

EKLAVYA UNIVERSITY, DAMOH (M.P.)

Scheme of Examination B.Sc II Year

/For batch admitted in Academic Session 2020-21/

Subject wise distribution of marks and corresponding credits

S. No.	Subject Name	Subject Code	Paper Name	Maximum Marks Allotted															Total Marks	Contact Periods Per week			Total Credits				
				Theory Slot					Practical Slot					Quiz/ Assignment/ Attendance	End Sem	Lab Work/ Sessional	L	T		P							
				Final Yearly		Half Yearly			End Sem	Lab Work/ Sessional																	
				P1	P2	P3	P4	P1			P2	P3	P4														
1	Common	BPIND20Y201	Summer Project/Industrial Training																			150	0	0	0	11	
		BSECA20Y201	Skill Enhancement Course (SEC-1)	60			30																100	2	0	0	2
		BSECB20Y202	Skill Enhancement Course (SEC-2)	60			30																100	4	0	0	4
		BYOGA20Y201	Yoga- 2 (University Core)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	100	2	0	0	2
		BBOTY20Y201	Taxonomy and Embryology of Angiosperms (Paper- I) (Core Course - 1A)	30			15																50	3	1	0	4
2	Botany	BBOTY20Y202	Plant Ecology, Biodiversity and Phytogeography (Paper- II) (Core Course - 1B)	30					15													50	3	1	0	4	
		BBOTY20Y203	Paper- I and Paper- II, Practical (Practical 1A & 1B, Core Course 1C)															30				50	0	0	2	2	
		BBOTY20Y204	Microbial Physiology & Metabolism (Paper-III) (Core Course - 1D, for Honors)			30																5	50	3	1	0	4
		BBOTY20Y205	Paper- III, Practical (Practical 1D for Honours, Core Course 1E)																30				50	0	0	1	1
3	Common	BASPR20Y201	Assingment Presentation for 3 Core Courses																			50	0	3	0	3	

Induction programme of three weeks (MC): Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to local Areas, Familiarization to Dept./Branch & Innovations.

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Class		B.Sc. Botany	
Semester / year		II Year	
Subject & Subject Code		Botany, BBOTY20Y202	
Paper	(English)	Plant Ecology, Biodiversity and Phytogeography (Paper- II)	
	हिन्दी	पादप पारिस्थिकीय, जैव विविधता एवं पादप भौगोलिकी	
Max. Marks		30 (ETE) + 20 (IA) = 50	
Credits		Total Credits	
L	T	P	4
3	1	0	
Course Objectives:			
After studying this unit students will be able to			
<ol style="list-style-type: none"> 1. Understanding the concept of ecology, biodiversity and phytogeography. 2. Determination of the characters of the Autecology and Synecology. 3. Know Concept of Population Ecology, biodiversity and phytogeography. 4. Know Concept of Community Ecology, biodiversity and phytogeography. 			
Course Outcome:			
In this course students will			
<ol style="list-style-type: none"> 1. Know about the inter relationship between living world and environment. 2. Know about the effect of different abiotic factor in living system. 3. Understand about the fundamental aspect of ecosystem. 4. Understand the factors affecting the need to find sustainable practices for production of food, feed and fiber crops and how to implement them. 5. Become competent in basic forest management principles and evaluation of forest stands for health, wildlife habitat and lumber use. 6. Understand how the environment influences plant growth and crop yields, and ways to modify the environme 			
Student Learning Outcomes (SLO):			
<ol style="list-style-type: none"> 1. Students will know how to identify and sustainably manage insects in various plant production systems. 2. Students will have a good understanding of cellular and organism-level plant and animal structures, taxonomy and metabolic processes. 3. Students will be able to identify plant vegetative and floral structures and be able to identify native and non-native herbaceous and woody plants. 4. Students will understand the general principles of ecology as how they related to terrestrial and/or aquatic plant and animal conservation and management. 5. Students will be able to identify species, characteristics, habitat requirements. 			
Unit	Syllabus		Periods
UNIT - I	Ecosystems: Structure and Types, Biotic, and Abiotic components, Trophic levels, Food chain, Food web, Ecological pyramids, Energy Flow concept of . Biogeochemical Cycles. Concept of Gaseous, Liquid and Sedimentary cycles, Carbon, Nitrogen, water Phosphorus and Sulphur cycle.		15

