

DEPARTMENT OF ZOOLOGY

COURSE CURRICULUM AND MARKING SCHEME

VALUE ADDED COURSE

ON

BEEKEEPING AND HONEY PROCESSING

SESSION: 2022-23



**GOVT. V.Y.T. PG AUTONOMOUS COLLEGE,
DURG, 491001 (C.G.)**

(Former Name – Govt. Arts & Science College, Durg)

NAAC Grade- 'A*', CPE Phase-III, DBT-Star College

Ph./ Fax: 0788-2359688,

Website: www.govtsciencecollegedurg.ac.in

VALUE ADDED COURSE
on
“BEEKEEPING AND HONEY PROCESSING”
By
Dept. of Zoology
Govt. VYT PG Autonomous College, Durg

1. INTRODUCTION:

Maintenance of honeybee colonies and honey production is known as bee-keeping or Apiculture. Apiculture is commercially viable if it is made an integral part Of farming in rural sector. Apiculture is quite easy to lean and farmers can start beekeeping as a business.

Honey is one of the oldest sweetener and it is a natural, pure and wholesome food. It has no added ingredient and a fat & cholesterol free food.

Bee-keeping is an industry for producing honey and wax. In India, Honey bee farming is most common in the hilly region, but nowadays, this business has also started in the plains by the local people to earn more money. Possibility for the development of beekeeping in India is tremendous due to its diverse environment and inexhaustible floral resources obtained from natural vegetation and cultivated crops. According to recent statistics, about 50 million hectares of land is under the cultivation of oilseeds, pulses, orchards and other crops which is useful to bees and benefitted by bee pollination. In addition, there is about 60 million hectares of forest area with beekeeping potential. This vast area of agriculture and forest may easily sustain at least one crore bee colonies.

Adequate management practices, optimum knowledge of beekeeping like nature of honeybees, optimum climatic condition and suitable places for beekeeping have increased the quality as well as quantity of apicultural produces and also have minimized the unwanted risk. Beekeeping is growing as beneficial, eco-friendly and economically agricultural practice but still beekeeping is more practiced in rural or interior part of our country and requires more awareness and support from the government agencies.

Maintaining the routine time table a value Added Online course is designed for UG and PG students of Life Science faculty of the college to get acquainted and develop skill under a framed setup along with their regular studies.

After successful completion of these courses the student would be able:

- ❖ To learn the techniques of apiculture
- ❖ To acquire an in-depth knowledge on different bee species with their specific host plant.
- ❖ To cultivate skills to understand culture, rearing, harvesting and marketing management
- ❖ To acquire knowledge about Honey processing

The key features are:

- Short-term skill based training programmes
- Identification of “minimum skills set” sufficient to get employment
- Flexible training delivery mechanism
- Opportunity for lifelong learning

Statement of learning outcomes:

1. Working Process: Person may establish a small scale industry or a domestic business/generate employment for others.
2. Professional knowledge: Basic facts, process and principle applied
3. Professional skill: Recall and demonstrate practical skill, routine and repetitive work in narrow range of application
4. Core skill: Communication with oral and written modes with minimum required clarity

2. GENERAL INFORMATION AND COURSE STRUCTURE

1. Duration of Modular Training: 30 hrs.
3. Entry Qualification: UG and PG students of life sciences
4. Trainees per unit: 20
5. Language: Hindi/English
6. Teaching Mode: Online through LMS, Video and PDF notes etc.

Distribution of training on Hourly basis:

Sl. No.	Broad Theory and Practical components to be covered	Duration (in Hrs)	Theory	Practical	Days
1.	General Introduction, history, species diversity and Bee keeping equipments	4	2	2	2
2.	Morphology and life cycle of Honey bees, social organization, and communication in bees, Collection and extraction of pollen, Bee wax, Nesting pattern, Bee sting, bee venom	4	2	2	2
3.	Selection of location, Up keeping and off seasonal management of bee colonies and Diseases and parasites of honey bees and their control measures	6	3	3	3
4.	Composition of honey, conversion of nectar to honey, Economic importance of honey and other bee products, Medical value , special properties and uses of honey and processing and value addition of honey	8	4	4	4
5.	Marketing aspects of bee products, Role of Govt and Non-Govt agencies, and Scope of apiculture in India	8	4	4	4
	Total	30	15	15	15

3. GENERAL TEACHING PLAN, ASSESSMENT & CERTIFICATE:**General Teaching Plan:**

The knowledge and skill components as stated in the section for „learning outcomes“ are to be imparted in accordance with the instructions in respect of the content and time structure. Both the theory and practical will be conducted online using synchronous and asynchronous modes based on suitable LMS

Assessment:

The competency assessment will be done by the departmental assessor ensuring an impartial assessment. The assessment process through Assessing Bodies aims to test and certify the competency of the student.

