GOVT. DIGVIJAY P.G. AUTONOMOUS COLLEGE RAJNANDGAON (C.G.)

DEPARTMENT OF ZOOLOGY

B.Sc. Zoology Honours & Honours with Research

(FYUGP/LOCF – VII Semester)

(Syllabus Based on UGC-LOCF Curriculum)

(2025 – 2026)

(Approved by Board of Studies)
Effective from July 2025-26
As Per provisions of NEP 2020 to be implemented from academic year 2022-23

GOVT. DIGVIJAY AUTONOMOUS PG COLLEGE, RAJNANDGAON (C.G.)

Department of Zoology
Based on FYUGP/LOCF Curriculum
B.Sc. Zoology Honours & Honours with Research
VII Semester Session: 2025-26

Sem	Course	Course Name	Credit	Lecture	Internal Marks	ESE Max Marks	M.M.
VII	DSC –VII	Biosystematics and Taxonomy	3	45	20	80	100
		Lab Course	1	15	-	-	50
	DSE- VII	Structure & Function of Invertebrates	3	45	20	80	100
		Lab Course	1	15	-	-	50
	DSE- VIII	Immunology	3	45	20	80	100
		Lab Course	1	15	-	-	50
	DSE- IX	Parasitology (Optional)	3	45	20	80	100
		Lab Course	1	15	-	-	50
		OR					
	DSE- IX	Research Methodology(Optional)	3	45	20	80	100
		Project	1	15	-	-	50
Total			20	300	100	480	750

Note: Syllabus of V & VII Semester of B.Sc. Zoology Honours & Honours with Research are common.

GOVT. DIGVIJAY AUTONOMOUS PG COLLEGE RAJNANDGAON (C.G.)

FYUGP (CBCS and LOCF Pattern)

Department of Zoology

B.Sc. Honours

2025-26

Session: 2025-26	**Program: B.Sc.**
Semester: VII	**Subject: Zoology**
Course type: DSE-VI	**Course Code:**
Course Title : Biosystematics & Taxonomy	
Credit: 04 (03+01)	**Lecture – 60 (45+15)**
MM: 100 = (ESE 80+IA 20)	**Minimum Passing Marks: 40%**

Title	**Biosystematics & Taxonomy**
Course Learning Outcome:	This Syllabus contains information about • Biosystematics. • Trends in Biosystematics. • Dimensions of speciation & Taxonomic characters. • Procedure keys in Taxonomy.
Program Specific Outcome:	Students gain knowledge about • The basic taxonomy and systematics trends in biosystematics. • Taxonomic characters and different keys of taxonomy. • Procedure keys in Taxonomy and Dimensions of Speciation & Taxonomic character.

Unit	Lectures	Topics	Credits
I	10	**Biosystematics** 1. History of Systematics. 2. Importance & applications of biosystematics in biology. 3. Material basis characteristics of Biosystematics. 1. Species concept.	0.75
II	10	**Trends in biosystematics** 1. Chemotaxonomy. 2. Cytotaxonomy. 3. Molecular taxonomy. 4. Immuno taxonomy.	0.75
III	10	**Dimensions of Speciation & Taxonomic characters** 1. Theories of biological classification, hierarchy of categories. 2. Origin of Reproductive isolation - biological mechanism of genetic incompatibility. 3. Speciation.	0.75
IV	15	**Procedure & keys in Taxonomy** 1. Types of taxonomic keys - Merits & Demerits. 2. Taxonomic procedures – Taxonomic collections, preservation,	0.75

		curetting process and identification. 3. International code of Zoological nomenclature (ICZN) its operative principles and application of important rules. Zoological nomenclature Formation of scientific names of various taxa.	
Lab course	15	1. Study of biodiversity among various invertebrates and vertebrates. (Listing of all the animals found in and around your house and also try to find out their Zoological Name.) 2. Identification of local fauna on the basis of their morphological characters (5 each) 3. Visit to local Animal Park or zoo to identify and study the captive fauna and preparation of report. 4. Construction of a dichotomous key. 5. Study of biodiversity in grassland and pond water and computation of index. 6. Study of adaptive characteristics of various invertebrates in different climate. 7. Composition assessment of the taxonomic diversity / biodiversity in a habitat (e.g. grassland, arid land, wet land, etc.). 8. Influence of climatic conditions on taxonomic diversity in a given habitat 9. Preparation of models showing the status of certain taxa or species in a particular habitat. 10. Other exercise related to theory paper.	1
Recommended Books		1. Biosystematics & Taxonomy – Dr.R.C. Tripathi. 2. Theory and practice of Animal Taxonomy – V.C. Kappor. 3. Principal of Animal Taxonomy – G.G. Simpson. 4. Elements of Taxonomy – Earnst Mayer. 5. Principle of Animal Taxonomy; G.G. Simpson. Oxford IBH Publishing Company.	

