

**FOUR YEAR UNDERGRADUATE PROGRAM (NEP-2020)**  
**Program: Bachelor in Life Science (2024 -28)**  
**DISCIPLINE – BOTANY**  
**Session – 2024 -25**

DSC -01 to 08		DSE -01 to 12	
Code	Title	Code	Title
BOSC -01T	<i>Elementary Botany</i>	BOSE -01T	<i>Natural resources and management</i>
BOSC -01P	<i>Lab. Course -01 (Elementary Botany)</i>	BOSE -01P	<i>Lab. Course -01 (Natural resources and management)</i>
BOSC -02T	<i>Microbes and Thallophyta</i>	BOSE -02T	<i>Microbiology and Phytopathology</i>
BOSC -02P	<i>Lab. Course -02 (Microbes and Thallophyta)</i>	BOSE -02P	<i>Lab. Course -02 (Microbiology and Phytopathology)</i>
BOSC -03T	<i>Archegoniate and Fossils</i>	BOSE -03T	<i>Phytopaleontology and Evolutionary Botany</i>
BOSC -03P	<i>Lab. Course-03 (Archegoniate and Fossils)</i>	BOSE -03P	<i>Lab. Course -03 (Phytopaleontology and Evolutionary Botany)</i>
BOSC -04T	<i>Angiosperms</i>	BOSE -04T	<i>Ethnobotany and Medicinal plants</i>
BOSC -04P	<i>Lab. Course -04 (Angiosperms)</i>	BOSE -04P	<i>Lab. Course-04 (Ethnobotany &amp; Medicinal plants)</i>
BOSC -05T	<i>Cytology and Genetics</i>	BOSE -05T	<i>Biosystematics and Biodiversity</i>
BOSC -05P	<i>Lab. Course -05 (Cytology and Genetics)</i>	BOSE -05P	<i>Lab. Course -05 (Biosystematics and Biodiversity)</i>
BOSC -06T	<i>Plant Physiology and Economic Botany</i>	BOSE -06T	<i>Plant breeding and Seed technology</i>
BOSC -06P	<i>Lab. Course -06 (Plant Physiology and Economic Botany)</i>	BOSE -06P	<i>Lab. Course -06 (Plant breeding and Seed technology)</i>
BOSC -07T	<i>Ecology and Phytogeography</i>	BOSE -07T	<i>Instrumentation and biochemical technology</i>
BOSC -07P	<i>Lab. Course -07 (Ecology and Phytogeography)</i>	BOSE -07P	<i>Lab. Course -07 (Instrumentation and biochemical technology)</i>
BOSC -08T	<i>Molecular biology and Biostatistics</i>	BOSE -08T	<i>Growth and Stress Physiology</i>
BOSC -08P	<i>Lab. Course-08 (Molecular biology and Biostatistics)</i>	BOSE -08P	<i>Lab. Course -08 (Growth and Stress Physiology)</i>
		BOSE -09T	<i>Plant biotechnology and crop improvement</i>
		BOSE -09P	<i>Lab. Course -09 (Plant biotechnology and crop improvement)</i>
		BOSE -10T	<i>Applied Botany and Intellectual property right (IPR)</i>
		BOSE -10P	<i>Lab. Cours.: -10 (Applied Botany and IPR)</i>
		BOSE -11T	<i>Biochemistry and Enzymology</i>
		BOSE -11P	<i>Lab. Course -11 (Biochemistry and Enzymology)</i>
		BOSE -12T	<i>Bioinformatics and Gene Technology</i>
		BOSE -12P	<i>Lab. Course-12 (Bioinformatics &amp; Gene Technology)</i>
<b>GE -01 &amp; 02</b>		<b>VAC</b>	
BOGE -01T	<i>Elementary Botany</i>	BOVAC-01	<i>Herbal Plant &amp; Human Health</i>
BOGE -01P	<i>Lab. Course -01 (Elementary Botany)</i>		<b>SEC</b>
BOGE -02T	<i>Microbes and Thallophyta</i>	BOSEC-01	<i>Gardening and Floriculture</i>
BOGE -02P	<i>Lab. Course -02 (Microbes and Thallophyta)</i>		

**Program Outcomes (PO):**

1. Demonstrate and apply the fundamental knowledge of the basic principles of major fields of biology
2. Apply knowledge to solve the issues related to plant sciences with the help of computer technology
3. Apply knowledge for conservation of endemic and endangered plant species

**Program Specific Outcomes (PSO):**

1. Collaborate effectively on team-oriented projects in the field of life sciences.
2. Communicate scientific information in a clear and concise manner both orally and in writing
3. Explain Biodiversity, climate change and plant pathology.
4. Apply Biotechnology, Ecology, Genetics and Plant breeding techniques in plant sciences
5. Apply knowledge of Medicinal and Economic botany in day to day life.
6. Apply the knowledge to develop the sustainable and eco-friendly technology.

1. R. Singh  
 2. M. Singh  
 3. S. Singh  
 4. M. Singh  
 5. M. Singh

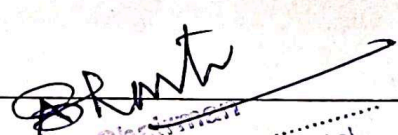
6. M. Singh  
 7. M. Singh  
 8. M. Singh  
 9. M. Singh  
 10. M. Singh

*[Signature]*  
 Chairman  
 of Studies  
 Nandkumar Patel  
 Jayalaya, Raigarh (C.O.)

