



Deccan Education Society's

**Fergusson College (Autonomous),  
Pune**

Learning Outcomes-Based Curriculum  
for 3/4 years B. Sc. /B. Sc. (Honours) Programme  
as per guidelines of

**NEP-2020**

for

**F. Y. B. Sc. (Zoology)**

With effect from Academic Year

**2024-2025**

### Program Outcomes (POs) for B.Sc.

|            |  |
|------------|--|
| <b>PO1</b> | <b>Disciplinary Knowledge:</b><br>Demonstrate comprehensive knowledge of the disciplines that form a part of an graduate programme. Execute strong theoretical and practical understanding generated from the specific graduate programme in the area of work.   |
| <b>PO2</b> | <b>Critical Thinking and Problem solving:</b><br>Exhibit the skills of analysis, inference, interpretation and problem-solving by observing the situation closely and design the solutions.  |
| <b>PO3</b> | <b>Social competence:</b><br>Display the understanding, behavioural skills needed for successful social adaptation , work in groups, exhibits thoughts and ideas effectively in writing and orally.  |
| <b>PO4</b> | <b>Research-related skills and Scientific temper:</b><br>Develop the working knowledge and applications of instrumentation and laboratory techniques. Able to apply skills to design and conduct independent experiments, interpret, establish hypothesis and inquisitiveness towards research.                  |
| <b>PO5</b> | <b>Trans-disciplinary knowledge:</b><br>Integrate different disciplines to uplift the domains of cognitive abilities and transcend beyond discipline-specific approaches to address a common problem.  |
| <b>PO6</b> | <b>Personal and professional competence:</b><br>Performing dependently and also collaboratively as a part of team to meet defined objectives and carry out work across interdisciplinary fields. Execute interpersonal relationships, self-motivation and adaptability skills and commit to professional ethics. |
| <b>PO7</b> | <b>Effective Citizenship and Ethics:</b><br>Demonstrate empathetic social concern and equity centred national development, and ability to act with an informed awareness of moral and ethical issues and commit to professional ethics and responsibility.   |
| <b>PO8</b> | <b>Environment and Sustainability:</b><br>Understand the impact of the scientific solutions in societal and environmental contexts and demonstrate the knowledge of and need for sustainable development.  |
| <b>PO9</b> | <b>Self-directed and Life-long learning:</b><br>Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes.  |

| <b>PSO No.</b> | <b>Program Specific Outcomes(PSOs)</b><br><b>Upon completion of this programme the student will be able to</b>  |
|----------------|---|
| <b>PSO1</b>    | <b>Academic competence:</b><br>(i) Develop deeper understanding of key concepts of Zoology at biochemical, molecular, cellular, physiological, histological and systematic level.<br>(ii) Understand the ecological impact on the evolutionary history of not only mankind but also unfolding the secrets of origin of life and classical Zoology.<br>(iii) Assess environmental impact on applied and skill-based branches of Zoology  |
| <b>PSO2</b>    | <b>Personal and Professional Competence:</b><br>(i) Carry out analysis of biological data, perform laboratory procedure with suitable technique in Histology, Physiology, Immunology, Bio- chemistry, molecular biology, environment biology, organic evolution, animal pathology, Endocrinology and biological techniques.<br>(ii) Identify animals on the basis of comparative morphology and anatomy.  |
| <b>PSO3</b>    | <b>Research Competence:</b><br>(i) Integrate and explore biological data.<br>(ii) Use current laboratory setup, instrumentation, statistical and biological techniques in the collection, organization, analysis, interpretation and manipulating the data related to Zoology discipline and allied branches.<br>(iii) Identify and interpret research literature, formulate ideas, write reports and review articles related to the subject.                                       |
| <b>PSO4</b>    | <b>Entrepreneurial and Social competence:</b><br>(i) Empower the students by enhancing their self-sustainability capabilities through a thorough understanding of skill-based subjects and techniques by learning<br>(ii) culturing techniques of economically important animals in applied and classical zoology.<br>(iii) Develop social competence including listening, speaking, observational, effective interactive skills and presenting skills to meet global competencies. |

