

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

PART- A: Introduction				
Program: Bachelor in life Science (Degree / Honors)		Semester - V		Session: 2024-2025
1	Course Code	ZOSC- 05T		
2	Course Title	Vertebrate Physiology		
3	Course Type	Discipline Specific Course		
4	Pre-requisite (if, any)	As per Program		
5	Course Learning Outcomes (CLO)	After successfully completing this course, the students will be able to- ➤ Understand the physiological mechanism at cellular and system level. ➤ Learn the significance of nutrients, breathing mechanism, blood coagulation. ➤ Understand the water balance in body and working of different senses response. ➤ Understand the reproductive physiology and muscles contraction. ➤ Apply this knowledge to understand working and disorders of physiological activities.		
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	Cell Physiology: Cell membrane and transport mechanism: Transport across membrane: osmosis, passive diffusion- simple and facilitated, & Active transport Mechanism of active transport Primary & secondary active transport, endocytosis and exocytosis, Vesicular Transport: Protein sorting from ER to Golgi, Retrograde transport, Transport across Mitochondrial membrane; pH and its biological significance, Buffer: buffers in biological system, Regulation of pH by Lung and Kidney.			12
II	Physiology of Digestion Respiration and Circulation: Physiology of Digestion: Biological significance of nutrients: carbohydrates, proteins, fats, vitamins and minerals. Physiology of digestion with special reference to enzyme involved, Absorption of Carbohydrate, protein and lipid. Breathing mechanism: Pulmonary ventilation, Respiratory volumes and capacities. Transport of Oxygen and Carbon dioxide in blood. Composition of blood, blood groups, Theories of blood coagulation. Conduction and Regulation of Heart beat, Cardiac cycle, Cardiac output, Integration of cardiovascular function, electrocardiogram (ECG).			11
III	Physiology of Excretion, nerve impulse transmission and Receptor Physiology: Physiology of excretion: Nephron: Structure, Types and their functions Mechanism of Urine formation, Counter-current Mechanism, role of ADH and Renin-Angiotensin-Aldosterone system in Excretion, Mechanism of Osmoregulation in fresh water and marine and terrestrial vertebrates, Stenohalinity and Euryhalinity. Nerve Physiology: Structure and functions of neuron, ionic basis of resting and action potentials, nerve impulse and its transmission, synapse and synaptic transmission, Reflex action. Receptor physiology- Physiology of Vision, Physiology of Hearing and balancing, Mechano, chemo reception, Bioluminescence.			11
IV	Physiology of Reproduction, Muscle Contraction and Tharmoregulation: Physiology of Reproduction: male reproduction: hormonal control of Spermatogenesis, female reproduction: hormonal Control of Oogenesis, menstrual cycle and its hormonal control. Muscle Contraction: Structure and types of muscles, striated, non-striated and cardiac muscles. Molecular structure of muscles protein Actin and Myosin. Physiology of muscles contraction. Theories of Muscles Contraction. Thermoregulation: Mechanism in Homeotherms and Poikilotherm.			11
Keywords	Vertebrate Physiology, Physiology of Respiration, Digestion, Circulation, Blood, Cardiac Cycle, Excretion, Nerve impulse, Thermoregulation, Muscle Contraction, Physiology of Reproduction & Endocrine Glands			
Signature of Convener & Members (CBoS) :				

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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

- Verma P S , Tyagi B S, Agarwal VK *Animal Physiology*. Author,. Edition, illustrated. Publisher, S. Chand Publishing, 2000 - Science - 432 pages
- *Berry AK*, A Textbook of *Animal Physiology* By (Second edition Emkay publication
- Dr. C. C. Chatterjee, Human physiology, Vol. I & II, 1980, 12th Edn., Medical Applied Agency, Kolkata
- Nagabhushanam, S. V. S. Rana, S. Kalavathy Text book of Animal Physiology, 2008, 2nd Edn., Oxford University Press, India.