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF BOTANY**  
**COURSE CURRICULUM**

<b>PART- A: Introduction</b>			
Program: Bachelor in Life Sciences (Certificate / Diploma / Degree/Honors)		Semester - I	Session: 2024-2025
1	Course Code	BOSC -01 T	
2	Course Title	Elementary Botany	
3	Course Type	Discipline Specific course (DSC)	
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 > Understand the Basics of Botany and its branches. > Get acquainted with complex interrelationship between organisms and environment. > Develop a comprehensive understanding of the identification, cultivation, and processing of medicinal plants, and their chemical constituents. > Utilize plants resources for livelihood.	
6	Credit Value	3 Credits	Credit = 15 Hours - learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40
<b>PART -B: Content of the Course</b>			
Total No. of Teaching-learning Periods (01 Hr. per period) - 45 Periods (45 Hours)			
Unit	Topics (Course contents)		No. of Period
I	<b>Basics of Plant Science:</b> Differences and resemblances between; living and nonliving plants and animals, plant and animal cell. Concept of prokaryotes and eukaryotes. Important features of thallophyta, Bryophyta, Pteridophyta, Gymnosperm and Angiosperm. Structure and function of a typical flowering plant.		12
II	<b>Branches of botany:</b> General idea, features, and significance; Anatomy, Cytology, Economic Botany, Ethnobotany, Forestry, Genetics, Histology, Microbiology, Paleobotany, Phytochemistry, Phytopathology, Plant biotechnology, Plant breeding, Plant ecology, Plant morphology, Plant physiology, Plant Taxonomy, etc.		11
III	<b>Plants for human welfare:</b> Plant Resources for Rural livelihood – Mahua, Tendu patta, Bamboo and Firwood. Ethnobotany in India: Methods to study Ethnobotany, Applications of Ethnobotany, ethnomedicinal plants and ethnoecology. Application of plant products for certain diseases- Cough and cold, Jaundice, Infertility, Diabetes, Blood pressure and Skin diseases.		11
IV	<b>Ancient Indian Botany:</b> Indigenous Medicinal Sciences; Definition and Scope- Ayurveda: History, origin, panchamahabhutas, saptadhatu and tridosha concepts, Rasayana, plants used in ayurvedic treatments, Siddha: Origin of Siddha medicinal systems, Basis of Siddha system, plants used in Siddha medicine. Unani: History, concept. Charaksamhita. Ancient and modern Botanists and their contributions. -Charak, Jagdish Chandra Bose, B.P.Pal, Desikachary, K.C. Mehta M.S. Swaminathan etc.		11
Keywords		Prokaryotes, Ethnobotany, Taxonomy, Ayurveda	
Signature of Convener & Members (CBoS):			

- ① Bhowan
- ② Renuka
- ③ Anurag
- ④ Ms. ...
- ⑤ Anurag
- ⑥ ...
- ⑦ ...
- ⑧ ...
- ⑨ ...
- ⑩ ...

  
 Nandkumar Patel  
 Head of Botany, Raigarh (C.G.)

## PART-C: Learning Resources

### Text Books, Reference Books and Others

#### Text Books Recommended -

1. College Botany Chaugali Kar and Gupta, HIMALAYA Publishers
2. "Handbook of Medicinal Plants" by L.D. Kapoor
3. "Indian Medicinal Plants: An Illustrated Dictionary" by C.P. Khare
4. "Medicinal Plants in India: Conservation and Sustainable Utilization in the Emerging Global Scenario" edited by V.K. Gupta
5. "A Compendium of Medicinal Plants in India: An Introduction to Ayurveda" by S.L. Kochhar
6. A handbook of forest utilization by T. Melita
7. Plants and human welfare by O.P. Sharma

#### Reference Books Recommended -

1. Charak Samhita
2. Medicinal Plants of India" by C.P. Khare

#### Online Resources-

- e-books and e-learning portals
- [www.sivayam.ac.in](http://www.sivayam.ac.in)
- [www.jgnou.ac.in](http://www.jgnou.ac.in)
- [www.eryankosh.ac.in](http://www.eryankosh.ac.in)
- [www.iftm.ac.in](http://www.iftm.ac.in)
- [www.eskllindia.org](http://www.eskllindia.org)
- [www.esllksha.mp.gov.in](http://www.esllksha.mp.gov.in)
- [www.vlab.co.in](http://www.vlab.co.in)
- [www.internshala.com](http://www.internshala.com)
- [www.ndl.litkpp.ac.in](http://www.ndl.litkpp.ac.in)

#### Online Resources-

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

- <https://extension.oregonstate.edu/collection/botany-basics>
- <https://www.pbs.org/video/botany-basics-1uu2bl/>
- <https://eaidnbmnnnibpncjpcglcflndmkaj/https://www2.ca.uky.edu/ngecomm/pubs/ho/ho96/ho96.pdf>
- <https://www.botanytoday.com/branches-of-botany/>
- <https://eaidnbmnnnibpncjpcglcflndmkaj/https://www.unanijournal.com/articles/94/3-1-11-206.pdf>
- [https://eaidnbmnnnibpncjpcglcflndmkaj/https://wpbis.ccs.iisc.ac.in/biodiversity/sahyadri/documents/botany\\_history.pdf](https://eaidnbmnnnibpncjpcglcflndmkaj/https://wpbis.ccs.iisc.ac.in/biodiversity/sahyadri/documents/botany_history.pdf)
- <https://vedpuran.files.wordpress.com/2016/07/charak samhitanatridevajiigupt-vol-1.pdf>
- <https://eryankosh.ac.in/handle/123456789/89429>

## 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.D. Wans
- ② Nandkumar
- ③ Anand
- ④ M. S.
- ⑤ Anand
- ⑥ M. S.

- ⑦ R.
- ⑧ Anand
- ⑨ Anand
- ⑩ M. S.

**Anand**  
Chairman  
Studies .....  
Nandkumar Patel  
Mahaya, Raigarh (C.G.)

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF BOTANY**  
**COURSE CURRICULUM**

<b>PART- A: Introduction</b>			
Program: Bachelor in Life Sciences (Certificate / Diploma / Degree / Honors)		Semester - I	Session: 2024-2025
1	Course Code	BOSC -01	
2	Course Title	Lab. Course -01 (Elementary Botany)	
3	Course Type	Laboratory course	
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 <ul style="list-style-type: none"> <li>&gt; Understand structure of plant cell, prokaryotic cell and eukaryotic cell.</li> <li>&gt; Identify pteridophytes of college campus.</li> <li>&gt; Learn about the different types of plant tissues.</li> <li>&gt; Learn about Ayurvedic system of medicine.</li> </ul>	
6	Credit Value	1 Credits	Credit =30 Hours Laboratory or Field learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
<b>PART -B: Content of the Course</b>			
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	1. Microscopic study of plant cell. 2. Microscopic study of prokaryotic (Bacteria) and eukaryotic cell (algae and fungi). 3. Study of thallus structure of <i>Riccia</i> and <i>Marchantia</i> . 4. Identification of different plants growing in college campus. 5. Study of a typical flowering plant and it's parts. 6. Study of internal structure of root and stem. 7. Study of parenchyma, collenchyma and sclerenchyma. 8. Study of medicinal plants of college campus. 9. Study of plants used to cure cough and cold, jaundice and skin diseases. 10. Visit to any local ayurvedic hospital / practitioner to understand Ayurveda.	30	
Keywords	Prokaryotic, Parenchyma, Jaundice, Ayurveda.		

