

B.Sc. – IV Semester

BOTANY

Govt. Digvijay Autonomous P.G. College, Rajnandgaon, C.G.
Bachelor of Science (B.Sc.) Four Years UG Programme (FYUP)

Botany

2025-26

Year	Sem.	Course Type	Course Title	Credit	IA	ESE	Max Marks
First Year	I Sem.	DSC-01	Elementary Botany	3+0+0	30	70	100
		DSC-01-LAB	Elementary Botany – LAB	0+0+1	15	35	50
		GE-01	Elementary Botany	3+0+0	30	70	100
		GE-01-LAB	Elementary Botany – LAB	0+0+1	15	35	50
	II Sem.	DSC-02	Microbes and Thallophyta	3+0+0	30	70	100
		DSC-02-LAB	Microbes and Thallophyta - LAB	0+0+1	15	35	50
		GE-02	Microbes and Thallophyta	3+0+0	30	70	100
		GE-02-LAB	Microbes and Thallophyta - LAB	0+0+1	15	35	50
		SEC-01	Gardening and Floriculture	0+0+2	10	40	50
Second Year	III Sem.	DSC-03	Archegoniate and Fossils	3+0+0	30	70	100
		DSC-03-LAB	Archegoniate and Fossils – LAB	0+0+1	15	35	50
		DSE- 01	Natural resources and management	3+0+0	30	70	100
		DSE-01-LAB	Natural resources and management- LAB	0+0+1	15	35	50
		VAC- 01	Herbal Plants & Human Health	2+0+0	10	40	50
	IV Sem.	DSC- IV	Angiosperms	3+0+0	30	70	100
		DSC- IV- LAB	Angiosperms- LAB	0+0+1	15	35	50
		DSE-02	Microbiology and Phytopathology	3+0+0	30	70	100
		DSE-02-LAB	Microbiology and Phytopathology- LAB	0+0+1	15	35	50
		SEC- 02	Flower Decoration	0+0+2	10	40	50

CEB *PK*

Third Year	V Sem.	DSC-05	Plant Physiology	3+0+0	20	80	100
		DSC-05-LAB	Plant Physiology- LAB	0+0+1	10	40	50
		DSE-03	Plant Metabolism	3+0+0	20	80	100
		DSE-03-LAB	Plant Metabolism- LAB	0+0+1	10	40	50
		DSE-04	Plant Diseases	3+0+0	20	80	100
		DSE-04-LAB	Plant Diseases-LAB	0+0+1	10	40	50
		SEC-03	Biofertilizer and Biopesticides	0+0+2	10	40	50
	VI Sem.	DSC-06	Plant Pathology	3+0+0	20	80	100
		DSC-06-LAB	Plant Pathology-LAB	0+0+1	10	40	50
		DSE-05	Molecular Biology and Plant Biotechnology	3+0+0	20	80	100
		DSE-05-LAB	Molecular Biology and Plant Biotechnology-LAB	0+0+1	10	40	50
		DSE-06	Economic Botany	3+0+0	20	80	100
		DSE-06-LAB	Economic Botany-LAB	0+0+1	10	40	50
		SEC-04	Mushroom Culture Technology-Project	0+0+2	10	40	50
Fourth Year Bachel or of Honors	VII Sem.	DSC-07	Ecology and Phytogeography	3+0+0	20	80	100
		DSC-07-LAB	Ecology and Phytogeography-LAB	0+0+1	10	40	50
		DSE-07	Instrumentation and Biochemical Technology	3+0+0	20	80	100
		DSE-07-LAB	Instrumentation and Biochemical Technology-LAB	0+0+1	10	40	50
		DSE-08	Biosystematics and Biodiversity	3+0+0	20	80	100
		DSE-08-LAB	Biosystematics and Biodiversity-LAB	0+0+1	10	40	50
		DSE-09	Plant Breeding and Seed Technology	3+0+0	20	80	100
		DSE-09-LAB	Plant Breeding and Seed Technology-LAB	0+0+1	10	40	50
		GE-	Growth and Stress Physiology	3+0+0	20	80	100
		GE-LAB	Growth and Stress Physiology-LAB	0+0+1	10	40	50
	VIII Sem	DSC-08	Molecular Biology and Biostatistics	3+0+0	20	80	100
		DSC-08-	Molecular Biology and	0+0+1	10	40	50

