1.1.2

List of Employability/ Entrepreneurship/ Skill Development Courses with Course Contents

Colour Codes		
Name of the Subjects	Yellow	
Employability Contents	Green	
Entrepreneurship Contents	Light Blue	
Skill Development Contents	Pink	

List of Courses Focus on Employability/ Entrepreneurship/ Skill Development

Department : *Zoology*

Programme Name : *B. Sc*

Academic Year : 2021-22

List of Courses Focus on Employability/ Entrepreneurship/Skill

Sr. No.	Course Code	Name of the Course
01.	ZOPALT3	Biochemistry and Molecular Biology
02.	ZOPALT3	Basic Mammalian Physiology
03.	ZOPBLT1	Animal Behaviour
04.	ZOPBLT3	Endocrinology
05.	ZOPCLT4	Regulatory Mammalian Physiology

विभागाध्यक्ष
HEAD
जन्तु विज्ञान विभाग
Department of Zoology
गुरु घासीदास वि.वि., बिलासपुर
Guru Ghasidas Vishwavidyalaya, Bilaspur

Scheme and Syllabus

Semester-wise Theory Papers/ Practical
Masters of Science in Zoology (CBCS)
Department of Zoology, School of Life Science

Course Opted	Course Code	Name of the Course	T-L-D /Week	Credits	CCA	ESE	Total
		Semester – I					
CC 1	**ZOPATT1**	Comparative Anatomy of Vertebrates	T-4	4	40	60	100
CC 1	**ZOPALT1**	Comparative Anatomy of Vertebrates	L-2	1	20	30	50
CC 2	**ZOPATT2**	Cell Biology and Genetics	T-4	4	40	60	100
CC 2	**ZOPALT2**	Cell Biology and Genetics	L-2	1	20	30	50
CC 3	**ZOPATT3**	Biochemistry and Molecular Biology	T-4	4	40	60	100
CC 3	**ZOPALT3**	Biochemistry and Molecular Biology	L-2	1	20	30	50
CC 4	**ZOPATT4**	Basic Mammalian Physiology	T-4	4	40	60	100
CC 4	**ZOPALT4**	Basic Mammalian Physiology	L-2	1	20	30	50
			24H/W	**20**	**240**	**360**	**600**
		Semester II					
CC 5	**ZOPBTT1**	Animal behaviour	T-4	4	40	60	100
CC 5	**ZOPBLT1**	Animal behaviour	L-2	1	20	30	50
CC 6	**ZOPBTT2**	Developmental Biology	T-4	4	40	60	100
CC 6	**ZOPBLT2**	Developmental Biology	L-2	1	20	30	50
CC 7	**ZOPBTT3**	Endocrinology	T-4	4	40	60	100
CC 7	**ZOPBLT3**	Endocrinology	L-2	1	20	30	50
CC 8	**ZOPCTT4**	Regulatory Mammalian Physiology	T-4	4	40	60	100
CC 8	**ZOPCLT4**	Regulatory Mammalian Physiology	L-2	1	20	30	50
			24H/W	**20**	**240**	**360**	**600**
		Semester III					
OE1	**ZOPCTO1**	Fundamental of Public Health	T-4	4	40	60	100
OE1	**ZOPCLO1**	Fundamental of Public Health	L-2	1	20	30	50
OE 2	**ZOPCTO2**	Brain function and Mental Awareness	T-4	4	40	60	100
OE 2	**ZOPCLO2**	Brain function and Mental Awareness	L-2	1	20	30	50
DSE: 1	**ZOPCTD1**	Evolution, Environmental Biology and Sustainable Development	T-4	4	40	60	100
DSE: 1	**ZOPCLD1**	Evolution, Environmental Biology and Sustainable Development	L-2	1	20	30	50
DSE: 2	**ZOPCTD2**	Biotechniques	T-4	4	40	60	100
DSE: 2	**ZOPCTD2**	Biotechniques	L-2	1	20	30	50
			24H/W	**20**	**240**	**360**	**600**
		Semester IV					
RM	**ZOPDTA1**	Research Methodology	T-4	4	40	60	100
DSE: A	**ZOPDTD1**	Biochemistry of Intermediary Metabolism and Enzymology	T-4	4	40	60	100
DSE: A	**ZOPDLD1**	Biochemistry of Intermediary Metabolism and Enzymology	L-2	1	20	30	50
DSE: A	**ZOPDTD2**	Molecular Biology of Information Pathway: Nucleic Acids	T-4	4	40	60	100
DSE: A	**ZOPDLD1**	Molecular Biology of Information Pathway: Nucleic Acids	L-2	1	20	30	50

Department of Zoology, GGV, Bilaspur (CG)

SEMESTER I
CORE COURSE 3

ZOPALT3: BIOCHEMISTRY AND MOLECULAR BIOLOGY

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 Km and Vmax by Michaelis-Menten and Lineweaver-Burk Plot
9. DNA isolation
10. RNA isolation
11. Reverse transcriptase polymerase chain reaction
12. Western blotting
13. Northen blotting

Course Objective:
To build comprehensive working knowledge of biomolecules and their role in specific molecular transformations.To enable the students to develop an integrated approach for understanding the various life science problem at the molecular level.

