



Syllabus-2023-2024

BSc_ComputerScience

Table with 2 columns: Title of the Course (AEC-IV), Course Code (AEC0401[T])

Table with 8 columns: Year, Semester, Credits, L, T, P, C. Includes Course Type (Theory only), Course Category (Foundation core), Pre-Requisite/s (Bhasha gyan), Co-Requisite/s (shabd gyan, varn gyan, samajik samej), Course Outcomes & Bloom's Level (CO1-CO4), and Courses Elements (Skill Development, Entrepreneurship, etc.)

Table with 4 columns: Modules, Contents, Pedagogy, Hours. Lists 5 modules with their respective content and teaching methods.

Table with 6 columns: Total Marks, Minimum Passing Marks, External Evaluation, Min. External Evaluation, Internal Evaluation, Min. Internal Evaluation. Shows Theory and Practical evaluation details.

Table with 2 columns: Books, Articles, References Books, MOOC Courses, Videos. Lists resources for the course.

Table with 17 columns: COs, PO1-PO12, PSO1-PSO3. Course Articulation Matrix showing mapping of COs to POs and PSOs.



Syllabus-2023-2024

BSc_Biotechnology

Table with 2 columns: Title of the Course, Course Code. Values: Hindi II, BSBT AEC IV

Table with 8 columns: Year, Semester, Credits, L, T, P, C. Includes Course Type, Category, Pre-Requisite/s, Course Outcomes, and Courses Elements.

Table with 4 columns: Modules, Contents, Pedagogy, Hours. Lists 5 modules with their respective content and teaching methods.

Part D (Marks Distribution)

Table with 6 columns: Total Marks, Minimum Passing Marks, External Evaluation, Min. External Evaluation, Internal Evaluation, Min. Internal Evaluation. Shows theory and practical mark distributions.

Part E

Table with 2 columns: Books, Articles, References Books, MOOC Courses, Videos. Lists various resources for the course.

Course Articulation Matrix

Matrix table with 16 columns (COs, PO1-PO12, PSO1-PSO3) and 7 rows (CO1-CO6) showing course articulation.



Syllabus-2023-2024

Bsc_Microbiology

Table with 2 columns: Title of the Course (HINDI II), Course Code (BSMB AECIV)

Table with 8 columns: Year (2nd), Semester (4th), Credits, L (3), T (0), P (1), C (4). Includes Course Type (Theory only), Course Category (Ability Enhancement Courses), Pre-Requisite/s, Course Outcomes & Bloom's Level, and Courses Elements.

Table with 4 columns: Modules, Contents, Pedagogy, Hours. Lists 5 modules with their respective content and teaching methods.

Part D (Marks Distribution)

Table with 6 columns: Total Marks, Minimum Passing Marks, External Evaluation, Min. External Evaluation, Internal Evaluation, Min. Internal Evaluation. Shows theory and practical mark distributions.

Part E

Table with 2 columns: Books, Articles, References Books, MOOC Courses, Videos. Lists resources for Hindi and Microbiology.

Course Articulation Matrix

Matrix table with 16 columns (COs, PO1-PO12, PSO1-PSO3) showing the relationship between course outcomes and program outcomes.

Syllabus-2023-2024

Bsc_Microbiology

Title of the Course	Agriculture Microbiology
Course Code	DSE II (T)

