



ST. PETER'S COLLEGE OF ENGINEERING & TECHNOLOGY: CHENNAI

Affiliated to Anna University, Chennai & Approved by AICTE
Accredited by NAAC with 'A' Grade & ISO 9001:2015 Certified Institution

22/12/2017

To

The Principal

Respected Sir,

Sub: Permission to conduct Value Added Course - Reg.

The Department of Biotechnology offers a value-added course during the Academic Year 2017-2018 ODD Semester. In this regard, kindly provide permission to conduct the value-added course in accordance with the schedule given below.

Name of the course with code	Date	Duration in Hours	Availability in Curriculum
BT1702- Apiculture	06.01.2018 to 24.02.2018 (Saturday)	33 Hours	No

Thanking you,



Permitted
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Head of the Department
Department of Biotechnology

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BT1702- APICULTURE

Resource Person Details

Dr B.A. Gowrishankar

Associate Professor

Bannari Amman Institute of Technology

Dr.Gowrishankar working as Associate Professor in Department of Biotechnology at Bannari Amman Institute of Technology Head Laboratory for venom peptidomics and Molecular Simulation has completed his B. Tech in Biotechnology, M.S Biotechnology, and Ph.D University Vienna, Austria. Has expertise in working in academic and industrial related projects.

Mail id : arungowrishankar@gmail.com

Phone no :9445262525

HOD - BIOTECH



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BT 1702 -APICULTURE

Course Outcomes (COs)

1. To understand the various techniques available for bee cultivation
2. To understand the potential of bees in market and value add it.

UNIT 1

History of bee keeping: Definition, Bee keeping in world wide, In India. Traditional bee keeping, Modern beekeeping, Urban or backyard beekeeping. **6 Hours**

UNIT 2

Honey bee species and identification: Introduction to honey bee; Origin, systematics and distribution; Types of honey bees, Species of honey bees. Bee identification. **6 Hours**

UNIT 3

Social organization in honey bees: Colony life and social organization – Queen, drone, worker. Annual biological cycle of the bee colony. Role of Central Honey Bee Research & Training Institute. **10 Hours**

UNIT 4

Communication in honey bees: Bee learning and communication – Learning - Color learning in honeybees, Color discrimination, Color learning rates and preferences, Color memory, Timing in color learning, Neurobiology of color vision; Communication - Odor plume, Trophallaxis, **10 Hours**

References:

- Dewey M. Caron, 2013. Honey Bee Biology and Beekeeping, Revised Edition. Wicwas Press, Kalamazoo.
- Pradip V Jabde, 1993. Text Book of Applied Zoology: Vermiculture, Apiculture, Sericulture, Lac Culture, Agricultural Pests and their Controls. Discovery Publishing House, New Delhi. Eva Crane, 1999. The World History of Beekeeping and Honey Hunting. Routledge, India.
- Ted Hooper, 2010. Guide to Bees & Honey: The World's Best Selling Guide to Beekeeping. Northern Bee Books, Oxford.




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BT1702- Apiculture Value added Course Schedule

Date	Hours	Title of the Course	Resource Person
06/01/2018	5 Hrs	History of bee keeping Traditional bee keeping Modern beekeeping Urban or backyard beekeeping	Dr. B.A Gowrishankar
20/01/2018	5 Hrs	Honey bee species Identification origin systematic Distribution	Dr. B.A Gowrishankar
27/01/2018	5 Hrs	Types of honey bees Species of honey bees Bee identification	Dr. B.A Gowrishankar
03/02/2018	5 Hrs	Social organization in honey bees Colony life and social organization Queen, drone, worker	Dr. B.A Gowrishankar
10/02/2018	5 Hrs	Annual biological cycle op the bee colony Role of Central Honey Bee Research & Training	Dr. B.A Gowrishankar
17/02/2018	5 Hrs	Communication in honey bees: Bee learning and communication Learning - Color learning in Honeybees Color discrimination Color learning rates and preferences Color memory	Dr. B.A Gowrishankar
24/02/2018	2 Hrs	Timing in color learning Neurobiology of color vision Communication - Odor plume Trophallaxis	Dr. B.A Gowrishankar
24/02/2018	1 Hr	Assessment	Mrs.K.Chitrakala