Signature of Convener & Members (CBoS) :

- ① Rishwan
- ② Arundh
- ③ Anshu
- ④ As
- ⑤ Arundh
- ⑥ As
- ⑦ As
- ⑧ Arundh
- ⑨ Arundh
- ⑩ Arundh

**Arundh**  
 Chairman  
 Studies .....  
 Dr. Nandkumar Patel  
 Jyoti, Raigarh (C.G.)

**PART-C: Learning Resources**

Text Books, Reference Books and Others

**Text Books Recommended –****Text Books Recommended –**

1. College Botany Ganguli Kar and dutta , HIMALAYA Publishers
2. "Handbook of Medicinal Plants" by L.D. Kapoor
3. "Indian Medicinal Plants: An Illustrated Dictionary" by C.P. Khare
4. "Medicinal Plants in India: Conservation and Sustainable Utilization in the Emerging Global Scenario" edited by V.K. Gupta
5. "A Compendium of Medicinal Plants in India: An Introduction to Ayurveda" by S.L. Kochhar
6. A handbook of forest utilization by T. Mehta
7. Plants and human welfare by O.P.Sharma

**Reference Books Recommended –**

1. Charak Samhita
2. Medicinal Plants of India" by C.P. Khare

**Online Resources–**

- > e-Resources / e-books and e-learning portals
- > [www.swavam.ac.in](http://www.swavam.ac.in)
- > [www.ignou.ac.in](http://www.ignou.ac.in)
- > [www.egvankosh.ac.in](http://www.egvankosh.ac.in)
- > [www.iitm.ac.in](http://www.iitm.ac.in)
- > [www.eskillindia.org](http://www.eskillindia.org)
- > [www.eshiksha.mp.gov.in](http://www.eshiksha.mp.gov.in)
- > [www.vlab.co.in](http://www.vlab.co.in)
- > [www.internshala.com](http://www.internshala.com)
- > [www.ndl.iitkgp.ac.in](http://www.ndl.iitkgp.ac.in)

**Online Resources–**

- > e-Resources / e-books and e-learning portals
- > <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5871155/>
- > <https://cms.botany.org/home/careers-jobs/careers-in-botany/areas-of-specialization-in-botany.html>

**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 &amp; Members of CBoS:

① R. Sivan  
 ② Munch  
 ③ Indira  
 ④ M  
 ⑤  
 ⑥  
 ⑦

⑧  
 ⑨  
 ⑩

**BR**  
 Chairman  
 Studies .....  
 Nandkumar Patel  
 Jayya, Raigarh (C.G.)

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF BOTANY**  
**COURSE CURRICULUM**

<b>PART- A: Introduction</b>		
Program: Bachelor in Life Sciences (Certificate / Diploma / Degree/Honors)		Semester - II
Session: 2024-2025		
1	Course Code	BOSC -02 T
2	Course Title	Microbes and Thallophyta
3	Course Type	Discipline Specific course (DSC)
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 1. Understand about the Microbes and their Importance. 2. Identify edible mushrooms and learn cultivation techniques. 3. Learn about bio-fertilizers and their uses. 4. Understand life cycles of different algae and fungi.
6	Credit Value	3 Credits      Credit = 15 Hours - learning & Observation
7	Total Marks	Max. Marks: 100      Min Passing Marks: 40
<b>PART -B: Content of the Course</b>		
Total No. of Teaching-learning Periods (01 Hr. per period) - 45 Periods (45 Hours)		
Unit	Topics (Course contents)	No. of Period
I	Viruses: - general characteristics, nature, structure and nomenclature, Bacteriophages and TMV; Lytic and Lysogenic cycles, transmission and replication of viruses, Symptoms of viral diseases on plants, important plant diseases, viroid, prions. Actinomycetes: general characteristics, Structure, reproduction and economic importance. Mycoplasma, Phytoplasma: general characteristics, structure, reproduction and their economic uses.	12
II	Bacteria: History, general character, classification and morphology, Gram positive and Gram-negative bacteria, structure of bacteria shape, size flagella and ultra structure of bacterial cell; Bacterial Growth curve, factors affecting growth of microbes; sporulation, reproduction, recombination in bacteria- Transformation Conjugation and Transduction, and Economic importance. Cyanobacteria: General characteristics, morphology, Heterocyst, cell structure of Cyanobacteria, reproduction and economic importance of Bacteria.	11
III	Phycology: General characteristic features of Algae. Algae in diversified habitat, Salient features, occurrence, classification and range of thallus organization. Prominent pigments found in Algae. Reproduction classification, general character and life cycle of -Volvox, Oedogonium, Chara, Vaucheria, Ectocarpus and Polysiphonia. Economic importance of algae - Role of algae in soil fertility, algae as biofertilizer, blue green algae and nitrogen fixation. Symbiosis; algal products - Agar, biofuel	11
IV	Mycology, Mushroom Cultivation, Lichenology & Mycorrhiza: General characteristic features of Fungi, Economic importance and Classification of Fungi, Nutrition, Heterothallism, Physiological specialization, Heterokaryosis & Parasexuality in Fungi. Fungi as biocontrol agent. Classification, general character and life cycle of -Mucor, Phytophthora, Penicillium, Peziza, Ustilago, Puccinia, Agaricus; Colletotrichum, Alternaria. Edible Mushroom- Button and Oyster mushroom and their cultivation. General account of lichens. General account of Mycorrhiza.	11
Keywords	Mycoplasma, Transduction, Biofertilizer, Parasexuality.	