Evaluation Scheme

Evaluation Scheme	Sections in Question Paper	Question type	Word Limit	No. of Questions	Marks per Question	Total
External	A	Very Short answer type	50	8	2	16
	B	Short answer type	100	4	6	24
	C	Long answer type	200	4	10	40
Internal	**Based on CT & Assignment/Project**					20
Total =						100

Evaluation Scheme of Practical

Practical	Experiment 01	12
	Experiment 02	08
	Experiment 03	04
	Spotting	16
	Viva	05
	Sessional	05
Total -		**50**

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GOVT. DIGVIJAY AUTONOMOUS PG COLLEGE RAJNANDGAON (C.G.)

FYUGP (CBCS and LOCF Pattern)

Department of Zoology

B.Sc. Honours

2025-26

Session: 2025-26	**Program: B.Sc.**
Semester: VII	**Subject: Zoology**
Course type: DSE-VII	**Course Code:**
Course Title : Structure and Function of Invertebrates	
Credit: 04 (03+01)	**Lecture – 60 (45+15)**
MM: 100 = (ESE 80+IA 20)	**Minimum Passing Marks: 40%**

Title	**Structure and Function of Invertebrates**
Course Learning Outcome:	This syllabus contains information about • Study of organization of Coelom & Locomotion. • Nutrition, digestion & respiration. • Excretion, nervous system, larval forms and minor phyla.
Program Specific Outcome:	Students will acquire knowledge about • The organization of Coelom. • Nutrition, digestion & respiration. • Excretion, nervous system, larval forms and minor phyla.

Unit	**Lectures**	**Topics**	**Credits**
I	10	**Organization of Coelom** 1. Acoelomates. 2. Pseudoeocoelomates, Coelomates. 3. Protostomia and Deuterostomia. **Locomotion -** 2. Flagella and cillary movement in protozoa. 3. Hydrostatic movement in coelenterate, Annelida and Echinodermata.	0.75
II	10	**Nutrition and Digestion** 1. Patterns of feeding and digestion in lower metazoan. (Porifera & Coelenterata) 2. Filter feeding in Polychaeta, Mollusca,Ecinodermata **Respiration** 3. Organs of respiration –Gills, Book Lungs and Trachea. 4. Respiratory Pigments. 5. Mechanism of Respiration (Arthropoda, Mollusca).	0.75
III	10	**Excretion** 1. Organs of excretion – Coelom, Coelomoducts, Nephridia and Malpighian tubules. 2. Mechanism of excretion. (Annelida, Arthropoda). 3. Osmoregulation in (Aquatic & Terrestrial Invertebrates) **Nervous system** 4. Primitive Nervous system- Coelenterata and Ehinodermata. 5. Advanced nervous system- Arthropoda.(Crustacea, Insecta) and	0.75

