SRI VENKATESWARA UNIVERSITY
B.Sc. DEGREE COURSE IN ORGANIC FARMING
V- SEMESTER
(Syllabus under CBCS w.e.f. 2022-23)

Skill Enhancement Courses (SECs) for Semester V, from 2022-23 *(Syllabus with Learning Outcomes, References, Co-curricular Activities & Model Q.P. Pattern)*

Structure of SECs for Semester – V

(To choose One pair from the Four alternate pairs of SECs)

Univ. Code	Course NO. 6 & 7	Name of Course	Th. Hrs. / Week	IE Mar-ks	EE Mar-ks	Credits	Prac. Hrs./ Week	Mar-ks	Credits
	6A	Vermicompost Technology	**3**	**25**	**75**	**3**	**3**	**50**	**2**
	7A	Manures in Organic Farming	**3**	**25**	**75**	**3**	**3**	**50**	**2**

Note: For Semester–V, for the domain subject History, any one of the four pairs of SECs shall bechosen as courses 6 and 7, i.e., 6A & 7A or 6B & 7B or 6C & 7C or 6D & 7D. The pair shall notbe broken (ABCD allotment is random, not on any priority basis).

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Course Code:

COURSE 6A: VERMICOMPOST TECHNOLOGY

(Skill Enhancement Course (Elective))

Max Marks: 100

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Acquire a critical knowledge on role of earth worms in making organic matter from biodegradable wastes.
2. Understand the biology of some important species of earth worms used in vermiculture.
3. Acquire skills on production of vermicompost.
4. Explain benefits and problems with vermiculture and vermicompost.

II. Syllabus: (Hours: Teaching: 50, Lab: 30, Training: 05, others incl. unit tests: 05)
(*Syllabi of theory and practical together shall be completed in 80 hours*)

Unit -1: Introduction to vermiculture (10h)

1. Vermiculture - definition, meaning, history, economic importance, value in maintenance of soil structure, role as four r's of recycling (reduce, reuse, recycle and restore).
2. Role in bio transformation of the residues generated by human activity and production of organic fertilizers.
3. The matter and humus cycle (product, qualities). ground population, transformation process in organic matter.
4. Useful species of earthworms, local and exotic species of earthworms; complementary activities of auto-evaluation; key to identify the species of earthworms.

Unit -2: Biology of *Eisenia fetida* (10h)

1. Taxonomy Anatomy, physiology and reproduction of Lumbricidae.
2. Vital cycle of *Eisenia fetida*: alimentation, fecundity, annual reproducer potential and limit factors (gases, diet, humidity, temperature, PH, light, and climatic factors).
3. Complementary activities of auto evaluation.

Unit-3: Biology of *Eudrilus eugeniae* (10h)

1. Taxonomy Anatomy, physiology and reproduction of Eudrilidae.
2. Vital cycle of Eudrilus eugeniae: alimentation, fecundity, annual reproducer potential and limit factors (gases, diet, humidity, temperature, PH, light, and climatic factors).
3. Complementary activities of auto evaluation.

Unit-4: Vermicomposting (10h)

1. Small scale earthworm farming for home gardens - earthworm compost for home gardens.
2. Conventional commercial composting - earthworm composting larger scale (pit, brick and, heap systems, and Kadapa slab method).
3. Earthworm farming, extraction (harvest), vermicomposting harvest and processing.
4. Vermiwash collection, composition and use.
5. Enemies of earthworms, sickness and worm's enemies; frequent problems – prevention and fixation. Complementary activities of auto evaluation.

Unit-5: Applications of vermiculture (10h)

1. Benefits of vermicompost, Use of vermicompost in agriculture.
2. Basic characteristics of earthworm suitable for vermicomposting.
3. Problems in vermicomposting, vermicomposting of dairy waste.

III. References:

1. Bhatt J.V. & S.R. Khambata (1959) "Role of Earthworms in Agriculture" Indian Council of Agricultural Research, New Delhi
2. Edwards, C.A. and J.R. Lofty (1977) "Biology of Earthworms" Chapman and Hall Ltd., London.
3. Lee, K.E. (1985) "Earthworms: Their ecology and Relationship with Soils and Land Use" Academic Press, Sydney.
4. Wallwork, J.A. (1983) "Earthworm Biology" Edward Arnold (Publishers) Ltd. London.
5. Kevin, A and K.E.Lee (1989) "Earthworm for Gardeners and Fisherman" (CSIRO, Australia, Division of Soils).

