



॥ सा विद्या या विमुक्तये ॥

स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

'ज्ञानतीर्थ', विष्णुपुरी, नांदेड - ४३१ ६०६ (महाराष्ट्र राज्य) भारत

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

'Dnyanteerth', Vishnupuri, Nanded - 431 606 (Maharashtra State) INDIA

स्वामी रामानंद तीर्थ
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विद्यापीठ अनुदान आयोगाने शैक्षणिक वर्ष २०२०-२१ पासून मान्यता दिलेल्या बी. व्होक (व्होकेशनल कोर्सेसचे) पदवी तृतीय वर्षाचे अभ्यासक्रमाचे (Syllabus) शैक्षणिक वर्ष २०२२-२३ पासून लागू करणे बाबत.

परिपत्रक

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, विज्ञान व तंत्रज्ञान विद्याशाखेतील विद्यापीठ अनुदान आयोगाने शैक्षणिक वर्ष २०२०-२१ पासून मान्यता दिलेल्या बी. व्होक (व्होकेशनल कोर्सेस) पदवी अभ्यासक्रमाचे तृतीय वर्षाचे Syllabus शैक्षणिक वर्ष २०२२-२३ पासून लागू करण्यास मा. कुलगुरू महोदयांनी मा. विद्यापरिपदेच्या मान्यतेच्या अधीन राहून मान्यता दिलेली आहे. त्यानुसार खालील अभ्यासक्रम लागू करण्यात येत आहेत.

1. B. Voc Software Development III year
2. B. Voc. Bachelor of Medical Laboratory Technology. III year
3. B. Voc. Herbal Medicine III year
4. B. Voc. Agriculture/commercial Aquaculture III year
5. B. Voc. Horticulture and Post Harvest Technology III year
6. B. Voc. Food Processing /Food Processing Technology III year
7. B. Voc. Chemical & Petrochemical Applied Analytical Chemistry III year
8. B. Voc. Life Science/Skill Based Zoology III year

सदरील परिपत्रक व अभ्यासक्रम प्रस्तुत विद्यापीठाच्या www.srtmun.ac.in या संकेतस्थळावर उपलब्ध आहेत. तरी सदरील बाब ही सर्व संबंधितांच्या निदर्शनास आणून द्यावी. ही विनंती.

जा.क्र.:शैक्षणिक-१/परिपत्रक/व्होकेशनल अभ्यासक्रम/N-

२०२२-२३/६२५

दिनांक : २९.०९.२०२२

प्रत माहिती व पुढील कार्यवाहीस्तव :

- १) मा. अधिष्ठाता, विज्ञान व तंत्रज्ञान विद्याशाखा, प्रस्तुत विद्यापीठ.
- २) मा. संचालक, परीक्षा व मूल्यमापन मंडळ यांचे कार्यालय, प्रस्तुत विद्यापीठ.
- ३) प्राचार्य, सर्व संबंधित संलग्नित महाविद्यालये, प्रस्तुत विद्यापीठ.
- ४) साहाय्यक कुलसचिव, पदव्युत्तर विभाग, प्रस्तुत विद्यापीठ.
- ५) उपकुलसचिव, पात्रता विभाग, प्रस्तुत विद्यापीठ.
- ६) सिस्टम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ. याना देवून कळविण्यात येते की, सदरील परिपत्रक विद्यापीठाच्या संकेतस्थळावर प्रसिध्द करण्यात यावे.

C. J. J.

सहाकुलसचिव

शैक्षणिक (१-अभ्यासमंडळ) विभाग



Kingdom Animalia is amongst the five kingdoms of life defined by R. H. Whitaker in his classification system. Amongst several specializations available for students studying zoology, Pearl culture, Apiculture, Sericulture, Vermicomposting are some of those which have potential to become source of employment at their own places without moving to cities in search of it.

The university and UGC have granted the college with B. Voc. Course as a vocational course so that the students withstand the challenging situations of unemployment.

THE SALIENT FEATURES:

Pearl culture, Apiculture, Sericulture, *Azolla* culture and vermicomposting, recirculatory aquaculture system, Spirulina culture, mushroom cultivation, biogas making are the compulsory papers in the course. It requires more time for pearl to be formed, cocoon of silk to be formed and honey to be deposited than *Azolla* culture and vermicomposting to happen hence the subjects Pearl culture, Sericulture and Apiculture have been included in first and second years respectively. And *Azolla* culture and Vermicomposting in last third year.

The structure of syllabus duration has been mentioned in the following table:

Kingdom Animalia is amongst the five kingdoms of life defined by R. H. Whitaker in his classification system. Amongst several specializations available for students studying zoology, Pearl culture, Apiculture, Sericulture, Vermicomposting are some of those which have potential to become source of employment at their own places without moving to cities in search of it.