		Mollusca (Cephalopoda).	
IV	15	**Larval forms and Minor Phyla** 1. Larval Forms of Free-Living Invertebrates. 2. Larval forms and significance of Platyhelminthies. 3. Larval forms of Parasites (Helminths) 4. Larval forms and significance of Crustacea. 5. Larval forms and significance of Echinodermata. 6. Evolutionary Significance of Larval Forms. 7. Minor Phyla: Gastrotricha ,Rotifera, Ectoprocta, Endoprocta.(Structure and affinities)	0.75
Lab course	15	**1.** Sterilization of glassware, media and laboratory. **2.** Working principle and applications of - Hot Air Oven, Autoclave & Laminar flow hood. **3.** Demonstration of cell culture techniques. **4.** Demonstration of gene library and cDNA library. **5.** Isolation of DNA from plant sample **6.** Isolation of plasmid DNA from E. coli cells **7.** Isolation of genomic DNA from whole blood. **8.** Demonstration of Gel electrophoresis techniques. **9.** Separation and visualization of DNA fragments using agarose gel electrophoresis. **10.** Spectrophotometric estimation of isolated DNA. **11.** Restriction digestion of plasmid DNA and genomic DNA. **12.** Study related to working principle of PCR machine. **13.** Preparation of Minimal Essential Growth medium. **14.** Staining the cultured cells using dyes such as heamatoxylin and eosin (H&E), and **15.** Observe them under a light microscope to study cell morphology and structure. **16.** B0ioinformatics: Analyze DNA or protein sequences using online tools and databases. **17.** Demonstration of online data bases for bioinformatics based studies. **18.** Demonstration of DNA band visualization techniques (e.g., Ethidium bromide staining, DNA intercalating dyes) **19.** Group discussion/ Quiz/Project/Seminar presentation on related topics. ***Note:*** *Virtual mode of demonstration can be opted if required.*	1
Recommended Books		1. Invertebrate Structure & Function: E.J.W. Barrington. 2. A Text book of zoology Invertebrate: Parker Hasvell, Marshall & Williams. 3. The Cambridge Natural History Vol 1-9; S.F. Harmer, A. E. Shipley. 4. The invertebrates. Vol.1, 2 & 8. Hyman, L.H. McGraw Hill Co., New York. 5. Invertebrate Zoology Barnes, RD. W.B.Saunders Co., Philadelphia 6. A Biology of higher invertebrates, Russel-Hunter, WD. McMillan Co. Ltd., London 7. Student Text Book of Zoology. Vol.I.II and III. Sedgwick.A. Central Book Depot, Allahabad. 8. Text book of Zoology. Parker, T.J., Haswell. W.A.Macmillan Co., London.	

Evaluation Scheme

Evaluation Scheme	Sections in Question Paper	Question type	Word Limit	No. of Questions	Marks per Question	Total
External	A	Very Short answer type	50	8	2	16
	B	Short answer type	100	4	6	24
	C	Long answer type	200	4	10	40
Internal	**Based on CT & Assignment/Project**					20
Total =						100

Evaluation Scheme of Practical

Practical	Experiment 01	12
	Experiment 02	08
	Experiment 03	04
	Spotting	16
	Viva	05
	Sessional	05
Total -		**50**

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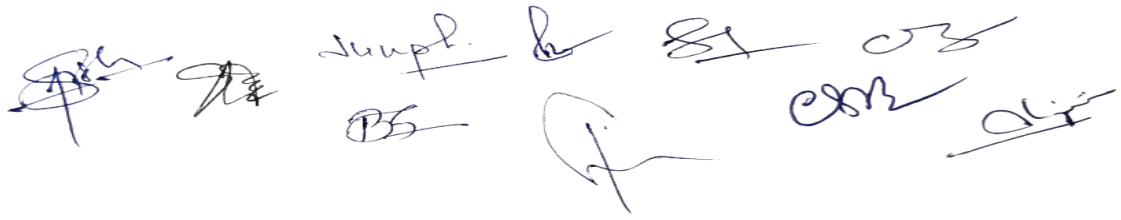

GOVT. DIGVIJAY AUTONOMOUS PG COLLEGE RAJNANDGAON (C.G.)

FYUGP (CBCS and LOCF Pattern)

Department of Zoology

B.Sc. Honours

2025-26

Session: 2025-26	**Program: B.Sc.**
Semester: VII	**Subject: Zoology**
Course type: DSE-VIII	**Course Code:**
Course Title : Immunology	
Credit: 04 (03+01)	**Lecture – 60 (45+15)**
MM: 100 = (ESE 80+IA 20)	**Minimum Passing Marks: 40%**

Title	**Immunology**
Course Learning Outcome:	Students will understand fundamental immunological concepts, including innate a adaptive immunity, immune cells, antigen-antibody interactions, and immu system components. They will learn about immune disorders, vaccination, a advanced immunotechniques like ELISA and immunoelectrophoresis, enabli practical skills in immune analysis and disease diagnosis.
Program Specific Outcome:	Students will gain in-depth knowledge of immune system components, immune responses, and immunological disorders. They will develop practical skills in immunotechniques such as ELISA, immunodiffusion, and electrophoresis. This foundation enables them to apply immunology principles in research, diagnostics, clinical, and biotechnological fields effectively.