IV. Co-Curricular Activities (student field training by teacher: 05 hours**):**

a) Mandatory:

1. **For Teacher**: Training of students by the teacher in the classroom or in the laboratory for a total of not less than 10 hours on concept of vermiculture, benefits, biology of earth worms, vermicomposting etc.,
2. **For Student**: Individual laboratory work and visit to parks in public and private places, studying establishment of vermicomposting unit, facilities required etc., culminating writing and submission of a hand-written Field Work Report (vermiculture to vermicomposting) not exceeding 10 pages in the given method or format.
3. Max marks for Field Work Report: 05
4. Suggested Format for Field work Report *(not exceeding 10 pages*): Title page with student details, index page, objective, stepwise work done, findings, conclusions and acknowledgements.
5. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Training of students by related industrial experts.
2. Assignments (including technical assignments various methods in vermiculture and vermicomposting, species of earth worms exploited in India and abroad etc.,)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on vermiculture and vermicomposting.
5. Collection of material/figures/photos related to vermiculture and vermicomposting in India and abroad, writing and organizing them in a systematic way in a file.
6. Visits to vermicompost units in -public and/or private firms.
7. Invited lectures and presentations on related topics by field/industrial experts

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B.Sc. DEGREE COURSE IN ORGANIC FARMING

V SEMESTER - W.E.F. 2022-23

COURSE 6A: VERMICOMPOST TECHNOLOGY

MODEL QUESTION PAPER

Time: 3 hours Marks: 75 marks

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer any fiveofthefollowingquestions in Part A.Part B consists of 5 Units. Answer one full question (A or B) from each unit (i.e., Q.No 9 from Unit – I, Q.No 10 from Unit – II, Q.No 11 from Unit – III, Q.No 12 from Unit – IV, Q.No 13 from Unit – V). Each question carries 10 marks.

PART – A

Answer any *Five* of the following question. (5X5=25M)

1.	
2.	
3.	
4.	
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6.	
7.	
8.	

(P.T.O)

PART – B

Answer All The Questions. Each question carries 10 marks (5X10= 50M)

9.	(A) OR (B)
10.	(A) OR (B)
11.	(A) OR (B)
12.	(A) OR (B)
13.	(A) OR (B)

Course 6A: Vermicompost Technology – Practical syllabus

Learning Outcomes: On successful completion of this practical course, student will be able to:

1. Identify the species of earth worms used.
2. Compare and contrast the characteristics of various earth worms used.
3. Perform various skills related to establishment and maintenance of vermicompost unit.
4. Demonstrate skills of making beds and growing the earth worms.
5. Acquire knowledge of harvesting, packing and marketing vermicompost.

Practical (Laboratory) Syllabus: (30 hrs)

1. Key to identify different types of earthworms.
2. Study of external features of earth worm species.
3. Study of life stages & development of *Eisenia fetida*.
4. Study of life stages & development of *Eudrilus eugeniae*
5. Study of vermiculture, vermiwash & vermicompost equipments, devices.
6. Preparation vermibeds, maintenance of vermicompost & climatic conditions.
7. Harvesting, packaging, transport and storage of Vermicompost and separation.

Model Question Paper Pattern for Practical Examination

Semester – V/ Organic Farming Skill Enhancement Course

Vermicompost Technology

Max. Time: 3 Hrs. Max. Marks: 50

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1. Morphology and anatomy of earth worm 'A'	8
2. Life cycle and developmental stages of a earth worm 'B'	10
3. Vermicomposting unit/ composting process 'C'	12
4. Scientific observation and data analysis	4 x 3 = 12
D. Earth worm species	
E. Design of vermin compost unit	
F. Product of vermiculture	
G. Tool/implement/container used	
5. Record + Viva-voce	5+3 = 8

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Course Code:
Max Marks: 100

COURSE 7A: MANURES IN ORGANIC FARMING

(Skill Enhancement Course (Elective))

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Acquire a knowledge on various manures used in organic farming.
2. Acquire skills in making and application of different manures.
3. Explain the preparation and uses of biodynamic formulations.
4. Demonstrate skills of protected cultivation in floriculture.
5. Perform skills in relation to post-harvest operations in floriculture.

II. Syllabus: (Hours: Teaching: 50, Lab: 30, Training: 05, Others incl. unit tests: 05)
(*Syllabi of theory and practical together shall be completed in 80 hours*)

Unit-1: Organic manures (10h)

1. Nutrient requirements in organic farming; limiting nutrient losses.
2. Manures – definition, Bulky Organic Manures (BOM), Concentrated Organic Manures (COM).
3. Organic manures: Farm Yard Manure (FYM), Enrichment of FYM.
4. Compost, methods of composting (Bangalore, Indore, Coimbatore, NADEP methods).

Unit-2: Green manures (10h)

1. Green manuring, Classification of green manures (GM).
2. Nutrient status of various green manures.
3. Advantages of GM, Desirable characteristics of leguminous GM crops.
4. Recycling of organic residues, Classification of organic residues.