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The structure of syllabus duration has been mentioned in the following table:

Year	Semester	Course Name
B.Voc. Third Year	V	Mushroom cultivation
B. Voc. Third Year	V	Biogas making
B. Voc. Third Year	V	Crab culture
B. Voc. Third Year	VI	Grading and marketing of

		mushroom
B. Voc. Third Year	VI	Biogas packing
B. Voc. Third Year	VI	Aquaponics

Utility of the courses (Mushroom cultivation):

Subjects involved in Skill based zoology are equipped to make student earn money out of very less investment and increase their faith in studying traditional subjects. The students can also persuade M. Voc. in future for their post graduate program. Although the topic of *Mushroom culture* is related to plants (Botany) it is useful for students in making a source of income out of very less investment. Thus the subject will automatic bring back faith of students in economically important fungi and thus will add to their source of earning.

Learning objectives:

- Introduction to kingdom Fungi
- Principals of *Mushroom farming*
- Demonstration of making of *Mushroom bed*
- Identification of different species of *Mushroom*
- Visits to sites of usage of *Mushroom bed*
- Management of *Mushroom bed* in all the seasons

Practical:

- To improve skills of students in *Mushroom culture*.
- To visit sites where the success in the field has been achieved.
- To equip students with the necessary skills in maintaining *Mushroom bed* in every season.
- To Acquaint students with marketing of *Mushroom culture*

Prerequisites:

The study of subjects being offered under the Skill Based Zoology requires basic knowledge of biology as elaborated below.

Basic knowledge about occurrence of Fungi in nature.

Knowledge about sell of harvested Mushroom and its usage.

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Skill Based Zoology

B. Voc. Third year

Skill Based Zoology

Semester V

Title of Paper: *Mushroom* culture

Periods: 45

Semester I

Unit I: Taxonomy: Classification of Fungi 11

Classification of Fungi with special emphasis on various edible species.

Understanding ecosystem of *Mushroom*bed.

Unit II: Principals of *Mushroom* culture: Introduction to different shape and sizes of *Mushroom* culture beds.

Standardization of room quality parameters.

Unit III:Field visits 10

Visits to different *Mushroom*culture sites.

Collection of *Mushroom* cultures by visits to different sites of cultivation.

Unit IV:Factors affecting *Mushrom* growth and its use as fodder: 12

Introduction to different chemicaland biological factors that affect *Mushroom* growth.

Installation of the*Mushroom* units at farms related to students.

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Skill Based Zoology

B. Voc. Third year

Skill Based Zoology

Semester V

Title of Paper: Practicals based on *Mushroom* culture.

Periods: 45

- | | | |
|--|----|---|
| 1. To improve skills of students in <i>Mushroom</i> culture. | | 9 |
| 2. To visit sites where the success in the field has been achieved. | 9 | |
| 3. To equip students with the necessary skills in maintaining <i>Mushroom</i> bed. | 12 | |
| 4. To understand factors affecting <i>Mushroom</i> culture. | | 9 |
| 5. To Acquaint students with marketing of <i>Mushroom</i> culture | | 6 |

Utility of the courses (Biogas making):

Subjects involved in Skill based zoology are equipped to make student earn money out of very less investment and increase their faith in studying traditional subjects. The students can also persuade M. Voc. in future for their post graduate program. Biogas finds its application in household, agriculture and horticulture practices. The subject will promote students to be volunteers in praising organic farming over traditional farming techniques. This can be achieved as teaching about various research papers published in the subject.

Learning objectives:

- Introduction to biogas
- Principles of Biogas making
- Demonstration of making biogas tank
- Management of Biogas in all the seasons

Practical:

- To improve skills of students in Biogas making.
- To visit sites where the success in the field has been achieved.
- To equip students with the necessary skills in maintaining Biogas in every season.
- To Acquaint students with marketing of Biogas, organic manure, worm feed

Prerequisites:

The study of subjects being offered under the Skill Based Zoology requires basic knowledge of biology as elaborated below:

- Knowledge about sell of Biogas, organic manure and wormfeed.

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Skill Based Zoology

B. Voc. Third year

Skill Based Zoology

Semester V

Title of Paper: Biogas making

Periods: 45

Semester I

Unit I: Taxonomy:

Classification of cows and buffaloes

Understanding importance of biogas and ideal dung for biogas making 12

Unit II: Principles of Biogas making. Introduction to different shape and sizes of containers for Biogas making (Cement and Plastic).

Cooling of content to be put for Biogas 12

Unit III: Field visits

Visits to different Biogas unit sites.