## Fergusson College (Autonomous), Pune

### NEP 2.0 Subject Credit Distribution Structure 2024-25

#### Department of Zoology

Class: F. Y. B. Sc. Sem. I

**Paper Code:** ZOO- 1001 **Paper Title:** Systematics and Diversity of Life

Number of Credits: 02

**Subject code:** ZOO- 1001

| Sr. No. | Course Outcome   | Blooms Taxonomy level | Weightage in % (For Example) |
|---------|--|-----------------------|------------------------------|
| 1       | CO-1: Define terms related to multicellularity, animal systematics and outline the various systems of classification.  | Remember              | 20                           |
| 2       | CO-2: Explain the structure and diversity in Protists, origin of Metazoans, Cnidarians Bilateria, Acoelomates  | Understand            | 40                           |
| 3       | CO-3: Illustrate the characteristics of acoelomates, Pseudo coelomates, protostome and deuterostome. Outline the basic organization and adaptive radiations in roundworms. | Apply                 | 20                           |
| 4       | CO-4: Explain the characteristics of the coelomates, Arthropods and Molluscs.  | Analyze               | 10                           |
| 5       | CO-5: Assess the characteristics of Hemichordates, affinities of Echinodermata with chordates.   | Evaluate              | 5                            |
| 6       | CO-6: Create a comparative chart and write the evolutionary characters of different Non chordate groups.   | Create                | 5                            |

*Note: Number of COs can vary from subject to subject depending on expected learning Outcome*

|        | Title and contents   | CO      | No. of hours | Weightage |
|--------|--|---------|--------------|-----------|
| Unit-1 | <b>Origin of Life on Earth, Products of evolutionary process:</b> Multicellularity: from simple collections of poorly differentiated cells to complex body plans. Biological diversity. Animal Systematics and taxonomy. Species concept, clades. Nomenclature and utility of scientific names. Classification system. | CO-1, 2 | 05           | 20        |
| Unit-2 | <b>Diversity in Protists and Metazoa:</b><br>Origin and systematics of phylum-protzoa, origin of Metazoans: Diploblastic and triploblastic organization; symmetries; body cavities; protostomes and deuterostomes. Special features and systemics of phyla - Porifera, Cnidaria, Platyhelminthes, and Aschelminthes.   | CO-2,3  | 10           | 30        |

|            |   |              |    |    |
|------------|---|--------------|----|----|
| Unit-<br>3 | <b>Diversity in coelomate:</b><br>The coelomates: - Basic organization and diversity in Annelids. Basic organization of Arthropods and its diversity. Basic organization and diversity in Molluscs. Basic organization of Echinoderms; their affinity to chordates. Special features and organization of Hemichordates. | CO – 3, 4, 5 | 10 | 30 |
| Unit<br>4  | <b>Study of parasites-</b><br>Life cycle of <i>Plasmodium vivax</i> and its pathogenicity.<br>Life cycle of <i>Fasciola hepatica</i> and its pathogenicity.<br>Life cycle of <i>Ascaris lumbricoides</i> and its pathogenicity.   | CO – 3, 4    | 05 | 20 |

**Note: Number of Units can vary from subject to subject depending on expected learning Outcome and number of credits**

**Resources:**

1. Barnes, R. S. K.; Calow, P.; Olive, P. J. W.; Golding, D. W.; Spicer, J. I. (2002) *The Invertebrates: a Synthesis*, Blackwell Publishing.
2. Hickman, C.; Roberts, L.S.; Keen, S.L.; Larson, A. and Eisenhour, D. (2018) *Animal Diversity*, McGraw-Hill.
3. Holland, P. (2011) *The Animal Kingdom: A Very Short Introduction*, Oxford University Press.
4. Kardong, K.V. (2006) *Vertebrates: Comparative Anatomy, Function, Evolution* (4th edition), McGraw-Hill.
5. Barrington, E.J.W. (1979) *Invertebrate Structure and Functions*. II Edition. E.L.B.S. and Nelson.
6. Boradale, L.A. and Potts, E.A. (1961) *Invertebrates: A Manual for the use of Students*. AsiaPublishing Home.
7. Bushbaum, R. (1964) *Animals without Backbones*. University of Chicago Press.