Unit	Lectures	Topics	Credits
I	10	**Understanding of Immunological Concepts:** **1.** Immune System : Brief history of Immunity, Concept & Types of Immunity (Innate and Acquired or Adaptive), Origin and Evolution of Immune System. **2.** Primary and Secondary lymphoid organs, lymphoid tissues. **3.** Thymic Selection : Self and non self-recognition. Inflammation. Lymphocyt e trafficking Hematopoiesis.	0.75
II	10	**Components of Immune System I :** **1.** Cells of Immune System: Structure and functions of macrophages, granulocytes, NK cells, T and B lymphocytes and Antigen presenting cells. **2.** T & B Cell receptors, maturation, activation and differentiation of T& B. **3.** Cell Antigen: Antigenicity v/s immunogenicity, F Factors affecting Immunogenicity, immunogen, haptens,super antigen, epitope, paratope. Adjuvants: Freund's complete and incomplete. **4.** Processing and presentation of Ag.Major histocompatibility complex (MHC) and HLA. Cytokines	0.75
III	10	**Components of Immune System-II :** **1.** Immunoglobulins : Nature, Primary structure of Immunoglobulins. **2.** Enzymatic fragmentation of Ig. Domain structure of Ig and its significance. **3.** Types and subtypes of Ig and its characteristics .Membranous antibody**.** **4.** Antigenic determinants : isotype, allotype, idiotype . Abzymes. **5.** Theories of Antibody Formation : Instructive, selective, clonal selection theories and evidences; Immunological memory. **6.** Complement System. Hypersensitivity (Type I to IV with example) CMI & humoral immune response.	0.75

		7. Antigen - Antibody interaction : affinity & avidity.	
IV	15	**Immune disorders &Immuno-techniques :** 1. **Auto -immunity:** Auto -recognition, classes of auto-immuno diseases.(Hashimoto disease, Thyrotoxicosis, Systemic lupus erythematosus, Rheumatoid arthritis). 2. Transplantation: Autograft, Isograft, Allograft, Xenograft, Immunological basis of transplantation reactions. Immune Deficiencies:Primary and secondary immune deficiencies. 3. T-cell, B-cell and SCID, AIDS.Vaccination and types of vaccines (First,Second & Third generation vaccines). Immunological techniques: Precipitin curve, Immuno -diffusion, one and two dimensional, single radial immune - diffusion, (Double Ouchterlony) immune - diffusion. 4. Immuno-electrophoresis: Rocket immuno-electrophoresis; CIE, Graber and William technique. 5. Radio-immunoassay: ELISA–Principle, Methodology and applications. 6. Immuno-fluorescence: Direct, indirect and Sandwich, in situ localization by techniques :FISH and GISH Hybridoma, Monoclonal antibodies.	0.75
Lab course	15	1. Study of permanent slides of organs of immune system 2. Enumeration of total leucocytes from human blood samples 3. Enumeration of differential leucocytes from human blood samples 4. Demonstration of agglutination reaction using human RBC 5. Demonstration of Ag-Ab precipitation by immunodiffusion technique 6. Antigen detection by radial immunodiffusion technique (RID) 7. Estimation of total serum protein 8. Estimation of serum gamma globulins/Separation of globulin by salt precipitation. 9. Estimation of A/G ratio 10. Isolation of lymphocyte by using density gradient centrifugation 11. Paper and gel immune electrophoresis 12. Rocket immunoelectrophores is 13. Counter current immunoelectrophoresis 14. ELISA 15. Groupdiscussion/Quiz/Seminarpresentationonrelatedtopics 16. Making of Pract ical record.	1
Recommended Books		***Text Books Recommended –*** • Pravash Sen. Gupta, Clinical Immunology. Oxford University Press. 2003. • N Arumugam, Immunology, Saras Publication. 2014. • Fatima D, Arumugam, Immunology , Saras Publication ***Reference Books Recommended –*** • Janis Kuby, Immunology, II edition. W. H. Freeman and Company, New York. 1993. • Ivan M. Roitt, J. Brostoff and D. K. Male, Immunology, Gower Medical Publishing, London.1993.	

Evaluation Scheme

Evaluation Scheme	Sections in Question Paper	Question type	Word Limit	No. of Questions	Marks per Question	Total
External	A	Very Short answer type	50	8	2	16
	B	Short answer type	100	4	6	24
	C	Long answer type	200	4	10	40
Internal	**Based on CT & Assignment/Project**					20
Total =						100

Evaluation Scheme of Practical

Practical	Experiment 01	12
	Experiment 02	08
	Experiment 03	04
	Spotting	16
	Viva	05
	Sessional	05
Total -		**50**

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GOVT. DIGVIJAY AUTONOMOUS PG COLLEGE RAJNANDGAON (C.G.)