Fourth Year Bachelor of Honors with Research		LAB	Biostatistics- LAB				
		DSE-10	Plant Biotechnology and Crop Improvement	3+0+0	20	80	100
		DSE-10-LAB	Plant Biotechnology and Crop Improvement-LAB	0+0+1	10	40	50
		DSE-11	Applied Botany and Intellectual Property Right (IPR)	3+0+0	20	80	100
		DSE-11-LAB	Applied Botany and Intellectual Property Right (IPR)-LAB	0+0+1	10	40	50
		DSE-12	Biochemistry and Enzymology	3+0+0	20	80	100
		DSE-12-LAB	Biochemistry and Enzymology-LAB	0+0+1	10	40	50
		DSE-13	Bioinformatics and Genetic Technology	3+0+0	20	80	100
		DSE-13-LAB	Bioinformatics and Genetic Technology-LAB	0+0+1	10	40	50
	VII Sem.	DSC-07	Ecology and Phytogeography	3+0+0	20	80	100
		DSC-07-LAB	Ecology and Phytogeography-LAB	0+0+1	10	40	50
		DSE-07	Research Methodology and Ethics	4+0+0	20	80	100
		DSE-08	Biosystematics and Biodiversity	3+0+0	20	80	100
		DSE-08-LAB	Biosystematics and Biodiversity-LAB	0+0+1	10	40	50
		DSE-09	Plant Breeding and Seed Technology	3+0+0	20	80	100
		DSE-09-LAB	Plant Breeding and Seed Technology-LAB	0+0+1	10	40	50
		GE-	Growth and Stress Physiology	3+0+0	20	80	100
		GE-LAB	Growth and Stress Physiology-LAB	0+0+1	10	40	50
	VIII Sem	DSC-08	Molecular Biology and Biostatistics	3+0+0	20	80	100
		DSC-08-LAB	Molecular Biology and Biostatistics- LAB	0+0+1	10	40	50
		DSE-10	Plant Biotechnology and Crop Improvement	3+0+0	20	80	100
		DSE-10-LAB	Plant Biotechnology and Crop Improvement-LAB	0+0+1	10	40	50
		Research Project/ Dissertation		12			

