

GOVT. COLLEGE FOR WOMEN, PARADE GROUND, JAMMU-180001, J&K.

(Erstwhile Maharani Mahila College)

Autonomous College affiliated to the University of Jammu

College with Potential for Excellence, 2016

(Estd. 1944)



Programme	U.G.
Semester	6
Nature of course	Theory
Credits	4
Course Title	Entrepreneurship in zoology
Course Code	UZOMJT-601
Maximum Marks	100
Minimum Pass Marks	36
Duration of final exam (hrs.)	3

✓ **Course Learning Objectives:**

This course has been designed to enable the students to gain an insight on the paths that lead to the success of any entrepreneurship on live animals and birds.

The course aims at enabling the students to establish themselves as entrepreneurs instead of job seekers.

✓ **Course Learning Outcome:**

After completion of the course the students will be able to:

1. Identify the cultivable food fish and ornamental fish species.
2. Comprehend integrated and composite fish farming.
3. Set up and maintain an aquarium.
4. Know about various fish preservation techniques.
5. Identify the cultivable bee and silk worm species.
6. Know about all the products related to Apiculture and Sericulture.
7. Identify the culturable poultry and dairy breeds.
8. Prepare a proposal for setting up of various farms.

✓ **Course contents:**

Unit I Food and Ornamental Fishes

Teaching hours: 12 hours

1.1 Food Fish:

1.1.1. Concept of major and minor carps:

- (i) Indian Minor and Major Carps
- (ii) Exotic Carps and Cat fishes

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1.1.2 Importance of fish and fish products

1.1.3 Composite fish culture

1.1.4 Fish preservation techniques

1.2 Ornamental Fishes:

1.2.1 Introduction to ornamental fishes: Concept of exotic and indigenous ornamental fishes with reference to their morphology, behaviour of fish in aquarium and compatibility:

(i) Fresh water ornamental fishes: Angel fish, Oscar fish, Guppies, Mollies, Betta, Arowana, Koi Carp, Gold fish

(ii) Marine ornamental fishes: Moorish idol fish, Anemone fish, Butterfly fish

(iii) Local ornamental fishes: *Puntius spp.*, *Xenentodon*, *Notopterus*, *Rasbora*, *Botia*, *Heteropneustes*, *Danio rerio*, *D. devario*, *Osteobrama*, *Trichogaster*.

1.2.2. Importance of Aquarium Fish Keeping.

1.2.3 Types of Aquarium and Aquarium accessories.

1.2.4 Maintenance of an aquarium.

Unit II Live stock management

12 hours

2.1 Poultry:

2.1.1 Identification of poultry birds

2.1.2 Different types of poultry farming

2.1.3 Layout and management of poultry houses

2.1.4 Poultry feed classification and principles of feeding

2.2. Dairy:

2.2.1 Exotic Dairy breeds

2.2.2 Indigenous Dairy Breeds

2.2.3 Feeding and management of different categories of farm animals

2.2.4 Methods to improve reproductive efficacy

Unit III Entrepreneurship in Apiculture and Sericulture

12 hours

3.1 Apiculture:

3.1.1 Types of economically important Honey bees: identification and behaviour

3.1.2 Selection of bee species for apiculture

3.1.3 Artificial bee rearing (Newton and Langstroth box)

3.1.4 Modern Bee Keeping Equipment and Methods

3.1.5 Products of Apiculture Industry and its uses

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3.2 Sericulture:

3.2.1 Types of Silk worms: Exotic and indigenous races and distribution

3.2.2 Mulberry and non mulberry sericulture

3.2.3 Silkworm rearing,; rearing house and rearing appliances

3.2.4 Types of silk; Various products of silk industry and their uses

- UnitIV(Integrated farming / Cottage Industries) 12 hours
 - 4.1 Bioflocs
 - 4.2 RAAS
 - 4.3 Aquaponics: various models
 - 4.4 Integrated Farming
 - 4.5 Concept of cottage industry
- Unit V (Govt Schemes/ Proposal writing) 12 hours
 - Preparing Proposals (Layout and Budget for financial Assistance and funding agencies)
- ✓ **References / Suggested Readings:**

Examination pattern for a 4-credit course shall be as under:

Internal Assessment:

1. 20 marks shall be earmarked for internal assessment (5 marks for attendance + 15 for assessment test).
2. Scheme for award of marks for attendance shall be the same as is being followed by the College.

External Examination:

Total marks: 80 Time allowed: 3 hours

The paper shall comprise of 3 Sections:

- Section A: 05 short answer type questions representing all units/syllabi i.e., at least one from each unit having 70-80 words and having 03 marks each. (All Compulsory)
- Section B: 05 medium answer type questions representing all units/syllabi i.e., at least one from each unit having 250-300 words and having 07 marks each. (All Compulsory).
- Section C: 05 long answer type questions representing all units/syllabi (02 to be attempted) with detailed analysis/ explanation to be stated within 500-600 words having 15 marks each.

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Committee members (External)

1	Prof. (Dr.) Seema Langer, Head, Department of Zoology & Dean, Life Sciences, University of Jammu	
2	Dr. N. K. Tripathi, Professor (Retd.) Department of Zoology, University of Jammu	
3	Dr. Surya Partap Singh, Assistant Prof. & Head, Department of Zoology, GDC Basholi	
4	Dr. Shvetambri Jasrotia, Assistant Prof., Department of Zoology, Central University of Jammu	
5	Mr. Munish Sharma Assistant Director Fisheries, Jammu.	
6	Col. (Retd.) Sunil Sambyal ,Biofloc Expert & Entrepreneur	

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Programme	U.G.
Semester	6
Nature of course	Practical
Credits	2
Course Title	Entrepreneurship in zoology
Course Code	UZOMJP-604
Maximum Marks	50
Minimum Pass Marks	18
Duration of final exam (hrs.)	3 hrs

Course structure:

Course Learning Objectives: This course has been designed to enable the students to gain a practical insight and a hands-on on the paths that lead to the success of any entrepreneurship on live animals and birds. The course aims at enabling the students to establish themselves as entrepreneurs instead of job seekers.

✓ **Course Learning Outcome:**

After completion of the course, the students are expected to have a know-how of various entrepreneurial ventures that may be taken up by them.

✓ **Course contents:**

The course contents shall be devised as per the syllabi of the theory course. The exercises could be:-

1. Identification of Indigenous Major Carps.
2. Identification of Exotic Major Carps.
3. Identification of Minor Carps.
4. Visit to a fish farm.
5. Identification of marine aquarium fishes.
6. Identification of fresh water aquarium fishes.
7. Identification of local ornamental fishes.
8. Visit to an aquarium at Bagh-e-bahu.
9. Identification of indigenous and exotic Dairy breeds.
10. Identification of indigenous and exotic Poultry breeds.
11. Visit to a Dairy farm.
12. Visit to a Poultry farm.
13. Identification of various bee species
14. A visit to an apiary.
15. Identification of various silk worm species
16. A visit to a sericulture farm.

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Note: Students need to prepare reports of the visits

• **Examination pattern:**

Internal evaluation / Continuous evaluation:- 25 marks		
	Component	Marks allotted
1	Report	10 Marks
2	Presentation on any of the topics assigned	10 Marks
3	Attendance	5 marks
External Examination / End-semester examination:- 25 marks		
	Test based on prescribed exercises	25 Marks
Note: To be conducted by the concerned department.		

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