CERTIFICATE COURSE IN VERMITECHNOLOGY

Syllabus and Scheme of Examination -2024

Course Title	**CERTIFICATE COURSE IN VERMITECHNOLOGY (THEORY)**		
Course Code:		Duration of the course	**1 Year**
Contact hours	**80 Hrs (3 hours/week)**	Duration of SEA/Exam	**3 Hrs**
Formative assessment marks	**50**	Summative assessment marks	**100**

Unit - I: Vermitechnology and Scope **20 Hrs**

Introduction, Objectives of vermitechnology- Waste management, soil detoxification, regeneration and sustainable agriculture. Vermitechnology for mitigating and managing environmental pollution. Importance of Earthworm in Agriculture; Earthworm as a Bio-indicators of soil types. Role of earthworms in soil structure – Carbon, Nitrogen and Phosphorous transformations. Role of earthworm in plant productivity, Scope of vermitechnology.

Unit -II: Biology and Ecology of Earthworms **20 Hrs**

Introduction, Diversity, Systematic position, General characteristics of earthworm - morphology (body organization, shape, size, clitellum, external openings). Ecological distribution of species (Epigeic, Endogeic, Anecic). Food habits (Detrivores, Geophages) and food preferences of earthworms. Life cycle, reproduction and Regeneration of earthworm.

Unit - III: Vermiculture **20 Hrs**

Criteria for the selection of suitable earthworm species for vermicomposting. Important species of earthworms used in vermiculture and their features (*Eudrilus euginiae*, *Eisenia fetida, Peryonix excavates, Hoplochaetella suctorial).*Physical factors - moisture, temperature, pH, aeration, light, soil type; Biological factors- Types of organic wastes - city garbage, city refuges, agricultural wastes, agro-industrial wastes, weeds, wastes of animal and animal based industries. Chemical factors affecting the earthworm culture. Management of diseases, pests, and predators in vermiculture.

Unit-IV Vermicomposting **20 Hrs**

Vermicomposting methods- Small scale (Pot method, pipe method) and Large scale (pit method, heap method) vermicomposting units, Selection of materials, preliminary steps.Primary decomposition (preparation of waste material). Secondary decomposition (introducing earthworms and daily maintenance). Harvesting of compost, Extraction of vermiwash. Uses of vermicompost and vermiwash.

REFERENCES:

1. Arvind, K. 2005. Verms & Vermitechnology, APH Publishing.
2. Avnish, C. 2012. Vermitechnology, Vermiculture, Vermicompost and Earthworms, Lap Lambart Academic Publishing.
3. Madhab, C. D. 2011. Tools For Vermitechnology, I.K. International Publishing House.
4. Mary Violet Christy, A. 2008. Vermitechnology, MJP Publishers.
5. Radha, D. K. 1998. Earthworm Cindrella of Organic farming, Prism books pvt. Ltd. Bangalore.
6. Ramesh Chandra Rao. 2009. Vermcompostig, published by KUIDFC-KUDCEMP Mangalore.
7. Seethalekshmy, M., Santhi, R. 2012. Vemitechnology, Saras Publications.
8. Shweta, Y., Vinay, K. S. 2014. Vermitechnology: Rebuilding of Sustainable Rural Livelihoods (Global Agriculture Developments), Nova Science Publishers Inc.
9. Shweta, Y. 2014. Empowerment of Weaker Section of Society Through Vermitechnology,Lap Lambart Academic Publishing.
10. Singh, S.M. 2009. Earthworm Ecology & Environment, International Book Distributing Company.

SCHEME OF EXAMINATION – THEORY

Question No.	**PART - A**	**Max. Marks**
I	Answer any FOUR Questions out of SIX Questions (Give at least One question from each unit)	(4 x 5) = **20**
	PART - B	
II	Answer any TWO out of three questions (Unit I)	(2x10) = **20**
III	Answer any TWO out of three questions **(**Unit II)	(2x10) = **20**
IV	Answer any TWO out three questions (Unit III)	(2x10) = **20**
V	Answer any TWO out three questions (Unit IV)	(2x10) = **20**
	Total	**100**

Internal assessment marks to be allotted by conducting one test and one assignment.

Course Title	**CERTIFICATE COURSE IN VERMITECHNOLOGY (PRACTICAL)**			
Course Code:			Duration of the course	**1 Year**
Contact hours	**3 hours/week**		Duration of SEA/Exam	**3 Hrs**
Formative assessment marks		**50**	Summative assessment marks	**100**

Experiments :

1. Study of morphological characteristics of earthworm.
2. Study of digestive system of earthworm (demonstration only).
3. Study of earthworm life cycle. Mounting of earthworm setae. Key to identify different species of earthworms (identify any 4/5 species).
4. Predators and prey in vermiculture.
5. Preparation of vermicompost by using different decomposing substrate.
6. Study of regeneration capacity of earthworm.
7. Field visit.

SCHEME OF EXAMINATION – PRACTICALS

Duration: 3 Hours **Max. Marks- 100**

I. Identify and comment on two species of earthworms A & B.	(2X5)= 10
II . Comment on developmental stages of earthworm C.	10
III. Mount the setae of earthworm.	10
IV. Identify and comment on the flagged part in the digestive system of earthworm with neat labelled diagram D.	10
V. Comment on a spotter (Predator/ prey of vermiculture) E.	10
VI. Field Report	30
VII. Viva	10
VIII. Record	10

Note:

- Questions must be framed as per the scheme provided.
- Internal assessment marks to be allotted after conducting one practical test.