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life sciences (Diploma / Degree/Honors)		Semester - IV	Session: 2024-2025 2025-26
1	Course Code	BOSC-04 T	
2	Course Title	Angiosperms	
3	Course Type	Discipline Specific course (DSC)	
4	Pre-requisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	At the end of the course, the students will be able : ➤ Understand basics of plant identification, classification and nomenclature ➤ Understand the concept, diversity and evolution of Angiosperm plants. ➤ Become familiar with the internal structure of plants and concept of plant tissues with its revolutionary concept. ➤ Understand the reproductive system in flowering plants.	
6	Credit Value	3 Credits	Credit = 15 Hours - learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40
PART -B: Content of the Course			
Total No. of Teaching-learning Periods (01 Hr. per period) - 45 Periods (45 Hours)			
Unit	Topics (Course contents)		No. of Period
I	Plant taxonomy: Types of classification-artificial, natural and phylogenetic Bentham & Hooker (upto series), Engler & Prantl (upto series) and Hutchinson system of classification with its merits and demerits, Modern trends of taxonomy and Numerical taxonomy. Binomial nomenclature system. Principles and rules (ICBN/ICN) Ranks and names, Typification, author citation, valid publication, principle of priority and its limitations; Herbarium technique, important herbaria, herbarium and Botanical gardens of India.		12
II	Taxonomic Description: Characteristics, systematics and economic importance of Dicotyledonous families- Brassicaceae, Malvaceae, Fabaceae (subfamily), Apiaceae, Rutaceae, Euphorbiaceae, Lamiaceae, Asteraceae. Monocotyledonous families -Orchidaceae, Liliaceae, Cyperaceae, Musaceae and Poaceae. (Floral features, Floral formula and floral diagram are essential)		11
III	Anatomy: Tissue system features, functions of different types of meristematic and permanent tissues. Internal Structure of dicot and monocot root stem and leaf. Root and shoot apex organization: Structure and function of cambium and secondary growth in root and stem. Wood (heartwood and sapwood, annual rings) Abnormal Secondary Growth (<i>Dracaena</i> , <i>Achyranthes</i> , <i>Nyctanthes</i> , <i>Boerhavia</i>)		11
IV	Embryology: Structure of anther and pollen. Structure and types of ovules, Embryo sacs-types, Pollination and Fertilization, Double fertilization, Endosperm types, structure and functions. Development of embryo-Dicot and monocot embryo. Concept of Apomixes and Polyembryony, Seed structure; appendages and dispersal mechanisms.		11
Keywords	Taxonomy, Herbarium, Tissue, Fertilization		
Signature of Convener & Members (CBoS) :			

- ① R. Rajan
- ② K. S. S. S.
- ③ Indira
- ④ A. S. S.
- ⑤ S. S. S.
- ⑥ K. S. S.
- ⑦ K. S. S.
- ⑧ S. S. S.
- ⑨ S. S. S.
- ⑩ S. S. S.

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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. Simpson, M.G. (2006) Plant Systematics. Elsevier Academic Press, San Diego, CA, USA
2. Beck, C.B. (2010). An Introduction to Plant Structure and Development, II edition.
3. Johri, B.M. (1984). Embryology of Angiosperms. Springer-Verlag, Berlin
4. Singh, G. (2012) Plant Systematics. Theory and Practice. Oxford & IBH Pvt. Ltd, New Delhi.
5. Bhojwani, SS. & Bhatnagar, SP (2011). Embryology of Angiosperms. Vikas Publication House Pvt.Ltd. New Delhi 5 edition
6. Mauseth. I.1) (1988) Plant Anatomy. The Benjamin Cummings Publisher. USA
7. Pandey, B. P. (LatesEdt), Plant Anatomy

Reference Books Recommended –

1. Simpson, M.G. (2006) Plant Systematics. Elsevier Academic Press, San Diego, CA, USA
2. Beck, C.B. (2010). An Introduction to Plant Structure and Development, II edition.
3. Mauseth. I.1) (1988) Plant Anatomy. The Benjamin Cummings Publisher. USA
4. Jeffrey, C. (1982). An Introduction to Plant Taxonomy. Cambridge University Press, Cambridge
5. Judd, W.S., Campbell, C.S., Kellogg, E.A., Stevens, P.F. (2002). Plant Systematics-A Phylogenetic Approach. Sinauer Associates Inc., U.S.A. 2 nd edition.
6. Maheshwari, J.K. (1963). Flora of Delhi. CSIR, New Delhi.
7. Radford, A.E. (1986). Fundamentals of Plant Systematics. Harper and Row, New York
8. Saxena N.B. and Saxena S. (2012). Plant Taxonomy Pragati Prakashan.
9. Sharma O.P. (2013). Plant Taxonomy. MC GRAW HILL INDIA.
10. Sharma, M.K. (2013) Plant Structures (An Introduction to Plant Anatomy). Vayu Education of India.
11. Chopra G.L. (2005) Angiosperm, Pradeep Publication, Jalandhar.

