

ANDHRAPRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

REVISED UG SYLLABUS UNDER CBCS

(Implemented from Academic Year - 2020-21)

PROGRAMME: FOUR YEAR B.SC. (Hons)

Domain Subject: ZOOLOGY

Skill Enhancement Courses (SECs) for Semester V, from 2022-23

(Syllabus with Learning Outcomes, References, Co-curricular Activities & Model Q.P. Pattern)

Structure of SECs for Semester-V

(To choose one pair from the four alternate pairs of SECs)

Univ Code	Course Number	Name of Course	Hours/Week Theory +Practical	Credits Theory+ Practical	Marks	
					IA-20 FW- 05	Sem End T+P
	6&7					
	6A	SUSTAINABLE AQUACULTURE MANAGEMENT	3+3	3+2	25	75+50
	7A	POST HARVEST TECHNOLOGY OF FISH AND FISHERIES	3+3	3+2	25	75+50

OR

	6B	LIVE STOCK MANAGEMENT-I (BIOLOGY OF DAIRY ANIMALS)	3+3	3+2	25	75+50
	7B	LIVE STOCK MANAGEMENT -II (DAIRY PRODUCTION AND MANAGEMENT)	3+3	3+2	25	75+50

OR

	6C	POULTRY MANAGEMENT- I (POULTRY FARMING)	3+3	3+2	25	75+50
	7C	POULTRY MANAGEMENT- II (POULTRY PRODUCTION AND MANGEMENT)	3+3	3+2	25	75+50

OR

	6D	SERI CULTURE -I****	3+3	3+2	25	75+50
	7D	SERI CULTURE -II	3+3	3+2	25	75+50

**** To be taught by Zoology Teachers

Note: For Semester-V, for the domain subject Zoology, any one of the four pairs of SECs shall be chosen as courses 6 and 7, i.e., 6A & 7A or 6B & 7B or 6C & 7C or 6D & 7D. The pair shall not be broken (ABCD allotment is random, not on any priority basis).

Note-2: One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate skills related to the domain subject in students. The syllabus of SEC will be partially skill oriented. Hence, teachers shall also impart practical training to students on the skills embedded in syllabus citing related real field situations.

Four – year B.Sc. (Hons)
Domain Subject: ZOOLOGY
IV Year B. Sc.(Hons)–Semester –V

Max Marks:100+50

**Course6 B: LIVE STOCK MANAGEMENT-I
(BIOLOGY OF DAIRY ANIMALS)**
(Skill Enhancement Course (Elective), - Credits: 05)

I. Learning Outcomes:

- Students at the successful completion of the course will be able to
- Select the suitable breeds of livestock for rearing
- Relate the anatomy of udder with letdown of milk
- Identify and manipulate the reproductive behavior of cattle
- Inspect the economics of dairy farming
- Apprise the various breeding techniques employed in livestock

II. Syllabus: *(Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit test etc.)*

Unit 1: Livestock census; Breeds of Dairy cattle, Buffaloes and Goats. Indigenous, Exotic and Crossbred Cattle breeds any three.

Unit 2: Anatomy of Udder; Development of udder; Lacto genesis and Galactopoiesis; Letdown of milk.

Unit 3: Artificial insemination; Oestrous cycle; Symptoms of heat in cows and buffaloes. Conception, Pregnancy diagnosis in cattle. Multi ovulation and embryo transfer technique. Cloning.

Unit 4: Economic traits of Dairy cattle. Methods of selection of dairy animals.

Unit 5: Systems of Dairy cattle breeding. Inbreeding, out breeding, Cross breeding, Grading up. Breeding systems (Cross breeding of cattle and Grading up of buffaloes).

III. References:

1. Textbook of Animal Husbandry-GC Benarjee
2. Handbook of Animal Husbandry –ICAREdition
3. Principles and practices of Dairy Farm–Jagdish Prasad

Web resources:

1. <http://ecoursesonline.iasri.res.in/course/index.php?categoryid=42>
2. <https://vetsebooks.blogspot.com/p/e-books.html>
3. <https://www.basu.org.in/study-materials/veterinary-science/>
4. <https://vikaspedia.in/agriculture/livestock/cattle-buffalo/breeds-of-cattle-buffalo>

Course 6 B: LIVE STOCK MANAGEMENT-I-PRACTICAL SYLLABUS (BIOLOGY OF DAIRY ANIMALS)

