



Course Syllabus
Gyanmanjari Science College
Semester-2 (B.Sc.)

Subject: Fundamentals of Botany- BSCBO12305

Type of course: Minor

Prerequisite: Basic Knowledge of Plant anatomy, biotechnology, and basic Plant Morphology.

Rationale: This course has been designed to make the students know about basic principles of Botany. Students will learn about plant's internal structure, how plant can be used for people better lives detail study of the plant families and Economic importance of some kind of plants.

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks					Total Marks
CI	T	P		SEE		CCE			
			Theory	Practical	MSE	LWA/V	ALA		
3	0	2	4	75	25	30	20	50	200

Legends: CI-Classroom Instructions; T – Tutorial; P - Practical; C – Credit; SEE - Semester End Evaluation; MSE- Mid Semester Examination; LWA - Lab Work Assessment; V – Viva voce; CCE- Continuous and Comprehensive Evaluation; ALA- Active Learning Activities.

3 Credits * 25 Marks = 75 Marks (each credit carries 25 Marks) Theory
 1 Credits * 25 Marks = 25 Marks (each credit carries 25 Marks) Practical
 SEE 100 Marks will be converted in to 50 Marks
 CCE 100 Marks will be converted in to 50 Marks
 It is compulsory to pass in each individual component.



Course Content

Unit No	Course content	Hrs	% Weightage
1	Chapter-1 PLANT BIOTECHNOLOGY <ul style="list-style-type: none"> • Introduction and Definition of Biotechnology. • Plant Tissue Culture Technique. • Application of Plant Tissue Culture. • Genetic Engineering. • Salient achievement of Genetic Engineering in crop Biotechnology & Prospects. 	10	25%
2	Chapter-2 PLANT ANATOMY <ul style="list-style-type: none"> • Plant Tissue: Classification and Function. • Primary structure of Dicot Root. • Primary structure of Monocot Root. • Primary structure of Dicot Stem. • Primary structure of Monocot Stem. • Types and Structure of Stomata. 	10	25%
3	Chapter-3 ECONOMIC BOTANY <ul style="list-style-type: none"> • To Study of Plants used as: Cereals (Wheat, Rice, Maize) • To Study of Plants used as: Pulses (Gram, Green Gram, Pea) • To Study of Plants used as: Beverages (Tea, Coffee, Cocoa) • To Study of Plants used as: Medicinal Plant (Ardusi, Tulsi, Ashwagandha, Galo, Kuvarpathu) • To Study of Plants used as: Fibers (Cotton, Coir, Jute) 	15	25%
4	Chapter-4 PLANT MORPHOLOGY-2 <ul style="list-style-type: none"> • To study Aestivation and its types. • To study Placentation and its types. • Reproductive Organs of Plant. (Androecium and Gynoecium) • To study Angiosperm Families <ol style="list-style-type: none"> 1. Malvaceae 2. Amaryllidaceae 	10	25%



Continuous Assessment:

Sr. No	Active Learning Activity	Marks
1	Poster Making: Students have to prepare a Poster on Plant Tissue Culture technique (Protocol) and upload photo of poster to the GMIU Web Portal.	10
2	Specimen Slide Preparation: Students have to prepare a temporary slide of specimen (Root/Stem) given by faculty, take a photo and upload to the GMIU Web Portal.	10
3	Report writing: Faculty will provide list of on Economically important Plants and students have to prepare a report and upload to the GMIU Web Portal (in group of 5 students).	10
4	Put a photo of Ovary T.S: To take a Photo of given Ovary T.S, write basic information and upload to the Portal.	10
5	Attendance.	10
	Total	50

Suggested Specification table with Marks (Theory):75

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	30%	50%	20%	-	-	-

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table



Course Outcome:

After learning the course the students should be able to:	
CO1	Discern about how Plants are used in Biotechnology field to improve Human desires and Economical values of it.
CO2	Understand internal organization of Plants and how does it work.
CO3	Recognize Economical uses of Plant.
CO4	Learn detail study of Plant Families.

List of Practical:

Sr. No	Descriptions	Unit No	Hrs
1	Practical: 1 To study Instruments used in Tissue Culture Technique (Weighing Balance, P ^H meter, Autoclave, Laminar air flow, BOD incubator).	1	2
2	Practical: 2 To study Mounting of Stomata.	2	2
3	Practical: 3 To study Internal Structure of Dicot root.	2	3
4	Practical: 4 To study Internal Structure of Monocot root.	2	3
5	Practical: 5 To study Internal Structure of Dicot stem.	2	3
6	Practical: 6 To study Internal Structure of Monocot stem.	2	3
7	Practical: 7 To Study of Plants used as: Cereals (Wheat, Rice, Maize).	3	2
8	Practical: 8 To Study of Plants used as: Pulses (Gram, Green Gram, Pea).	3	2
9	Practical: 9 To Study of Plants used as: Beverages (Tea, Coffee, Cocoa).	3	2
10	Practical: 10 To Study of Plants used as: Medicinal Plant (Ardusi, Tulsi, Ashwagandha, Galo, Kuvarpathu).	3	2
11	Practical: 11	3	2



	To Study of Plants used as: Fibers (Cotton, Coir, Jute).		
12	Practical: 12 To study Family: Malvaceae.	4	2
13	Practical: 13 To study Family: Amaryllidaceae.	4	2
Total:			30

Instructional Method:

The course delivery method will depend upon the requirement of content and the needs of students.

The teacher, in addition to conventional teaching methods by black board, may also use any tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory.

The internal evaluation will be done on the basis of Active Learning Assignment.

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in the laboratory.

Reference Books:

- 1) Biotechnology by U. Satyanarayana Books and Allied (P) Ltd
- 2) Elements of Biotechnology by P.K.Gupta, Rastogi Publications.
- 3) Plant cell and tissue culture by Narayanswamy, Tata McGraw Hill.
- 4) Economic Botany by V. Verma
- 5) Economic Botany of the Tropics by S.L.Kochhar
- 6) A Textbook of Plant Anatomy by Pratibha Saxena and Susheela M. Das
- 7) Plant Anatomy: A Concept-Based Approach to the Structure of Seed Plants, Kindle Edition by Richard Crang, Sheila Lyons -Sobaski, Robert Wise.
- 8) A Text Book of Practical Botany 2 by Bendre and Kumar.
- 9) Plant Form: An Illustrated Guide to Flowering Plant Morphology by Andrian D. Bell.