Online Resources–

- e-Resources / e-books and e-learning portals
- www.swayam.ac.in
- www.ignou.ac.in
- www.egyankosh.ac.in
- www.iitn.ac.in
- www.eskillindia.org
- www.eshiksha.mp.gov.in
- www.vlab.co.in
- www.internshala.com
- www.ndl.iitkgp.ac.in

Online Resources–

- e-Resources / e-books and e-learning portals

<https://www.fs.usda.gov/managing-land/wildflowers/pollinators/what-ispollinationhttps://www.pw.live/exams/neet/embryo/#:~:text=Dicot%20and%20monocot%20embryos%20develop,one%20that%20is%20significantly%20smaller.>

<https://byjus.com/biology/apomixis/>

<https://examupdates.in/plant-anatomy-and-embryology-book>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): 15 (By Course Teacher)	Internal Test / Quiz-(2): 20 +20	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
	Assignment / Seminar - 10	
	Total Marks - 30	
End Semester Exam (ESE): 35	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks Section B: Descriptive answer type qts., 1out of 2 from each unit-4x10=40 Marks	

Name and Signature of Convener & Members of CBoS:

① R. R. R.
② R. R. R.
③ R. R. R.
④ R. R. R.
⑤ R. R. R.
⑥ R. R. R.
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FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF BOTANY
COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Sciences (Diploma / Degree/ Honors)		Semester - IV	Session: 2024-2025 ²⁰²⁵⁻²⁶
1	Course Code	BOSC-04 P	
2	Course Title	Lab. Course – 04 (Angiosperms)	
3	Course Type	Laboratory Course	
4	Pre-requisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	At the end of this course, students will be able to: > Understand the systematic status of flowering plants. > Learn collection of local flora , identification and herbarium preparation. > Understand internal structure of different plant parts. > Understand the pollination and seed dispersal mechanism. > Understand about reproduction system in flowering plants.	
6	Credit Value	1 Credits	Credit =30 Hours Laboratory or Field learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
PART -B: Content of the Course			
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)			
Module	Topics (Course contents)		No. of Period
Lab./Field Training/ Experiment Contents of Course	<ul style="list-style-type: none"> • Description of local plants of the syllabus in semitechnical language, floral formula and floral diagrams should be drawn. • Preparation of herbarium of local flora. • Anatomy of primary and secondary growth in monocots and dicots stem using hand sections or permanent slides. • Anatomy of root, primary and secondary structure. • Study of placentation. • Study of types of ovule in permanent slide. • Isolation of globular, heart shape and torpedo embryo. • Study of pollination by insects. 	30	
Keywords	Herbarium, Monocot, Placentation, Pollination		

Signature of Convener & Members (CBoS) :

- ① R. S. Wani
- ② K. S. Wani
- ③ M. S. Wani
- ④ M. S. Wani
- ⑤ A. S. Wani
- ⑥ C. S. Wani
- ⑦ H. S. Wani
- ⑧ B. S. Wani
- ⑨ P. S. Wani
- ⑩ M. S. Wani

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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. Pandey, B.P. (2014). Modern Practical Botany Vol. II. S. Chand and Company Ltd., New Delhi.
2. Bendre, A.M. and Kumar A. (2003). Manual of Practical Botany Vol. II. Rastogi Publications, Meerut.
3. Santra S.C. and Chatterjee (2005). College Botany Practical Vol. II New Central Book Agency Pvt. Ltd

Online Resources–

> e-Resources / e-books and e-learning portals

- > www.swayam.ac.in
- > www.ignou.ac.in
- > www.egyankosh.ac.in
- > www.iitm.ac.in
- > www.eskillindia.org
- > www.eshiksha.mp.gov.in
- > www.vlab.co.in
- > www.internshala.com
- > www.ndl.iitkgp.ac.in

Online Resources–

> e-Resources / e-books and e-learning portals

<https://visiblebody.com/learn/biology/monocot-dicot/roots>

<https://www.toppr.com/guides/biology/differences-between/monocot-and-dicot-stem/>