FYUGP (CBCS and LOCF Pattern)

Department of Zoology

B.Sc. Honours

2025-26

Session: 2025-26	**Program: B.Sc.**
Semester: VII	**Subject: Zoology**
Course type: DSE-IX	**Course Code:**
Course Title : Parasitology	
Credit: 04 (03+01)	**Lecture – 60 (45+15)**
MM: 100 = (ESE 80+IA 20)	**Minimum Passing Marks: 40%**

Title	**Parasitology**
Course Learning Outcome:	Students will understand virus, bacterial, fungal, protozoan, and helminth diseas including their structure, classification, pathogenesis, diagnosis, and treatment. Th will gain practical skills in identifying pathogens, staining techniques, and specim analysis, preparing them for research, clinical diagnostics, and public hea applications in infectious disease management.
Program Specific Outcome:	This program equips students with comprehensive knowledge of viral, bacterial, fungal, protozoan, and helminth diseases, emphasizing pathogen biology, disease mechanisms, and diagnostics. It develops practical skills in specimen analysis, staining, and microscopy, preparing graduates for careers in microbiology, infectious disease research, clinical diagnostics, and public health management.

Unit	Lectures	Topics	Credits
I	10	**Viral diseases:** 1. General characters, Structure and Classification of virus , A brief account of pathogenic viruses. 2. Brief history of microbiology : germ theory of disease, Host pathogen interaction: invasion, antigenic heterogeneity, toxins and enzymes Secretions. 3. Viral diseases: hepatitis, influenza, AIDS, Covid -19 with emphasis on their causative agents, pathogenesis, diagnosis, prophylaxis and chemotherapy.	0.75
II	10	**Acterial &Fungal diseases** : 1. General characters, Structure and Classification of bacteria. 2. **Bacterial Diseases :** A brief account of pathogenic bacteria , discovery of penicillin, diseasescaused by *Streptococcus pneumonia, Salmonella typhi, Escherichia coli, Mycobacterium tuberculosis, Rickettsia, Spirochaetes.* 3. **Fungal diseases:** Ringworm infection , *Aspergillosis, candidiasis.*	0.75
III	10	**Protozoan parasites: An** overview of protozoa & disease. 1. Introduction to parasites and parasitic diseases. 2. Mode of transmission, portals of entry and implications of Parasitism. 3. Parasitic adaptations. 4. Concept of zoonotic diseases. 5. Protozoan diseases of medical importance: Brief account of life History, pathogenicity of the following Protozoa with reference to Man, prophylaxis and treatment :*Entamoeba histolitica, Trypanosoma gambiens, Plasmodium vivex , Giardi.*	0.75
IV	15	**Helminth parasites:** An overview of Helminthes diseases.Brief account of life	0.75

		1. History, pathogenicity of the following Helminths with reference to Man, prophylaxis and treatment - *Taenia solium, Schistosoma haematobium, Ascaris lumbricoides, Wuchereria branrofti.* **2.** Vector insects.	
Lab course	15	**1.** Study of permanent slides and specimens of parasitic Protozoans and Helminthes. **2.** Pathological examination of sputum, blood, urine and stool. **3.** Blood: Erythrocyte Sedimentation Rate (ESR), Haematocrit. **4.** Staining and identification of Grampositive and Gram negative bacteria. **5.** Preparation of thin and thick blood films to diagnose Plasmodium infections/ or permanent slides. **6.** Preparation of temporary and permanent slides of faecal matter by saline **7.** preparation and concentration techniques to identify cysts of parasitic Protozoan's and **8.** Helminthes eggs /or parmanant slides studies. **9.** Study Kinetics of bacterial growth and staining techniques. **10.** Group discussion or Seminar presentation on one or two related topics **11.** Group discussion/quiz seminar on topics related to theory. **12.** Preparation of practical record or Album of parasites.	1
Recommended Books		***Text Books Recommended –*** • Agrawal Anju Principles of Toxicology. • Parija, S. C. (2013) Textbook of Medical Parasitology, Protozoology & Helminthology (Text and color Atlas), IV Edition, All India Publishers & Distributers, New Delhi. • Ichh pujani, R.L. and Bhatia, R. (2009) Medical Parasitology. III Edition, Jaypee BrothersMedical Publishers (P) Ltd., New Delhi. • Ahmed, N., Dawson, M., Smith, C. and Wood, Ed. (2007) Biology of Disease. Taylor andFrancis Group. • Chatterjee, K. D. (2009). Parasi tology: Protozoology and Helminthology. XIII Edition, CBSPublishers & Distributors (P) Ltd. • Arora, D. R and Arora, B. (2001) Medical Parasitology. II Edition. CBS Publications and Distributors. • Chatterjee, K.D (2015) Parasitology (13th edition) ***Reference Books Recommended –*** • Jawetz, M. and Adelberg (2015) Medical Microbiology (27th edition) • Noble, E.R. and Noble, G.A. (1989) Parasitology: The Biology of Animal Parasites. VIEdition, Lea and Febiger.	