# Fergusson College (Autonomous), Pune

## NEP 2.0 Paper Weightage Distribution 2024-25

### Department Of Zoology

Class: F. Y. B. Sc. Sem. I

Paper Code: ZOO- 1011 Paper Title: **Zoology Practical-I**

Number of Credits: 02

Subject code: ZOO- 1011

| Sr. No. | Course Outcome  | Blooms Taxonomy level | Weightage in % (For Example) |
|---------|---|-----------------------|------------------------------|
| 1       | CO – 1: Recall the classification system of Invertebrate animals. Identify the animals belonging to different phyla.  | Remember              | 20                           |
| 2       | CO – 2: Classify the invertebrate animals belonging to various classes. Explain the morphological features of animal and differentiate the fauna based on morphological features. | Understand            | 40                           |
| 3       | CO – 3: Interpret the data of field visit. Organize the animals as per their hierarchy of classification.   | Apply                 | 20                           |
| 4       | CO – 4: Classify and compare various classes of non-chordate based on the morphological features characters of Animals.   | Analyze               | 10                           |
| 5       | CO – 5: Discriminate between animals belonging to different phyla of Invertebrate.  | Evaluate              | 5                            |
| 6       | CO – 6: Construct the classification schemes of animals based on morphological features.  | Create                | 5                            |

*Note: Number of COs can vary from subject to subject depending on expected learning Outcome*

| Exp. No. | Title of Experiment   | CO       | Weightage |
|----------|---|----------|-----------|
| 1        | Study of animals through slides and museum specimens in the laboratory from Protista, and Porifera. (one Specimen from each class.)   | CO-1, 2  |           |
| 2        | Study of animals through slides and museum specimens in the laboratory from Cnidaria and Helminths (one specimen from each class of Cnidaria and Platyhelminthes.)                                  | CO- 1, 2 |           |
| 3        | Study of animals through slides and museum specimens in the laboratory from Annelida and Arthropoda ( one specimen from each class of Annelida and one Specimen from each subphylum of Arthropoda.) | CO- 1,2  |           |
| 4        | Study of animals through slides and museum specimens in the laboratory from Mollusca and Echinodermata (one specimen from each class of from Mollusca and Echinodermata.)                           | CO- 1,2  |           |
| 5        | Temporary preparation of slide of Spicules and study of gemmules from Sponges.  | CO- 4, 5 |           |

|    |  |           |  |
|----|--|-----------|--|
| 6  | Study of animals in nature during a survey of a National Park or Forest area.  | CO- 2,3,4 |  |
| 7  | A project work on any five wild animals' species-generic identification, description and illustration with a note on their locality. | CO- 5,6   |  |
| 8  | Study of life cycle and pathogenicity of <i>Plasmodium</i> .   | CO- 2, 3  |  |
| 9  | Study of life cycle and pathogenicity of <i>Fasciola</i> .   | CO- 2, 3  |  |
| 10 | Study of life cycle and pathogenicity of <i>Ascaris</i> .  | CO- 2, 3  |  |
| 11 | Study of Paramecium culture .  | CO- 4, 6  |  |
| 12 | Study of reproduction in paramecium.   | CO- 2, 3  |  |

**Note: Number of Units can vary from subject to subject depending on expected learning Outcome and number of credits**

**Resources:**

1. Barnes, R. S. K.; Calow, P.; Olive, P. J. W.; Golding, D. W.; Spicer, J. I. (2002) *The Invertebrates: a Synthesis*, Blackwell Publishing.
2. Hickman, C.; Roberts, L.S.; Keen, S.L.; Larson, A. and Eisenhour, D. (2018) *Animal Diversity*, McGraw-Hill.
3. Holland, P. (2011) *The Animal Kingdom: A Very Short Introduction*, Oxford University Press.
4. Kardong, K.V. (2006) *Vertebrates: Comparative Anatomy, Function, Evolution* (4th edition), McGraw-Hill.
5. Barrington, E.J.W. (1979) *Invertebrate Structure and Functions*. II Edition. E.L.B.S. and Nelson.
6. Boradale, L.A. and Potts, E.A. (1961) *Invertebrates: A Manual for the use of Students*. AsiaPublishing Home.
7. Bushbaum, R. (1964) *Animals without Backbones*. University of Chicago Press.