Reference Books Recommended –

- Ian Kay, 2000, Introduction to Animal Physiology, Bios Scientific Publishers Limited.
- Guyton A. C. & Hall J. E., 2006, Textbook of Medical Physiology, 11th Edition, Hercourt Asia Pvt. Ltd. / W. B. Saunders Company
- Tortora G. J. & Grabowski S., Principles of Anatomy & Physiology, 2006, 11th Edition, John Wiley & sons, Inc.
- Schmidt-Nielsen, Knut, Animal Physiology: Adaptation and Environment, 1997, Cambridge University Press.
- Hoar W. S., General and Comparative Physiology, 1983, 3rd Edn., Prentice Hall, UK.7.
- Barret, K.; Brooks, H.; Boitano, S. and Barman, S. (2010) Ganong's Review of Medical Physiology (23rd edition) Lange Medical.
- Guyton, A.C. and Hall, J.E. (2006) A text book of Medical Physiology (11th edition) Saunders.
- Keele, C.A. & Neil, E. (1989) Samson Wright's Applied Physiology (13th edition) Oxford.

Online Resources–

➤ E PG Pathshala:

<https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=2rAs1Puvga4LW93zMe83aA==>

➤ <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=2rAs1Puvga4LW93zMe83aA==>

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): (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):	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:









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

PART- A: Introduction			
Program: Bachelor in Life Science (Degree / Honors)		Semester - V	Session: 2024-2025
1	Course Code	ZOSC-05 P	
2	Course Title	Vertebrate Physiology	
3	Course Type	Discipline Specific Lab Course	
4	Pre-requisite (if, any)	<i>As per Program</i>	
5	Course Learning Outcomes (CLO)	After successfully completing this course, the students will be able to- ➤ Perform and demonstrate some physiological exercises ➤ Learn to record Blood pressure and analyze it ➤ Calculate Oxygen Consumption in model animal ➤ Learn the structure and working of eye and ear. ➤ Apply this knowledge to identify tissues by learning Histological details	
6	Credit Value	1 Credits	<i>Credit = 15 Hours - learning & Observation</i>
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)			
Unit	Topics (Course contents)		No. of Period
	- Hematological practical : Determine blood group, RBC and WBC counting technique, clotting time - Preparation of haemine crystal - Measurement of Blood Pressure through sphygmomanometer. - Action of salivary amylase on starch - Biochemical analysis of food - Determination of oxygen consumption with the help of Respirometer - Preparation of casein from milk - Study of permanent histological section slides of (esophagus , stomach, duodenum, ilium , pancreas ,liver trachea kidney spinal cord, bone, cartilage & blood cells) mammal, - Demonstration of technique of microtome to have hands-on experience and learning of the technique - Glycolysis, Krebs's cycle, electron transportation demonstrate through Chart / Photographs - Preparation of Practical record - group discussion /quiz / A small project report applying the knowledge		15
Keywords	Vertebrate Physiology, Human Physiology, Physiology of Respiration, Digestion, Circulation, Blood, Cardiac Cycle, Excretion, Nerve impulse, Thermoregulation, Muscle Contraction, Physiology of Reproduction & Endocrine Glands		
Signature of Convener & Members (CBoS) :			

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

- Hoar W. S., General and Comparative Physiology, 1983, 3rd Edn., Prentice Hall, UK.7.
- Keele, C.A. & Neil, E. (1989) Samson Wright's Applied Physiology (13th edition) Oxford.
- Verma P S , Tyagi B S, Agarwal VK *Animal Physiology*. Author,. Edition, illustrated. Publisher, S. Chand Publishing, 2000 - Science - 432 pages
- Berry AK, A Textbook of Animal Physiology By (Second edition Emkay publication
- Pal GK & Pal Parvati, Text book of Practical Physiology, Universities Press
- V P Varshaney and Mona Bedi, Ghai's Text Book of Practical Physiology, Jaypee Brothers Medical Publication

Reference Books Recommended –

- Ian Kay, 2000, Introduction to Animal Physiology, Bios Scientific Publishers Limited.
- Guyton A. C. & Hall J. E., 2006, Textbook of Medical Physiology, 11th Edition, Hercourt Asia Pvt. Ltd. / W. B. Saunders Company
- Tortora G. J. & Grabowski S., Principles of Anatomy & Physiology, 2006, 11th Edition, John Wiley & sons, Inc.
- Dr. C. C. Chatterjee, Human physiology, Vol. I & II, 1980, 12th Edn., Medical Applied Agency, Kolkata
- Nagabhushanam, S. V. S. Rana, S. Kalavathy Text book of Animal Physiology, 2008, 2nd Edn., Oxford University Press, India.
- Schmidt-Nielsen, Knut, Animal Physiology: Adaptation and Environment, 1997, Cambridge University Press.

