



**List of Courses Focus on Employability/ Entrepreneurship/  
Skill Development**

**Department : Zoology**

**Programme Name : M.Sc.**

**Academic Year : 2020-21**

**List of Courses Focus on Employability/ Entrepreneurship/Skill**

Sr. No.	Course Code	Name of the Course
01.	LZL 106: Lab Exercises	Mammalian Physiology
02.	LZL 205: Lab Exercises	Biochemistry, Molecular Biology and Regulatory Mammalian Physiology
03.	LZL 206: Lab Exercises	Bio-techniques

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## Scheme and Syllabus

### Semester-wise Theory Papers/ Practical: Masters of Science in Zoology

#### Department of Zoology, School of Life Science

Type of Course	Course Code	Title of the Course	Lecture-Tutorial-Practical / week	No. of credits	Continuous Comprehensive Assessment (CCA)	End-Semester Exam. (ESE)	Total
<b>Semester – I<sup>st</sup></b>							
Core Course 1	LZT 101	Comparative Anatomy of Vertebrates	4	4	40	60	100
Core Course 2	LZT 102	Cell Biology	4	4	40	60	100
Core Course 3	LZT 103	Reproduction and Developmental Biology	4	4	40	60	100
Core Course 4	LZT 104	Basic Mammalian Physiology	4	4	40	60	100
Core Course Practical 1	LZL 105	Lab. Exercises based on courses LZT 101 and 102	6	3	40	60	100
Core Course Practical 2	LZL 106	Lab. Exercises based on courses LZT 103 and 104	6	3	40	60	100
				<b>22</b>	<b>240</b>	<b>360</b>	<b>600</b>
<b>Semester II<sup>nd</sup></b>							
Core Course 5	LZT 201	Biochemistry and Molecular Biology	4	4	40	60	100
Core Course 6	LZT 202	Regulatory Mammalian Physiology	4	4	40	60	100
Core Course 7	LZT 203	Endocrinology	4	4	40	60	100
Core Course 8	LZT 204	Biotechniques	4	4	40	60	100
Core Course Practical 3	LZL 205	Lab. Exercises based on course LZT 201 and 202	6	3	40	60	100
Core Course Practical 4	LZL 206	Lab. Exercises based on course LZT 203 and 204	6	3	40	60	100
				<b>22</b>	<b>240</b>	<b>360</b>	<b>600</b>
<b>Semester III<sup>rd</sup></b>							
Core Course 9	LZT 301	Molecular Genetics	4	4	40	60	100
Core Course 10	LZT 302	Animal Behavior	4	4	40	60	100

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Department of Zoology, GGV, Bilaspur (CG)

SEMESTER I

**LZI. 106: LAB EXERCISES**

(Based on papers LZI 103 and LZI 104)

**Developmental Biology**

1. Study of frog embryonic development through models
2. Collection of frog spawns and observation of different developmental stages
3. Study of spiral cleavage in eggs of snail
4. Effect of vitamin A in tadpole tail regeneration
5. Study of embryonic development in chick through slides
6. Window preparation to study chick embryo development
7. Whole mount preparation of chick embryos at various stages of development
8. Study of expression of developmental genes in larval imaginal discs

**Mammalian Physiology**

1. Preparation of casein from milk
2. Glucose estimation
3. Amylase assay in the given sample
4. Determination of blood groups (ABO and Rh factor)
5. Erythrocyte counting
6. Total leucocytes counting in blood
7. Study of histological slides: Salivary gland, Liver, Pancreas, Stomach and Intestine.
8. Study of histological slides: Kidney, Heart, Lungs and Skin

Percent Change From Previous Syllabus: 10.0 %

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SK. Sharma

Rajw.

Bhavs



Department of Zoology, GGV, Bilaspur (CG)

SEMESTER II

LZI. 205: LAB EXERCISES  
(Based on papers LZT 201 and LZT 202)

Biochemistry

1. Preparation of extract for enzyme assay (alkaline phosphatase)
2. Study of alkaline phosphatase activity
3. Standard curve preparation
4. Effect of enzyme concentration and determination of total and specific activity
5. Effect of temperature on enzyme activity
6. Effect of time on enzyme activity
7. Effect of substrate concentration on enzyme activity
8. Determination of  $K_m$  and  $V_{max}$  by Michaelis-Menten and Lineweaver-Burk Plot

Molecular biology

1. DNA isolation
2. RNA isolation
3. Reverse transcriptase polymerase chain reaction
4. Western blotting
5. Northern blotting

Regulatory mammalian physiology

1. Study of axial skeleton
2. Study appendicular skeleton
3. Study of brain by model/chart
4. Total and differential leucocytes counting in blood
5. Study of histological slides
6. To study functioning of brain by rotarod
7. To study functioning of brain by light and dark chamber
8. To study functioning of brain by T - Maze

Percent Change From Previous Syllabus: 20.0 %

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S. K. Sharma

Sharma

Sharma





Department of Zoology, GGV, Bilaspur (CG)

SEMESTER II

LZL 206: LAB EXERCISES

(Based on papers LZT 203 and LZT 204)

Endocrinology

1. Handling, sexing, numbering and maintenance of rat
2. General survey of endocrine glands in rat
3. Study of vaginal smear preparation in rat
4. Study of the following using permanent slides:
  - a. Endocrine glands and reproductive organs of rat
  - b. Gonads (testis and ovary from fish to birds)
  - c. Thyroid of fish (pharyngeal and ectopic) and reptile
  - d. Adrenal homologues (interrenal and chromaffin tissues) in fish and reptile
  - e. Cell types pituitary
  - f. Hypothalamo-neurohypophysial system
5. Demonstration of frog metamorphosis by models and charts
6. Demonstration of ELISA-based hormone assay

Biotechniques

1. Principle and working of centrifuges using yeast cells.
2. Principle and working of paper chromatography
3. Principle and working of spectrophotometer
4. Cell counting using hemocytometer (by using suitable stain)
5. Demonstration of agarose gel electrophoresis for DNA.
6. Fixation, block preparation, staining and identification of given samples.
7. Demonstration of ELISA for hormonal assay
8. Study and interpretation of electron micrographs/ photographs showing
  - a) DNA replication
  - b) Transcription
  - c) Split genes

Percent Change From Previous Syllabus: 40.0 %

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