

GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE

RAJNANDGAON (C.G.)



**B.Sc. BOTANY FYUP
(Four Year Undergraduate Programme)
Semester I, II, III, IV, V, VI, VII, VIII**

Course Curriculum

FOR

**B.Sc. BOTANY
Semester V and Semester VI
SESSION – 2026-27**

**Approved by
Central Board Of Studies & Board Of Studies**

DEPARTMENT OF BOTANY

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

Botany

2026-27

Year	Sem.	Course Type	Course Code	Course Title	Credit	IA	ESE	Max Marks
First Year	I Sem.	DSC-01	BOSC01T	Elementary Botany	3+0+0	30	70	100
		DSC-01-LAB	BOSC01P	Elementary Botany –LAB	0+0+1	15	35	50
		GE-01	BOGE01T	Elementary Botany	3+0+0	30	70	100
		GE-01-LAB	BOGE01P	Elementary Botany –LAB	0+0+1	15	35	50
	II Sem.	DSC-02	BOSC02T	Microbes and Thallophyta	3+0+0	30	70	100
		DSC-02-LAB	BOSC02P	Microbes and Thallophyta - LAB	0+0+1	15	35	50
		GE-02	BOGE02T	Microbes and Thallophyta	3+0+0	30	70	100
		GE-02-LAB	BOGE02P	Microbes and Thallophyta - LAB	0+0+1	15	35	50
		SEC-01	BOSEC01	Gardening and Floriculture	0+0+2	10	40	50
Second Year	III Sem.	DSC-03	BOSC03T	Archegoniate and Fossils	3+0+0	30	70	100
		DSC-03-LAB	BOSC03P	Archegoniate and Fossils – LAB	0+0+1	15	35	50
		DSE- 01	BOSE01T	Natural resources and management	3+0+0	30	70	100
		DSE-01-LAB	BOSE01P	Natural resources and management- LAB	0+0+1	15	35	50
		VAC- 01	BOVAC01	Herbal Plants & Human Health	2+0+0	10	40	50
	IV Sem.	DSC- IV	BOSC04T	Angiosperms	3+0+0	30	70	100
		DSC- IV- LAB	BOSC04P	Angiosperms- LAB	0+0+1	15	35	50
		DSE-02	BOSE02T	Microbiology and Phytopathology	3+0+0	30	70	100
		DSE-02-LAB	BOSE02P	Microbiology and Phytopathology- LAB	0+0+1	15	35	50
		SEC- 02	BOSEC02	Flower Decoration	0+0+2	10	40	50

Third Year	V Sem.	DSC-05	BOSC05T	Cytology and Genetics	3+0+0	30	70	100
		DSC-05-LAB	BOSC05P	Cytology and Genetics - LAB	0+0+1	15	35	50
		DSE-03	BOSE03T	Phytopalaeontology and Evolutionary Botany	3+0+0	30	70	100
		DSE-03-LAB	BOSE03P	Phytopalaeontology and Evolutionary Botany - LAB	0+0+1	15	35	50
		VAC-02	BOVAC02	Academic Research and Report Writing	2+0+0	10	40	50
	VI Sem.	DSC-06	BOSC06T	Plant Physiology and Economic Botany	3+0+0	30	70	100
		DSC-06-LAB	BOSC06P	Plant Physiology and Economic Botany-LAB	0+0+1	15	35	50
		DSE-05	BOSE04T	Ethnobotany and Medicinal Plants	3+0+0	30	70	100
		DSE-05-LAB	BOSE04P	Ethnobotany and Medicinal Plants-LAB	0+0+1	15	35	50
Fourth Year Bachel or of Honors	VII Sem.	DSC-07	UBSDCT-707	Ecology and Phytogeography	3+0+0	20	80	100
		DSC-07-LAB	UBSDCL-707	Ecology and Phytogeography-LAB	0+0+1	10	40	50
		DSE-07	UBSDET-707A	Instrumentation and Biochemical Technology	3+0+0	20	80	100
		DSE-07-LAB	UBSDEL-707A	Instrumentation and Biochemical Technology-LAB	0+0+1	10	40	50
		DSE-08	UBSDET-707B	Biosystematics and Biodiversity	3+0+0	20	80	100
		DSE-08-LAB	UBSDEL-707B	Biosystematics and Biodiversity-LAB	0+0+1	10	40	50
		DSE-09	UBSDET-707C	Plant Breeding and Seed Technology	3+0+0	20	80	100
		DSE-09-LAB	UBSDEL-707C	Plant Breeding and Seed Technology-LAB	0+0+1	10	40	50
		GE-707	UBSGET-707	Growth and Stress Physiology	3+0+0	20	80	100
		GE-LAB	UBSGEL-707	Growth and Stress Physiology-LAB	0+0+1	10	40	50