IV. Learning Outcomes:

On successful completion of this practical course, student shall be able to

1. Examine the points of dairy cow
2. Understand the behavioral changes of cow during the reproductive period
3. Differentiate the merits and demerits of cross breeds in cattle

V. Practical (Laboratory) Syllabus: (30hrs) (Max. 50 Marks)

1. Points dairy cow. (Explanation with observation of charts- Model evaluation to be performed by the student in the laboratory)
2. Identification of different breeds of dairy cattle and buffaloes. (Observation of Charts of breeds in the laboratory- at least 3 breeds should be identified by the students in their locality with video, photo)
3. Male and female reproductive systems of cow – Model/ Chart (Student has to draw a labeled diagram of the male and female reproductive systems of cow – acquire skill to identify the parts).
4. Symptoms of heat in cow (Study and Understanding the physiological symptoms during heat).
5. Artificial insemination (Flow chart of implements – Procedure-precautions)
6. Pregnancy diagnosis in cattle.
7. Study comparative merits of cows and buffaloes; zebu and cross bred cows (Examination of merits)

VI. Lab References:

1. Principles and practices of Dairy Farm – Jadish Prasad
2. Dairy cow points: <https://www.icar.org/Guidelines/05-Conformation-Recording.pdf>
3. Pregnancy test protocol: <https://cgspace.cgiar.org/bitstream/handle/10568/109408/Milk%20testing%20lab%20protocol.pdf?sequence=1&isAllowed=y>

Web resources suggested by the teacher concerned and the college librarian including reading material

VII. Co-Curricular Activities

a) **Mandatory:** (Lab/ field training of students by teacher : (lab: 10 + field: 05):

1. For Teacher: Training of students by the teacher in laboratory/field for not less than 15 hours on principles and practices of dairy industry- breeds – artificial insemination- reproductive behavior of cows etc. as per the syllabus above.
2. For Student: Students shall individually visit to any of the nearby cattle rearing centers/ veterinary hospital/ Raithu Bharosa Kendra and make observations of the procedure and quality enhancement activities and submit a handwritten Fieldwork/Project work Report in 10 pages.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work Report: *Title page, student details, index page, details of place visited, observations made, findings and acknowledgements*
5. (IE) Unit tests,

b) **Suggested Co-Curricular Activities**

1. Collection of various cattle breed images from the web to prepare album
2. Visit the sites of Veterinary colleges in India and preparation of brief report on the videos and content/ employment details
3. Sketch a model dairy farm with details
4. Invited lecture and presentation on related topics by experts
5. Seminar, Assignment, Group discussion. Quiz, Collection of Material, Invited lecture, Video preparation etc.

Four – year B.Sc. (Hons)
Domain Subject: ZOOLOGY
IV Year B. Sc.(Hons)–Semester –VY

Max Marks:100+50

Course 7B: LIVE STOCK MANAGEMENT -II
(DAIRY PRODUCTION ANDMANAGEMENT)
(Skill Enhancement Course (Elective), - Credits:05)

I. LearningOutcomes:

Students at the successful completion of the course will be able to

- Identify and suggest the suitable housing system for the dairyfarming
- Understand management practices for the dairyfarming
- Learn the process of milkpasteurization
- Prepare cream frommilk

II. Syllabus: *(Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit testsetc.)*

Unit1: Systems of Housing of Dairy cattle- Loose Housing and Conventional Dairy Barns. Drawing of layouts for dairy cattle dwellings; Criteria for selecting site for establishing Dairy farm buildings; Water requirement of dairy animals.

Unit2: Management of different classes of Dairy animals- Milk producing animals, pregnant animals dry animals, heifers and calves. Management practices for Dairy farm; Identification, Dehorning, Castration, Deworming, Vaccination, Disinfection, and Milking.

Unit 3: (a) Pasteurization of milk: Definition, objects of pasteurization, objections to pasteurization, Principles of heat exchange. Methods of pasteurization: LTLT, HTST and Uperization.
(b)Sterilization of milk. Homogenization: Factors influencing homogenization

Unit 4: Market milk: Toned milk, double toned milk, Reconstituted milk, Standardized milk and full cream milk–Standards and methods of manufacture.

Unit 5: Cream: Types of cream, composition, methods of cream separation, gravity and centrifugal methods, types of cream separators, factors affecting fat losses in skim milk and fat percentage in cream.