Signature of Convener & Members (CBoS):

- ① R. Singh
- ② B. Singh
- ③ K. Singh
- ④ A. Singh
- ⑤ J. Singh
- ⑥ S. Singh
- ⑦ M. Singh

**Chairman**  
 Dr. M. K. Patil  
 Head, Department of Botany,  
 P. O. Box No. 10, Raigarh (C.G.)

## PART-C: Learning Resources

### Text Books, Reference Books and Others

#### Text Books Recommended -

1. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West. Press Pvt. Ltd. Delhi. 2nd edition.
2. Tortora, G.J., Funke, B.R., Case, C.L. (2010). Microbiology: An Introduction, Pearson Benjamin Cummings, U.S.A. 10th edition.
3. Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, MacMillan Publishers Pvt. Ltd., Delhi.
4. Aggarwal, S.K. 2009. Foundation Course in Biology, A one books Pvt. Ltd., New Delhi.
5. Anceja, K.R. 1993. Experiments in Microbiology, Pathology and Tissue Culture, VishwaPrakashan, NewDelhi.
6. Annie Ragland, 2012. Algae and Bryophytes, Saras Publication, Kanyakumari, India.
7. Basu, A.N. 1993. Essentials of Plant Viruses, Vectors and Plant diseases, New Age International, New Delhi.
8. Chopra, G.L. 1984. A text book of Algae, Rastogi publications, Meerut, India.
9. Dubey, R.C. and Maheshwari, D.K. 2012. Practical Microbiology, S. Chand & Company, Pvt. Ltd., NewDelhi.
10. Fritsch, R.E. 1977. Structure and Reproduction of Algae, Cambridge University Press, London.
11. Sharma, P.D. (2011). Plant Pathology. Meerut, U.P.: Rastogi Publication.
12. Pandey B.P. 2001. College Botany Volume 1, S Chand & Company Pvt.Ltd, New Delhi.

#### Reference books:

1. Webster, J., Weber, R. (2007). Introduction to Fungi, 3rd edition. Cambridge, U.K.: Cambridge University Press.
2. Pelzar, 1963. Microbiology, Tata McGraw Hill, New Delhi
3. Rangaswamy, G. 2009. Disease of Crop Plants in India, Prentice Hall of India, New Delhi.
4. Microbiology Fundamental and Applications (hindi) (pb) 9. ISBN: 9788188826230 Edition: 03Year : 2016Author : Dr. Purohit SS , Dr. Deo Publisher : Student Edition Language : Hindi
5. Modern Microbiology (hindi) (hb) ISBN: 9788177543599Edition : 1Year : 2018Author : Dr. Purohit SS , Dr. Singh T Publisher : Agrobios (India)
6. Plant pathology by R.S. Mehrotra, Tata McGraw-Hill Publication

#### Online Resources-

- > e-Resources / e-learning portals
- > [www.swavam.ac.in](http://www.swavam.ac.in)
- > [www.ignou.ac.in](http://www.ignou.ac.in)
- > [www.egvankosh.ac.in](http://www.egvankosh.ac.in)
- > [www.iitm.ac.in](http://www.iitm.ac.in)
- > [www.eskillindia.org](http://www.eskillindia.org)
- > [www.eshiksha.mp.gov.in](http://www.eshiksha.mp.gov.in)
- > [www.vlab.co.in](http://www.vlab.co.in)
- > [www.internshala.com](http://www.internshala.com)
- > [www.ndl.iitkgp.ac.in](http://www.ndl.iitkgp.ac.in)

#### Online Resources-

- > e-Resources / e-books and e-learning portals
- 1. <https://www.classcentral.com/tag/microbiology>
- 2. <https://www.edx.org/learn/microbiology>
- 3. <https://www.mooc-list.com/tags/microbiology>
- 4. <https://www.udemy.com/topic/microbiology/>
- 5. <https://ucmp.berkeley.edu/bacteria/bacteria.html>
- 6. <https://www.livescience.com/53272-what-is-a-virus.html>
- 7. <https://eclambathach.in/lms/Economic%20importance%20of%20Algae.pdf>
- 8. <https://www.slideshare.net/sardar1109/algae-notes-1>
- 9. <https://www.onlinebiologynotes.com/algae-general-characteristics-classification/>
- 10. <https://www.sciencedirect.com/topics/immunology-and-microbiology/fungus>
- 11. <https://ucmp.berkeley.edu/fungi/fungi.html>
- 12. <https://agrimoon.com/wp-content/uploads/Mashroom-culture.pdf>
- 13. <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=11293>
- 14. [http://www.jnkvv.org/PDF/11042020102651plant\\_pathology.pdf](http://www.jnkvv.org/PDF/11042020102651plant_pathology.pdf)
- 15. <https://www.apsnet.org/edcenter/disimpactnmgmt/topc/EpidemiologyTemporal/Pages/ManagementStrategies.aspx>
- 16. <https://www.agrilcareer.com/6-easy-steps-for-mushroom-cultivation/>

## 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 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
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 Rishu
- ② Hemant
- ③ Anshu
- ④ Anshu
- ⑤ Anshu
- ⑥ Anshu
- ⑦ Anshu
- ⑧ Anshu
- ⑨ Anshu

*BRANT*  
 Kumar Patel  
 Raigarh (C.G)

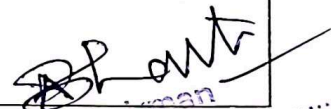
**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF BOTANY**  
**COURSE CURRICULUM**

<b>PART- A: Introduction</b>			
Program: Bachelor in Life Sciences <i>(Certificate / Diploma / Degree/Honors)</i>		Semester - II	Session: 2024-2025
1	Course Code	BOSC- 02	
2	Course Title	Lab. Course –02 (Microbes and Thallophyta)	
3	Course Type	Laboratory course	
4	Pre-requisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	1. Understand the Viruses, Bacteria, Phycology, Mycology and Plant pathology 2. Learn microbial techniques which will be beneficial for agriculture and industry. 3. Learn life cycles of selected genera of different groups 4. Understand etiology of plant diseases 5. Apply their knowledge in the crop fields to eradicate or avoid the diseases	
6	Credit Value	1 Credits	Credit =30 Hours Laboratory or Field learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20

<b>PART -B: Content of the Course</b>		
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	1. Collection of viral/ Bactrial /fungal infected plants 2. Study of plant disease symptoms caused by viral/ Bactrial /fungal/ Mycoplasma 3. <b>BACTERIAL IDENTIFICATION:</b> Isolation of bacteria Staining techniques: Gram's, staining 4. Study / Slide preparation of available Cyanobacteria 5. <b>PHYCOLOGY:</b> Study / Slide preparation and Staining of algae – <i>Volvox, Oedogonium</i> and <i>Chara; Vaucheria; Ectocarpus Polysiphonia</i> 6. <b>MYCOLOGY:</b> Study/ Slide preparation and . Staining of fungi. <i>Mucor, Phytophthora, Penicillium, Peziza, Ustilago, Puccinia; Agaricus, colletotrichum, Alternaria.</i> Study of Button and Oyster Mushroom Lichens: crustose, foliose and fruticose specimens. Study of VAM fungi	30
Keywords	infected plants, VAM, algae, fungi	