Fourth Year Bachelor of Honors with Research	VIII Sem	DSC-08	UBSDCT-807	Molecular Biology and Biostatistics	3+0+0	20	80	100
		DSC-08-LAB	UBSDCL-807	Molecular Biology and Biostatistics- LAB	0+0+1	10	40	50
		DSE-10	UBSDET-807A	Plant Biotechnology and Crop Improvement	3+0+0	20	80	100
		DSE-10-LAB	UBSDEL-807A	Plant Biotechnology and Crop Improvement-LAB	0+0+1	10	40	50
		DSE-11	UBSDET-807B	Applied Botany and Intellectual Property Right (IPR)	3+0+0	20	80	100
		DSE-11-LAB	UBSDEL-807B	Applied Botany and Intellectual Property Right (IPR)-LAB	0+0+1	10	40	50
		DSE-12	UBSDET-807C	Biochemistry and Enzymology	3+0+0	20	80	100
		DSE-12-LAB	UBSDEL-807C	Biochemistry and Enzymology-LAB	0+0+1	10	40	50
		DSE-13	UBSDET-807D	Bioinformatics and Genetic Technology	3+0+0	20	80	100
		DSE-13-LAB	UBSDEL-807D	Bioinformatics and Genetic Technology-LAB	0+0+1	10	40	50
	VII Sem.	DSC-07	UBSDCT-707	Ecology and Phytogeography	3+0+0	20	80	100
		DSC-07-LAB	UBSDCL-707	Ecology and Phytogeography-LAB	0+0+1	10	40	50
		DSE-07	UBSDET-707A1	Research Methodology and Ethics	4+0+0	20	80	100
		DSE-08	UBSDET-707B	Biosystematics and Biodiversity	3+0+0	20	80	100
		DSE-08-LAB	UBSDEL-707B	Biosystematics and Biodiversity-LAB	0+0+1	10	40	50
		DSE-09	UBSDET-707C	Plant Breeding and Seed Technology	3+0+0	20	80	100
		DSE-09-LAB	UBSDEL-707C	Plant Breeding and Seed Technology-LAB	0+0+1	10	40	50
		GE-	UBSGET-707	Growth and Stress Physiology	3+0+0	20	80	100
		GE- LAB	UBSGEL-707	Growth and Stress Physiology-LAB	0+0+1	10	40	50
	VIII Sem	DSC-08	UBSDCT-807	Molecular Biology and Biostatistics	3+0+0	20	80	100
		DSC-08-LAB	UBSDCL-807	Molecular Biology and Biostatistics- LAB	0+0+1	10	40	50
		DSE-10	UBSDET-807A	Plant Biotechnology and Crop Improvement	3+0+0	20	80	100
		DSE-10-LAB	UBSDEL-807A	Plant Biotechnology and Crop Improvement-LAB	0+0+1	10	40	50
		Research Project/Dissertation	UBSRP-807		12			

B.Sc. – V Semester

BOTANY

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Sciences (Degree/Honors)		Semester - V	Session: ²⁰²⁶⁻²⁷ 2024-2025
1	Course Code	BOSC-05 T	
2	Course Title	Cytology & Genetics	
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: ➤ Acquire knowledge of cell and its components. ➤ Learn about the structure and function of membrane and cell division ➤ Interpret Mendelian and non Mendelian genetics ➤ Interpret linkage, crossing over and gene interaction	
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	The cell, cell wall, plasma membrane : Cell structure and function; Characteristics of prokaryotic and eukaryotic cells; Structure, function and chemical composition of Plant cell wall. Plasma membrane structure and chemical nature; Membrane transport – Passive, active and facilitated transport, endocytosis and exocytosis. Nucleus: Structure-nuclear envelope, nuclear pore complex, nuclear lamina, molecular organization of chromatin; nucleolus. Cytoskeleton: Role and structure of microtubules, microfilaments and intermediary filament		12
II	Cell organelles, Division of Cell Mitochondria and Chloroplast; Structure and functions. Endoplasmic Reticulum – Structure, and functions, role in protein synthesis. Golgi Apparatus – organization, protein glycosylation, Lysosomes. Cell cycle, mitosis and meiosis; Regulation of cell cycle- checkpoints, role of protein kinases.		11
III	Mendelian genetics, Linkage and Crossing over; Mendelism: History; Principles of inheritance; terminology Chromosome theory of inheritance; Autosomes and sex chromosomes; Probability and pedigree analysis. Non-Mendelian inheritance: Incomplete dominance and co-dominance. Gene interaction; duplicate, complimentary, supplantmentry, epistasis. Linkage and crossing over.		11
IV	Extrachromosomal Inheritance, Mutation : Extrachromosomal inheritance: Cytoplasmic inheritance in plants. Mutations; types, Molecular basis of Mutations; Mutagens – physical and chemical. Chromosomal aberration: Deletion, Duplication, Inversion, Translocation, Euploidy and Aneuploidy.		11
Keywords	Cytology, Cell division, Genetics, Mendelian genetics, Mutation		

