



Yogoda Satsanga Mahavidyalaya

JAGANNATHPUR, DHURWA, RANCHI – 834004

Email address: ysmranchi4@gmail.com

(NAAC Accredited, Grade: B++, CGPA: 2.89)

COURSEPLAN

NAME OF THE DEPARTMENT: Botany

NAME OF THE FACULTY: Dr. S.K. Pathak

ACADEMIC SESSION: 2022-26

YEAR: 2024

PROGRAMME: B.Sc.

SEMESTER: I

COURSE TYPE: Core

COURSE: MICROBIOLOGY, PHYCOLOGY AND MYCOLOGY

COURSE CODE: MJ 1

TOTAL CREDIT: 4

Program Outcomes (POs):

PO1- Apply the knowledge and concepts of Life science and its fundamental principles and to identify, analyse and find solutions to various plant science problems.

PO2- Identity, hypothesize, and review available research literature, and analyse complex biological issues reaching substantiated conclusions using knowledge of biodiversity, environment, and biological functioning.

PO3- Develop scientific temperament, an ability to merge, interconnect and extrapolate information and knowledge across various streams.

PO4- Ability to decide appropriate technology and tools to solve problems. Understand the availability, of resources, their judicious use, and the execution of the project in sustainable way.

PO5- Design solutions for complex scientific problems and design processes that meet the specified needs with appropriate consideration for agricultural practices, societal health and wellness, conservation of endemic and rare plant species, cultural, societal, legal, constitutional and environmental considerations.



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PO6- Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO7- Communicate effectively on complex scientific activities with the science community and with society at large, such as, being able to comprehend and write effective reports and design documents, make effective presentations, and give and receive clear instructions.

PO8- Demonstrate knowledge and understanding of the scientific principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO9- Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of scientific developments, technological advancements and global changes.

PO10- Value and foster Physical, Physiological and Psychological well-being through personal practice and conduct. Ability to apply the learnings for a lifelong commitment to ethics in fulfilment of professional and social obligations.

PO11- Apply academic learning to promote higher studies, sustainable living through employment, and initiation of entrepreneurial advent to create opportunities and wealth for self and society.

PO12- Value and support social causes and rural development through service and philanthropic activities.

PROGRAMME SPECIFIC OUTCOMES (PSO):

PSO1: Explain different specialization of Botany such as Plant systematic, evolution, ecology, physiology, biochemistry, morphology anatomy, reproduction, genetics, cell and molecular biology of plants.

PSO2: Apply analytical techniques of plant biology, use of plants as industrial resources or as support system for human livelihood and will be well versed with the use of transgenic technologies for both basic research in plants.

PSO3: Identify various life forms of plants, design and execute experiments related to basic studies on evolution, ecology, developmental biology, physiology, microbiology, anatomy, recombinant DNA technology, Students are also familiarized with the use of common laboratory techniques like: - biological microscopic objects, histological and histochemical staining techniques bio-informatics tools and databases and in application of statistics to biological data.

PSO4: Apply Ethnobotanical knowledge of medicinal plants in traditional treatment using indigenous plants and methods.



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COURSE OUTCOMES (COs):

CO1: Remember the fundamental types and classification of microorganisms.

CO2: Understand the physiochemical and biological characteristics of viruses and their economic importance.

CO3: Apply knowledge of bacterial cell structure to differentiate between archaeobacteria, eubacteria, and wall-less forms.

CO4: Analyze the life cycles of different algae, such as Chlamydomonas and Volvox, to understand their reproductive strategies.

CO5: Evaluate and Create experimental designs to study the effects of specific plant pathogens and propose solutions for plant disease management.

A. CORRELATION BETWEEN POs AND Cos

POs Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO3
CO1	3	-	1	-	2	-	-	-	-	-	1	-	3	-	-
CO2	3	-	2	2	2	2	-	1	-	1	2	-	3	-	-
CO3	3	-	3	-	2	2	1	1	1	2	2	-	3	3	-
CO4	2	2	3	2	3	3	1	1	2	2	2	1	3	2	-
CO5	2	3	3	3	3	3	3	3	3	2	2	2	3	2	1

1. Weak

2. Moderate

3. Strong

COURSE TEACHING AND LEARNING ACTIVITIES

A. PEDAGOGY

- i. Whiteboard
- ii. Flipped Class
- iii. PPT



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B. COURSE COMPLETION PLAN

UNIT	NO. OF LECTURES			TEST	QUIZ	ASSIGNMENT
	THEORY (Lecture)	PRACTICAL	TUTORIAL			
1	2					
2	8				1	1
3	8				1	1
4	5					
5	4					
6	7				1	
7	5					
8	11				1	1
9	10				1	1