III. References:

1. Textbook of Animal Husbandry-G C Benarjee
2. Handbook of Animal Husbandry –ICAREdition
3. Principles and practices of Dairy Farm–JagdishPrasad
4. <http://ecoursesonline.iasri.res.in/course/index.php?categoryid=42>
5. <https://vetsebooks.blogspot.com/p/e-books.html>
6. <https://www.basu.org.in/study-materials/veterinary-science/>
7. <https://vikaspedia.in/agriculture/livestock/cattle-buffalo/breeds-of-cattle-buffalo>

Course 7 B: LIVE STOCK MANAGEMENT -II – **PRACTICAL SYLLABUS**
(DAIRY PRODUCTION AND MANAGEMENT)

IV. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

- Design a model dairy farm layout
- Understand procedure of milk pasteurization at milk processing centers
- Identify various important management practices in dairy farming

V. **Practical (Laboratory) Syllabus:** (30hrs) (Max. 50 Marks)

1. Dairy Farm layout (In the laboratory student has to sketch a dairy farm with all its components)
2. Identification of cows (students have to identify the breeds of cows from the images/charts – have to identify any two breeds in the vicinity of the college/ their locality).
3. Dehorning of calves : (Method - protocol-precautions)
4. Castration of bulls (Method – Apparatus-Time-importance)
5. Deworming of dairy cattle : (Schedule – method- benefits)
6. Pasteurization of milk (Batch Method- procedure-Observation)
7. Sterilization of milk (In bottle sterilization- procedure –protocol)
8. Cream separation (By gravity method- procedure- hands on experiment)

VI. Lab References

1. Handbook of Animal Husbandry – ICAR Edition
2. Dairy farm layout : <https://www.youtube.com/watch?v=dmukHUEUvKc>
3. Dehorning procedure : <http://www.omafr.gov.on.ca/english/livestock/dairy/facts/09-003.htm>
4. Castration of bulls: <https://vikaspedia.in/agriculture/livestock/general-management-practices-of-livestock/castration-of-ruminants>
5. Deworming: https://kvk.icar.gov.in/API/Content/PPUpload/k0347_10.pdf
6. Pasteurization of milk : <http://www.jnkvv.org/PDF/08042020170652part%203.pdf>
7. <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=1690>
8. Cream separation: <http://ecoursesonline.iasri.res.in/mod/page/view.php?id=147910>

Web resources suggested by the teacher concerned and the college librarian including reading material

VII. **Co-Curricular Activities**

a) **Mandatory:** (Lab/field training of students by teacher; lab 10+ field:05)

1. For Teacher: Training of students by the teacher in laboratory and field for not less than 15 hours on skills of dairy management – housing-management of dairy animals of various stages- procedure of preparation of marketable milk with procedures like sterilization, pasteurization and other techniques)
2. For Student: Student shall (individually) visit a nearby dairy farm- house hold cattle rearing – make observations on aspects like housing – management – feed- milk- revenue- breed selection- qualities of breed –etc. A handwritten Fieldwork/Project work Report to be submitted in the given format.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work Report: *Title page, student details, index page, details of place visited, observations made, findings and acknowledgements.*
5. (IE) Unit tests.

b) Suggested Co-Curricular Activities

1. Sketch model dairy house with details
2. Web resources on Protocols in the management of stages of cattle
3. Properties of varieties of milk from the market observation
4. Assignment, Seminar, Invited lecture, Group discussion. Quiz, Collection of Material, Video preparation etc.

Suggested Question Paper Pattern
Semester-wise Revised Syllabus under CBCS, 2020-21

Four – year B.Sc.(Hons)
Domain Subject: ZOOLOGY
IV Year B. Sc.(Hons)–Semester –V

Course Code:

Max.Marks:75

Time:3 hrs

SECTION - A(Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)

1.
2.
3.
4.
5.

SECTION - B (Total: 5x5=25Marks)

(Answer any Five questions. Each answer carries 5 marks)

(At least 1 question should be given from each Unit)

6.
7.
8.
9.
10.
11.
12.
13.

SECTION C

(Total: 4x10 = 40 Marks)(Answer any four questions. Each answer carries 10 marks)

(At least 1 question should be given from each Unit)

14.
15.
16.
17.
18.
19.

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Draft Syllabus Prepared by;

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