Signature of Convener & Members (CBoS) :

① R. S. ...
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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended-

1. Cell Biology: Powar C. B. and Dagainawala H. I., Himalay Pub. House, Bombay
2. Cell biology by Karp, G. 2010.
3. Cell and Molecular Biology: Concepts and Experiments. 6th Edition. John Wiley & Sons. Inc.
4. De Robertis, E.D.P. and De Robertis, E.M.F. 2006. Cell and Molecular Biology. 8th edition Lippincott Williams and Wilkins, Philadelphia.
5. Genetics by P. K. Gupta, Rastogi Publication
6. Gytogenetics, Molecular biology and Plant breeding by P. K. Gupta, Rastogi Publication

Reference Books Recommended-

1. Becker, W.M., Kleinsmith, L.J., Hardin. J. and Berton, G. P. 2009 The World of the Cell. 7th edition. Pearson Benjamin Cummings Publishing, San Francisco.
2. L.J. (2012). Becker's World of the Cell, Pearson Education Inc. U.S.A. 8th edition.
3. Hausman, R.E. (2009) The Cell: A Molecular Approach. 5th edition. ASM Press & Sunderland, Washington,
4. D.C.; Sinauer Associates, MA. 9. Becker, W.M., Kleinsmith, L.J., Hardin. J. and Berton, G. P. (2009) The World of the Cell. 7th edition. Pearson Benjamin Cummings Publishing, San Francisco

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://www.cytology-iac.org/educational-resources/virtual-slide-library>
- [https://www.asct.com/ASCTWeb/Content/Cytopreparation Online Course.aspx](https://www.asct.com/ASCTWeb/Content/Cytopreparation%20Online%20Course.aspx)
- <https://www.mooc-list.com/tags/genetics>
- <https://www.coursera.org/learn/genetics-evolution>
- <https://www.my-mooc.com/en/mooc/introduction-to-genetics-and-evolution>
- http://rastogipublications.com/index.php?route=product/product&product_id=50
- <https://www.nou.ac.in/sites/default/files/sim/BSCBO>
- [http://ysmubooks.am/uploads/MEDICAL BIOLOGY.pdf](http://ysmubooks.am/uploads/MEDICAL%20BIOLOGY.pdf)

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. B. Bhas
② R. B. Bhas
③ R. B. Bhas
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FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF BOTANY
COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Sciences (Degree/ Honours)		Semester - V	Session: 2024-2025 2026-27
1	Course Code	BOSC-05	
2	Course Title	Lab. Course -05 (Cytology and Genetics)	
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: ➤ Handle the Compound light Microscope and apply microscopy ➤ Achieve elaborate idea about cell staining procedures and mitotic plate observation & analysis ➤ Identify the various stages of cell division karyotype analysis Get practice of genetic crosses and genetic analysis.	
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	1. Staining technique of cell organelles. 2. Study of different stages of Mitosis. 3. Study of different stages of Meiosis 4. Study of plant cell structure with the help of epidermal peel mount of Onion/Rhoeo/Crinum. 5. Demonstration of the phenomenon of protoplasmic streaming in <i>Hydrilla</i> leaves. 6. Counting the cells per unit volume with the help of haemocytometer. (Yeast/pollen grains) 7. Exercise on genetics (Mendelian ratio and test cross) 8. Karyotype of chromosomes. 9. Study of polytene and lampbrush chromosomes.		30
Keywords	Mitosis, Mendelian ratio, Karyotype, Chromosome.		

Signature of Convener & Members (CBoS) :

- ① P. Bhowar
- ② S. S. S. S.
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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. Laboratory Manual of Cyto-technique and Chromosome handling By Sharma A K
2. Manual of Cytology, Ministry of Health & Welfare
3. Cytogenetics By PK Gupta.
4. Cell biology By C. B. Powar

Online Resources–

- e-Resources / e-books and e-learning portals
- www.swayam.ac.in
- www.ignou.ac.in
- www.egvankosh.ac.in
- www.iitm.ac.in
- www.eskillindia.org
- www.esniksha.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://ijrbat.in/upload_papers/0410202102153609.%20Basarkar%20UG%20and%20%20Patil-Behere%20KP.pdf
- <https://www2.samford.edu/~djohnso2/44962w/334/mitosis.html>
- <https://www.findel-international.com/product/science/biology/prepared-slides/philip-harris-prepared-microscope-slide-set-meiosis-and-mitosis-set-of-9-slides/e8r06642>