Course Outcomes:
Students will recognize and interpret the structural and functional aspects of molecules and their interactions that give rise to the supramolecular complexes such as organelles and cells.Students will have the ability to perform laboratory techniques used in molecular biology and biochemistry.

Percent Change From Previous Syllabus: 05.00 %

Department of Zoology, GGV, Bilaspur (CG)

SEMESTER I
CORE COURSE 4

ZOPALT4: BASIC MAMMALIAN PHYSIOLOGY

1. Study of histological slides: Salivary gland, Liver, Pancreas, Stomach and Intestine.
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: Kidney, Heart and Lungs
8. Study of Kidney, Heart and Lungs with models/PPT
9. Assessment of kidney function test

Course Objective:
To study morphological, structural, functional and metabolic aspects of mammals.
To create awareness among students about their health.

Course Outcomes:
Students will understand the physiochemical basis of how each system operates and build also they will understand the functioning of each system. The knowledge can be applied to the understanding of everyday activities of human body.

Percent Change From Previous Syllabus: 05.00 %

Department of Zoology, GGV, Bilaspur (CG)

SEMESTER II
CORE COURSE 5

ZOPBLT1: ANIMAL BEHAVIOUR

1. Study of individual and social behavioral patterns of a troop of monkeys.
2. Courtship behavior in the fruit fly.
3. Study the different behavior of laboratory rats.
4. Nest making behavior of birds.
5. Habitat preference behavior in insects.
6. Habituation in earthworms/mosquito larvae.
7. Locomotory behavior of dipteran larvae (fruit fly): Locomotion on different types of substrata (writing paper, plastic sheet and sand paper) & Effects of light intensity and light quality on the rate of locomotion.
8. Study of interspecific association between cattle and egrets.
9. Territorial behavior in stray dogs.

Course Objective:
Ethology focuses on behavior under natural conditions, and viewing behavior as an evolutionarily adaptive trait. Understanding how genes and the environment come together to shape animal behavior is also an important underpinning of the field. Genes capture the evolutionary responses of prior populations to selection on behavior.

Course Outcomes:
Students will understand the ways how animal interact with other organisms and the physical environment.

Percent Change From Previous Syllabus: 50.0 %

Department of Zoology, GGV, Bilaspur (CG)

SEMESTER II
CORE COURSE 7

ZOPBLT3: 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-neurohypophsial system
5. Demonstration of frog metamorphosis by models and charts
6. Demonstration of ELISA-based hormone assay

Course Objective:
To explain new hormones are synthesized, secreted and different from other physiological secretion. Their role in regulation of homeostasis of all physiological process via autocrine, paracrine, and endocrine modes of delivery, following negative and positive feedback mechanism. It also explains molecular mechanism of hormonal action based on the types of receptor.

Course Outcomes:
It will explain various endocrinological principle which helps in determination of pathophysiological basis and consequences of specific endocrine disorder.

Percent Change From Previous Syllabus: 20.0 %

Department of Zoology, GGV, Bilaspur (CG)

SEMESTER II
CORE COURSE 8

ZOPBLT4: REGULATORY MAMMALIAN PHYSIOLOGY

1. Study of skin with the help of chart and models
2. Study of muscle with the help of chart and models
3. Study of appendicular skeleton system with the help of model
4. Study of axial skeleton system with the help of model
5. Total and differential leucocytes counting in blood
6. Study of histological slides
7. Study of brain by model/chart
8. To study functioning of brain by rotarod
9. To study functioning of brain by light and dark chamber

Course Objective:
To study physiological and metabolic aspects of systems and their regulations.
To study the interaction between immune systems and their components with various systems of the body.

Course Objective:
To explain new hormones are synthesized, secreted and different from other physiological secretion. Their role in regulation of homeostasis of all physiological process via autocrine, paracrine, and endocrine modes of delivery, following negative and positive feedback mechanism. It also explains molecular mechanism of hormonal action based on the types of receptor.

Course Outcomes:
It will explain various endocrinological principle which helps in determination of pathophysiological basis and consequences of specific endocrine disorder.

Course Outcomes:
Students acquire knowledge about how immune system communicates with different systems of the body. Different sensory systems works and how they affect behavior.

Percent Change From Previous Syllabus: 10.00 %