**Fergusson College (Autonomous), Pune**  
**NEP 2.0 Paper Weightage Distribution 2024-25**

**Department Of Zoology**

Class: F. Y. B. Sc. Sem. I

**Paper Code:** ZOO- 1002 **Paper Title:** **Genetics**

Number of Credits: 02

**Subject code:** ZOO- 1002

| Sr. No. | Course Outcome   | Blooms Taxonomy level | Weightage in % (For Example) |
|---------|--|-----------------------|------------------------------|
| 1       | CO – 1: Define and describe different terminology and concepts in genetics.  | Remember              | 20                           |
| 2       | CO – 2: Articulate the causes and effects of alterations in chromosome number and structure.   | Understand            | 40                           |
| 3       | CO – 3: Illustrate the principles of Mendelian inheritance.  | Apply                 | 20                           |
| 4       | CO – 4: Relate the conventional and molecular methods for gene manipulation in other biological systems.   | Analyze               | 10                           |
| 5       | CO – 5: Appraise and justify principles of Mendelian and non Mendelian inheritance, methods of sex determination.  | Evaluate              | 5                            |
| 6       | CO – 6: Integrate the knowledge to find new avenues of joining research in related areas such genetic engineering eugenics, animal cloning, genetic disorders, human fertility programme, etc. | Create                | 5                            |

*Note: Number of COs can vary from subject to subject depending on expected learning Outcome*

|        | Title and contents   | CO      | No. of hours | Weightage |
|--------|--|---------|--------------|-----------|
| Unit-1 | <p><b>Introduction to Genetics-</b></p> <p>Genetics: scope and importance. Elements of heredity and variation: Classical and Modern concept of Gene (Cistron, muton, recon), Alleles etc. Mendel's laws of inheritance, Chromosomal basis of inheritance and its applications.</p> <p><b>Exceptions to Mendelian Inheritance:</b><br/>                     Incomplete dominance, Codominance, Multiple allelism, Lethal alleles, , Epistasis - Recessive, Double recessive and double dominant. Polygenic inheritance.</p> | CO-1, 2 | 10           | 30        |
| Unit-  | <p><b>Extra nuclear inheritance and sex determination in organisms</b> Organelle</p>   | CO-1,2  | 05           | 20        |



|            |  |           |    |    |
|------------|--|-----------|----|----|
| 2          | inheritance (Mitochondrial) Extra-nuclear inheritance, Maternal Inheritance, Sex Chromosomes and sex-linkage: XX/XO, XX/XY, ZZ/ZW and haploidy/diploidy types, <del>Autom</del> dominant and autosomal recessive, X-linked dominant, and X-linked recessive. Haplodiploidy, intersex, gynandromorphs. Role of environmental factors- Bonellia and Crocodile.   |           |    |    |
| Unit-<br>3 | <b>Human Genetics/ Introduction to inborn errors</b><br>Human Genetics: Morphological and molecular organization of chromosome, and nomenclature of chromosome subdivisions. Pedigree analysis. Karyotype, Structural and numerical alterations of chromosomes, Genetic disorders: chromosomal aneuploidy (Down, Turner and Klinefelter syndromes), chromosome translocation (Chronic Myeloid Leukemia) and deletion (“cry of cat” syndrome), gene mutation (sickle cell anemia). Inborn errors of metabolisms- PKU, AKU. Albinisms. | CO- 3,4,6 | 10 | 30 |
| Unit<br>4  | <b>Application of Genetics-</b><br>Eugenics, DNA fingerprinting, Animal cloning, PCR.  | CO-2,3    | 05 | 20 |