<https://examupdates.in/plant-anatomy-and-embryology-book/>

https://jrs.ac.in/working_folder/DOWNLOAD-D-12-180-618C09F700115.pdf

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): 15 (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10 Assignment/Seminar + Attendance - 05 Total Marks - 15	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
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End Semester Exam (ESE): 35	Laboratory / Field Skill Performance: On spot Assessment A. Performed the Task based on lab. work - 20 Marks B. Spotting based on tools & technology (written) – 10 Marks C. Viva-voce (based on principle/technology) - 05 Marks	Managed by Course teacher as per lab. status
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Name and Signature of Convener & Members of CBoS:

- ① R. Singh
- ② K. Singh
- ③ A. Singh
- ④ M. Singh
- ⑤ A. Singh
- ⑥ H. Singh
- ⑦ K. Singh
- ⑧ P. Singh
- ⑨ P. Singh
- ⑩ M. Singh

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FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Science (Diploma / Degree/Honors)		Semester - IV	Session: ²⁰²⁵⁻²⁶ 2024-2025
1	Course Code	BOSE- 02 T	
2	Course Title	Microbiology and Phytopathology	
3	Course Type	Discipline specific Elective (DSE)	
4	Pre-requisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to get > Basic idea of different microbes present in biotic and abiotic environment. > Knowledge of principle concept and methods in the field of Microbiology and Phytopathology > Idea of living, non living and environmental causes of plant diseases. > Knowledge of different technique to isolate microbes study their cultural characteristics., > How disease occurs by microbes, their identification and control measures.	
6	Credit Value	3 Credits	Credit = 15 Hours - learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40
PART -B: Content of the Course			
Total No. of Teaching-learning Periods (01 Hr. per period) - 45 Periods (45 Hours)			
Unit	Topics (Course contents)		No. of Period
I	Microbiology: ❖ General account, distribution and classification of microorganism. ❖ Major microbes of air soil water and food ❖ Isolation and cultivation of microorganism ❖ Important tools and techniques used in microbiological studies.		12
II	Plant pathology: ❖ Nature and concept of diseases in plants, ❖ History and development of plant pathology, contribution of Indian plant pathologist in India and abroad, pathology and trends in 21 st century ❖ Symptom of parasitic and non-parasitic diseases. ❖ Classification of plant diseases. ❖ Important plant diseases caused by different Pathogens ❖ Plant quarantine ❖ HR and hypersensitivity		11
III	Techniques of Studying Plant Diseases: ❖ Field Studies, Collection of samples and its preservation. ❖ Sterilization technique- Standard Methods of sterilization - Physical methods, Chemical methods, Radiation methods, ❖ Isolation technique: Preparation of different media for growth of pathogen by using standard inoculation techniques like- plate streak, serial dilution and pour plate methods to obtain a pure culture. ❖ Staining Technique: Nature and Types of stains, ❖ Preservation : methods of preservation of culture		11
IV	Host Parasite Relation: ❖ Terms and concept ❖ Disease cycle and environmental relations ❖ Plant disease dissemination ❖ Role of enzymes and toxins in pathogenesis and mode of infection, ❖ Inoculums and inoculums potential ❖ Koch's postulates ❖ Defense mechanism in plant against pathogens, ❖ Prevention and control of plant diseases		11
Key words		Microorganism, Disease, Pathogens , Culture	
Signature of Convener & Members (CBOS):			

① Shree
② Shree
③ Mr
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Signature

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Signature

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended -

1. Bridges, P. (1998) Molecular Variability Of Fungal Pathogens. CAB
2. Bilgrami, K. S. and Dubey, H. C. (1985) Plant Pathology, Vikas Publ. House, Sahibabad U.P.
3. Ali, s. s. and Kulshereshta, p. (1986) plant pathology, adeeb educational, Raipur.
4. Singh, R. S. (1980) Plant Pathology, Oxford IBH Publ. Co, New Delhi.
5. Malhotra R. Plant Pathology Publisher: McGraw Hill Education India