Evaluation Scheme

Evaluation Scheme	Sections in Question Paper	Question type	Word Limit	No. of Questions	Marks per Question	Total
External	A	Very Short answer type	50	8	2	16
	B	Short answer type	100	4	6	24
	C	Long answer type	200	4	10	40
Internal	**Based on CT & Assignment/Project**					20
Total =						100

GOVT. DIGVIJAY AUTONOMOUS PG COLLEGE RAJNANDGAON (C.G.)

FYUGP (CBCS and LOCF Pattern)

Department of Zoology

B.Sc. Homers

2025-26

Session: 2025-26	**Program: B.Sc.**
Semester: VII	**Subject: Zoology**
Course type: DSE - IX	**Course Code:**
Course Title : Research Methodology (Optional)	
Credit: 04 (03+01)	**Lecture – 60 (45+15)**
MM: 100 = (ESE 80+IA 20)	**Minimum Passing Marks: 40%**

Title	**Research Methodology**
Course Learning Outcome:	Students will understand research fundamentals, including problem formulation, hypothesis development, and research design. They will learn effective sampling, data collection, and analysis methods like ANOVA and Chi-square tests. The course enhances skills in ethical research conduct, literature review, and scientific report writing for academic and professional excellence.
Program Specific Outcome:	This program develops students' abilities to design, conduct, and analyze research effectively. It equips learners with skills in problem formulation, hypothesis testing, sampling techniques, data collection, and statistical analysis. Graduates gain proficiency in ethical research practices, literature review, and scientific report writing for academic and professional success.

Unit	**Lectures**	**Topics**	**Credits**
I	10	Introduction to research definition, Nature, Scope and Significance. Types of research, characteristics of a good research. Qualities of Researcher, introduction to review of literature.	0.75
II	10	Research process defining research problem, components of research Problem. Title formulation, hypothesis. Types of hypothesis Research Design- Exploratory , descriptive and Experimental Research design	0.75
III	10	Sampling design, criteria of selective a sampling procedure , characteristics of good sample design, sampling procedure, characterics of good sample design, sampling Errors, Sampling methods. Measurement and scaling, methods of collection of primary and secondary data, process of questionnaire design, processing of data- Editing, coding, classification and tabulation	0.75
IV	15	Analysis and Report Writing- Hypothesis testing, one way and two way ANOVA; Chi square test. Introduction to Non Parametric Test: Report writing. Essentials, Structure /Layout, presentation of Result , Ethical Norms in Research , Plagiarism.	0.75
Lab course	15	**Project work:** 1. how to decide thesis, project and Research paper title 2. synopsis writing 3. Review writing 4. Data presentation through table and Graphs. 5. how to write Bibliography	1

		6. how to write concluding remark 7. project work summary presentation through PPT 8. one research paper writing in any peer reviewed Journal 9. Viva –Voice.	
Recommended Books		• "Research Methodology: Methods and Techniques" C.R. Kothari & Gaurav Garg , New Age International. • "Research Methodology: A Step-by-Step Guide for Beginners" Ranjit Kumar,SAGE Publications. • Methodology of Research in Social Sciences", O.R. Krishnaswami, Himalaya Publishing House. • "Research Methods for the Behavioral Sciences" Frederick J. Gravetter & Lori-Ann B. Forzano,Cengage Learning. • "Business Research Methods" Donald R. Cooper & Pamela S. Schindler, McGraw-Hill Education. ***Reference Books Recommended –*** • Research Design: Qualitative, Quantitative, and Mixed Methods Approaches" John W. Creswell & J. David Creswell, SAGE Publications. • "The Foundations of Social Research: Meaning and Perspective in the Research Process" Michael Crotty,SAGE Publications.	