*Note: Number of Units can vary from subject to subject depending on expected learning Outcome and number of credits*

**Resources:**

1. Barnes, R. S. K.; Calow, P.; Olive, P. J. W.; Golding, D. W.; Spicer, J. I. (2002) The Invertebrates: a Synthesis, Blackwell Publishing.
2. Hickman, C.; Roberts, L.S.; Keen, S.L.; Larson, A. and Eisenhour, D. (2018) Animal Diversity, McGraw-Hill.
3. Holland, P. (2011) The Animal Kingdom: A Very Short Introduction, Oxford University Press.
4. Kardong, K.V. (2006) Vertebrates: Comparative Anatomy, Function, Evolution (4th edition), McGraw-Hill.
5. Barrington, E.J.W. (1979) Invertebrate Structure and Functions. II Edition. E.L.B.S. and Nelson.
6. Boradale, L.A. and Potts, E.A. (1961) Invertebrates: A Manual for the use of Students. Asia Publishing Home.
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**Fergusson College (Autonomous), Pune**  
**NEP 2.0 Paper Weightage Distribution 2024-25**

**Department Of Zoology**

Class: F. Y. B. Sc. Sem. I

**Paper Code:** ZOO- 1012 **Paper Title:** **Zoology Practical - II**

Number of Credits: 02

**Subject code:** ZOO- 1012

| Sr. No. | Course Outcome   | Blooms Taxonomy level | Weightage in % (For Example) |
|---------|--|-----------------------|------------------------------|
| 1       | CO – 1: Recall the fundamental concepts of genetics, sex linked inheritance, multiple alleles and mutation.  | Remember              | 20                           |
| 2       | CO – 2: Discuss, techniques of handling Drosophila flies and identify different mutants.   | Understand            | 40                           |
| 3       | CO – 3: Demonstrate Drosophila culture technique, applications DNA fingerprinting and thermal cycler. Apply principles of inheritance to solve problems based on monohybrid, dihybrid crosses and genic interaction. | Apply                 | 20                           |
| 4       | CO – 4: Detect A, B, AB, O and Rh blood groups.  | Analyze               | 10                           |
| 5       | CO – 5: Evaluate different genetic traits in human being and analyze the human karyotype.  | Evaluate              | 5                            |
| 6       | CO – 6: Compile the data of different syndromes in human beings and prepare a report.  | Create                | 5                            |

*Note: Number of COs can vary from subject to subject depending on expected learning Outcome*

| Exp. No. | Title of experiment  | CO     | Weightage |
|----------|--|--------|-----------|
| 1        | To solve problems based on Monohybrid and dihybrid crosses. (Two problems each).   | CO-5,6 |           |
| 2        | To solve problems based on deviation from Mendelian inheritance.   | CO-5,6 |           |
| 3        | Frequency of the following human genetic traits: widow's peak, attached ear lobe, dimple in chin, hypertrichosis, colour blindness, PTC tasting. | CO-4,5 | 10        |
| 4        | Study of handling techniques, external morphology and sexual dimorphisms in Drosophila.  | CO-3,4 |           |
| 5        | Demonstration of setting up Drosophila culture and observing wild type and mutant (white eye, sepia eye, vestigial wings, curly wings) flies.    | CO-3,4 |           |
| 6        | Demonstration of multiple allelism and determination of blood groups (ABO And Rh factor ).   | CO-3,4 |           |

|    |  |        |  |
|----|--|--------|--|
| 7  | Study of human karyotypes and numerical alterations (Down syndrome, Klinefelter syndrome and Turner syndrome). | CO-2,3 |  |
| 8  | Application of DNA fingerprinting (photograph of electrophoretic pattern to be given for interpretation).      | CO-1,3 |  |
| 9  | Study of principle and applications of thermal cyclers.  | CO-3,4 |  |
| 10 | Study of Barr body from oral mucosa.   | CO-2,3 |  |
| 11 | Study of techniques of animal cloning  | CO-2,3 |  |
| 12 | Study of genetic disorders from human population (any two).  | CO-3,4 |  |

