQK3Yr4Sc_k https://www.youtube.com/watch?v=PiAUPg4UrrE https://www.youtube.com/watch?v=00jbG_cfGuQ https://www.youtube.com/watch?v=UMpKtS0hAjw https://www.youtube.com/watch?v=bvQvGtPJSgY		Laboratory experiment (per batch) With F2F and online post-lab	

9	**Midterm Examination**				
10-12	**Plant Breeding, Propagation and Biotechnology** 1. From Mendel to gene expression 2. Hybridization and traditional plant breeding 3. Plant genetic engineering and genetically modified crops	**1. Lectures Notes** **2. Powerpoint presentation** **3.Suggested Web Readings** https://www.iatp.org/sites/default/files/Applications_of_Biotechnology_to_Crops_Benefit.htm https://www.nature.com/scitable/knowledge/library/history-of-agricultural-biotechnology-how-crop-development-25885295/ https://www.sciencedirect.com/topics/earth-and-planetary-sciences/plant-breeding https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/plant-biotechnology http://web.fscj.edu/David.Byres/botanynotes/botanych14notes.html	Discuss and explain the plant breeding, propagation and biotechnology	Recitation Quiz Seatwork/Group dynamics	**SDG No. 4** Quality Education **SDG No. 14** Life below Water **SDG No. 15** Life on Land

		https://cnx.org/resources/7847f7d45e1da2e6977a49af0ef65ad1/PlantBioI-INTRODUCTION.pdf https://science.umd.edu/classroom/BSCI124/lec41.html **4. Suggested Videos to view** https://www.youtube.com/watch?v=8ATRfaiaOLg https://www.youtube.com/watch?v=fKkboOVUFos https://www.youtube.com/watch?v=aRtgOhMgC_c https://www.youtube.com/watch?v=JtkhHIG3nx4			
13-15	**Plant Classification, Evolution, Diversity and Systematics** 1. Nonvascular plants (Bryophytes) 2. The seedless vascular plants 3. The seed nonflowering plants (Gymnosperms)	**1. Lectures Notes** **2. Powerpoint presentation** **3.Suggested Web Readings** https://www.thoughtco.com/plant-systematics-419199 https://www.thoughtco.com/plant-systematics-419199 http://www.eolss.net/sample-chapters/c03/e6-71-06-00.pdf	Discuss the plant classification, evolution, diversity and systematics	Recitation Quiz Seatwork/Group dynamics	**SDG No. 4** Quality Education **SDG No. 14** Life below Water **SDG No. 15** Life on Land

	4. The seed flowering plants (Angiosperms) 5. Plant Systematics	https://courses.botany.wisc.edu/botany_400/Lecture/0pdf/01Introduction.pdf **4. Suggested Videos to view** https://www.youtube.com/watch?v=cRCck4niz5o https://www.youtube.com/watch?v=IYxfz1PSfZ0 https://www.youtube.com/watch?v=UAyedkWLuIk https://www.youtube.com/watch?v=3QBKpcwrUpQ		Laboratory experiment (per batch) With F2F and online post-lab	
16-17	**Plant Ecology** 1. Plants and dynamics of communities and ecosystems 2. Human impacts and conservation biology	**1. Lectures Notes** **2. Powerpoint presentation** **3.Suggested Web Readings** Plant Ecology - an overview | ScienceDirect Topics Plant ecology - Latest research and news | Nature Bot Unit V Plant Ecology notes.pdf (eflorakkl.in) Microsoft Word - Unit 1 Introduction to Plant Ecology (egyankosh.ac.in)	Demonstrate knowledge of plant ecology	Recitation Quiz Seatwork/Group dynamics	**SDG No. 4** Quality Education **SDG No. 14** Life below Water **SDG No. 15** Life on Land