Course Coordinator




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DEPARTMENT OF BIOTECHNOLOGY

BT1702 – APICULTURE

Date:

Multiple Choice Questions

1. The generic name of which of these is Apis?
 - a) Fish
 - b) Honey bee
 - c) Lac insect
 - d) Prawn
2. Apis dorsata is used to refer to
 - a) Little bee
 - b) Indian bee
 - c) European bee
 - d) Rock bee
3. Nature of honey is
 - a) Acidic
 - b) Alkaline
 - c) Neutral
 - d) Turns basic after a few days
4. Honey is
 - a) Nectar of a flower
 - b) Nectar stored in the honey sac
 - c) Nectar mixed with saliva and stored in the honey sac
 - d) Nectar and water sucked by honey bee
5. Which of the following is not a differentiation of worker bees?
 - a) Builder bees
 - b) Nurse bees
 - c) Sanitary bees
 - d) Drones
6. The development of a male bee (drone) takes how long?
 - a) 16 days
 - b) 19 days
 - c) 22 days
 - d) 24 days
7. Which of the following species of the honey bee is not found in India?




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DEPARTMENT OF BIOTECHNOLOGY

- a) Apis mellifera
 - b) Apis dorsata
 - c) Apis indica
 - d) Apis florea
8. Who is the inventor of langstroth bee hive?
- a). Alex Harry.
 - b). Lorenzo Lorraine.
 - c). Francois Huber.
 - d). Dr. J. Dzierzon.
9. Which of the following hormone is secreted by Queen of honey bees?
- a) Bombykol
 - b) Trail pheromone
 - c) Antiquen pheromone
 - d) Copulin
10. For how long does a worker bee live in the summer?
- a) For 2 weeks
 - b) For 2 months
 - c) For 4 months
 - d) For 6 months
11. Which of the following bees does the tail-wagging dance?
- a) Scout bees
 - b) Nurse bees
 - c) Builder bees
 - d) Sanitary bees
12. What is the role of a drone bee?
- a). Attacking on enemies.
 - b). To protect bee hive.
 - c). Both a and b.
 - d). To mate with virgin queen.
13. Where do honey bees live?
- a) Colony
 - b) Hives
 - c) Desert
 - d) House




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DEPARTMENT OF BIOTECHNOLOGY

14. What is the scientific name of bumble bee?

- a). *Bombus lapidarius*.
- b). *Xylocopa violacea*.
- c). *Xylocopa amethystina*.
- d). None of the above.

15. A person who keeps bee for honey and other product..

- a). Beekeeper.
- (b). Apiarist.
- c). Both a and b.
- d). None of the above.

16. beeswax consists of..

- a). Fatty acids.
- b). Lactic acid.
- c). Oxalic acid.
- d). Formic acid.

17. A honeycomb is..

- a). Triagonal prismatic wax cell.
- b). Pentagonal prismatic wax cell..
- c). Octagonal prismatic wax cell.
- d). Hexagonal prismatic wax cell.

18. Which of the following is the largest bee?

- a) *Apis dorsata*
- b) *Apis florea*
- c) *Apis indica*
- d) *Apis mellifera*

19. The BS National hive is a form of..

- a). Warre hive.
- b). Top bar hive.
- c). Langstroth hive.
- d). None of the above.

20. Who studies on bee dance?

- a). Biologist.
- b). Entomologist.
- c). Ethologist.
- d). All of the above.




