



## CERTIFICATE COURSE ON BEE KEEPING

Organized by

*Department of Zoology*

Adv. M. N. Deshmukh Arts, Science and Commerce College  
Rajur,

Tal- Akole, Dist- Ahmednagar, Pin-422604

**Duration:** 30 contact hours.

**Coordinator**

Prof. J. D. Arote (Head of Department)

**Faculty**

Prof. Dr. B. K. Tapale

Prof. M. L. Kanawade

Prof. P. B. Daye

## CERTIFICATE COURSE ON BEE KEEPING

### About course:

#### Introduction:

Beekeeping (apiculture) is the maintenance of bee colonies, commonly in man-made hives, by humans. Most such bees are honey bees in the genus *Apis*, but other honey-producing bees such as *Melipona* stingless bees are also kept. A beekeeper (apiarist) keeps bees in order to collect their honey and other products that the hive produce (including beeswax, propolis, flower pollen, bee pollen, and royal jelly), to pollinate crops, or to produce bees for sale to other beekeepers. A location where bees are kept is called an apiary or "bee yard".

#### Objectives:

1. Increasing the employment opportunity in rural sector and thus enhancing the income of the beekeepers & farmers.
2. To give students knowledge about various techniques of Bee keeping and its marketing to make them self-sustainable after graduation
3. To maximize, economic, ecological and social benefits by diversification through beekeeping.
4. Empowerment of Women through Beekeeping.
5. To understand the basic life cycle of the honeybees, beekeeping tools and equipments.



## SYLLABUS OF THE COURSE

### TITLE OF THE COURSE: BEE KEEPING

#### Theory topics

(Lectures-20/Hours: 20)

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|--|----|
| 1. Introduction to Apiculture - scope, importance.         | 02 |
| 2. Honey Bee morphology, Anatomy.                          | 02 |
| 3. Honey Bee Life cycle.                                   | 02 |
| 4. Colony organization and Division of labor of Honey bee. | 02 |
| 5. Bee behavior and communication.                         | 01 |
| 6. Bee keeping: Tools and Equipments.                      | 02 |
| 7. Bee Products.   | 02 |
| 8. Introduction of Diseases and enemies of Bees.           | 01 |
| 9. Economics of bee keeping.                               | 01 |

#### Practical

(Hours-15)

- |  |    |
|--|----|
| 1. Study of external morphology and polymorphism in Honey Bee.                                 | 03 |
| 2. To Study different stages in life cycle of Honey bees.                                      | 03 |
| 3. Study of Bee keeping Equipment: Bee box, Honey extractor, Smoker, Bee-veil, queen excluder. | 03 |
| 4. Colony inspection and maintenance.  | 03 |
| 5. Study of Bee products: Honey, Wax and Pollen.   | 03 |

#### Reference

1. Bee and Bee Keeping, 1978, Roger A. Morse, Cornell University Press, London
2. The Behaviour & Social Life of Honey Bees, C. R. Ribbandas, Dover Publication inc. New York.
3. Economic Zoology, Shukla Upadhyay, Rastogi Publication, Meerut, India, 1998.
4. Apiculture, N. Arumugam, K.V. Jayashree, C.S. Tharadevi; Saras Publication
5. APPLIED ZOOLOGY 2 (ZO-242) (Dr. Kishore R. Pawar, Dr. Ashok E. Desai), Nirali Prakashan.

**TIME TABLE OF THE COURSE  
TITLE OF THE COURSE: BEE KEEPING**

| Sr. No. | Date       | Day      | Time         | Teacher    | No. of Lecture | Practical |
|---------|------------|----------|--------------|------------|----------------|-----------|
| 1       | 10/01/2020 | Friday   | 2 PM to 3 PM | J.D.Arote  | 01             | Theory    |
| 2       | 11/01/2020 | Saturday | 2 PM to 3 PM | B.K.Tapale | 01             | Theory    |
| 3       | 17/01/2020 | Friday   | 2 PM to 3 PM | M.L.K      | 01             | Theory    |
| 4       | 18/01/2020 | Saturday | 2 PM to 3 PM | P.B.Daye   | 01             | Theory    |
| 5       | 24/01/2020 | Friday   | 2 PM to 5 PM | J.D.Arote  | 03             | Practical |
| 6       | 25/01/2020 | Saturday | 2 PM to 3 PM | B.K.Tapale | 01             | Theory    |
| 7       | 31/01/2020 | Friday   | 2 PM to 3 PM | P.B.Daye   | 01             | Theory    |
| 8       | 01/02/2020 | Saturday | 2 PM to 5 PM | M.L.K      | 03             | Practical |
| 9       | 07/02/2020 | Friday   | 2 PM to 3 PM | J.D.Arote  | 01             | Theory    |
| 10      | 14/02/2020 | Friday   | 2 PM to 3 PM | B.K.Tapale | 01             | Theory    |
| 11      | 15/02/2020 | Saturday | 2 PM to 3 PM | M.L.K      | 01             | Theory    |
| 12      | 28/02/2020 | Friday   | 2 PM to 5 PM | P.B.Daye   | 03             | Practical |
| 13      | 29/02/2020 | Saturday | 2 PM to 3 PM | J.D.Arote  | 01             | Theory    |
| 14      | 06/03/2020 | Friday   | 2 PM to 3 PM | B.K.Tapale | 01             | Theory    |
| 15      | 07/03/2020 | Saturday | 2 PM to 3 PM | M.L.K      | 01             | Theory    |
| 16      | 13/03/2020 | Friday   | 2 PM to 5 PM | P.B.Daye   | 03             | Practical |
| 17      | 20/03/2020 | Friday   | 2 PM to 3 PM | J.D.Arote  | 01             | Theory    |
| 18      | 21/03/2020 | Saturday | 2 PM to 3 PM | P.B.Daye   | 01             | Theory    |
| 19      | 27/03/2020 | Friday   | 2 PM to 3 PM | M.L.K      | 01             | Theory    |
| 20      | 03/04/2020 | Friday   | 2 PM to 5 PM | B.K.Tapale | 03             | Practical |
| 21      | 04/04/2020 | Saturday | 2 PM to 3 PM | P.B.Daye   | 01             | Theory    |