Course: Vermiculture	**Course code:**
L-T-P per week: 1-0-2	**No. of Credits:** 02
Internal Assessment: 20 marks	**Semester End Examination:** 30 marks
Total Contact Hours: 42	

Course Outcomes (COs):

At the end of the course the student should be able to:

CO1	Understand the importance of earthworms in maintaining soil quality
CO2	Learns that the vermicomposting as an effective organic solid waste management method
CO3	Gets acquainted with the importance of earthworms in agro-based economic activity.
CO4	Vermicomposting leads to organic farming and healthy food production.
CO5	Vermicomposting may be taken up as a small scale industry by the farmers and unemployed youth.
CO6	Get jobs in teaching institutions or vermiculture units as technicians.
CO7	Learn the concept of vermicomposting as bio fertilizers thus student can become an entrepreneur after completion of the course.

Course Content	Hrs
Module-1	6
Introduction to vermiculture Definition, scope of vermiculture, types of earthworms Life cycle of eartheworm Ecological grouping – Epigeic, Anecic and Endogeic species Ecological role and economic importance of earthworms. Advantages of vermiculture	
Module-2	**8**
Vermiculture techniques and applications of Vermicompost Vermicomposting technology, Methods of vermicomposting, Large scale manufacture of vermicompost, worm casts, vermicompost, vermiwash, vermin-protein Vermicompost as a organic manure a good substitute of fertilizers. Marketing of vermicomposting products and financial support by governments and NGOs for vermiculture.	

Module-3	28
Labs to be conducted 1. Collection ofnative earth worm species to study habit and habitat. 2. Keys to identify different species of earth worm. 3. Externals and Life cycle of Eiseniafetida and Eudriluseugeniae. 4. Dissection of digestive and reproductive system. 5. Study of vermicomposting equipments and devices. 6. Preparation of vermibeds and their maintenance. 7. Study of different vermicomposting methods. 8. Harvesting, separation of worms, packaging, transport and storage of varmicompost. 9. Vermi-wash collection and processing. 10. Small scale earth worm farming for home gardens and studying the effect of vermicompost on garden plants. 11. Budget and cost scenario of vermiculture (Project). 12. Diseases and natural enemies of earth worms and their control measures. 13. Visit to vermiculture farm to acquaint with latest techniques.	

Text Books/Reference Books:

1. Bhatt J.V. & S.R. Khambata (1959) “Role of Earthworms in Agriculture” Indian Councilof Agricultural Research, New Delhi
2. Dash, M.C., B.K.Senapati, P.C. Mishra (1980) “Verms and Vermicomposting” Proceedings of the National Seminar on Organic Waste Utilization and Vermicomposting Dec. 5-8, 1984, (Part B), School of Life Sciences, Sambalpur University, JyotiVihar, Orissa.
3. Edwards, C.A. and J.R. Lofty (1977) “Biology of Earthworms” Chapman and Hall Ltd., London.
4. Lee, K.E. (1985) “Earthworms: Their ecology and Relationship with Soils and Land Use” Academic Press, Sydney.
5. Kevin, A and K.E.Lee (1989) “ Earthworm for Gardeners and Fisherman” (CSIRO, Australia, Division of Soils)
6. Rahudakar V.B. (2004). GandulkhatashivayNaisargeekParyay, Atul Book Agency, Pune.
7. Satchel, J.E. (1983) “Earthworm Ecology” Chapman Hall, London.
8. Wallwork, J.A. (1983) “Earthworm Biology” Edward Arnold (Publishers) Ltd. London.

Pedagogy: Lectures, demonstration, videos, Assignments, group discussion, field visit.