

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

<b>PART-A: Introduction</b>			
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)	<p>After successfully completing this course, the students will be able to:</p> <ul style="list-style-type: none"> <li>➤ Learn the identifiable features of earthworm species for vermiculture and vermicomposting.</li> <li>➤ Cultivate the skills of vermiculture.</li> <li>➤ Understand the challenges in vermiculture and vermicomposting.</li> <li>➤ Analyze the features of different vermicomposting methods.</li> <li>➤ Create entrepreneurial prospects in this field.</li> </ul>	
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
<b>PART -B: Content of the Course</b>			
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	<p><b>General Introduction:</b> 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.</p> <p><b>Vermiculture:</b> 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.</p> <p><b>Vermicomposting:</b> 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 &amp; Tank system. Management during vermicomposting (Physical and Biological). Products of vermicomposting, physiochemical features and their utility: earthworm biomass (vermi-protein), vermicompost and vermiwash. Harvesting the vermicompost &amp; storage. Marketing prospects of Vermicomposting in Chhattisgarh and India.</p>		15
Lab./Field Training Contents	<ul style="list-style-type: none"> <li>➤ Key to identify different types of earthworms.</li> <li>➤ Identification of materials/waste products for vermiculture and vermicomposting.</li> <li>➤ Study of systematic position, habits, and habitat &amp; External characters of <i>Eisenia fetida</i>.</li> <li>➤ Study of Life stages &amp; development of <i>Eisenia fetida</i>.</li> <li>➤ Culture of earthworms in Grow Bags.</li> <li>➤ Study of devices and instruments of Vermiculture and Vermicomposting.</li> <li>➤ Preparation of vermibed, maintenance of vermicompost &amp; management of climatic conditions.</li> <li>➤ Study the effects of vermicompost &amp; vermiwash on any two short duration plants.</li> <li>➤ Study of different methods of vermicomposting (NADEP Composting, Bangalore Method, Coimbatore Method &amp; Indore Method).</li> <li>➤ Creation of set up for vermiwash collection.</li> <li>➤ Field Visit to Vermiculture &amp; Vermicomposting sites and interaction with self help groups/ personnel engaged in these activities.</li> <li>➤ Projects/ Assignments/ Chart/ Model preparation.</li> <li>➤ Practical Record</li> </ul>		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://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. Subhadra Rahalkar

Dr. Naseem Ahmed Masani

Dr. Ajit K. Kumbhar

Shobha Ram Yadav

Dr. R. K. Tambekar

Engr. M. M. Lata Meshram