Online Resources–

- http://ndl.iitkgp.ac.in/he_document/swayam_prabha/m_zly6dppqu
- http://ndl.iitkgp.ac.in/he_document/swayam_prabha/y_0ag_clvw0

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):	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:













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

PART- A: Introduction			
Program: Bachelor in Life Science (Degree/Honors)		Semester - V	Session: 2024-2025
1	Course Code	ZOSE-03T	
2	Course Title	Biochemistry	
3	Course Type	Discipline Specific Elective	
4	Pre-requisite (if, any)	As per Program	
5	Course Learning Outcomes (CLO)	After successfully completing this course, the students will be able to- ➤ Understand the structure and biological significance of carbohydrates, amino acids, proteins, lipids and nucleic acids. ➤ Understand the concept of enzyme, its mechanism of action and regulation and its kinetics. ➤ Understand the process of DNA replication, transcription and translation. ➤ Learn the preparation of models of peptides and nucleotides. ➤ Analyze properties of biomolecules through biochemical tests for amino acids, carbohydrates, proteins and nucleic acids.	
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	Introduction to Biochemistry, Carbohydrates: Introduction, scope and importance of Biochemistry. Carbohydrates: Classification and Chemical structure of: Reducing and non-reducing sugars: monosaccharides, Oligosaccharides, polysaccharides, Physical and Chemical properties, biological importance. Metabolism of carbohydrates and ATP production: Glycolysis, Krebs cycle, Electron transport chain and ATP synthesis, Phosphate pentose pathway, Gluconeogenesis, Glycogenolysis Glycogenesis and Cori cycle.		12
II	Lipids: Structure and Biological significance: Lipids: Structure and Biological significance. Fatty acids: Types and nomenclature (saturated and unsaturated). Classification: Triglycerides, Phospholipids, Sphingolipids, Cholesterol, β -oxidation and omega-oxidation of saturated fatty acids with even and odd number of carbon atoms. Biosynthesis of palmitic acid, Ketogenesis.		11
III	Protein structure and metabolism: Proteins: Composition and Biological significance: Amino acids: Structure, classification and properties. Primary, secondary, tertiary and quartnary structure of protein. Physiological importance of essential and non-essential amino acids. Catabolism of amino acids: Transamination, Deamination, Urea cycle. Enzymes: Nomenclature and classification, general properties, specificity. Mechanism of enzyme action (ES complex and lowering of activation energy, chemical catalysis). Regulation of enzyme activity, inhibition, allosteric regulation.		11
IV	Nucleic acids and mechanisms of replication, transcription and translation: Structure: Bases, nucleosides and nucleotides. DNA structure: Conformation (A, B and Z), DNA double helix (Watson and Crick model). DNA and RNA as genetic material. Organization of nucleosomes and higher order structure. DNA replication: Machinery and Basic mechanism (Prokaryotes). Transcriptional unit and basic mechanism of transcription (Prokaryotes). Genetic code and basic mechanism of translation (Prokaryotes).		11
Keywords	Biomolecuules, Carbohydrates, Protein, Lipids, enzymes, Nucleic Acids		
Signature of Convener & Members (CBoS) :			

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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

- Deb A.C., Fundamentals of Biochemistry, New Central Book Agency
- Jain J.L., Jain N., Jain S., Fundamentals of Biochemistry, S.Chand Publication

Reference Books Recommended –

- Nelson, D.L. & Cox, M.M. (2017) Lehninger Principles of Biochemistry (7th edition) Worth.
- Berg, J.M.; Tymoczko, J.L. and Stryer, L. (2012) Biochemistry (7th edition) Freeman.
- Zubay, G. (2017) Biochemistry (4th edition) McGraw-Hill.
- Conn, E.E.; Stumpf, P.K.; Bruening, G. and Doi, R.H. (2006) Principles of Biochemistry (5th edition) Wiley.