**Note:** Number of Units can vary from subject to subject depending on expected learning Outcome and number of credits

**Resources:**

1. Barnes, R. S. K.; Calow, P.; Olive, P. J. W.; Golding, D. W.; Spicer, J. I. (2002) The Invertebrates: a Synthesis, Blackwell Publishing.
2. Hickman, C.; Roberts, L.S.; Keen, S.L.; Larson, A. and Eisenhour, D. (2018) Animal Diversity, McGraw-Hill.
3. Holland, P. (2011) The Animal Kingdom: A Very Short Introduction, Oxford University Press.
4. Kardong, K.V. (2006) Vertebrates: Comparative Anatomy, Function, Evolution (4th edition), McGraw-Hill.
5. Barrington, E.J.W. (1979) Invertebrate Structure and Functions. II Edition. E.L.B.S. and Nelson.
6. Boradale, L.A. and Potts, E.A. (1961) Invertebrates: A Manual for the use of Students. Asia Publishing Home.
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**Fergusson College (Autonomous), Pune**  
**NEP 2.0 Paper Weightage Distribution 2024-25**  
**Department Of Zoology**

Class: F. Y. B. Sc. Sem. I

**Paper Code:** ZOO- 1021 **Paper Title-** Vector Diseases and Control, **Number of Credits:** 02

Subject code -ZOO-1021 Paper-Open Elective 1 (For other faculty)

| Sr. No. | Course Outcome  | Blooms Taxonomy level | Weightage in % (For Example) |
|---------|---|-----------------------|------------------------------|
| CO1     | Define and describe term host, vector, their types, morphological peculiarities, and vector bionomics.                  | 1                     | 20                           |
| CO2     | Illustrate salient features of the different vectors, causes of disease outbreak and the vector management strategy.    | 2                     | 10                           |
| CO3     | Demonstrate the role of non-blood sucking and blood sucking flies in transmission of diseases and their management.     | 3                     | 20                           |
| CO4     | Explain the control of vector flies by screening and different methods.   | 4                     | 10                           |
| CO5     | Appraise methods of biological control by natural parasites and predators, chemical control, sterile insect technique.  | 5                     | 20                           |
| CO6     | Write emerging concepts and approaches to vector management through legislation and regulation of vectors and diseases. | 6                     | 20                           |

*Note: Number of COs can vary from subject to subject depending on expected learning Outcome*

| Unit   | Title and contents  | COs    | No. of hours | Weightage |
|--------|---|--------|--------------|-----------|
| Unit-1 | <b>Vector and vector bionomics.</b><br>Brief introduction, types, and morphological peculiarities of vectors such as mosquitoes, flies, fleas, lice, bugs, ticks, and mites. Host- vector relationship. Primary and secondary vector concept. Vectorial capacity. Vector bionomics-larval habitats and host biting preferences, human and animal biting indices.  | CO-1,2 | 8            | 20        |
| Unit-2 | <b>Disease vectors and the causes of disease outbreaks</b><br>Salient features of the vectors belonging to Diptera, Siphonaptera, Siphunculata, Hemiptera, Arachnida, Blattaria, Acarina (families Ixodidae and Argasidae) etc. Role of non-blood sucking flies in myiasis; blood sucking flies in transmission of plague and typhus; of lice (body, head, pubic) in transmission of typhus, relapsing and trench fevers. Examples of few diseases. | CO-2,3 | 10           | 30        |

|         |  |                  |           |    |
|---------|--|------------------|-----------|----|
| Unit-3  | <b>Vector management strategies.</b><br>Control of vector flies by screening, fly traps, electrocution, poison baits and outdoor residual sprays; biological control by natural parasites and predators. Chemical control. Biological control of mosquitoes by the use of viruses, bacteria, fungi, parasites, nematodes and larvivorous fishes. Sterile insect technique, | CO-<br><br>3,4,5 | <b>10</b> | 30 |
| Unit-IV | <b>Emerging concepts and approaches to vector management</b><br>Legislation and regulation of vectors and diseases.  | Co-<br><br>1,5,6 | <b>2</b>  | 20 |

