

**Course Title:** Exercise Physiology  
**Code Number:** HPE-402  
**Credit Hours:** 03 hrs  
**Pre-Requisites course Requirement/Skills:** Nil

### **Objectives of Course**

At the successful completion of this course students will be able:

- 1) The course has been developed with the objective to provide knowledge of exercise physiology, exercise responses, methods to improve performance, fitness, age and exercise, gender differences, weight control, obesity and exercise environment.

### **Course Contents**

#### **Unit-I Introduction**

- 1.1 Definition and nature of exercise physiology.
- 1.2 Importance of exercise physiology in Physical Education

#### **Unit-II Muscular System and Exercise**

- 2.1 Muscle: Structure and function
- 2.2 Fiber types and biochemistry
- 2.3 Mechanism of Transmission of Nerve Impulse in Muscles
- 2.4 Metabolic fuels for exercise and recovery

#### **Unit-III Cardiovascular System and Exercise**

- 3.1 Muscle blood flow and blood pressure
- 3.2 Work out put, Oxygen consumption and cardiac output.
- 3.3 Training effects on heart, stroke volume and heart rate
- 3.4 Effects of heart disease and old age on athletic performance.

#### **Unit-IV Environment and Exercise**

- 4.1 Acclimatization to heat, cold, altitude
- 4.2 Environmental Hazards in training
- 4.3 Temperature regulations
- 4.4 Exercise and temperature regulation in hot climate
- 4.5 Humid climate (Hyponatrimia)
- 4.6 Hot and dry climate (General Heat Disorders)
- 4.7 Cold climate (Hypothermia, Frostbite and Frostnip etc.)
- 4.8 Air pollution
- 4.9 Environment and Exercise
- 4.10 High altitude effects on exercise

**Unit-V** **Nervous System and Exercise**

- 5.1 Effects of nervous system during exercise
- 5.2 Neuromuscular coordination

**Unit-VI** **Glandular System and Exercise**

- 6.1 General metabolic and endocrine changes
- 6.2 Effects of therapeutic medication
- 6.3 Hormonal changes

**Unit-VII** **Gender Differences**

- 7.1 Exercise and sex differences
- 7.2 Male and Female athletes
- 7.3 Effect on performances and control

**Unit-VIII** **Obesity**

- 8.1 Definition and types
- 8.2 Hazards
- 8.3 Diabetes
- 8.4 Coronary Heart Diseases (CHD)

**Unit-IX** **Respiratory System**

- 9.1 Gaseous exchange
- 9.2 Respiratory volumes
- 9.3 Effects of exercise on respiratory system
- 9.4 Hemoglobin Dissociation Curve

**Teaching Learning strategies**

- a) Inquiry based learning
- b) Cooperative Learning
- c) Multimedia usage
- d) Concrete examples
- e) Think -Pair-Share

**Assessment and Examination**

#	Elements		Details
1	Theory Examination based Assessment		It takes Place at the mid-point of the semester. It is mostly in the form of a test but owing to the nature of the course. The teacher may assess their students based on term paper, research proposal development, field work and report writing etc.

2	Formative Assessment	It is continuous assessment. It includes classroom Participation, attendance, assignments and Presentations, homework, attitude, and behavior, hands on activities, short test, quizzes etc.
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### Recommended Books

1. Kenney, W. L., Wilmore, J., & Costill, D. (2015). *Physiology of sport and exercise 6th edition*. Human kinetics.
2. Ehrman, J., Gordon, P., Visich, P., & Keteyian, S. (Eds.). (2018). *Clinical Exercise Physiology, 4E*. Human Kinetics.
3. Housh, T. J., & Housh, D. J. (2017). *Applied Exercise and Sport Physiology, With Labs*. Routledge.
4. Sharma, J. (2015). *EXERCISE PHYSIOLOGY HEALTH FITNESS AND PERFORMANCE*. Horizon Books (A Division of Ignited Minds Edutech P Ltd).
5. Boone, T. (2014). *Introduction to exercise physiology*. Burlington, MA: Jones & Bartlett Learning.