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	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): 35	Laboratory / Field Skill Performance: On spot Assessment	Managed by Course teacher as per lab. status
	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	

Name and Signature of Convener & Members of CBoS:

- ① P. Powar
- ② P. Bhandarkar
- ③ A. Bhatnagar
- ④ A. Bhatnagar
- ⑤ A. Bhatnagar
- ⑥ V. Bhatnagar
- ⑦ A. Bhatnagar
- ⑧ A. Bhatnagar
- ⑨ A. Bhatnagar
- ⑩ A. Bhatnagar

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Science (Degree/Honors)		Semester - V	Session: 2026-27 2024-2025
1	Course Code	BOSE -03 T	
2	Course Title	Phytopaleontology and Evolutionary Botany	
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 ➤ have a basic idea of fossils and process of fossilization ➤ Describe how plants evolved including their origin and diversification ➤ Summarize and evaluate information from scientific literature ➤ Identify plant fossil through study of the remains of organisms, anatomical evidence and diversity ➤ Understand and track evolution of species over millions of years identify transitional forms of life ➤ Understand how earth's environment has changed over geological time.	
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	Phytopaleontology- ❖ General account, ❖ Geological time scale; ❖ Brief account of process of fossilization & types of fossils and their study techniques; ❖ Fossils of algae, fungi, bryophytes		12
II	Fossils and India: ❖ Fossil plants: <i>Rhynia</i> , <i>Horneophyton</i> , <i>Williamsonia</i> , <i>Cycadeoidea</i> . ❖ Contribution of Prof. Birbal Sahni, - <i>Pentoxyles</i> - <i>Pentoxylon sahnii</i> ❖ Role of Indian Gondwana Flora in Chhattisgarh with reference to coal mines		11
III	Brief account of the families of Pteridospermales – ❖ Lyginopteridaceae, ❖ Medullosaceae, ❖ Caytoniaceae & ➤ Glossopteridaceae		11
IV	General Account and Affinities – ❖ Cycadeoidales and Cordaitales. ❖ Paleozoic seeds ❖ Angiospermic and Gymnospermic fossils ❖ Uses of fossils ❖ Evolution : convergent, divergent and parallel evolution ❖ Telome concept		11
Keywords	Fossil, geological time table, gondwana flora, Telome		

Signature of Convener & Members (CBOS) :

① R. Singh
 ② R. Singh
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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. Vashishtha, B. R. (2005) Pteridophytes S. Chand and Co., Delhi.
2. Vashishtha, B. R. (2005) Bryophytes S. Chand and Co., Delhi.
3. Parihar, N. S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Central Book Depot, Allahabad.
4. Rashid A (1999) An Introduction to Pteridophyta, Vikas Publishing House Pvt. Ltd. New Delhi.
5. Sharma OP (1990) Textbook of Pteridophyta. MacMillan India Ltd. Delhi.
6. Vashishtha BR, Sinha AK and Kumar A (2010) Botany for Degree Students – Pteridophyta, S. Chand and Company,
7. Vashishtha BR, Sinha AK and Kumar A (2010) Botany for Degree Students – Gymnosperms, S. Chand and
8. Parihar NS (1976) Biology and Morphology of Pteridophytes. Central Book Depot.
9. Bhatnagar SP (1996) Gymnosperms, New Age International Publisher.
10. Pandey BP (2010) College Botany Vol II S. Chand and Company, New Delhi.

Reference Books Recommended –

1. Kumar, H. D. (1988) introductory Phycology, Affiliated East-West Press Ltd., New Delhi.
2. Morris, I (1986) An Introduction to Algae, Cambridge Univ. Press, UK.
3. Puri, P. (1980) Bryophytes, Atma Ram and Sons, Delhi.
4. Sporne, K. K. (1991) The Morphology of Pteridophytes, B. I. Publishing Pvt. Ltd. Bombay.
5. Stewart, W. N. and Ruthwell, G. W. (1993) Paleobotany and the Evolution of Plants. Cambridge Univ. Press, UK.
6. Principles of Paleontology Edition 3 Paperback-1 January 2006 by Arnold Miller, Michael Foote Publishers - W.H. Freeman & Co Ltd

Online Resources–

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

1. <https://efaidnbmnnnibpcajpegllefindmkaj/https://egyankosh.ac.in/bitstream/123456789/6961/1/Unit-9.pdf>
2. <https://www.encyclopedia.com/science/encyclopedias-almanacs-transcripts-and-maps/fossil-and-fossilization>
3. <https://palaeobotany.org>