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UNIT - I	पारिस्थितिक तंत्र : संरचना एवं प्रकार, जैविक एवं अजैविक घटक, पोषी स्तर, खाद्यशृंखला खाद्यजाल, पारिस्थितिक पिरामिड, ऊर्जा प्रवाह। जैवभू रासायनिक चक्र: अवधारणा, गैसीय, द्रव तथा अवसादीय चक्र, कार्बन, नाइट्रोजन, जल, फासफोरस चक्र एवं सल्फर चक्र।	
UNIT - II	Ecological Adaptations : Morphological, Anatomical and Physiological responses Water adaptation (Hydrophytes and Xerophytes) Temperature adaptation (Thermoperiodism and Vernalization), Light adaptation (Heliophytes and Sciophytes) Photoperiodism , Plant Succession : causes, Trends and Processes, Types of succession - Hydrosere and Xerosere. पारिस्थितिक अनुकूलन : आकारिकी आंतरिकी, तथा कार्यिकी अनुक्रिया, जल अनुकूलन (जलोद्भिद्र तथा मरुद्भिद्र), तापक्रम अनुकूलन (तापकालिता एवं वसंतीकरण) प्रकाश अनुकूलन (प्रकाशरागी तथा छायारागी) पादप अनुक्रमण प्रकाश दीप्तीकालिता : कारण, प्रवृत्ति एवं प्रक्रिया, अनुक्रमण के प्रकार हाइड्रोसियर (जलीय अनुक्रमण) जीरोसियर, (शुष्क अनुक्रमण)	15
UNIT - III	Population Ecology : Distribution Patterns, Density, Mortality, Growth curves, Ecotypes and Ecads; Community Ecology : Frequency, Density, Abundance, Cover and Life forms. Biodiversity : Basic concept, definition, Importance, Biodiversity of India, Hotspots, <i>in situ and ex situ</i> conservation., Biosphere reserves, Sancturies and National parks of Madhya Pradesh. Endangered and Threatened species, red data book. tula[;k ikfjflFkfrdh % forj.k iz.kkyh] ?kuRo egqyrk] vkPNknku ,oa thou:Ik @tSofofokrk & vk/kkjHkwr ifjdYiuk] ifjHkk"kk] egRo Hkkjr dh tSofofokrk] rRrLFky LoLFkkus rFkk ckg'; Lfkkus laj{k.k A tSo e.My lap;r] e-iz- ds vHk;kj.k ,oa jk"V^a; m ku] foyqIrizk; rFkk [krjs esa iM+h iztkfr;ka] jsM MkVkcqdA	15
UNIT - IV	Soil : Physico - chemical properties, Soil formation Development of Soil Profile, Soil classification, Soil composition, Soil Pollution: Deinition, Types & Causes ; Global warming, Climate change and Ozone hole. Plant Indicators, Environmental Protection Act, Farmer's Right and Intellectual Property Right. मृदा : भौतिक - रासायनिक गुण मृदा निर्माण, मृदा परिच्छेदिका का विकास, मृदा कारण मृदा का वर्गीकरण, मृदा संगठन प्रदूषण परिभाषा प्रकार एवं कारण, वैश्विक तपन, जलवायु परिवर्तन एवं ओजोन छिद्र। पादप सूचक पर्यावरण संरक्षण अधिनियम कृषक अधिकार एवं बौद्धिक संपदा का अधिकार।	15
UNIT - V	Phytogeography : Phytogeographical regions of India. Vegetation types of Madhya Pradesh Natural resources - definition and classification. Conservation and management of natural resources. Land resources management. Water and Wet land resource management. Economic and Ethobotany. पादप भौगोलिकी : भारत के पादप भौगोलिक क्षेत्र म.प्र. के वानस्पतिक प्रकार, प्राकृतिक स्रोत प्राकृतिक स्रोतों की परिभाषा एवं वर्गीकरण, प्रबंधन एवं संरक्षण। भू-स्रोत प्रबंधन। जल आर्द्रभूमि स्रोत प्रबंधन। आर्थिक एवं लोकवानस्पतिकी।	15

Text Books-

- 1 A Text Book Of Plant Ecology. By Shukla R.S. & Chandel P.S. 2006.
- 2 Ecology and Environment , by Rastogi Sharma P.D. 7th ed.1998. Rastogi Publication Shivaji Road Meerut. 250002. India.

Reference Books-

- 1 Kumar U.K. 2006. Bio diversity Principles and conservation A grobios Jodhpur
- 2 Odum ,E.P. 5th ed. 2004 Fundamentals of Ecology Matraj Publisher ,Dehradun.
- 3 Puri G.S. 1960. indian Forest Ecology.

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Class			B.Sc. Botany
Semester / year			II Year
Subject & Subject Code			Practical Botany, BBOTY20Y203
Paper			Paper- I and Paper- II, Practical
Max. Marks			50= (30+20) (ETE + IA)
L	T	P	2
0	0	2	

PRACTICALS

- 1 Description and Identification of a Plant Upto family Level.
Family- (1) Brassicaceae (2) Malvaceae (3) Rutaceae (4) Fabaceae (5) Apiaceae (6) Rosaceae (7) Cucurbitaceae (8) Asteraceae (9) Apocynaceae (10) Solanaceae (11) Lamiaceae (12) Euphorbiaceae (13) Asclepiadaceae (14) Liliaceae (15) Poaceae
- 2 Study of different types of Inflorescence,
- 3 Study of different types of ovules.
- 4 Study of different types of Anthers.
- 5 Study of different types of Placentation.
- 6 To determine the minimum size of the quadrat by species area curve.
- 7 To Determine the Frequency of different plant species found in a given area.
- 8 Determination of Density of Plant Species in a given community by quadrat method.
- 9 Determination of Abundance of Plant Species in a given plant community by quadrat method.
- 10 Study the Morphological and Anatomical adaptations in. Hydrophytes and Xerophytes
- 11 To Study the Composition of Field Soil.
- 12 To Find out the water Holding Capacity of soil.
- 13 To Test the PH of Soil.
- 14 Soil test
- 15 To Study Phytogeographic regions of India.
- 16 To Study national Parks of Madhya Pradesh.