Signature of Convener & Members (CBoS) :

- ① R. Das
- ② S. Das
- ③ S. Das
- ④ S. Das
- ⑤ S. Das
- ⑥ S. Das
- ⑦ S. Das
- ⑧ S. Das
- ⑨ S. Das
- ⑩ S. Das

  
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 and Kumar Patel  
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**PART-C: Learning Resources**

**Text Books, Reference Books and Others**

**Text Books Recommended -**

1. Practical Botany (Part I) ISBN #:81-301-0008-8 Sunil D Purohit, Gotam K Kukda & Anamika Singhvi Edition:2013 Apex Publishing House Durga Nursery Road, Udaipur, Rajasthan (bilingual).
2. Pandey S.K. (2012). Quick Concept of Botany. Publisher LAP LAMBERT Academic Publishing GmbH & Co. KG, Germany (ISBN: 978-3-8484-3104-5).
3. Dubey, R. C. and Maheshwari, D.K. 2012. Practical Microbiology, S. Chand & Company, Pvt. Ltd., New Delhi.
4. Pandey, B.P. 2014 Modern Practical Botany, (Vol-I) S. Chand and Company Pvt. Ltd., New Delhi.

**Online Resources-**

- > e-Resources / e-books and e-learning portals
- > [www.swayam.ac.in](http://www.swayam.ac.in)
- > [www.ignou.ac.in](http://www.ignou.ac.in)
- > [www.egyankosh.ac.in](http://www.egyankosh.ac.in)
- > [www.iitm.ac.in](http://www.iitm.ac.in)
- > [www.eskillindia.org](http://www.eskillindia.org)
- > [www.esniksha.mp.gov.in](http://www.esniksha.mp.gov.in)
- > [www.vlab.co.in](http://www.vlab.co.in)
- > [www.internshala.com](http://www.internshala.com)
- > [www.ndl.iitkgp.ac.in](http://www.ndl.iitkgp.ac.in)

**Online Resources-**

- > e-Resources / e-books and e-learning portals
- 1. <https://community.plantae.org/tags/moocfuturelearn.com/courses/teaching-biology-inspiring-students-with-plants-in-science>
- 2. <https://microbiologysociety.org/publication/education-outreach-resources/basic-practical-microbiology-a-manual.html>
- 3. <https://microbiologyonline.org/file/7926d7789d8a2f7b2075109f68c3175e.pdf>
- 4. <http://allaboutalgae.com/benefits/>
- 5. <https://repository.cimmyt.org/xmlui/bitstream/handle/10883/3219/64331.pdf>
- 6. <https://www.mooc-list.com/tags/microbiology>
- 7. <http://www.agrifis.ir/sites/default/files/A%20text%20book%20o%20practical%20botany%201%20%7BAshok%20Bendre%7D%20%5B81%20%7B171339239%5D%20%281984%29.pdf>
- 8. <https://171339239%5D%20%281984%29.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:

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 ..and Kumar Patel  
 .., Raigarh (C.C)

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**

**DEPARTMENT OF BOTANY  
COURSE CURRICULUM**

<b>PART- A: Introduction</b>			
Program: Bachelor in Life sciences (Certificate / Diploma / Degree)		Semester - I/III/IV	Session: 2024-2025
1	Course Code	BOVAC-01	
2	Course Title	Herbal Plant & Human Health	
3	Course Type	Value Addition Course (BOVAC-01)	
4	Pre-requisite (if any)	As per program	
5	Course Learning Outcomes (CLO)	<p><b>After completion of this course, the students will be able to –</b></p> <ul style="list-style-type: none"> <li>➤ Understand the value of herbs, herbal medicine and use of herbal medicine</li> <li>➤ Know about botanical medicine professionals in the complementary and alternative medicine (CAM)</li> <li>➤ Demonstrates the knowledge of the toxicity of plant and essential oil ingredients.</li> <li>➤ Understand the possibility for allergic and unpleasant reactions to herbal products and the impact of herbal quality on potential toxicity.</li> <li>➤ Use the herbal plants in their daily life</li> <li>➤ Adopt the value of herbal medicine to save their health.</li> </ul>	
6	Credit Value	2 Credits	Credit = 15 Hours - learning & Observation
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
<b>PART -B: Content of the Course</b>			
Total No. of Teaching-learning Periods (01 Hr. per period) - 30 Periods (30 Hours)			
Unit	Topics (Course contents)	No. of Period	
I	<p><b>Introduction:</b> Elementary knowledge of Herbal plant and Concept of Herb as medicine.</p> <p>Concept of ethno-medicine, folk medicines, ethno-ecology, ethnic communities of the India &amp; the Chhattisgarh. Concept of Herbal garden. Collection of ethnic information.</p> <p><i>Observation/In Practices - Survey and familiarization with herbs &amp; local herbal plants</i></p>	08	
II	<p><b>Importance of medicinal plants:</b> Importance of Herbal / Medicinal plant in human health care – health and balanced diet (Role of proteins, carbohydrates, lipids and vitamins). Common plants &amp; plant parts providing metals and vitamins.</p> <p><i>Observation/In Practices - Survey and familiarization with local herbal medicinal plants</i></p>	07	
III	<p><b>Tribal medicine and Traditional knowledge:</b> Introduction, Concept of Tribal medicine, methods of disease diagnosis and treatment – common Plants in folk religion. Traditional knowledge and utility of some medicinal plants in Chhattisgarh.</p> <p><i>Collection /Identification of Herbal plants commonly used by villagers of the state –</i></p> <ul style="list-style-type: none"> <li>• Centella asiatica,</li> <li>• Aloe vera,</li> <li>• Solanum nigrum,</li> <li>• Achyranthus aspera,</li> <li>• Withania somnifera,</li> <li>• Papaver somniferum,</li> <li>• Strychnos nux- vomica,</li> <li>• Atropa belladonna;</li> </ul>	08	
IV	<p><b>Plants in day to day life:</b> Nutritive and medicinal value of common herbal fruits and vegetables of daily use. Precautions during use of herbal medicinal products. Basic idea of contribution of national research laboratories like CDRI, CIMAP, NBRI, etc.</p> <p><i>Collection /Identification of Herbal plants commonly used In dally life - Tulsi, Garlic, Ginger, Turmeric, Ajwain, Methi, Flax, Tea and Coffee.</i></p>	08	
<b>Keywords</b>		<i>Herbal medicine, Folk medicine, Ethno-medicine, Tribal medicine</i>	
<b>Signature of Convener &amp; Members (CBOS)</b>			

