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	P.G.
Semester	**3**
Nature of course	**Theory**
Credits	**4**
Course Title	**Animal Physiology**
Course Code	**PSZOTC-310**
Maximum Marks	**100**
Minimum Pass Marks	**36**
Duration of final exam (hrs.)	**2.5**

Syllabus for the examination to be held in December 2024, December, 2025 and December, 2026

- ✓ **Course Learning Objectives:**

• The course in animal physiology has been designed to familiarize students with the functional mechanisms of the organs and organ systems and their regulation.

• The course will also acquaint the learners with various functional disorders seen at various levels in an organism.

- ✓ **Course Learning Outcome:**

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

1. Understand the concept of digestion and absorption in humans.
2. Comprehend main disorders of absorption and their control.
3. Understand about the process of erythropoises and origin of heart beat.
4. Understand about the adaptation of animals during hypothermia and hyperthermia.
5. Understand the concept of excretion and impulse transmission.
6. Comprehend the concept of muscle contraction.
7. Understand the significance of a healthy gut
8. Identify the symptoms of depression and deal with the same
9. Know how to maintain mental health

- ✓ **Course Content:**

UNIT-I : Digestion and absorption **12 hours**

1.1 Digestion, advantages and digestive coefficient

1.2 Process of digestion & its control

1.2.1 Salivary digestion

1.2.2 Gastric digestion

1.2.3 Intestinal digestion digestive enzymes

1.2.4 Movements in GIT

1.3 Absorption in GIT

1.3.1 Carbohydrates

1.3.2 Amino acids

1.3.3 Lipids

1.4 Disorders of Malabsorption

1.5 Choking: symptoms, effects on the body, causes and prevention

1.6 Significance and maintenance of a healthy gut.

1.7 Effects of stress on Gut

Unit-II: Blood and Cardiophysiology **12 hours**

2.1 Blood

2.1.1 Composition of blood and its Functions

2.1.2 Concept of Erythropoises, process and factors influencing it

2.1.3 Biosynthesis of Haemoglobin, types of Haemoglobin and functions

2.1.4 Blood coagulation, pathways and clotting factors

2.1.5 Blood groups and transfusion

2.1.6 Bleeding and thrombosis

2.2 Human Heart

2.2.1 Heart and its structure

2.2.2 Working of human heart

2.2.2.1 Heart beat in mammals

2.2.2.2 Origin, rhythmicity and conduction

2.2.2.3 Nervous and chemical regulation

2.2.3 Electrocardiogram and significance

2.2.4 Events in Cardiac cycle (Pressure – volume changes) in man

2.2.5 Arterial blood pressure, concept, measurement and control

Unit-III : Respiratory Physiology **12 hours**

3.1 Regulation of respiration in humans

3.1.1 Respiratory Centre in Medulla Oblongata; Nervous regulation of respiration

3.1.2 Chemical regulation: role of CO_2, O_2, H^+ in rate of respiration

3.1.3 Voluntary control of respiration

3.2 Respiratory responses to hypercapnia and hypoxia

3.3 High altitude and hypoxia

3.4 Reflexes of respiration

3.5 Asthma and its management

3.6 Exercise and respiratory adaptations

Unit-IV: Excretory and Neurophysiology **12 hours**

4.1 Excretory physiology

4.1.1 Detailed structure of nephron

4.1.2 Glomerular functions

4.1.3 Tubular functions

4.1.4 The rennin angiotensin system

4.1.5 Acidosis and Alkalosis

4.2 Neurophysiology

4.2.1 Neuron doctrine and nerve cell organization

4.2.2 Nerve impulse, origin and propagation, Ion channels

4.2.3 Synapsis and transmitters

4.2.4 Neurophysiology of audition in humans

4.2.4 Physiology of depression

4.2.6 Management of mental health

Unit-V: Structural basis of contraction **12 hours**

5.1 Muscle: Types, their gross structure

5.1.1 Hierarchy and skeletal muscle organization (vertebrates)

5.1.2 Myofibrils: Ultra- structure

5.1.3 Chemical composition of myofibril

5.2. Sliding, filament theory and cross bridge activity

5.2.1 Contraction cycle

5.2.2 Excitation- contraction coupling

5.2.3 Cross-bridge attachment and muscle contraction

5.2.4 Energy cycle, role of ATP and phosphagen

5.3 Muscle health

5.3.1 Muscular diseases along with aging and their management

5.3.2 Maintenance of muscle health

✓ **Suggested Readings:**

1. Dennis, W. Wood (1970). Principles of Animal Physiology. Amold, Publ. Ltd., London.

2. Malcolin & Gorden. (1977). Animal Physiology: Principles and Adaptation. Mecmillan Publ. Co. New York.

3. Nagabhushnam. (1993), Textbook of Animal Physiology. Oxford & IBH Publ. Co. Pvt. Ltd.

4. Louw. (1993). Physiological Animal Ecology. Langman House, Burnt Mill, Harlow, England.

5. Randall, Burggren and French. (2000). Eckert Animal Physiology Mechanisms and Adaptations. W.H.Freeman and Co. New York.

6. Guyton and Hall. (2013). Textbook of Medical Physiology.

7. K. Sembulingam and Prema Sembulingam. (2016). Essentials of Medical Physiology, 7th edition.

NOTE FOR PAPER SETTING

Examination Theory	Syllabus to be covered in examination	Time allowed for Exam	% weightage (Marks)
Minor Test I	Upto 20%	1 Hr.	20
Minor Test II	21% to 40%	1 Hr.	20
Major Test	41% to 100%	2Hrs. & 30 Mins.	60

Major Test will have two sections A & B.

• SECTION 'A' shall comprise of 5 multiple choice questions of 1 mark each and 5 short answer type questions of 2 marks each. (Total 15 marks)

• SECTION 'B' shall comprise of 6 questions, two questions from each unit from the remaining three units. Each question carries 15 marks. Students will attempt three questions selecting one question from each unit. Total (45 marks)

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)

Lab Course 1 **Course Code: PSZOPC-315**

List of Practicals for Animal Physiology

Credits-02

1. To study the effect of physical activity on Heart rate
2. To measure and compare reaction time (reflex response) under different conditions
3. To explore lung capacity and breath-holding ability.
4. To measure flexibility and range of motion.
5. To evaluate balance and coordination
6. Estimation of Hemoglobin content in a given blood sample.
7. Study of Blood groups (ABO)
8. Observation of bleeding time and clotting time in human Blood sample.
9. Permanent slides: Study of Glands associated with digestion, slides of endocrine glands, Kidneys, Brian, Spinal cord etc.
10. Use of sphygmomanometer and measurement of Blood Pressure.
11. Study of E.C.G

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. Suraya 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	

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)