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Class	B.Sc. Botany (Honours)		
Semester / Year	II Year		
Subject & Subject code	Botany Honours, BBOTY20Y204		
Paper	MICROBIAL PHYSIOLOGY & METABOLISM (Paper-III)		
Max. Marks	30 (ETE) + 20(2A) = 50		
Credit	Total Credits		
L	T	P	4
3	1	0	

Course Objectives:

This module gives us detailed knowledge about the growth and metabolism of bacteria. A major goal of Microbial Physiology and Metabolism is to assist scientists in rapidly communicating their research results to other scientists through an open, free-access platform, free from some of the restrictions.

Course Outcome:

On successful completion of the course, the student shall be able to:

1. Describe the nutritional requirements of microbes and the effect of environmental factors on the growth of microorganisms.
2. Classify the various transport mechanisms in microbes.
3. Define the metabolic pathways in microbes.
4. Distinguish between various fermentation mechanisms in microbes.
5. Discuss about anoxygenic and oxygenic photosynthesis in bacteria and cyanobacteria.

Student Learning Outcomes (SLO):

On successful completion of the course, the student shall be able to:

1. Demonstrate the Winogradsky column.
2. Describe the procedure of sterilization.
3. Describe the process of preparation of basic culture media.
4. Demonstrate the basic concept of cultivation of microorganisms
5. Analyse the growth curve of bacteria
6. Describe the effect of environmental factor
7. Learn the microbial taxonomy, the basics of microbes, microbial growth, microbial diversity its importance and application in day to day life and beneficial versus harmful microorganisms.

Unit	Syllabus	Periods
UNIT - I	MICROBIAL GROWTH : Definition of growth, Mathematical nature and expression of growth, Generation time. Growth curve in Bacteria, Measurement of Growth (Cell number, cell mass and cell constituent), Effect of environment on the microbial growth. (temperature, pH and Oxygen), Continuous culture synchronous culture and Batch culture.	15

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UNIT - II	MEMBRANE TRANSPORT PROCESS : Different models of cell membrane, Biochemical properties of cell membrane, function of cell membrane, Types of cellular transport (diffusion, gaseous exchange, osmosis, plasmolysis, active & passive transport, group translocation)	15
UNIT - III	BACTERIAL PHOTOSYNTHESIS AND FUELING REACTIONS : Classification of photosynthetic bacteria (Oxygenic & an oxygenic photosynthetic bacteria). Photosynthetic structure. Photosynthetic pigments. Photosynthetic electron transport system. Mechanism of photosynthesis (Cyclic & Non cyclic).	15
UNIT - IV	METABOLIC PATHWAYS : Respiratory Pathways (Glycolysis, Entner Daudoroff pathway, Pentose phosphate pathway, krebs cycle). Calvin cycle, substrate level & oxidative phosphorylation, Fermentation process & products.	15
UNIT - V	MICROBIAL ASSIMILATION AND BIOENERGETICS : Assimilation of Ammonia, Nitrogen and sulphate Methanogens and methylotrophs, Principles of Bioenergetics G. endergonic and exergonic reaction. Oxidation reduction reaction. Redoxpotential.	15

Text Books–

- 1 Doelle, H.W. 1975, Bacterial metabolism 2nd edition Academic press.
- 2 Moat, A.G. and Foster, J.W. 1988. Microbial physiology, 2nd edition, Springer verlag.

Reference Books–

- 1 White, D. 2000 Physiology and Biochemistry of Prokaryotes. 2nd edition. Oxford university press New York.
- 2 Calwell D.R. 1995 Microbial physiology and metabolism. Wm. Brown publishers, England.
- 3 Madigan, M.T. Martinko J.M. Stahl, D.A. and Clark, D.P. 2012. Brock Biology of Microorganisms 13th edition, Benjamin Cummings, San Francisco.

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Class	B.Sc. Botany (Honours)			
Semester / year	II Year			
Subject & Subject Code	Practical Botany Honours, BBOTY20Y205			
Paper	Paper- III, Practical			
Max. Marks	50= (30+20) (ETE + 2A)			
L	T	P	1	
0	0	1		

PRACTICALS

- 1 Study of osmosis in bacterial cell.
- 2 Study of plasmolysis in bacterial cell.
- 3 Effect of pH on the growth of bacteria on solid media.
- 4 Effect of salt on growth of microorganisms.
- 5 Effect of temperature on the growth of microorganisms.
- 6 Effect of antibiotics on bacterial growth by paper disc method.

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