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

- www.swavam.ac.in
- www.ignou.ac.in
- www.egyankosh.ac.in
- www.iitm.ac.in
- www.eskillindia.org
- www.esniksha.mp.gov.in
- www.vlab.co.in
- www.internshala.com
- www.ndl.iitkgp.ac.in

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., Total of 2 from each unit-4x10 =40 Marks	

Name and Signature of Convener & Members of CBs:

① Prof. Dr. ...
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FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Science (Degree/ honors)		Semester - V	Session: 2024-2025 2026-27
1	Course Code	BOSE-03 P	
2	Course Title	Lab. Course -03 (Phyt paleontology and Evolutionary Botany)	
3	Course Type	Laboratory course	
4	Pre-requisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	1. Understand evolutionary trends of plant development and diversification. 2. Study remnant of past and its natural conservation. 3. Phylogenetic relationship with the help of paleontological evidences 4. Understand role of fossil as an educational tool promoting science literacy an appreciation for earth's rich biological heritage.	
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	1) Study of important fossil of pteridophytes from prepared slides and specimens 2) Study of important fossil of gymnosperms from prepared slides and specimens 3) Study of important fossil of algae, fungi, bryophytes and angiosperms from prepared slides and specimens 4) Local trip to coal mines or fossil area for collection of fossil specimens and prepare study reports.		30
Keywords	1) Fossil, slides and specimens		

Signature of Convener & Members (CBoS) :

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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. Principles of Paleontology Edition 3 Paperback–1 January 2006 by Arnold Miller, Michael Foote Publishers - W.H Freeman & Co Lt
2. The Practical Fossil Finder (Practical Handbook) Hardcover – 1 October 1991 by Steve Parker (Author) Publishers Facts On File Inc

Online Resources–

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

1. <https://efaidnbmnnnibpcajpcglefindinkaj/https://egvankosh.ac.in/bitstream/123456789/69611/1/Unit-9.pdf>
2. <https://www.encyclopedia.com/science/encyclopedias-almanacs-transcripts-and-maps/fossil-and-fossilization>
3. <https://palaeobotany.org>

Online Resources–

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

- > www.swayam.ac.in
- > www.ignou.ac.in
- > www.egvankosh.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

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 Prof. Dr. S. K. Singh
② Dr. S. K. Singh
③ Dr. S. K. Singh

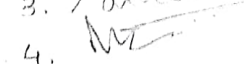
④ Dr. S. K. Singh
⑤ Dr. S. K. Singh
⑥ Dr. S. K. Singh

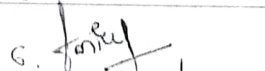
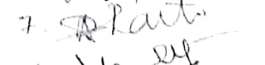
⑦ Dr. S. K. Singh
⑧ Dr. S. K. Singh
⑨ Dr. S. K. Singh
⑩ Dr. S. K. Singh

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

PART-A: Introduction			
Program: Undergraduate (Certificate / Diploma / Degree/Honors)		Semester - I/III/V	Session: 2026-27 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)	After completion of this course, the students will be able to - ➤ Understand the academic research and its scope & prospects. ➤ Know the Importance of Report writing in academic and Research and Necessity of report writing for achievement of academic & research goals ➤ Demonstrates the knowledge of the toxicity of plant and essential oil ingredients. ➤ Understand the kinds & characteristics of academic and research reports / presentation and its prospective application. ➤ Use the tools and techniques of academic research and report writing ➤ Adopt the skill of research designing and report/ paper / thesis writing	
6	Credit Value	2 Credits	Credit = 15 Hours - learning & Observation
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
PART -B: Content of the Course			
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 Netzey, Snow, PEARSON INDIA
- A Student Guide to Writing Research Reports, Papers, Theses and Dissertations By Cathal Ó Siochru: 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://egyankosh.ac.in/bitstream/123456789/39238/1/Unit-5.pdf>
- <https://www.studocu.com/in/document/vishvesvaraya-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

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

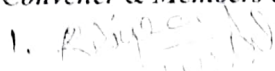
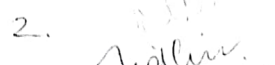
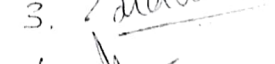
Maximum Marks: 50 Marks

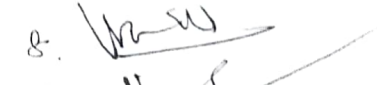
Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10 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):	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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B.Sc. – VI Semester