Understanding mechanism of Biogas formation with abiotic respiration of microflora

Unit IV: Factors affecting capacity of Biogas units to convert organic mass into worm feed

Significance of Biogas over other means adopted in countryside. 12

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Skill Based Zoology

B. Voc. Third Year

Skill Based Zoology

Semester V

Title of Paper: Practicals based on Biogas making

Periods: 45

- | | |
|--|----|
| 1. To understand factors affecting anaerobic respiration | 9 |
| 2. To improve skills of students in Biogas making. | 9 |
| 3. To visit sites where the success in the field has been achieved. | 9 |
| 4. To equip students with the necessary skills in maintaining Biogas plant in every season | 12 |
| 5. To Acquaint students with necessary skills for use of Biogas | 6 |

Crab culture:

Crab culture can be done in two ways. Understanding both the methods with life cycle of crab is necessary. This type of farming doesn't need much care to be taken. There are two economically important crabs which can be cultured.

Learning objectives:

- Learning how to extend durability of tanks and equipments.
- Getting better quality of crabs output.
- Medicinal use of crab as food.
- Visits to farms where success in the field have been achieved

Practical:

- To improve skills of students in Making Tanks for crab culture.
- To visit sites where the success in the field has been achieved.
- To equip students with the necessary skills in maintaining crab culture in every season
- To Acquaint students with training farmers for successful crab culture

Prerequisites:

The study of subjects being offered under the Skill Based Zoology requires basic knowledge of biology as elaborated below.

To gain basic knowledge about classification of arthropods.

- To sell seed of crabs produced.

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Skill Based Zoology

B. Voc. Third Year

Skill Based Zoology

Semester V

Title of Paper: Crab culture

Periods: 45

Semester I

Unit I: Understanding classification of arthropods.

Classification of Arthropoda up to order level.

Classification of economically arthropods.

Unit II:

Biological guy of economically important crabs.

To understand mechanism of O₂ consumption in crab.

Unit III: Field visits

To understand advantages and disadvantages of crab culture

To understand the properties of mud

Unit IV: Factors affecting reproductive capacity of carbs

Making of high protein containing food for crabs

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Skill Based Zoology

B. Voc. Third Year

Skill Based Zoology

Semester V

Title of Paper: Practicals based on crab culture.

Periods: 45

- | | |
|--|----|
| 1. Making of homemade food for crabs. | 9 |
| 2. Making of homemade biological filters. | 9 |
| 3. Demonstration of reproductive system and digestive system of crab | 12 |
| 4. Demonstration of handling of crab | 9 |
| 5. Factors affecting crab growth and reproduction | 6 |

Grading and marketing of mushroom:

Subjects involved in Skill based zoology are equipped to make student earn money out of very less investment and increase their faith in studying traditional subjects. The students can also persuade M. Voc. in future for their post graduate program. Although the topic of grading and marketing of mushrooms is not related to Zoology, it gives a good source of income to students.

Learning objectives:

- Study of use of Mushrooms as a good source of proteins.
- Grading of Mushrooms
- Canning of mushrooms
- Management of mushrooms to be sold in all seasons

Practical:

- Estimation of protein by Lowry's method.
- To visit sites where the success in the field has been achieved.
- To equip students with the marketing skills of Mushrooms
- Visit to places where success in the field have been achieved

Prerequisites:

The study of subjects being offered under the Skill Based Zoology requires basic knowledge of biology as elaborated below.

Basic knowledge about principal of estimation of protein

Making of various mushroom products

Working and functioning of hygrometer

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Skill Based Zoology

B. Voc. Third Year

Skill Based Zoology

Semester VI

Title of Paper: Grading and marketing of mushroom

Periods: 45

Semester I

Unit I: Nutritive and medicinal value of mushroom

Understanding proteins, vitamins and minerals found in mushroom

Understanding medicinal value of mushrooms

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Unit II: Making of different types of compost for mushroom cultivation

Importance of different types of compost for all three types of mushrooms

Understanding the diseases faced by mushroom culture and its remedies

Unit III: Use of Mushroom as food

Making of various food products from mushrooms

Making of medicines from mushrooms

Unit IV: Factors affecting Mushroom growth.

Effect of various physical factors on mushroom cultivation: humidity, temperature

Effect of formaldehyde, sodium hypochlorite, phenolic etc on growth of mushroom

Grading of mushrooms for sell

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Skill Based Zoology

B. Voc. Third Year

Skill Based Zoology

Semester VI

Title of Paper: Practicals based on Grading and marketing of mushroom

Periods: 45

- | | |
|--|----|
| 1. To study carbohydrate, protein and fat content of mushrooms | 12 |
| 2. To study making of different types of composts for cultivation of various types of mushroom | 12 |
| 3. To study use of Mushroom as food and medicine | 12 |
| 4. Field visits to places where success in the field has been achieved | 9 |

Utility of the courses biogas packing (Biogas upgradation):

Subjects involved in Skill based zoology are equipped to make student earn money out of very less investment and increase their faith in studying traditional subjects. The students can also persuade M. Voc. in future for their post graduate program. Biogas packing find their application in house hold, automobiles and electricity generation. The subject will promote students to be experts in Biogas filtration and get rid of unwanted contents. This can be achieved by teaching students with the facilities to bottling the gas.