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## PART-C: Learning Resources

### Text Books, Reference Books and Others

#### Text Books Recommended -

1. Kumar, N.C. (1993). An Introduction to Medical botany and Pharmacognosy. Emkay Publications, New Delhi.
2. Rao, A.P. (1999). Herbs that heal. Diamond Pocket Books (P) Ltd., New Delhi.
3. Iris F. F. Benzie and Sissi Wachtel-Galut. Herbal Medicine, 2nd edition Biomolecular and Clinical Aspects, CRC Press Taylor & Francis; 2011
4. Fabrizio Denovan (2020) Medicinal Herbs: The Ultimate Guide to Natural Healing. Learn The Benefits of Herbs and Use the Nature's Most Powerful Medicinal Plants in Making Your Own A-Z Remedies to Treat Diseases, Author's Republic.
5. Stargrove Mitchell Bebel ND, Herb, Nutrient, and Drug Interactions, Publisher: Elsevier - Health Sciences Division
6. Iris F. F. Benzie (Editor), Herbal Medicine (Oxidative Stress and Disease) 2nd Edition,

#### Online Resources-

- > e-Resources / e-books and e-learning portals
- > [www.swayam.ac.in](http://www.swayam.ac.in)
- > [www.ignou.ac.in](http://www.ignou.ac.in)
- > [www.evyankosh.ac.in](http://www.evyankosh.ac.in)
- > [www.iitm.ac.in](http://www.iitm.ac.in)
- > [www.eskillindia.org](http://www.eskillindia.org)
- > [www.eshiksha.mp.gov.in](http://www.eshiksha.mp.gov.in)
- > [www.vlab.co.in](http://www.vlab.co.in)
- > [www.internshala.com](http://www.internshala.com)
- > [www.ndl.iitkgn.ac.in](http://www.ndl.iitkgn.ac.in)

#### Online Resources-

- > <https://pubmed.ncbi.nlm.nih.gov/22593937/>
- > <https://crimsonpublishers.com/acam/pdf/ACAM.000551.pdf>
- > [https://www.researchgate.net/publication/329823358\\_Medicinal\\_Plants\\_Used\\_in\\_the\\_Treatment\\_of\\_Mental\\_and\\_Neurological\\_Disorders\\_in\\_Ghana](https://www.researchgate.net/publication/329823358_Medicinal_Plants_Used_in_the_Treatment_of_Mental_and_Neurological_Disorders_in_Ghana)
- > <https://www.sciencedirect.com/science/article/abs/pii/S0378874115003013>
- > <https://core.ac.uk/download/pdf/143841457.pdf>
- > <https://practicalselfreliance.com/medicinal-plants/>
- > <https://practicalselfreliance.com/medicinal-plants/>
- > <https://www.pdfdrive.com/medicinal-plants-books.html>

## 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 Teacher)	Internal Test / Quiz-(2):	10 & 10	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
	Assignment/Seminar + Attendance -	05	
	Total Marks -	15	

End Semester Exam (ESE):	Two section - A & B Section A: Q1. Objective - 05 x1 = 05 Mark; Q2. Short answer type- 5x2 =10 Marks Section B: Descriptive answer type cts. 1out of 2 from each unit- 4x05 =20 Marks
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### Name and Signature of Convener & Members of CBs:

1. R. S. Rao
2. K. S. Rao
3. S. S. Rao
4. M. S. Rao
5. M. S. Rao

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**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF BOTANY**  
**COURSE CURRICULUM**

<b>PART- A: Introduction</b>			
Program: Bachelor In Life Sciences (Certificate / Diploma / Degree)		Semester - III/IV/V/VI	Session: 2024-2025
1	Course Code	BOSEC-01	
2	Course Title	Gardening and Floriculture	
3	Course Type	Skill Enhance Course (BOSEC 01)	
4	Pre-requisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	After completion of this course, the students will be able to - > understand the concept of Gardening & Floriculture > learn about the gardening technique and familiar with gardening tools > adopt the skill of gardening as well as floriculture > student may develop entrepreneurship in this field.	
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
<b>PART -B: Content of the Course</b>			
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)		No. of Period
Theory Contents	1. <b>Concept &amp; Types of Garden:</b> Concept of Garden & Landscape Gardening, Styles of garden – Formal & Informal garden, Free style gardens, Home garden, Hanging garden; Types of gardens – English, Mughal, Babylonian garden [Observation & Practices] 2. <b>Garden plants:</b> Ornamental plants - Shrubbery, Fernery, Arches (climbers and creepers), Pergolas, Edges & Hedges and Pot plants, Cacti and Succulents plants, Flower borders and beds, Ground covers and carpet beds [Observation & Practices] 3. <b>Floriculture:</b> Present situation & scope in India. Various types of flowers – Seasonal flowers, Cut flowers. Flower Crops - Rose, Chrysanthemum, Carnation, Gerbera, Gladioli, Tuberose, Aster, Lilly, Dahlia and Marigold. [Observation & Practices]		15
Lab./Field Training Contents	1. Familiarization with different tools and equipments used in gardening work. 2. Design and Plotting of Garden and Preparation of Soil for Garden 3. Soil decontamination techniques, Planting methods, Fertigation method 4. Propagation techniques for selected ornamental plants Weed management 5. Harvesting techniques, Post-harvest handling, Pre cooling, Pulsing, Packing, 6. Preparation of composite mixture and manuring practice in nursery and pots. 7. Practice in budding, cutting, layering and grafting etc. 8. Practice of flower arrangements, flower bouquet.		30
Keywords	Garden, Flower, Floriculture, Garden tools		
Signature of Convener & Members (CBoS)			
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## PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended-

1. Ranchhawa, G. S. and Mukhopadhyay, A. (1986) "Floriculture in India." Allied Publisher (India)
2. Bhattachajee, S. K. (2006) "Advances in Ornamental Horticulture," Vols. I-VI, Pointer Pub.
3. Lania, A. and Victor, H. R. (2001) "Floriculture - Fundamentals and Practices." Agrobios.
4. Sadina, G. T. and Peter, K. V. (2008) "Ornamental Plants for Gardens." New India pub. India.