BOTANY

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

COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life sciences (Degree/Honors)		Semester - VI	Session: 2026-27 2024-2025
1	Course Code	BOSC-06 T	
2	Course Title	Plant Physiology and Economic 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 understand to ➤ Gain a deep understanding of the fundamental physiological processes in plants, including photosynthesis, respiration, transpiration, and nutrient uptake, and their regulation. ➤ Acquire practical skills in conducting experiments and using various techniques. ➤ Develop a comprehensive understanding of the economic value and utilization of plant resources. ➤ Acquire knowledge and skills to identify and classify economically important plant species.	
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-water relations & Mineral nutrition Importance of water, water potential and its components; Transpiration and its significance; Factors affecting transpiration; Root pressure and guttation. Essential elements, macro and micronutrients; Criteria of essentiality of elements; Role of essential elements; Symptoms of mineral deficiency in major crops, Transport of ions across cell membrane, active and passive transport.		12
II	Photosynthesis and Lipid Metabolism Historical background, photosynthetic pigments and their role photochemical reactions, PSI, PSII, Q cycle, C ₄ pathways; Crassulacean acid metabolism; Factors affecting CO ₂ reduction. Synthesis and breakdown of triglycerides, β-oxidation, glyoxylate cycle, gluconeogenesis and its role in mobilization of lipids during seed germination, α oxidation		11
III	Respiration and Nitrogen Metabolism Glycolysis, anaerobic respiration, TCA cycle; Oxidative phosphorylation, Glyoxylate, Oxidative Pentose Phosphate Pathway. Electron transport and mechanism of ATP synthesis; C ₃ , C ₄ and CAM pathways of carbon fixation, Photorespiration. Nitrate assimilation, biological nitrogen fixation, Physiology and biochemistry of nitrogen fixation, Ammonia assimilation (GS-GOGAT), reductive amination and transamination, amino acid synthesis.		11
IV	Economic Botany: Origin of Cultivated Plants, Examples of major plant introductions; Crop domestication and loss of genetic diversity; evolution of new crops/varieties, importance of germplasm diversity. Brief account of crops, millets, legumes, spice, Beverages, oils, drug, fiber, and timber yielding plant.		11
Keywords	Osmosis, Transport, Hill reaction, Genetic diversity.		

Signature of Convener & Members (CBoS) :

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 ⑩ *[Signature]*

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. Taiz, L., Zeiger, E., Møller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA 6th edition.
2. B. P. Pandey (2017) Economic Botany. S. Chand Publication, New Delhi.
3. Kochhar, S.L. (2012). Economic Botany in Tropics, MacMillan & Co. New Delhi, India.
4. Bajracharya, D., (1999). Experiments in Plant Physiology- A Laboratory Manual. Narosa Publishing House, New Delhi.

Reference Books Recommended-

1. Wickens, G.E. (2001). Economic Botany: Principles & Practices. Kluwer Academic Publishers, The Netherlands.
2. Chrispeels, M.J. and Sadava, D.E. 1994 Plants, Genes and Agriculture. Jones & Bartlett Publishers.
3. Harborne, J.B. (1973). Phytochemical Methods. John Wiley & Sons. New York
4. Hopkins, W.G., Huner, N.P., (2009). Introduction to Plant Physiology. John Wiley & Sons, U.S.A. 4th Edition.

Online Resources–

- e-Resources / e-books and e-learning portals
- <https://education.nationalgeographic.org/resource/photosynthesis/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4242210/>
- <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/nitrogen-metabolism>
- https://en.wikipedia.org/wiki/Lipid_metabolism

Online Resources–

- e-Resources / e-books and e-learning portals
- www.swayam.ac.in
- www.ignou.ac.in
- www.cgankosh.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

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

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

PART- A: Introduction				2026-27
Program: Bachelor in Life Sciences (Degree/ Honors)		Semester - VI		Session: 2024-2025
1	Course Code	BOSC-06		
2	Course Title	Lab. Course -06 (Plant Physiology and Economic Botany)		
3	Course Type	Laboratory course		
4	Pre-requisite (if, any)	As per program		
5	Course Learning Outcomes (CLO)	Acquire practical skills in conducting experiments and using various techniques to measure and analyze plant physiological parameters, enabling students to design and execute experiments in plant physiology research. ○ Acquire knowledge and skills to identify and classify economically important plant species, and understand their ecological requirements, cultivation techniques, and potential for sustainable utilization. ○ Apply critical thinking and problem-solving skills to analyze and evaluate the impacts of human activities on plant resources, and develop strategies for the conservation, sustainable management, and utilization of plant biodiversity.		
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		1. Determination of osmosis and plasmolysis. 2. Determination of osmotic potential of plant cell sap by plasmolytic method. 3. Demonstration of the process of transpiration. 4. To find out rate of transpiration by potometer method. 5. To find out stomatal frequency and stomatal index. 6. Chemical separation of photosynthetic pigments. 7. To find out that oxygen evolved during the process of photosynthesis. 8. To study the effect of quality and intensity of light on photosynthesis. 9. To find out the effect of carbon dioxide concentration on the rate of photosynthesis. 10. To find out the Respiratory Quotient of different respiratory substrates by respirometer method. 11. To compare the rate of respiration in different parts of a plant. 12. Study of amylase and catalase enzymes. 13. Morphological features and economic importance of cereals, millets, legumes, oil, spices, drug, fiber, and timber yielding plant.		30
Keywords		Physiology, Economic Botany, Beverages, Enzyme.		