*Note: Number of Units can vary from subject to subject depending on expected learning Outcome and number of credits*

Resources:

1. Imms, A.D. (1977). A General Textbook of Entomology. Chapman & Hall, UK.
2. Chapman, R.F. (1998). The Insects: Structure and Function.IV Edition, CambridgeUniversity Press, UK.
3. Mathews, G. (2011). Integrated Vector Management: Controlling Vectors of Malaria and other Insect Vector borne Diseass.Wiley-Blackwell.
4. Belding, D.L. (1942). Textbook of Clinical Parasitology. Appleton-Century Co., Inc., NewYork.
5. Roy, D.N. and Brown, A.W.A. (2004). Entomology. Biotech Books, Delhi

## Fergusson College (Autonomous), Pune

### NEP 2.0 Paper Weightage Distribution 2024-25

#### Department Of Zoology

Class: F. Y. B. Sc. Sem. I

**Paper Code:** ZOO- 1022 **Paper Title-** Human Physiology, **Number of Credits:** 02

**Subject code -**ZOO-1022 **Paper-**Open Elective 2 (For other faculty)

| Sr. No. | Course Outcome  | Blooms Taxonomy level | Weightage in % (For Example) |
|---------|---|-----------------------|------------------------------|
| 1       | CO1 Tell and explain different terms and processes in physiology.                                       | 1                     | 20                           |
| 2       | CO2 Articulate physiological mechanism of different systems in human body.                              | 2                     | 20                           |
| 3       | CO3 Illustrate processes of digestion, respiration, circulation, reproduction and endocrine activities. | 3                     | 20                           |
| 4       | CO4 Explain and develop understanding of structure and functions of kidney and heart.                   | 4                     | 20                           |

*Note: Number of COs can vary from subject to subject depending on expected learning Outcome*

| Unit    | Title and contents   | COs      | No. of hours | Weightage |
|---------|--|----------|--------------|-----------|
| Unit-1  | <b>How are processes of digestion accomplished in man?</b><br>Digestive glands: Structure and function.<br>Digestion and absorption of nutrients: carbohydrates, fats and proteins. Neural and hormonal control of digestion.  | CO-1,2   | 7            | 20        |
| Unit-2  | <b>An overview of muscular function in man</b><br>Structure of smooth, skeletal and cardiac muscles. Neuromuscular junction. Mechanism of muscle contraction. Respiration: Ventilation, External and internal respiration. Transport of carbon dioxide and oxygen in blood and tissues. Factors affecting gaseous transport. | CO-2,3   | 6            | 20        |
| Unit-3  | <b>Cardiovascular functions in man</b><br>Structure of heart. Coordination of heartbeat; control of heart beat (neural and hormonal) Blood cells and blood vessels. Cardiac cycle. ECG. Lymph and lymph vessels.   | CO-3,4   | 7            | 30        |
| Unit-IV | <b>Endocrine and reproductive physiology</b><br>Structure and function of endocrine glands viz., pituitary, thyroid, parathyroid, pancreas, adrenal, ovaries and testes. Fertilization and implantation. Menstrual cycle. Pregnancy and Parturition.   | Co-2,3,4 | 10           | 30        |

*Note: Number of Units can vary from subject to subject depending on expected learning Outcome and number of credits*

Resources:

1. Tortora, G.J. and Derrickson, B.H. (2009) Principles of Anatomy and Physiology (12th edition) John Wiley and Sons, Inc.
2. Widmaier, E.P., Raff, H. and Strang, K.T. (2008) Vander's Human Physiology (9th edition) McGraw Hill.
3. Guyton, A.C. and Hall, J.E. (2011) Textbook of Medical Physiology (12th edition) Harcourt Asia Pvt. Ltd/ W.B. Saunders Company.
4. Marieb, E. (1998) Human Anatomy and Physiology (4th edition) Addison-Wesley.
5. Kesar, S. and Vashisht, N. (2007) Experimental Physiology, Heritage Publishers