		Ecology: Useful notes on Ecology (biologydiscussion.com) **4. Suggested Videos to view** (329) Lecture - 1 Plant Ecology - YouTube (329) What is Plant Ecology? - YouTube (329) ECOSYSTEM - The Dr. Binocs Show | Best Learning Videos For Kids | Peekaboo Kidz - YouTube (329) Ecosystem and its components||Plant ecology|| Botany|| - YouTube			
18	**Final Examination**				

SUMMARY OF REVISIONS:

Revision	Date	Updated by	Short Description of Changes
1.0	June 28, 2018	Lourdes Fatima S. David, Instructor	• Created the 1st OBE version based on the CMO 49, s. 2017

2.0	January 8, 2019	Lourdes Fatima S. David, Instructor	• Inclusion of plant ecology as a topic
3.0	September 4, 20220	Lourdes Fatima S. David, Instructor	• Inclusion of hub/home modality teaching/learning activities, and assessment method/task • Modified home-base laboratory activity • Inclusion of worksheets
4.0	August 25, 2021	Lourdes Fatima S. David, Instructor	• Revision to online/virtual platform with Learning Management System (LMS), synchronous and asynchronous teaching/learning activities, and assessment method/task. • Modified home-base laboratory activity
5.0	August 18, 2022	Lourdes Fatima S. David, Instructor	• Revision to hybrid learning – online learning and limited face-to-face with online/virtual Learning Management System (LMS), and assessment method/task. • Inclusion of Sustainable Development Goals • Inclusion of face-to-face laboratory activities/experiments

6.0	August 21, 2023	Lourdes Fatima S. David, Instructor	• Addition of National and Local Knowledge sections. • Modified hybrid laboratory activities

As the College currently follows Hybrid Delivery of Learning on its instruction, the following general guidelines and policies are set by the School to be followed by the faculty-in-charge and the students of the course.

Attendance

Checking of attendance during face-to-face classes is a requirement and will be strictly observed.

Academic Integrity

Observance of the outmost academic integrity shall be observed by the students of the course. Plagiarism, cheating, and other forms of academic dishonesty shall not be tolerated by the faculty-in-charge nor the Institute.

Accomplishment of Requirements

All requirements given by the instructor/faculty-in-charge of the course to the students shall be called/referred to/addressed as "work output". Each work output must be accomplished by the students until the schedule set by the instructor/faculty-in-charge. Final student's output must also be accomplished by the schedule set by the instructor of the course.

Line of Communication

The course's official line of communication shall be through the following:

Name: Lourdes Fatima S. David
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Email Add/ MS Teams Acc: lourdes.david@mcc.edu.ph
Messenger Account: Fhat Sula-David

The outmost respect and courtesy must be observed by students in communicating to their instructor/faculty-in-charge of the course and to their classmates and vice versa. Any form of disrespectful and discourteous way of communication shall not be tolerated by the School.

Instructional Materials (IMs)

Working students may avail of the modular type of teaching (for seminar type General Education Courses). MS Teams on-line platform may be utilized by the instructor/faculty-in-charge of the course to the students – adapting the flexible learning scheme.

Grading System:

Midterm

Class Standing		60%
➢ Classwork	30%	
➢ Class Participation (Recitation and Participation in discussion forum)	20%	
➢ Attendance	10%	
Midterm Examination		40%

Final

Class Standing		60%
➢ Classwork	30%	
➢ Class Participation (Recitation and Participation in discussion forum)	20%	
➢ Attendance	10%	
Final Examination		40%

REFERENCES:

Books

1. Fahn, A. 1990. Plant Anatomy. Butterworth-Helnemann Ltd. Oxford.
2. Esau, K. 1965. Plant Anatomy. John Wiley and Soris, New York. Second Edition.
3. Eames, A. and L. Mac Daniels, 1947. An Introduction to Plant Anatomy. McGraw-Hill Book Co., Inc.
4. Stern. Introductory Plant Biology. Ed.13. McGraw Hill ISBN 0073369446.

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