Signature of Convener & Members (CBoS) :

① *R. Prasad*
 ② *Arundhathi*
 ③ *Arundhathi*
 ④ *Arundhathi*
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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. Bajracharya, D., (1999). Experiments in Plant Physiology- A Laboratory Manual. Narosa Publishing House, New Delhi.
2. Kochhar, S.L. (2012). Economic Botany in Tropics, MacMillan & Co. New Delhi, India.
3. Wickens, G.E. (2001). Economic Botany: Principles & Practices. Kluwer Academic

Reference Books Recommended –

1. Taiz, L., Zeiger, E., Møller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
2. Hopkins, W.G., Huner, N.P., (2009). Introduction to Plant Physiology. John Wiley & Sons, U.S.A. 4th Edition.

Online Resources–

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

- www.swavam.ac.in
- www.ignou.ac.in
- www.egvankosh.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://education.nationalgeographic.org/resource/photosynthesis/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4242210/>
- <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/nitrogen-metabolism>
- https://en.wikipedia.org/wiki/Lipid_metabolism

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

Name and Signature of Convener & Members of CBoS:

- ① *[Signature]*
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FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF BOTANY
COURSE CURRICULUM

PART- A: Introduction				2026-27	
Program: Bachelor in Life Science (Degree/Honors)		Semester - VI		Session: 2024-2025	
1	Course Code	BOSE-04 T			
2	Course Title	Ethnobotany and Medicinal plants			
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 - Develop a comprehensive understanding of the identification, cultivation, and processing of medicinal plants, and their chemical constituents responsible for therapeutic properties, enabling the evaluation of their potential for drug development and healthcare applications. - Explore the integration of traditional medicine practices, ethnobotany, and pharmacological principles in the study of medicinal plants, enabling the critical evaluation of their efficacy, safety, and cultural significance in different healthcare systems.			
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	Ethnobotany: - Introduction, concept, scope and objectives; - Ethnobotany as an interdisciplinary science. - The relevance of ethnobotany in the present context; - Major and minor ethnic groups or Tribals of India, and their life styles. - Plants used by the tribals: a) Food plants b) intoxicants and beverages c) Resins and oils and miscellaneous uses. - Role of ethnobotany in sustainable development				12
II	Role of ethnobotany in modern Medicine: - Medico-ethnobotanical sources in India; - Significance of the locally available plants in ethno botanical practices (along with their habitat and morphology - Role of ethnic groups in conservation of plant genetic resources. - Endangered taxa and forest management (participatory in Chhattisgarh). - Role of plant drugs in pharmaceutical industries - Quality, safety and efficacy of herbal medicines.				11
III	Medicinal Plants: - History, Scope and Importance of Medicinal Plants. - Indigenous Medicinal Sciences; Definition and Scope- - Traditional system of medicine in India- concept principles and importance of Ayurveda, Shidha, Yunani and Homeopathy - Concept of Herbalism and its significance - Phytomedicines and herbal raw materials , - local health traditions and traditional medicine				11
IV	Conservation and Propagation of medicinal plants: - Medicinal plants Conservation – issues and approaches - IUCN criteria - Red list criteria, - In situ conservation: Biosphere reserves, sacred groves, National Parks; Ex situ conservation: Botanical Gardens, - Ethnomedicinal plant Gardens - Propagation of Medicinal Plants: Objectives of the nursery, its classification, important components of a nursery, sowing, pricking, use of green house for nursery production, propagation through cuttings, layering, grafting and budding				11
Keywords	Ethnobotany, conservation, Medicinal Plants, Tribals				
Signature of Convener & Members (CBOS):					

Text Books, Reference Books and Others

1. S.K. Jain, Manual of Ethnobotany, Scientific Publishers, Jodhpur, 1995.
2. S.K. Jain (ed.) Glimpses of Indian. Ethnobotny, Oxford and I B H, New Delhi - 1981 Lone et al., Palaeo ethnobotany
3. S.K. Jain (ed.) 1989. Methods and approaches in ethnobotany. Society of ethnobotanists, Lucknow, India.
4. S.K. Jain, 1990. Contributions of Indian ethnobotny. Scientific publishers, Jodhpur.