Learning objectives:

- To understand contents of crude biogas.
- To separate contents of Biogas and purification of methane.
- The bottling of biogas.
- It's safe usage in house hold and automobiles.

Practical:

- To fetch attention of students towards sustainable and pollution sources of fuel.
- To get fine quality methane out of crude biogas.
- To demonstrate bottling of methane in tanks.
- To use purified Biogas in house hold, automobiles and electricity power generators.

Prerequisites:

The study of subjects being offered under the Skill Based Zoology requires basic knowledge of biology as elaborated below.

- Basic knowledge about Raw material required for Biogas making.
- Basic knowledge about anaerobic respiration
- Basic knowledge about use of Biogas slurry in agriculture.

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Skill Based Zoology

B. Voc. Third Year

Skill Based Zoology

Semester VI

Title of Paper: Biogas packing

Periods: 45

Semester I

Unit I: Introduction to sustainable environment and agriculture practices

Problems with traditional agriculture practices

Need of sustainable agriculture practice and role of biogas in it 12

Unit II: Benefits of using biogas.

Traditional sources of energy

Significance of Biogas over traditional sources of energy

Problems of using biogas. 11

Unit III: purification of methane and making it odorless

Purification of methane out of Biogas

Making the gas odorless 11

Unit IV: Packaging and selling of Biogas

Grading and sell of Biogas in cylinders 11

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Skill Based Zoology

B. Voc. Third Year

Skill Based Zoology

Semester VI

Title of Paper: Practicals based on Biogas packing

Periods: 45

1. To demonstrate calculate burning of pure methane and crude biogas 9
2. To introduce students with use of Biogas slurry as manure and as a source of food of earthworms 9
3. To demonstrate use of use of methane as source of fuel in various gas plants. 12
4. To demonstrate packing of Biogas in cylinders of various sizes 15

Utility of the course (Aquaponics):

Aquaponics, its meaning and its application. The waste of fishes as manure for seeds of vegetable plants. The culture does not require huge amount of water that is wasted in traditional farming techniques. This makes Aquaponics an ideal technique of farming in water deficient environments.

Learning objectives:

- Learning the biology of fishes in artificial environment of biofloc.
- Learning how to grow vegetables in the Aquaponics.
- Learning basic difference between Aquaponics and other traditional techniques
- Learning pros and cons of the aquaponics technique

Practical:

- To improve skills of students growing vegetables in Aquaponics environment
- To teach students regarding biology of biofloc cultivable fishes
- To equip students with water quality parameter analysis
- To teach students with importance of Aquaponics over other agriculture and pisciculture practices.

Prerequisites:

The study of subjects being offered under the Skill Based Zoology requires basic knowledge of biology as elaborated below.

To gain basic knowledge about growing of vegetables

To gain basic knowledge about biofloc growth of fishes

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Skill Based Zoology

B. Voc. Third Year

Skill Based Zoology

Semester VI

Title of Paper: Aquaponics

Periods: 45

Semester I

Unit : Introduction to Aquaponics

Introduction to biology of different vegetable plants that can be grown in Aquaponics farms.

Introduction to biology of fishes that can be grown in biofloc

Unit II: Physiochemical properties of water and water purification

Understanding physiochemical properties of water and factors affecting fish growth.

Mechanism of working of biological and physical filters

Unit III: Factors affecting growth of plants in green house

Use of lux meter and management of light

Measurement and management of atmospheric humidity

Management of temperature.

Understanding theory behind preparation of green houses of various sizes

Unit IV: Plantation and certification of farm

Understanding working of certification companies

Vegetable plantation

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Skill Based Zoology

B. Voc. Third Year

Skill Based Zoology

Semester VI

Title of Paper: Practicals based on Aquaponics.

Periods: 45

- | | |
|---|----|
| 1. Define and construction of green houses for Aquaponics | 9 |
| 2. Study of biology of different vegetable plants | 9 |
| 3. Importance of nutritive value of vegetables in diet | 9 |
| 4. Role of water quality parameters in fish growth | 12 |
| 5. Role and working of hygrometer and lux meter in Aquaponics | 3 |
| 6. Biology of fish that can be grown in biofloc | 3 |