Evaluation Scheme

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External	A	Very Short answer type	50	8	2	16
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	C	Long answer type	200	4	10	40
Internal	**Based on CT & Assignment/Project**					20
	Total =					100

Evaluation Scheme of Practical

Practical	Experiment 01	12
	Experiment 02	08
	Experiment 03	04
	Spotting	16
	Viva	05
	Sessional	05
Total -		**50**

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GOVT. DIGVIJAY AUTONOMOUS PG COLLEGE RAJNANDGAON (C.G.)

FYUGP (CBCS and LOCF Pattern)

Department of Zoology

Session: 2024-25	**Program: B.Sc.**
Semester: VII	**Subject: Zoology**
Course type: GE - III	**Course Code:**
Course Title : Global Environmental Issue	
Credit: 04 (03+01)	**Lecture – 60 (45+15)**
MM: 100 = (ESE 80+IA 20)	**Minimum Passing Marks: 40%**

Title	**Global Environmental Issue**
Course Learning Outcome:	• **Analyze current environmental issues** in India such as air and water pollution, surface water crisis, and evaluate government initiatives like the Namami Gange project. • **Understand global environmental problems and climate change**, including greenhouse gases, global warming, and their ecological impacts, along with mitigation strategies. • **Identify and assess natural hazards and disaster management practices**, including the use of GIS and remote sensing, and evaluate national and international policy responses.
Program Specific Outcome:	**After studying this Course the student will be able to:** • **Apply environmental science knowledge** to assess and address key national and global environmental challenges, including pollution, climate change, and natural disasters. • **Demonstrate practical understanding of environmental management tools**, such as GIS and remote sensing, and interpret relevant policies and conservation strategies for sustainable development.

Unit	**Lectures**	**Topics**	**Credits**
I	10	Current environmental issues in India: Air pollution in Indian cities, pollution in major rivers of India, Namami Gange project, surface water crisis in India.	0.75
II	10	Global environmental problems: Ozone depletion, Deforestation, Green house gases and their increasing trends. Global warming, Global warming and climate change, recent records of climate change, Extreme weather events, Impact of climate change on ecological systems, Measures to cope with climate change.	0.75
III	10	Environmental Hazards: Geological hazards - volcanoes, Earthquakes, Tsunami, Hydrological hazards -Floods, Droughts, Hurricanes, Cyclones.	0.75
IV	15	Disaster and Hazard management : Human and ecological impacts, risk assessment and vulnerability, Hazards policies and agencies, Role of GIS and remote sensing in surveillance, monitoring, risk assessment. Recent international conventions on environmental problems.	0.75
Lab course/ Project Work	15	• Measurement of Air Quality Index (AQI) using online data. • Testing pH, DO, and BOD of local river/pond water. • Conducting a survey on environmental awareness. • Case study on Namami Gange or local river conservation. • Mapping deforestation in Chhattisgarh using GIS tools. • Visit/report on pollution control in an industrial area. • Analysis of climate data (rainfall/temperature trends). • Preparation of hazard zonation map of Chhattisgarh. • Designing a disaster management plan for an institution. • Report on recent extreme weather event in India.	

Recommended Books	• **Environmental Studies** *By Erach Bharucha* (UGC-recommended; covers Indian environmental issues, policies, and case studies) • **Environmental Science: A Global Concern** *By William P. Cunningham & Mary Ann Cunningham* (Covers global environmental problems, climate change, and sustainability) • **Textbook of Environmental Science** *By G. Tyler Miller Jr. & Scott Spoolman* (Well-illustrated global perspective with topics on pollution and climate impact) • **Disaster Management** *By Harsh K. Gupta* (Focused on natural hazards—earthquakes, floods, cyclones—and management in Indian context) • **Environmental Hazards: Assessing Risk and Reducing Disaster** *By Keith Smith* (Internationally acclaimed for hazard and risk assessment, with recent case studies)

Evaluation Scheme

Evaluation Scheme	Sections in Question Paper	Question type	Word Limit	No. of Questions	Marks per Question	Total
External	A	Very Short answer type	50	8	2	16
	B	Short answer type	100	4	6	24
	C	Long answer type	200	4	10	40
Internal	**Based on CT & Assignment/Project (10+10)**					20
	Total =					100

Evaluation Scheme of Practical

Practical	Experiment 01	12
	Experiment 02	08
	Experiment 03	04
	Spotting	16
	Viva	05
	Sessional	05
Total -		**50**

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