Reference Books Recommended:

- Reference Books Recommended:**
1. Colton C.M. 1997. Ethnobotany – Principles and applications. John Wiley and sons – Chichester
 2. Rama Ro, N and A.N. Henry (1996). The Ethnobotany of Eastern Ghats in Andhra Pradesh, India. Botanical Survey of India. Howrah
 3. .Rajiv K. Sinha – Ethnobotany The Renaissance of Traditional Herbal Medicine – INA –SHREE Publishers, Jaipur-1996
 4. Trivedi P C, 2006. Medicinal Plants: Ethnobotanical Approach, Agrobios, India.
 5. Purohit and Vyas, 2008. Medicinal Plant Cultivation: A Scientific Approach, 2nd edn. Agrobios, India. Approach, 2nd edn. Agrobios, India.
 6. Medicinal Plants of India" by C.P. Khare
 7. "Handbook of Medicinal Plants" by L.D. Kapoor Rogers, P.P., Jalal, K.F. and Boyd, J.A. (2008). An Introduction to Sustainable Development. Prentice Hall of India Private Limited, New Delhi.

Online Resources—

- e-Resources / e-books and e-learning portals
- <https://www.fs.usda.gov/wildflowers/ethnobotany/index.shtml>
- https://www.researchgate.net/publication/333017295_Role_of_ethnobotany_in_modern_medicines_with_special_reference_to_Rauvolfia_serpentina_Trichopus_zeylanicus_Artemisia_sp_and_Withania_somnifera
- <https://www.sciencedirect.com/science/article/abs/pii/S0738081X18300415>
- https://www.mdpi.com/journal/diversity/special_issues/ethnobotany_biodiversity

Online Resources—

- e-Resources / e-books and e-learning portals
- www.swavam.ac.in
- www.ignou.ac.in
- www.egvankosh.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

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 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:

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② Raza
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FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Science (Degree/ honors)		Semester - VI	Session: ²⁰²⁶⁻²⁷ 2024-2025
1	Course Code	BOSE-04 P	
2	Course Title	Lab. Course 04 (Ethnobotany and Medicinal plants)	
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 get ➤ Acquire practical skills about the connection between plants and human society. ➤ Acquire knowledge of ethnobotanical research methods. ➤ Apply critical thinking and problem-solving skills of traditional plant uses. ➤ Idea about protection and conservation of medicinal and ethnobotanical plants. ➤ Documentation of cultural knowledge about healing.	
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	1. Identify and collect medicinal plant specimens from various habitats. Documentation for relevant information such as plant parts used, traditional uses, and ecological characteristics. 2. Preparation of herbarium of the collected plants 3. To study the distribution of tribals / ethnic peoples of a selected area. 4. Collection of locally used plants of ethnobotanically important plants 5. To study morphological description and identification of various medicinal plants. 6. Engage with local communities and traditional healers to document their knowledge of medicinal plants. Record their uses, preparation methods, and cultural significance, emphasizing the importance of preserving traditional knowledge. 7. To study common name, botanical name, important varieties and commercially important parts of medicinal and aromatic plants. 8. To study different methods of plant extraction to obtain bioactive compounds 9. Phytochemical and secondary metabolites analysis to determine the chemical potential therapeutic properties of collected specimens of local area. 10. Tribal knowledge towards disease diagnosis, treatment for different medicinal plants and its cultivation and conservation. 11. To find out antimicrobial potential of medicinal plant extracts.	30
Keywords	1. Therapeutic, antimicrobial, medicinal plants. herbarium	

Signature of Convener & Members (CBOS) :

① Review
② Plunder
③ Mz
④
⑤
⑥

⑥
⑦
(B)
10

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. S.K. Jain, Manual of Ethnobotany, Scientific Publishers, Jodhpur, 1995.
2. Jain, S. K. and V. Mudgal, 1999. A Handbook of Ethnobotany, Bishen Singh Mahendra Pal Singh, Dehradun

Reference Books Recommended –

1. "Handbook of Medicinal Plants" by L.D. Kapoor.
2. "Indian Medicinal Plants: An Illustrated Dictionary" by C.P. Khare.

Online Resources–

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

- 1) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9526633/>
- 2) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9922502/>
- 3) <https://bnrc.springeropen.com/articles/10.1186/s42269-022-00770-8>
- 4) <https://cnjournal.biomedcentral.com/articles/10.1186/s13020-016-0108-7>

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.eschiksha.mp.gov.in
- www.vlab.co.in
- www.internshala.com
- www.ndl.iitkgp.ac.in

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

End Semester Exam (ESE): 35	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
Continuous Internal Assessment (CIA): 15 (By Course Teacher)		
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. Shree
② L. S. D.
③ M.
④ K. S.
⑤ A. S.
⑥ B. S.

⑦ J. S.
⑧ S. S.
⑨ S.
⑩ S.