Candidates are to demonstrate that they are able to do the followings under assessment:

1. Plan and organize work processes, identify necessary materials and tools
2. Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations
3. Apply professional knowledge and Computer literacy while performing the task.

Examination:

Both the theory and practical examination will be conducted online using synchronous and asynchronous modes based on suitable LMS

Pass regulation:

Minimum passing marks for Practical is 60%

Minimum pass marks for Theory is 40%

Certificate:

Successful candidate will be awarded training certificates issued by the College.

4. SYLLABUS CONTENT Detailed Syllabus:

Theory	Practical
<ul style="list-style-type: none"> • Introduction, History of bee keeping, Species diversity in Honey bee, Bee keeping in worldwide and In India. • Traditional bee keeping, Modern beekeeping, Urban or backyard beekeeping. • Bee hives and peculiarities, Beekeeping equipments 	<ul style="list-style-type: none"> • Identification of different casts in honeybees- Queen, drones and workers • Structure of honey comb-different type of cells for queen, drones and workers
<ul style="list-style-type: none"> • Basic concepts of morphology and life cycle of Honey bees • Types and social organization of Honey bees, • Bee dance and communication in bees • Collection of pollen by bees, extraction of pollen • Royal jelly and hormonal influence • Bee wax, wax glands, Nesting pattern • Bee sting, bee venom 	<ul style="list-style-type: none"> • Morphological peculiarities of worker bees- Honey and pollen storage structures • Familiarize bee keeping instruments and bee hives
<ul style="list-style-type: none"> • Selection of location • Up keeping and off seasonal management of bee colonies • Growth period and Honey flow-seasonal management • Diseases and parasites of honey bees and their control measures 	<ul style="list-style-type: none"> • Introduction of parts of Bee box - ISI 'A' type 'B' type & Tools used in Bee keeping • Identification of Queen cells, Drone cells & Brood • Methods of Multiplication of Bee Colonies
<ul style="list-style-type: none"> • Composition of honey, conversion of nectar to honey, • Economic importance of honey and other bee products • Medical value of honey, special properties and uses of honey • processing and value addition of honey 	<ul style="list-style-type: none"> • Steps for strengthening of colonies- Requeening technique • Propagation of bee plants- Preparation of floral calendar • Measures to be taken while transporting colonies

<ul style="list-style-type: none"> • Marketing aspects of bee products • Role of Govt and Non-Govt agencies in promoting apiculture in Chhattisgarh • Present status and future scope of apiculture as a small scale industry in Chhattisgarh • Present scenario and Scope of apiculture in India 	<ul style="list-style-type: none"> • Extraction of Honey using Honey extractor, moisture reduction, packing and storing of Honey • Methods of Extraction of Bees wax, Royal Jelly and Bee venom • Fermentation and Granulation of Honey.
---	---

5. ASSESSMENT STANDARD

5.1 GUIDELINES FOR INSTRUCTORS AND ASSESSORS

Due care to be taken for proper & inclusive delivery among the batch. Some of the following method of delivery may be adopted:

- A) LECTURE
- B) PDF/ VIDEO LESSON
- C) DEMONSTRATION VIDEO
- D) GROUP DISCUSSION

5.2 ASSESSMENT GUIDELINE:

The nature of special needs should be taken into account while undertaking the assessment. Due consideration shall be given while assessing for teamwork, behavioural attitude, sensitive to environment and regularity in training. The sensitivity towards self-learning attitude shall be considered while assessing competency.

1. Assessment will be evidence based comprising the following:
2. Answer sheet for assessment
3. Viva-voce
4. Attendance and punctuality
5. Project work

Evidence of internal assessment should be preserved for an appropriate period of time for audit and verification by examination body.

Examination/ Evaluation will be done by online mode. The following marking pattern to be adopted while assessing:

S.No.	Parameters	Assessable outcomes	Marks
1.	Skill	Remember, Recognize and Comply safe working practices	20
2.	Understanding and Expressions	Understand the working procedure and basic skills for repetitive work	20

3.	Neatness and Promptness of work	Apply, demonstrate knowledge of concept and principles of basic arithmetic calculation and apply knowledge of specific area to perform practical operations.	30
4.	Support required for Project work	Analyse, Explain and Evaluate time management, entrepreneurship and manage/organize related task in day to day work for personal & societal growth	30
Total			100

The syllabus for Value added course on Bee keeping and Honey processing is hereby approved for the Session 2022-23

Name and Signatures

Chairperson /H.O.D <i>[Signature]</i>	Departmental members 1. 2. 3. 4. 5. 6. 7. 8.
University Nominee <i>[Signature]</i>	
Subject Expert <i>[Signature]</i>	
Subject Expert <i>[Signature]</i>	
Representative from Industry/entrepreneur <i>[Signature]</i>	
Student representative <i>[Signature]</i>	
Other Prof. from Science faculty <i>[Signature]</i>	