Reference Books Recommended-

1. Agrios, G. N. (1997) Plant Pathology, Academic Press, London

Online Resources-

- e-Resources / e-books and e-learning portals
- www.swayam.ac.in
- www.ignou.ac.in
- www.egyankosh.ac.in
- www.iitm.ac.in
- www.eskillindia.org
- www.eshiksha.mp.gov.in
- www.vlab.co.in
- www.internshala.com
- www.ndl.iitkgp.ac.in

Online Resources-

- e-Resources / e-books and e-learning portals
- 1. <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/plant-pathology#:~:text=Plant%20pathology%20is%20a%20science,parasitic%20microorganisms%20that%20cause%20disease>
- 2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4600171/>
- 3. <https://bnrc.springeropen.com/articles/10.1186/s42269-021-00627-6>
- 4. <https://www.sciencedirect.com/science/article/abs/pii/S0065308X08604339>
- 5. <https://www.researchgate.net/publication/371501301> Fundamentals of Plant Pathology

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): 30 (By Course Teacher)	Internal Test / Quiz-(2): 20 +20	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
	Assignment / Seminar - 10 Total Marks - 30	
End Semester Exam (ESE): 70	Two section - A & B Section A: Q1. Objective - 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks Section B: Descriptive answer type qts, 1out of 2 from each unit-4x10=40 Marks	

Name and Signature of Convener & Members of CBoS:

① R. Prasad
② R. Prasad
③ R. Prasad
④ R. Prasad
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FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Science (Diploma / Degree/ Honors)		Semester - IV	Session: ²⁰²⁵⁻²⁶ 2024-2025
1	Course Code	BOSE-02 P	
2	Course Title	Lab course 02 (Microbiology and Phytopathology)	
3	Course Type	Discipline specific Elective (DSE)	
4	Pre-requisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to get ➤ Basic idea of microbes. ➤ Culture of microbes in the laboratory ➤ How disease occurs by microbes ➤ Basic idea of host parasite interrelationship ➤ Control measure of pathogen by different biological sources.	
6	Credit Value	1 Credits	Credit =30 Hours Laboratory or Field learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
PART -B: Content of the Course			
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)			
Module	Topics (Course contents)		No. of Period
Lab./Field Training/ Experiment Contents of Course	<ul style="list-style-type: none"> ❖ Calibration of microscope. ❖ Study of symptoms of various plants disease caused by viruses, bacteria and fungi. ❖ Sterilization of glass wares by detergent, chromic acid and dry sterilization ❖ Preparation and sterilization of culture media NAM, PDA, to culture bacteria and fungi respectively. ❖ Isolation of micro-organism from soil, water and air by using standard inoculation technique. ❖ Identification of the isolated fungi by slide preparation. ❖ Micrometry – measurement of length and width of spore/ conidia of the isolated /given fungi. ❖ Preparation of camera lucida diagram of the isolated / given fungi. ❖ Cultural charecteristics the the cultured bacteria. ❖ Gram staining of Bacteria ❖ Host parasite relationship- slide preparation of infected / diseased portion of the host to study host parasite relationship by smearing and section cutting methods isolated from local field. ❖ Demonstration of the effect of various bio-pesticides (essential oils, neem, turmeric and garlic) against microbe/pathogens ❖ Preparation of herbarium of different plant diseases of local area 		30
Keywords	Disease, symptoms, medium, pathogenesis		

Signature of Convener & Members (CBOS):

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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. Experiments In Microbiology, Plant Pathology And Biotechnology By K. R. Anuja. Publisher New Age International

