

S. G. B. S.P. Sanstha's

Shri Guru Buddhiswami Mahavidyalaya

Purna (Jn.) – 431511, Dist. Parbhani (M.S.) India (Estd. 1983)

(Permanently Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)

Re-accredited by NAAC at 'B' Grade with "2.42" CGPA

Recognised under 2 (f) and 12 (B) of UGC Act 1956

ISO 9001:2015 Certified Institute; Obtained "A" Grade in Academic Audit by S.R.T.M. U. N.

Awarded The Best College (Rural) 2019 – 2020 by S.R.T.M. University, Nanded



Value-added / Skill Enhancement Course

Certificate Course in Vermicomposting

Course Co-ordinator:

Dr. Ravindra R. Rakh

Department of Microbiology

DEPARTMENT OF MICROBIOLOGY
Value-added / Skill Enhancement Course
CERTIFICATE COURSE IN VERMICOMPOSTING
(With effect from the academic year 2020-2021)

SYLLABUS

Eligibility for the Course:

Candidates for admission to the Certificate course in Vermicomposting should possess a Higher Secondary School Education Certificate.

Duration of the Course: 40 hrs.

Course objectives:

- To develop the attitude among the students for joining the four R's of recycling, i.e. reduce, reuse, recycle and restore.
- To develop skills in the students for production of good vermicompost.
- To develop self-employability among the students.

Course Outcomes:

By successful completion of the course students will be able to:

- Usefulness of vermicomposting
- Learn a means of self-employment and income generation
- Gain skill for production of vermicompost.

Course Content: Syllabus/Program:

SCHEME

Vermicomposting as one of the Certificate Course at undergraduate level

Credits to be earned	:02credits
Theory paper	:01 credits
Practical course/paper	:01 credits




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Purna (Jn.) Dist. Parbhani

	Unit-I General Vermiculture/ Vermicompost	12Hrs
1	Introduction to vermiculture. definition, meaning, history, economic important, their value in maintenance of soil structure, role as four r's of recycling reduce, reuse, recycle, restore.	
2	His role in bio transformation of the residues generated by human activity and production of organic fertilizers. How does nature works.	
3	The matter and humus cycle (product, qualities). Ground population, transformation process in organic matter.	
4	Choosing the right worm. Useful species of earthworms. Local species of earthworms. Exotic species of earthworms. Complementary activities of auto evaluation.	
	Unit-II Earthworm Biology and Rearing	12Hrs
5	Key to identify the species of earthworms.	
6	Biology of <i>Eisenia fetida</i> . a) Taxonomy Anatomy, physiology and reproduction of Lumbricidae. b) Vital cycle of <i>Eisenia fetida</i> : alimentation, fecundity, annual reproducer potential and limit factors (gases, diet, humidity, temperature, PH, light, and climatic factors). Complementary activities of auto evaluation.	
7	Biology of <i>Eudrilus eugeniae</i> . c) Taxonomy Anatomy, physiology and reproduction of Eudrilidae. d) Vital cycle of <i>Eudrilus eugeniae</i> : alimentation, fecundity, annual reproducer potential and limit factors (gases, diet, humidity, temperature, PH, light, and climatic factors). Complementary activities of auto evaluation.	
	Unit-III Vermicompost Technology (Methods and Products)	12Hrs
8	Small Scale Earthworm farming for home gardens - Earthworm compost for home gardens	
9	Conventional commercial composting - Earthworm Composting larger scale	
10	- Earthworm Farming (Vermiculture), Extraction (harvest), vermicomposting harvest and processing.	
11	Nutritional Composition of Vermicompost for plants, comparison with other fertilizers	
12	Vermiwash collection, composition & use	
13	Enemies of Earthworms, Sickness and worm's enemies. Frequent problems. How to prevent and fix them. Complementary activities of auto evaluation.	