B. COURSE DELIVERY PLAN:

UNIT	TOPIC/SUBTOPIC	LECTURE REQUIRED	CO ADDRESSED	ASSIGNMENT /TEST/QUIZ
1	Unit 1: Introduction to microbial world Types and Classification		CO1	1
2	Unit 2: Viruses Discovery, physiochemical and biological characteristics; classification, general structure with special reference to viroids and prions; replication (general account), DNA virus (T-phage), lytic and lysogenic cycle; RNA virus (TMV). Economic importance of viruses with reference to vaccine production, role in research, medicine and diagnostics, as causal organisms of plant diseases		CO2	1
3	Unit 3: Bacteria Discovery, general characteristics; Types-archaeobacteria, eubacteria, wall-less forms (mycoplasma and spheroplasts); Cell structure; Nutritional types; Reproduction-vegetative, asexual and recombination		CO3,CO4	1
4	Unit4:Algae General characteristics of Algae, Criteria for classification of algae, Fritsch (1935) system of classification. Significant contributions of eminent phycologists		CO4,CO5,CO6	1



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5	Unit 5: Cyanophyta Brief account of ecology and occurrence; Range of thallus organization; Cell structure; Reproduction, Morphology and life-cycle of <i>Nostoc</i> and <i>Oscillatoria</i>		CO3	1
6	Unit 6: Chlorophyta, Charophyta and Xanthophyta Brief account of general characteristics; Occurrence; Range of thallus organization; Cell structure; Reproduction Morphology and life-cycles of <i>Chlamydomonas</i> , <i>Volvox</i> , <i>Oedogonium</i> , <i>Chara</i> , <i>Vaucheria</i>		CO3,CO4	1
7	Unit 7: Phaeophyta and Rhodophyta Brief account of characteristics; Occurrence; Range of thallus organization; Cell structure; Reproduction. Morphology and life-cycles of <i>Ectocarpus</i> and <i>Polysiphonia</i>			
8	Unit 8: Introduction to Fungi Classification –Ainsworth (1966, 1973). Brief account of allied fungi and applied mycology. Brief account of evolution. Brief account and life cycle pattern of <i>Synchytrium</i> , <i>Phytophthora</i> , <i>Erysiphe</i> , <i>Claviceps</i> , <i>Peziza</i> , <i>Puccinia</i> , <i>Ustilago</i> , <i>Alternaria</i>			
9	Unit 9: Phytopathology Terms and concepts; General symptoms; Etiology; Symptomology; Host-Pathogen relationships; Disease cycle and environmental relation; prevention and control of plant diseases, and role of quarantine. Bacterial diseases – Citrus canker. Viral diseases – Tobacco Mosaic viruses. Fungal diseases – Early blight of potato, Black stem rust of wheat.			



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C. COURSE OUTCOME ASSESSMENT PLAN

a. DIRECT ASSESSMENT

(Please tick the appropriate column)

COURSE OUTCOME	ASSESSMENT				REMARKS
	QUIZ	TEST	MID SEMESTER	Term Exam	
CO1		1	1		
CO2		1	1		
CO3			1		
CO4			1		
CO5		1	1		
CO6		1	1		

b. INDIRECT ASSESSMENT (STUDENT SURVEY)

Name of the Student:
University Roll no/ Class roll no.:
Name of the Programme:
Semester and Session:
Course and Course Code:

Rate the following aspects of course outcomes. Use the scale 1-3

S. No	Course Outcome	1	2	3
1.	CO1			
2.	CO2			
3.	CO3			
4.	CO4			
5.	CO5			

1. Average
2. Good
3. Very Good



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D. REMEDIAL CLASSES

S.NO.	ROLL. NO.& SESSION	NAME OF THE STUDENT	MARKS OF MID SEM /CLASS TEST	REMEDIAL CLASSES HELD			TERM EXAM	IMPROVEMENT (Y/S)
				DATE	TIME	MODE		

E. SUGGESTED READINGS

1. Pelczar, M.J. (2001) Microbiology, 5th edition, Tata McGraw-Hill Co, New Delhi.
2. Lee, R.E. (2008). Phycology, Cambridge University Press, Cambridge. 4th edition.
3. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West Press, Delhi.
4. Sharma, O.P. (2018). A text book of algae. TATA McGRAW – HILL.
5. Bilgrami, K. S. and Saha, L. C. (2020). A textbook of Algae, CBS.
6. Agrios, G.N. (2011) Plant Pathology, 6th edition, Academic Press, U.K.
7. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley
8. Webster, J. and Weber, R. (2007). Introduction to Fungi, Cambridge Univ Press, Cambridge. 3rd
9. Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi and Their Allies, Macmillan Pub. India Ltd.
10. Sharma, P.D. (2011). Plant Pathology, Rastogi Publication, Meerut, India

a. VIDEO RESOURCE

<https://egvankosh.ac.in/handle/123456789/56201?offset=40>

https://www.egvankosh.ac.in/browse?type=title&sort_by=1&order=ASC&rpp=55&etal=35&null=&offset=10116

<https://www.youtube.com/watch?v=iWpIhc1g8is>

b. WEB RESOURCES:-

<https://microbe.net/resources/microbiology-web-resources/>

<https://guides.library.umass.edu/c.php?g=672432&p=4735854>

c. E-RESOURCES

<http://182.160.97.198:8080/xmlui/handle/123456789/724>

https://www.researchgate.net/publication/371501301_Fundamentals_of_Plant_Pathology