Online Resources-

- e-Resources / e-books and e-learning portals
- [www.smyanl.ac.in](http://www.smyanl.ac.in)
- [www.ignou.ac.in](http://www.ignou.ac.in)
- [www.egyankosh.ac.in](http://www.egyankosh.ac.in)
- [www.ftm.ac.in](http://www.ftm.ac.in)
- [www.eskillindia.org](http://www.eskillindia.org)
- [www.esitksha.mp.gov.in](http://www.esitksha.mp.gov.in)
- [www.ylab.co.in](http://www.ylab.co.in)
- [www.internshala.com](http://www.internshala.com)
- [www.udl.itkgn.ac.in](http://www.udl.itkgn.ac.in)

Online Resources-

- e-Resources / e-books and e-learning portals
- <https://indiaagrinet.com/horticulture/CONTENTS/LANDSCAPE.htm>
- [https://www.youtube.com/watch?v=ZUhg6ZFO48c&ab\\_channel=MountainGardens](https://www.youtube.com/watch?v=ZUhg6ZFO48c&ab_channel=MountainGardens)
- <https://www.youtube.com/watch?v=EE0oQO6n9IA>
- <https://www.teachmint.com/ille/studymaterial/bse/11063f0g/11styleofgardeningpdf/0dha825bul6od-4180-afe1-28950ar42454>
- [https://k8449r.weebly.com/uploads/3/0/7/3/30731055/types\\_of\\_gardens\\_compatibility\\_model\\_pdf-signed.pdf](https://k8449r.weebly.com/uploads/3/0/7/3/30731055/types_of_gardens_compatibility_model_pdf-signed.pdf)
- <https://www.egyankosh.ac.in/bitstream/123456789/73050/1/Unit-2.pdf>
- [https://www.academla.edu/40140208/A\\_HANDBOOK\\_ON\\_FLORICULTURE\\_And\\_Landscapeing](https://www.academla.edu/40140208/A_HANDBOOK_ON_FLORICULTURE_And_Landscapeing)
- [https://k8449r.weebly.com/uploads/3/0/7/3/30731055/landscape\\_gardening.pdf](https://k8449r.weebly.com/uploads/3/0/7/3/30731055/landscape_gardening.pdf)
- <https://homeguides.sfstate.com/gardening-tools-uses-41745.html>
- <https://tractoroguru.in/blog/floriculture-types-of-flowers-tips-and-importance-of-floriculture/>

## 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 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): 35	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:

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**FOUR YEAR UNDERGRADUATE PROGRAM (2024 -2028)**  
**DEPT. OF BOTANY: VALUE ADDITION COURSE**  
**COURSE CURRICULUM (2024-25)**

<b>PART-A: Introduction</b>			
Program: Undergraduate (Certificate / Diploma / Degree/Honors)		Semester - I/III/V	
		Session: 2024-2025	
1	Course Code	BOVAC – 02	
2	Course Title	Academic Research & Report Writing	
3	Course Type	Value Addition Course (VAC)	
4	Pre-requisite(if,any)	As per Government norms / Institutional scheme	
5	Course Learning Outcomes (CLO)	<p><i>After completion of this course, the students will be able to -</i></p> <ul style="list-style-type: none"> <li>➤ Understand the academic research and its scope &amp; prospects.</li> <li>➤ Know the Importance of Report writing in academic and Research and Necessity of report writing for achievement of academic &amp; research goals</li> <li>➤ Demonstrates the knowledge of the toxicity of plant and essential oil ingredients.</li> <li>➤ Understand the kinds &amp; characteristics of academic and research reports / presentation and its prospective application.</li> <li>➤ Use the tools and techniques of academic research and report writing</li> <li>➤ Adopt the skill of research designing and report/ paper /thesis writing</li> </ul>	
6	Credit Value	2 Credits	Credit = 15 Hours - learning & Observation
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
<b>PART -B: Content of the Course</b>			
Total No. of Teaching-learning Periods (01 Hr. per period) - 30 Periods (30 Hours)			
Module	Topics (Course contents): Learning and Practices		No. of Hrs
I	Introduction: Concept of - Academic Research and Research Project, Component of a concept Paper for academic research, Research-Characteristics, Type, Formulation & Design, Format, Scope, Motivation & Prospects. Popular Scheme & Organization in India promoting Research - INSPIRE, NSF, MEF, DBT, DST, DNES, STARD, ICAR, ICMR, CSIR, INSA.-		08 Hours
II	Research paper / Review writing: Steps of writing a research report. Types of Research paper, Structure of Research papers, Research paper formats, Abstract writing, Methodology, Results and Discussion, Different formats referencing, Ways of communicating a research papers, (Assignments)		07 Hours
III	Report/ Dissertation / Thesis Writing - Structure of a thesis , Scope of the work, Literature review, Experimental / Computational details, Preliminary studies, Result and Discussion, Figures & Table Preparation, Conclusion and Future works, Bibliography, Appendixes (Assignments)		07 Hours
IV	Tools, Techniques & Presentation-- Various word processors - MS Office- Word, Excel & PowerPoint, Libre-office, Latex etc. Making effective presentations using Power Point and Beamer. Basic idea of Data collection, Tabulation & Presentation. Plagiarism detection tools (Assignments)		08 Hours
Keywords	Academic Research, Research report, Project, Thesis/ Dissertation/ Review writing		

Signature of Convener & Members of CBOS:

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## PART-C

BVAC - 02 (Academic Research & Report Writing)

### Learning Resources: Text Books, Reference Books and Others

#### Text Books Recommended -

- Technical Report Writing and Research Methodology by Dr Naushad Alam Dr Quadri Javeed Ahmad Peer Dr Banarsi Lal, Write & Print Publications
- Research Writing A Complete Guide (PB) by Srinivasan R, How Academics
- GUIDE TO REPORT WRITING by Netzley, Snow, PEARSON INDIA
- A Student Guide to Writing Research Reports, Papers, Theses and Dissertations By Cathal Ó Siochrú; ISBN 9780367621049. Published 2022 by Routledge
- <https://www.goodreads.com/shelf/show/report-writing>