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DEPARTMENT OF BIOTECHNOLOGY

21. Bee dance is also known as?

- a). Western dance.
- b). Flee dance.
- c). Happy dance.
- d). Waggle dance

22. The first scientist to translate the meaning of bee dance.

- a). Jurgen Tautz
- b). Karl von Frisch.
- c). Ferdinand de Saussure.
- d). Gould J. L

23. What is the scientific name of bumble bee?

- a). *Bombus lapidarius*.
- b). *Xylocopa violacea*.
- c). *Xylocopa amethystina*.
- d). None of the above.

24. Nobel prize winner for the discovery of method of interpersonal communication in honey bees is

- a). Von Frisch.
- b). H.GKhorana.
- c). Hervey.
- d). None of the above.

25. If honey bee is conveyed an information, round dance then the distance of source will be about

- a). 10 meters.
- b). 50 meters.
- c). 100 meters.
- d). 2000 meters.



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BT 1702 APICLUTURE

ANSWER KEY

1	B	11	A	21	B
2	D	12	D	22	B
3	A	13	B	23	A
4	C	14	A	24	A
5	D	15	C	25	B
6	D	16	A		
7	A	17	D		
8	B	18	A		
9	C	19	C		
10	B	20	C		




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BT 1702 APICULTURE

Value added Course Feedback Form

Name of the Student : Divya Priya.S

Date : 24/2/2018

S.No	Questions	Grading Level				
		1	2	3	4	5
1	The instructor was well prepared for class					✓
2	The instructor was organized, well prepared, and used class time efficiently					✓
3	The instructor presented course material in a clear manner that facilitated understanding				✓	
4	This class has increased my interest in this field of study				✓	
5	The readings were appropriate to the goals of the course				✓	
6	I have put a great deal of effort into advancing my learning in this course				✓	
7	I would highly recommend this course to other students				✓	
8	The grading practices were fair				✓	

Grading level

Excellent-5

Very good-4

Good- 3

Fair-2

Satisfactory-1

Any other suggestions:

The course was nice.




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BT 1702 APICULTURE

Value added Course Feedback Form

Name of the Student : ASUMITHRA.C (112716214004)

Date : 24/02/2018

S.No	Questions	Grading Level				
		1	2	3	4	5
1	The instructor was well prepared for class				✓	
2	The instructor was organized, well prepared, and used class time efficiently					✓
3	The instructor presented course material in a clear manner that facilitated understanding				✓	
4	This class has increased my interest in this field of study				✓	
5	The readings were appropriate to the goals of the course				✓	
6	I have put a great deal of effort into advancing my learning in this course				✓	
7	I would highly recommend this course to other students				✓	
8	The grading practices were fair				✓	

Grading level

Excellent-5

Very good-4

Good- 3

Fair-2

Satisfactory-1

Any other suggestions:

The course was good and interesting one.

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BT 1702 APICULTURE

Value added Course Feedback Form

Name of the Student : Mathi Mozhi R (112716214015)

Date : 24-02-2018

S.No	Questions	Grading Level				
		1	2	3	4	5
1	The instructor was well prepared for class				✓	
2	The instructor was organized, well prepared, and used class time efficiently					✓
3	The instructor presented course material in a clear manner that facilitated understanding				✓	
4	This class has increased my interest in this field of study					✓
5	The readings were appropriate to the goals of the course				✓	
6	I have put a great deal of effort into advancing my learning in this course				✓	
7	I would highly recommend this course to other students				✓	
8	The grading practices were fair					✓

Grading level

Excellent-5

Very good-4

Good- 3

Fair-2

Satisfactory-1

Any other suggestions:

..... The course was Intractive
and interesting.....
.....
.....