Part A				
Year	Semester	6th	Credits	L T P C
3rd				3 0 0 3
Course Type	Embedded theory and lab			
Course Category	Discipline Core			
Pre-Requisite/s	Basic knowledge of microscope and other microbiological techniques		Co-Requisite/s	
Course Outcomes & Bloom's Level	CO1- TO Understand and accurately apply terminology used in the field of microbiology, and understand the fundamental differences between different types of microorganisms including bacteria, viruses, fungi, prions and protozoa(BL1-Remember) CO2- Describe the structure and biology of bacterial cells, including the arrangement and replication of genetic material, and understand the concept of virulence and virulence factors(BL2-Understand) CO3- To analyse how microorganisms may be detected within various environments, including how they may be cultivated within the laboratory setting, and molecular methods of detection(BL3-Apply) CO4- To identify specific microorganisms important to animals, plants and soil ecosystems, and explain why these microorganisms are significant(BL4-Analyze) CO5- Review and evaluate readings relating to microbiology and agricultural production(BL5-Evaluate)			
Courses Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✓ Gender X Human Values ✓ Environment ✓	SDG (Goals)	SDG4(Quality education)	

Part B			
Modules	Contents	Pedagogy	Hours
1	Introduction – Soil as an environment for microorganisms. Classification of soil, physical and chemical properties of soil, structure of soil. Microbial interactions - mutualism, commensalism, amensalism, synergism, parasitism, predation and competition. Microbial interactions between plants–rhizosphere, mycorrhizae, rhizosphere and symbiotic association in root nodules. Biofertilizer – VAM, Rhizobium, Frankia, Azospirillum, Azotobacter, cyanobacteria and Azolla.	Tutorials, Collaborative, Demonstrations, Project methods, Hands on experience, ABL Experiments.	8
2	Soil microbes and fertility of soil. Roles of microbes in biogeochemical cycles. Microorganisms in soil processes, carbon cycle, organic matter decomposition, humus formation, nitrogen cycle, nitrogen fixation, symbiotic, non-symbiotic, associative organisms, ammonification, nitrification, denitrification, reactions, organisms involved.	Tutorials, Collaborative, Demonstrations, Project methods, Hands on experience, ABL Experiments.	8
3	Plant protection – phenolics – phytoalexins and related compounds. Bio insecticides – viral, bacterial and fungal. Chemical Pesticide and their adverse effect on agriculture (soil and crop).	Tutorials, Collaborative, Demonstrations, Project methods, Hands on experience, ABL Experiments.	8
4	Plant pathogenic Microorganisms - Historical Background, Disease symptoms, Mode of Entry of pathogens, Plant Disease Resistance, Physiology of Parasitism, Factors effecting disease Incidence, Algal, Fungal, Viral, Bacterial disease. Bacterial diseases of agricultural crops -pathogens, symptoms and control measures with reference to paddy, cotton, maize, tomato, citrus, mango and potato. Mycoplasma Disease, Nematode Disease.	Tutorials, Collaborative, Demonstrations, Project methods, Hands on experience, ABL Experiments.	8
5	Microorganisms Harmful to Man and Animal - Resentance of animal to pathogens. Group of organisms causing disease. Foot mouth disease, Johne's disease, Control of Johne's disease (JD) in cattle, poisoning of livestock by blue-green algae	Tutorials, Collaborative, Demonstrations, Project methods, Hands on experience, ABL Experiments.	8

Part C				
Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	Enumeration of microbial population in soil; qualitative and quantitative distribution;	PBL	BL3-Apply	1 month
2	isolation of symbiotic nitrogen fixing bacteria –non symbiotic and associative symbiotic bacteria;	Experiments	BL3-Apply	2
3	soil algae ; nitrification	Experiments	BL4-Analyze	4
4	isolation of sulphur and iron bacteria;	Experiments	BL5-Evaluate	2
5	isolation and study of phosphobacteria and phosphorus solubility	Experiments	BL5-Evaluate	2

Part D(Marks Distribution)					
Theory					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	60	18	40	
Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	40	20	60	