Online Resources–

➤ e-Resources / e-books and e-learning portals

1. <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/plant-pathology#:~:text=Plant%20pathology%20is%20a%20science,parasitic%20microorganisms%20that%20cause%20disease.>
2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4600171/>
3. <https://bnrc.springeropen.com/articles/10.1186/s42269-021-00627-6>
4. <https://www.sciencedirect.com/science/article/abs/pii/S0065308X08604339>
- 1) https://www.researchgate.net/publication/371501301_Fundamentals_of_Plant_Pathology

Online Resources–

➤ e-Resources / e-books and e-learning portals

- <https://efaidnbmnnnibpcajpeglclefindmkaj/https://mis.alagappauniversity.ac.in/siteAdmin/dde->
- https://admin/uploads/3/PG_M.Sc._Botony_34631%20MICROBIOLOGY%20AND%20PLANT%20PATHOLOGY.pdf

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): 15 (By Course Teacher)

Internal Test / Quiz-(2): 10 & 10
Assignment/Seminar + Attendance - 05
Total Marks - 15

Better marks out of the two Test / Quiz
+ obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE): 35

Laboratory / Field Skill Performance: On spot Assessment
A. Performed the Task based on lab. work - 20 Marks
B. Spotting based on tools & technology (written) - 10 Marks
C. Viva-voce (based on principle/technology) - 05 Marks

Managed by
Course teacher
as per lab. status

Name and Signature of Convener & Members of CBoS:

① R. Sreenivasulu
② S. Srinivasulu
③ M. Srinivasulu
④ S. Srinivasulu
⑤ S. Srinivasulu
⑥ S. Srinivasulu

⑦ S. Srinivasulu
⑧ S. Srinivasulu
⑨ S. Srinivasulu
⑩ S. Srinivasulu

FOUR YEAR UNDERGRADUATE PROGRAM (2024-2028)
DEPT. OF BOTANY: SKILL ENHANCEMENT COURSE
COURSE CURRICULUM (2024-25)

PART-A: Introduction			
Program: Undergraduate (Certificate / Diploma / Degree/Honors)		Semester - II/IV	Session: 2024-2025 2025-26
1	Course Code	BOSEC-02	
2	Course Title	Flower Decoration	
3	Course Type	Skill Enhance Course (SEC)	
4	Pre-requisite (if, any)	As per Government norms / Institutional scheme	
5	Course Learning Outcomes(CLO)	<i>After completion of this course, the students will be able to-</i> > -understand the concept of Flower arrangement & Decoration > -learn the idea, design and style of Flower decoration and its importance > -learn the skill of different types Flower arrangement with local/social application, commercial value and social demand > -adopt the skill of Indian, Western, Japanese and other/local style of flower arrangement / decoration towards level of entrepreneurs' start-up	
6	Credit Value	2 Credits (1C + 1C)	Credit = 15 Hours – Theoretical learning and = 30 Hours Laboratory or Field learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20

PART -B: Content of the Course		
Total No. of Teaching-learning Periods: Theory – 15 Periods (15 Hrs) and Lab. or Field learning/Training 30 Periods (30 Hours)		
Module	Topics (Course contents): learning, Observation and Preparation	No. of Hrs
I	Introduction: Basic knowledge of Flowering plants, Ornamental plants, Decorative plants- Shade plants, Ferns, Bonsai, Decorative Flowers, Flower shows. Commercial flowers, Common Ornamental plants and flowers of local area /state. Famous flower Gardens of India. [Learning and Practices]	04Hours Learning and 07 Hours Practices
II	Floral ornaments & Flower arrangements: Garlands, Floral bouquets, Floral rangoli, Flower arrangements – concept, idea , design and style – Western styles, Japanes or Ikebana styles, Common types of Flower arrangement – Elliptical, Vertical, Horizontal Triangular, Crescent, S & Oval shapes and Cascade flower arrangement. [Learning and Practices]	04Hours Learning and 07HoursPractices
III	Flower decoration: Flowers used for decoration; Different idea of flower decoration for Home, Festivals, office, Gallery, Stage, Wall, Table, Gate. Flower Pot / Vas / Bottle decoration. [Learning and Practices]	03 Hours + 07 Hours
IV	Creative decorations: Flower drying and Dry flower decoration, Foliage arrangement; Dry foliage decoration; Flower decoration by Oil Painting, Resin art of Flower decoration; Terrarium – concept, design and creation of different forms. Bonsai, Shady foliage, Fern and Water plant/ flower decoration. [Learning and Practices]	04Hours Learning and 09 Hours Practices
Keywords	Floral ornaments, Flower arrangement, Flower decoration	