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Practical Course

Practicals

1 Credit

	Unit- I	18Hrs
1	Key to identify different types of earthworms	
2	Field trip- Collection of native earthworms & their identification	
3	Study of Systematic position, habits, habitat & External characters of Eisenia fetida	
4	Study of Life stages & development of Eisenia fetida	
5	Study of Life stages & development of Eudrilus eugeniae	
6	Comparison of morphology & life stages of Eisenia fetida & Eudrilus eugeniae	
7	Study of Vermiculture, Vermiwash & Vermicompost equipment's, devices	
8	Preparation vermibeds, maintenance of vermicompost & climatic conditions.	
9	Harvesting, packaging, transport and storage of Vermicompost and separation of life stages	
10	Study of verms diseases & enemies	
11	Study the effects of vermicompost & vermiwash on any two short duration crop plants	
12	Study the effects of sewage water on development of worms	

Examination and Evaluation Pattern

Examination:

A theory paper of 02 hrs. duration for maximum of 50 marks with passing minimum of 40% marks.

Question Paper Pattern

Maximum marks: 50

Time: 02 hrs.

Part A: MCQ (10 marks) (05 questions).

Part B: Long Answer Questions (40 marks) (04 questions, each question for 10 marks)

Marking scheme & Award of grades:

- 8-10 marks = C' grade
- 10-20 marks = B' grade.
- 20-30 marks = B+ grade.
- 30-40 marks = A' grade.
- 40-50 marks = A+ grade.



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REFERENCE BOOKS:

1. Bhatt J.V. & S.R. Khambata (1959) "Role of Earthworms in Agriculture" Indian Council of 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, Jyoti Vihar, 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). Gandul khatashivay Naisargeek Paryay, 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.




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**SHRI GURU BUDDHISWAMI SHIKSHAN PRASARAK SANSTHA'S
SHRI GURU BUDDHISWAMI MAHAVIDYALAYA, PURNA (Jn.)**

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Ref: SGBMA IQAC/2020-21/20

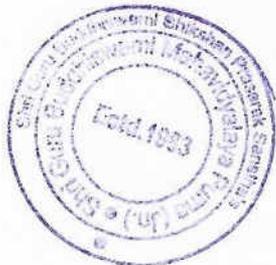
Date 23.11.2020

To,

- i) **Dr. R. S. Deshmukh,** (External Expert)
Assistant Professor, Dept. of Botany,
B. Raghunath Mahavidyalaya, Parbhani.
- ii) **Dr. L. S. Raut,** (External Expert)
Assistant Professor, Dept. of Microbiology,
Sant Tukaram ACS College, Parbhani
- iii) **Dr. R. R. Rakh,** (Internal Expert)
Assistant Professor, Dept. of Microbiology,
S.G.B. Mahavidyalaya, Purna (Jn.)

Dear Sir/s,

It gives us immense pleasure to inform you that the College Management has decided to introduce a **Certificate Course in Vermicomposting** for UG students across the streams. You are hereby informed to draft the syllabus within a week and submit the same to the IQAC.



Dr. K. Rajkumar

Principal
PRINCIPAL

Shri Guru Buddhiswami Mahavidyalaya
Purna (Jn.) Dist. Parbhani

Date 01.12.2020

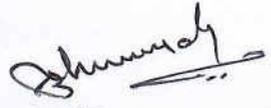
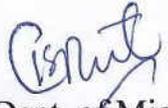
To,
The Principal,
S.G.B. Mahavidyalaya, Purna

Respected Sir,

We are submitting herewith the final draft of the syllabus of **Certificate Course in Vermicomposting** for UG students across the streams. You are requested to accept it and oblige.

Thank You.

Yours Faithfully,

- i) **Dr. R. S. Deshmukh,** 
(External Expert)
Assistant Professor, Dept. of Botany,
B. Raghunath Mahavidyalaya, Parbhani.
- ii) **Dr. L. S. Raut,** 
(External Expert)
Assistant Professor, Dept. of Microbiology,
Sant Tukaram ACS College, Parbhani
- iii) **Dr. R. R. Rakh,** 
(Internal Expert)
Assistant Professor, Dept. of Microbiology,
S.G.B. Mahavidyalaya, Purna (Jn.)

Enclosures:

- i) Final Draft of Syllabus of Certificate Course in Vermicomposting




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