Part E	
Books	Martin Alexander 1976. Introduction to soil microbiology Willy Eastern Ltd. New Delhi. Robert L Tate III. 1995. Soil Microbiology. John Wiley & Sons, New York, pp 398.
Articles	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8313292/
References Books	Subbarao, N.S. 1977. Soil microorganisms and plant growth, Oxford & IBH Publishing Co., New Delhi. Walker, N. 1975. Soil Microbiology, Butterworths, London AGRICULTURAL MICROBIOLOGY By D. J. BAGYARAJ, G. RANGASWAMI Alexander M. 1997. Introduction to soil microbiology, John Wiley & Sons, Inc, New York. EEdidowney S., Hardman, D.J. and Waite, S. 1993. Pollution Ecology and Biotreatment-Longman Scientific Technical.
MOOC Courses	https://nptel.ac.in/courses/105107173
Videos	https://nptel.ac.in/courses/105107173

Course Articulation Matrix																
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	1	2	2	-	-	2	-	-	-	2	2	-	2	2	3	
CO2	2	1	2	-	-	3	-	-	-	2	1	-	1	2	2	
CO3	2	2	2	-	-	1	-	-	-	1	1	-	1	1	2	
CO4	1	2	1	-	-	2	-	-	-	1	2	-	3	1	1	
CO5	2	2	1	-	-	1	-	-	-	1	-	-	3	2	1	
CO6	2	2	3	-	-	3	-	-	-	-	2	-	2	1	1	

Syllabus-2023-2024

BSc_ComputerScience

Title of the Course	Ethical Hacking Fundamental
Course Code	DSE0602[T]

Part A					
Year	3rd	Semester	6th	Credits	L T P C 2 0 1 3
Course Type	Embedded theory and lab				
Course Category	Discipline Specific Elective				
Pre-Requisite/s	: An attendee of this course must have knowledge of Computer system and its components and should understand the types of data and data storage in computer system. Must be familiar with Linux Operating system, communication network and must have knowledge of Python or any other scripting language.			Co-Requisite/s	
Course Outcomes & Bloom's Level	CO1- understanding of the basic principles and clinical significance of laboratory testing in the field of molecular diagnostics (BL1-Remember) CO2- Demonstrate an understanding of basic molecular diagnostic techniques(BL2-Understand) CO3- Demonstrate an understanding of electrophoresis in the separation of DNA fragments(BL2-Understand) CO4- Apply molecular diagnostic techniques to the identification and diagnosis of diseases(BL3-Apply) CO5- Understand the basics in quality control and quality assurance(BL2-Understand) CO6- ()				
Courses Elements	Skill Development X Entrepreneurship X Employability X Professional Ethics X Gender X Human Values ✓ Environment X		SDG (Goals)	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG4(Quality education) SDG8(Decent work and economic growth) SDG11(Sustainable cities and economies)	

Part B			
Modules	Contents	Pedagogy	Hours

Part C				
Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1-2	Assignment	Experiments	BL2-Understand	8
3-4	Activity	Experiments	BL3-Apply	10
1-5	Project	Case Study	BL4-Analyze	15

Part D(Marks Distribution)					
Theory					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	60	18	40	22
Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	50	60	30	40	20

Part E	
Books	Matt Walker CEH Certified Ethical Hacker All-in-One Exam Guide, Second Edition 2nd Edition
Articles	Patrick Englebretson The Basics of Hacking and Penetration Testing: Ethical Hacking and Penetration Testing Made Easy (Syngress Basics Series) 1st Edition Syngress Basics Series
References Books	Hein Smith (Author), Hilary Morrison (Author) Ethical Hacking: A Comprehensive Beginners Guide to Learn and Master Ethical Hacking
MOOC Courses	
Videos	

Course Articulation Matrix															
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	1	-	-	-	-	-	-	-	-	-	3	2	1
CO2	1	1	1	2	1	-	-	-	-	-	-	-	2	3	1
CO3	2	1	1	2	2	-	-	-	-	-	-	-	3	2	1
CO4	1	1	1	2	3	-	-	-	-	-	-	-	1	3	1
CO5	2	2	2	-	-	-	-	-	-	-	-	-	3	2	1
CO6	-	2	1	-	-	-	-	-	-	-	-	-	1	2	1