Signature of Convener & Members of CBOS:

1. *R. Shree*
 2. *[Signature]*
 3. *Indira*
 4. *[Signature]*
 5. *[Signature]*

6. *[Signature]*
 7. *[Signature]*
 8. *[Signature]*
 9. *[Signature]*
 10. *[Signature]*

[Signature]

PART-C**BOSEC-02 (Flower Decoration)****Learning Resources: Text Books, Reference Books and Others****Text Books Recommended****Textbooks:**

1. Floriculture in India, G. S. Randhawa and A. Mukhopadhyay, Allied Publishers Pvt. Ltd.
2. Modern Ikebana: A New Wave in Floral Design Hardcover-2020 by Tom Loxley & Victoria Gaiger
3. On Flowers: Lessons from an Accidental Florist, Illustrated, 2019 by Amy Merrick (Author)
4. Flower School: A Practical Guide to the Art of Flower Arranging, 2020 by Calvert Crary (Author)
5. The Flower Expert: Ideas and Inspiration for a Life With Flowers, 2019 by Fleur McHarg (Author)
6. The Art of Flower Arranging, 1992 by Jan Hall (Author)
7. A Personal Guide to Flower Arranging: Volume 2 Spring and Summer, 2021 by Wendy Markby
8. The Flower Chef: A Modern Guide to Do-It-Yourself Floral Arrangements, 2016 by Carly Cylinder
9. Easy Ikebana: 30 Beautiful Flower Arrangements, 2020 by Shinichi Nagatsuka (Author)

Reference Book:

<https://www.gardensillustrated.com/reviews/the-best-new-floristry-books>

Online Resources-

❖ e-Resources/e-books and e-learning portals Use of following sites

- <https://en.wikipedia.org/wiki/Ikebana>
- <https://www.artsy.net/article/artsy-editorial-thriving-art-ikebana-japanese-tradition-flower-arranging>
- https://agritech.tnau.ac.in/horticulture/horti_Landscaping_dryflower_tech.html
- <https://library.ihbt.res.in/Institute%20Brochures/dry%20flower.pdf>
- https://static.vikaspedia.in/media/files_en/agriculture/farm-based-enterprises/value-added-products/dry-flower-production-1.pdf
- https://www.researchgate.net/publication/362645798_Dry_Flower_Technology_A_Value_Addition_to_Floriculture_Industry
- <https://in.pinterest.com/smsastry/flower-decoration/>
- <https://in.pinterest.com/galisreelatha/flower-decoration/>
- <https://www.britannica.com/art/floral-decoration>
- <https://homebnc.com/best-creative-flower-decoration-ideas/>

PART -D: Assessment and Evaluation**Suggested Continuous Evaluation Methods:**

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Coordinator)	Internal Test / Quiz-(2): 10 & 10 Assignment/Seminar + Attendance - 05 Total Marks - 15	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
End Semester Exam (ESE):	Laboratory / Field Skill Performance: On spot Assessment A. Performed the Task based on learned skill - 20 Marks B. Spotting based on tools (written) - 10 Marks C. Viva-voce (based on principle/technology) - 05 Marks	Managed by Coordinator as per skilling

Name and Signature of Convener & Members of CBOS:

1. R. Singh

2. [Signature]

3. Sudhin

4. [Signature]

5. [Signature]

6. [Signature]

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10. [Signature]

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