Online Resources–

- http://ndl.iitkgp.ac.in/he_document/swayam_prabha/clbszfhwqd0
- http://ndl.iitkgp.ac.in/he_document/aklectures/4_1_1_2888

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): (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):

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

Name and Signature of Convener & Members of CBoS:

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

PART- A: Introduction				
Program: Bachelor in Life Science (Degree/ Honors)			Semester - V	Session: 2024-2025
1	Course Code	ZOSE- 03P		
2	Course Title	Biochemistry		
3	Course Type	Discipline Specific Elective Lab Course		
4	Pre-requisite (if, any)	As per Program		
5	Course Learning Outcomes (CLO)	After successfully completing this course, the students will be able to- ➤ Learn qualitative analysis of bio molecules ➤ Students will use current biochemical and molecular techniques to plan and carry out experiments. ➤ They will undertake experiments to understand enzyme activity, ➤ Prepare models for biomolecules		
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	• Qualitative analysis of nutrients: Carbohydrate, Proteins, Lipids. • Preparation of models of amino acids and dipeptides. • Ninhydrin test for α-amino acids. • Preparation of models of nitrogenous bases, nucleosides and nucleotides. • Qualitative test for DNA & RNA. • Determination of the activity of enzyme (Urease). • Determination of pK and pI values of glycine • Group discussion/ Quiz/Seminar presentation on related topics. • Preparation of practical record.			30
Keywords	Carbohydrates, lipids, Proteins, Nucleic acids, qualitative, quantitative analysis			
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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

- Swaroop, Pathak and Arora. Laboratory technique
- Deb A.C., Fundamentals of Biochemistry, New Central Book Agency
- Jain J.L., Jain N, Jain s., Fundamentals of Biochemistry, S.Chand Publication

Reference Books Recommended –

- Nelson, D.L. & Cox, M.M. (2017) Lehninger Principles of Biochemistry (7th edition) Worth.
- Berg, J.M.; Tymoczko, J.L. and Stryer, L. (2012) Biochemistry (7th edition) Freeman and Co.
- Zubay, G. (2017) Biochemistry (4th edition) McGraw-Hill.
- Conn, E.E.; Stumpf, P.K.; Bruening, G. and Doi, R.H. (2006) Principles of Biochemistry (5th edition) Wiley.

Online Resources–

- http://ndl.iitkgp.ac.in/he_document/swayam_prabha/pe9ddsufpck
- http://ndl.iitkgp.ac.in/he_document/swayamprabha/swayam_prabha/dsajwjhnmf8?e=8|*|||

Online Resources–

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

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

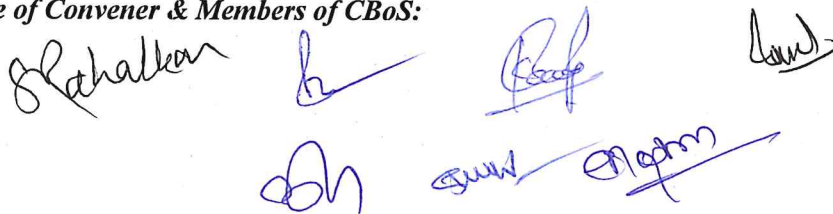
Maximum Marks: 50 Marks

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):	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:



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

PART-A: Introduction			
Program: Bachelor in Life Science (Certificate / Diploma / Degree)		Semester – II/IV/V/VI	Session: 2024-2025
1	Course Code	ZOSEC-01	
2	Course Title	Vermiculture and Vermicomposting	
3	Course Type	Skill Enhancement Course	
4	Pre-requisite (if, any)	As per Program	
5	Course Learning Outcomes (CLO)	After successfully completing this course, the students will be able to: ➤ Learn the identifiable features of earthworm species for vermiculture and vermicomposting. ➤ Cultivate the skills of vermiculture. ➤ Understand the challenges in vermiculture and vermicomposting. ➤ Analyze the features of different vermicomposting methods. ➤ Create entrepreneurial prospects 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
PART -B: Content of the Course			
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	General Introduction: Distribution and habit, habitat. Food: Phytophagous and Geophagous earthworm. Morphology of earthworm. Ecological categories: Epigeic, Endogeic and Anecic earthworms. Ecological requirements: moisture, temperature, light, pH and, organic matter. Ecosystem services: role played by earthworms in soil ecosystem. Difference between vermiculture and vermicomposting. Role of earthworm and vermicompost in growth of plants. Vermiculture: Definition and features. Selective features of earthworms for vermiculture. Vermiculture methods: Wormery, breeding techniques: indoor and outdoor cultures, monoculture and polyculture, merits and demerits. Obstacles in Vermiculture: Prevention and Management. Vermicomposting: Definition and features. Scientific names and distinguishing features of native and exotic vermicomposting earthworms (Native Indian earthworms. <i>Perionyx excovatus</i> , <i>Perionyx ceylanensis</i> , European earthworms. <i>Eisenia fetida</i> , <i>Eisenia andrei</i> , South African earthworms. <i>Eudriluseugeniae</i>), Principle of vermicomposting, Methods of vermicomposting: Low-cost Floor beds, Grow bags & Tank system. Management during vermicomposting (Physical and Biological). Products of vermicomposting, physiochemical features and their utility: earthworm biomass (vermiprotein), vermicompost and vermiwash. Harvesting the vermicompost & storage. Marketing prospects of Vermicomposting in Chhattisgarh and India.		15
Lab./Field Training Contents	➤ Key to identify different types of earthworms. ➤ Identification of materials/waste products for vermiculture and vermicomposting. ➤ Study of systematic position, habits, and habitat & External characters of <i>Eisenia fetida</i>. ➤ Study of Life stages & development of <i>Eisenia fetida</i>. ➤ Culture of earthworms in Grow Bags. ➤ Study of devices and instruments of Vermiculture and Vermicomposting. ➤ Preparation of vermibed, maintenance of vermicompost & management of climatic conditions. ➤ Study the effects of vermicompost & vermiwash on any two short duration plants. ➤ Study of different methods of vermicomposting (NADEP Composting, Bangalore Method, Coimbatore Method & Indore Method). ➤ Creation of set up for vermiwash collection. ➤ Field Visit to Vermiculture & Vermicomposting sites and interaction with self help groups/ personnel engaged in these activities. ➤ Projects/ Assignments/ Chart/ Model preparation. ➤ Practical Record		30
Keywords	Earthworm, Vermiculture, Vermicomposting, Vermiwash, Grow Bags, NADEP.		
Signature of Convener & Members (CBoS):			

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

- Chauhan, A. (2012) Vermitechnology, Vermiculture, Vermicompost and Earthworms: Vermiculture, Vermicomposting, Vermitechnology and Microbes, Lambert Academic Publishing, Germany.
- National Institute of Industrial Research, (2010): The Complete Technology Book on Vermiculture and Vermicompost, Published by National Institute of Industrial Research, Delhi-7, India.
- Kumar, A. (2005) Verms and Vermitechnology, APH Publishing.
- Bhatnagar & Patla, 2007. Earthworm vermiculture and vermin-composting, Kalyani Publishers, New Delhi.
- Sultan Ahmed Ismail, 2005. The Earthworm Book, Second Revised Edition. Other India Press, Goa, India.
- Panda Himadri: The Complete Technology Book on Vermiculture and Vermicompost (Earthworm) with Manufacturing Process, Machinery Equipment Details & Plant Layout; Asia Pacific Business Press Inc.
- EIRI Board : Hand Book Of Biofertilizers & Vermiculture.

Online Resources–

- https://agritech.tnau.ac.in/org_farm/orgfarm_composting.html#:~:text=In%20the%20Bangalore%20method%20of,laid%20over%20the%20moistened%20layer.
- <https://www.thepharmajournal.com/archives/2021/vol10issue12/PartAR/11-5-248-926.pdf>

Online Resources–

- <https://megbrdc.nic.in/publications/fliers-Pamphlets/nadep-composting-english.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) 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):	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:

Dr. Subhash Chandra Rahalkar

(Dr. Nazim Ahmed Masani)

Dr. Ajit Kumar

Shobha Ram Yadav

(Dr. Lata Meshram)

Dr. R.K. Tamboli