# Fergusson College (Autonomous), Pune

## NEP 2.0 Paper Weightage Distribution 2024-25

### Department Of Zoology

Class: F. Y. B. Sc. Sem. I

**Paper Code:** ZOO- 1032 **Paper Title-** Public Health and Hygiene, **Number of Credits:** 02  
**Subject code -**ZOO-1032 **Paper-SEC-1**

| Sr. No. | Course Outcome  | Blooms Taxonomy level | Weightage in % (For Example) |
|---------|---|-----------------------|------------------------------|
| 1       | CO1 Describe maintenance of personal hygiene.   | 1                     | 20                           |
| 2       | CO2 Classify food into micro and macro nutrients.                                     | 2                     | 40                           |
| 3       | CO3 Explain Non-communicable diseases/Life style diseases.                            | 3                     | 20                           |
| 4       | CO4 Discriminate between a pandemic, an epidemic, endemic, and an outbreak .          | 4                     | 10                           |
| 5       | CO5 Review Nutrient deficiency diseases   | 5                     | 5                            |
| 6       | CO6 Compile data of Communicable, non-communicable and nutrition deficiency diseases. | 6                     | 5                            |

*Note: Number of COs can vary from subject to subject depending on expected learning Outcome*

|        | Title and contents  | CO        | No. of hours | Weightage |
|--------|---|-----------|--------------|-----------|
| Unit-1 | Maintenance of personal hygiene Introduction to public health and hygiene- determinants and factors. Pollution and health hazards; water and air borne diseases. Radiation hazards: Mobile Cell tower and electronic gadgets (recommended levels, effects and precaution). Role of health education in environment improvement and prevention of diseases. 8 [27] Personal hygiene, oral hygiene and sex hygiene.                                 | CO-1, 2   | 08           | 30        |
| Unit-2 | Nutrient deficiency diseases Classification of food into micro and macro nutrients. Balanced diet, dietary plan for an infant, normal adult, pregnant woman and old person. Importance of dietary fibres. Significance of breast feeding. Malnutrition anomalies – Anaemia (Iron and B12deficiency), Rickets, Goitre (cause, symptoms, precaution and cure). Substitution of diet with required nutrients to prevent malnutrition disorders. BMI. | CO-1,2    | 10           | 30        |
| Unit-3 | Communicable and contagious diseases Infectious agents responsible for diseases in humans. The difference between a pandemic, an epidemic, endemic, and an outbreak. Communicable viral diseases- Covid -19, measles, chicken pox, poliomyelitis, swine flu, dengue, chikungunya, and hepatitis. Communicable bacterial diseases-   | CO- 3,4,6 | 10           | 30        |



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|--------|--|------|----|----|
|        | tuberculosis, typhoid, cholera, tetanus, plague, whooping cough, diphtheria, leprosy. sexually transmitted diseases- AIDS, syphilis. Health education and preventive measures for communicable diseases  |      |    |    |
| Unit 4 | Non-communicable diseases and cure Non-communicable diseases/Life style diseases- hypertension, stroke, coronary heart disease, myocardial infarction. Osteoporosis, osteoarthritis and rheumatoid arthritis-cause, symptom, precautions. Diabetes- types and their effect on human health. Gastrointestinal disorders- acidity, peptic ulcer, constipation, piles (cause, symptoms, precaution and remedy) etc. Obesity (Definition and consequences). Mental illness (depression and anxiety). | CO-2 | 02 | 10 |

#### Resources

1. Mary Jane Schneider (2011) Introduction to Public Health.
2. Muthu, V.K. (2014) A Short Book of Public Health.
3. Detels, R. (2017) Oxford Textbook of Public Health (6th edition).
4. Gibney, M.J. (2013) Public Health Nutrition.
5. Wong, K.V. (2017) Nutrition, Health and Disease