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Value added Course Feedback Form

Name of the Student : Aishwarya S (12726214001)
Date : 24/02/2018

S.No	Questions	Grading Level				
		1	2	3	4	5
1	The instructor was well prepared for class					✓
2	The instructor was organized, well prepared, and used class time efficiently					✓
3	The instructor presented course material in a clear manner that facilitated understanding				✓	
4	This class has increased my interest in this field of study				✓	
5	The readings were appropriate to the goals of the course				✓	
6	I have put a great deal of effort into advancing my learning in this course			✓		
7	I would highly recommend this course to other students				✓	
8	The grading practices were fair				✓	

Grading level

Excellent-5

Very good-4

Good- 3

Fair-2

Satisfactory-1

Any other suggestions:

The course is very interesting




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BT 1702 APICULTURE

Value added Course Feedback Form

Name of the Student : Prakash GP (112716214019)

Date : 24-2-2018

S.No	Questions	Grading Level				
		1	2	3	4	5
1	The instructor was well prepared for class				✓	
2	The instructor was organized, well prepared, and used class time efficiently					✓
3	The instructor presented course material in a clear manner that facilitated understanding				✓	
4	This class has increased my interest in this field of study				✓	
5	The readings were appropriate to the goals of the course				✓	
6	I have put a great deal of effort into advancing my learning in this course			✓		
7	I would highly recommend this course to other students				✓	
8	The grading practices were fair				✓	

Grading level

Excellent-5

Very good-4

Good- 3

Fair-2

Satisfactory-1

Any other suggestions:

.....The course was interactive and informative.....

.....

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DEPARTMENT OF BIOTECHNOLOGY

Mathi Mozhi R
112716214015

BT1702 – APICULTURE

Date: 2A-02-2018

Multiple Choice Questions

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- a) Fish
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23

25

2. Apis dorsata is used to refer to

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14. What is the scientific name of bumble bee?

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- b). *Xylocopa violacea*.
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- b). Karl von Frisch.
- c). Ferdinand de Saussure.
- d). Gould J. L

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- b). H.GKhorana.
- c). Hervey.
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- a). 10 meters.
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BT1702- Apiculture


Value added Course Mark Sheet

S. No.	Register Number	Name of the Student	Marks (100)
1	112716214001	Aishwarya S	96
2	112716214002	Anitha S	96
3	112716214003	Arya P N	92
4	112716214004	Asumithra C	68
5	112716214005	Bharathi Kannan R	76
6	112716214006	Devaraj R	68
7	112716214007	Dharshini G	68
8	112716214008	Dhivya Priya S	80
9	112716214009	Harish M	84
10	112716214010	Kavitha Abirami S	88
11	112716214011	Kerthika Devi A	88
12	112716214012	Kiruthiga T	92
13	112716214013	Kousika Y	96
14	112716214014	Lakshana S	92
15	112716214015	Mathi Mozhi R	92
16	112716214016	Merjin Deepa J G	96
17	112716214017	Prabakaran S	80
18	112716214018	Pragathi M	80
19	112716214019	Prakash G P	84
20	112716214020	Priya B	88
21	112716214021	Priyanka R	88
22	112716214022	Ramana Murthy K V	92
23	112716214023	Ranu A	96
24	112716214025	Sahil Kumar S	96
25	112716214026	Selvamari P	92
26	112716214027	Simran S	88
27	112716214028	Subash S	84
28	112716214030	Valarmathi R	84
29	112716214031	Varsha V	88
30	112716214032	Vidhula S	72
31	112716214033	Yogananda Balaji K	76
32	112716214034	Yogeswar M	68

No of Students getting more than 70%	29
% of Students getting more than 70%	90.6%

CO Attainment: Course is successfully completed with the Attainment Level 1




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Rubrics:

Assessment Level	CO's Percentage	Performance	Remarks
Level 1	90-100%	Excellent	All important info adequately delivered and shows proficient understanding of the subject matter
Level 2	80-90%	Very good	Most of the important info are delivered and shows adequate understanding of the subject matter
Level 3	70-80%	Good	Some of the important info are delivered and shows a basic understanding of the subject matter
Level 4	50-70%	Needs work	Some of the important info are delivered but doesn't show adequate understanding of the subject matter
Level 5	<50%	Poor	None of the important info are delivered and failed to show an understanding of the subject matter

Course Coordinator

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Principal

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