Unit-3: Soil amendments (10h)

1. Soil improvements and soil amendments.
2. Salinity, alkalinity, acidity, types of amendments.
3. Reclamation of problematic soil using organic manures.

Unit-4:Biodynamic formulations (10h)

1. Biodynamic agriculture, biodynamic formulation-500(BD-500) – method of preparation and application.
2. Biodynamic formulation 501(BD-501); Cow-pat pit (CPP) – preparation and application.
3. Potash mobilizing and Sulphur mobilizing microorganisms; Arbuscular mycorrhizal fungi.
4. Growth promoting substance excreting microorganisms – methods of application.

Unit-5: Organic preparations (10h)

1. Preparation and application of beejamruta, sanjivak and amritpan
2. Preparation and application of panchgavya and dashagavya
3. Preparation of different types of compost including industrial waste, coir waste, press mud.
4. Government interventions to promote organic farming: NPOF, NPMSHF, NHM, RKVY, KVK and APEDA.

III. References:

1. Anand B. Masthihole and L. Nalina (2016) Organic Farming. Agrimoon.Com
2. Buckman, H.O. and N.C. Brady. 1990. Nature and properties of soil, The McMillan Co, New York, Indian Publishers – Eurasia Publishing House (P) Ltd., Ram Nagar, New Delhi.
3. Das, P.C. 1993. Manures and Fertilizers, Kalyani Publishers, New Delhi

IV. Co-Curricular Activities (student field training by teacher: 05 hours**):**

a) Mandatory:

1. **For Teacher**: Training of students by the teacher in the classroom or in the laboratory for a total of not less than 10 hours different types of manures, their preparation, composition and application etc.,
2. **For Student**: Individual laboratory work and visit to waste to wealth units established by government, compost units in public and private sectors; compost units in a Agriculture and Horticulture University/college - studying the composting practices - written Field Work Report (production and applications of organic maures) not exceeding 10 pages in the given method or format.
3. Max marks for Field Work Report: 05
4. Suggested Format for Field work Report *(not exceeding 10 pages*): Title page with student details, index page, objective, stepwise work done, findings, conclusions and acknowledgements.
5. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Training of students by related industrial experts.
2. Assignments (including technical assignments like organic and green manures – production and application; biodynamic formulations etc.,)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on production and application of various organic manures.
5. Collection of material/figures/photos related to organic manures in India and abroad, writing and organizing them in a systematic way in a file.
6. Visits to organic composting units in public and private sectors.
7. Invited lectures and presentations on related topics by field/industrial experts.

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B.Sc. DEGREE COURSE IN ORGANIC FARMING

V SEMESTER - W.E.F. 2022-23

COURSE 7A: MANURES IN ORGANIC FARMING

MODEL QUESTION PAPER

Time: 3 hours Marks: 75 marks

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer any fiveofthefollowingquestions in Part A.Part B consists of 5 Units. Answer one full question (A or B) from each unit (i.e., Q.No 9 from Unit – I, Q.No 10 from Unit – II, Q.No 11 from Unit – III, Q.No 12 from Unit – IV, Q.No 13 from Unit – V). Each question carries 10 marks.

PART – A

Answer any *Five* of the following question. (5X5=25M)

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

(P.T.O)

PART – B

Answer All The Questions. Each question carries 10 marks (5X10= 50M)

9.	(A) OR (B)
10.	(A) OR (B)
11.	(A) OR (B)
12.	(A) OR (B)
13.	(A) OR (B)

Course 6A: Manures in Organic Farming – Practical syllabus

Learning Outcomes: On successful completion of this practical course, student will be able to:

1. Analyse nutrient status of soil.
2. Identify various organic maures.
3. Perform skills in production of organic manures.
4. Demonstrate skills of application of organic manures.
5. Perform skills of floral arrangements or making floral products.

Practical (Laboratory) Syllabus: (30 hrs)

1. Analysis of available N, Organic carbon
2. Analysis of available P and available K
3. Analysis of soil test results, Interpretation and Fertilizers recommendation.
4. Foliar diagnosis and its corrective measures.
5. Identification of manures.
6. Preparation of different types of compost and method of application.
7. Preparation of slow release fertilizers (Neem coated, Tar and Lac coated urea).
8. Study of soil amendments, fertigation and foliar fertilizers application.

Model Question Paper Pattern for Practical Examination

Semester – V/ Organic Farming Skill Enhancement Course

Manures in Organic Farming

Max. Time: 3 Hrs. Max. Marks: 50

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1. Determination of a nutrient in a soil sample 'A'	8
2. Application of organic manures 'B'	10
3. Production technique of an organic manure 'C'	12
4. Scientific observation and data analysis	4 x 3 = 12
D. Organic manure	
E. Green manure	
F. Soil microbe	
G. Biodynamic formulation/organic preaparations	
5. Record + Viva-voce	5+3 = 8