#### Online Resources-

- e-Resources / e-books and e-learning portals
  - <https://www.questionpro.com/blog/research-reports/>
  - <https://egvankosh.ac.in/bitstream/123456789/39238/1/Unit-5.pdf>
  - <https://www.studocu.com/in/document/visvesvaraya-technological-university/research-methodology/general-format-of-a-research-report/33791300>
  - <https://students.unimelb.edu.au/academic-skills/resources/report-writing/research-reports>
  -
- ❖ Use of following sites
- <https://www.wiley.com/en-ie/Student+Research+and+Report+Writing:+From+Topic+Selection+to+the+Complete+Paper-p-9781118963913>
- [https://www.researchgate.net/publication/275654158\\_HAND\\_BOOK\\_FOR\\_WRITING\\_RESEARCH\\_PAPER](https://www.researchgate.net/publication/275654158_HAND_BOOK_FOR_WRITING_RESEARCH_PAPER)

### PART -D: Assessment and Evaluation

#### Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

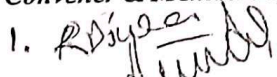




Continuous Internal Assessment (CIA): 15 Marks

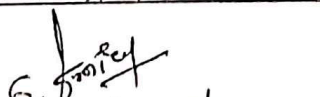
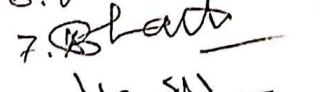

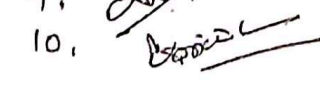

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
	Assignment/Seminar +Attendance - 05 Total Marks - 15	

End Semester Exam (ESE):	Two section - A & B
	Section A: Q1. Objective - 05 x1= 05 Mark; Q2. Short answer type- 5x2 =10 Marks Section B: Descriptive answer type qts., 1out of 2 from each unit- 4x05 =20 Marks

Signature of Convener & Members of CBOS:

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

<b>PART-A: Introduction</b>			
Program: Undergraduate <i>(Certificate / Diploma / Degree/Honors)</i>		Semester - II/IV	Session: 2024-2025
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

<b>PART -B: Content of the Course</b>			
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	<b>Introduction:</b> 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. <i>[ Learning and Practices]</i>	04Hours Learning and 07 Hours Practices	
II	<b>Floral ornaments &amp; Flower arrangements:</b> 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. <i>[ Learning and Practices]</i>	04Hours Learning and 07HoursPra ctices	
III	<b>Flower decoration:</b> Flowers used for decoration; Different idea of flower decoration for Home, Festivals, office, Gallery, Stage, Wall, Table, Gate. Flower Pot / Vas / Bottle decoration. <i>[ Learning and Practices]</i>	03 Hours + 07 Hours	
IV	<b>Creative decorations:</b> 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. <i>[ Learning and Practices]</i>	04Hours Learning and 09 Hours Practices	
Keywords	Floral ornaments, Flower arrangement, Flower decoration		

Signature of Convener & Members of SCBOS:

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## 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 Cray (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\\_drvflower\\_tech.html](https://agritech.tnau.ac.in/horticulture/horti_Landscaping_drvflower_tech.html)
- <https://librarv.ihbt.res.in/Institute%20Brochures/drv%20flower.pdf>
- [https://static.vikaspedia.in/media/files\\_en/agriculture/farm-based-enterprises/value-added-products/drv-flower-production-1.pdf](https://static.vikaspedia.in/media/files_en/agriculture/farm-based-enterprises/value-added-products/drv-flower-production-1.pdf)
- [https://www.rcsearchgate.net/publication/362645798\\_Dry\\_Flower\\_Technology\\_A\\_Value\\_Addition\\_to\\_Floriculture\\_Industry](https://www.rcsearchgate.net/publication/362645798_Dry_Flower_Technology_A_Value_Addition_to_Floriculture_Industry)
- <https://in.pinterest.com/smsastrv/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	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
	Assignment/Seminar + Attendance - 05 Total Marks - 15	
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:

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### PART-C: Learning Resources

#### Text Books, Reference Books and Others

##### Text Books Recommended –

1. Kumar, N.C. (1993). An Introduction to Medical botany and Pharmacognosy. Emkay Publications, New Delhi.
2. Rao, A.P. (1999). Herbs that heal. Diamond Pocket Books (P) Ltd., New Delhi.
3. Iris F. F. Benzie and Sissi Wachtel-Galor. Herbal Medicine, 2nd edition Biomolecular and Clinical Aspects, CRC Press/Taylor & Francis; 2011
4. Fabrizio Donovan (2020) Medicinal Herbs: The Ultimate Guide to Natural Healing, Learn The Benefits of Herbs and Use the Nature's Most Powerful Medicinal Plants in Making Your Own AZ Remedies to Treat Diseases, Author's Republic.
5. Stargrove Mitchell Bebel ND, Herb, Nutrient, and Drug Interactions, Publisher: Elsevier – Health Sciences Division
6. Iris F. F. Benzie (Editor), Herbal Medicine (Oxidative Stress and Disease) 2nd Edition,

##### Online Resources–

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

##### Online Resources–

- <https://pubmed.ncbi.nlm.nih.gov/22593937/>
- <https://crimsonpublishers.com/acam/pdf/ACAM.000551.pdf>
- [https://www.researchgate.net/publication/329823398\\_Medicinal\\_Plants\\_Used\\_in\\_the\\_Treatment\\_of\\_Mental\\_and\\_Neurological\\_Disorders\\_in\\_Ghana](https://www.researchgate.net/publication/329823398_Medicinal_Plants_Used_in_the_Treatment_of_Mental_and_Neurological_Disorders_in_Ghana)
- <https://www.sciencedirect.com/science/article/abs/pii/S0378874115003013>
- <https://core.ac.uk/download/pdf/143841457.pdf>
- <https://practicalselfreliance.com/medicinal-plants/>
- <https://practicalselfreliance.com/medicinal-plants/>
- <https://www.pdfdrive.com/medicinal-plants-books.html>

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	Assignment/Seminar + Attendance -	05	
	Total Marks -	15	

End Semester Exam (ESE):	Two section – A & B Section A: Q1. Objective – 05 x1= 05 Mark; Q2. Short answer type- 5x2 =10 Marks Section B: Descriptive answer type qts., 1out of 2 from each unit- 4x05 =20 Marks
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#### Name and Signature of Convener & Members of CBoS:

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