**Department of Zoology Mayurakshi Gramin College, Ranishwar**

**Program Outcome/Program Specific Outcome/Course Outcome**

Department of Zoology, M.G. College Ranishwar, offers undergraduate (honours and General program) course in Zoology in accordance to the prescribed CBCS curriculum of S.K.M. University Dumka. The CBCS provides an opportunity for the students to choose courses from the prescribed courses comprising of core, elective, AECC skill enhancement courses. Generic course in Zoology is offered for students of other departments.

Zoology covers all areas of animal biology starting from molecules to communities. Our degree course has been designed with a real understanding of what the world needs from zoologists and what zoologists need to pursue higher studies and professional career. From classroom lectures to benchmark laboratory experiments and extensive field studies the course objective focuses to make students understand the basic concepts, fundamental principles and the scientific theories related to subject Zoology and its relevance in the day-to-day life. Above all the course aims to make students able to think both critically and creatively to propose novel ideas in explaining facts and figures along with proposing new solution to the problems.

**Program Specific Outcome of Zoology Under-graduate Honours and General Program Course**

Zoology (both Honours and General Program) is taught in all 06 Semesters in accordance to the CBCS curriculum of S.K.M.U. Dumka. The nature of these courses, and their respective marks with credit points are listed below:

Undergraduate Honours Course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Semester | Course name | Course Details | Course Credit | Total Marks |
| I | Animal diversity (Non chordates)-1 | CC-1 | 6 | 100 |
| (A)Animal Diversity (Non chordates)-2  (B)Animal behaviour | CC-2 | 6 | 100 |
| AECC | AECC | 2 | 50 |
| II | Animal Diversity (Chordates) | CC-3 | 6 | 100 |
| (A)Comparative Anatomy of vertebrates  (B)Ecology & Environmental Biology | CC-4 | 6 | 100 |
| Envirnmental studies | EVS | 2 | 50 |
| III | Biostatistics | CC-5 | 6 | 100 |
| Evolution | CC-6 | 6 | 100 |
| Biochemistry | CC-7 | 6 | 100 |
| SEC | SEC | 2 | 50 |
| IV | Palaeontology | CC-8 | 6 | 100 |
| Genetics | CC-9 | 6 | 100 |
| Molucular Biology | CC-10 | 6 | 100 |
| SEC | SEC | 2 | 50 |
| V | (A)Toxicology  (B)Biotechnology  (C)Zoogeography | CC-11 | 6 | 100 |
| (A)Endocrinology & reproductive Biology  (B)Cell Biology | CC-12 | 6 | 100 |
| Economic Zoology | DSE-1 | 6 | 100 |
| Biostatistics | DSE-2 | 6 | 100 |
| Value and Moral Education | Value and Moral Education | 2 | 50 |
| VI | (A)Applied & Economic zoology  (B)Immunology | CC-13 | 6 | 100 |
| (A)Mammalian Physiology (B)Developmental Biology | CC-14 | 6 | 100 |
| Wild life conservation & management | DSE-III | 6 | 100 |
| Agrochemical &Pest management | DSE-IV | 6 | 100 |

**Semester I:**

This Semester is divided in to two core courses viz. CC-I and CC-II. The core course I deals with basic concept of taxonomy and non-chordates where emphasis is given to identify the major groups of non-chordate organisms, to classify them within a phylogenetic framework. The students learn to compare and contrast the characteristics of animals that differentiate them from other related forms of life. Life cycles of important parasites from these animal taxa are also taken in to account. Core course II. Animal behaviour deals with link between organism and environment and between nervous system, and ecosystem. Behaviour plays a critical role in biological adaptation.

**Semester II:**

This Semester is also divided in to two core courses viz. CC-III and CC-IV. The core course III deals with general characteristic and classification of chordates. The students learn to identify different animals based on morphological characters that differentiate them from other related forms of life. Apart from knowing how to classify them the students get the opportunity to learn about their evolution and biology. Core Course IV deal with similarities and differences in the anatomy of different species. Ecology and Environmental biology deals with the interaction between living organisms and their environment.

**Semester III:**

This Semester is divided in to three core courses, CC-V CCVI & CC-VII. The Core Course V deals with the statical processes and methods applied to the analysis of biological phenomena. VI deals with evolutionary biology. The students acquire knowledge about origin of life and its evolution. Various theories (Lamarckism, Darwinism and Neo-Darwinism) are discussed to review the concept of evolution. Macro and micro evidences of evolution along with detailed idea of population genetics are taught under this course. Interpretation of phylogenetic trees and evolution of man are also dealt with under this course.

VII deals with fundamentals of biochemistry. From this course, the students acquire basic concepts like structure, types and biological importance of macromolecules along with most advanced knowledge of enzymes and metabolism of carbohydrates, proteins and lipids.

**Semester IV:**

This Semester is divided in to three core courses, CC-VIII,CC IX & CC-X. The Core Course VIII deals with the history of life .The history is written in the fossil and geological record, paleontology allows to place living organisms in both evolutionary and geological cntext. Core Course IX deals with principles of genetics. The students become competent in gathering information about various aspects of genetics including Mendelian genetics and its extension, linkage and crossing over, mutation and sex determination. They also learn

extra chromosomal inheritance, polygenic inheritance, recombination and transposable genetic materials . Core Course X deals with molecular biology. The students become proficient in knowing structure of DNA, replication, transcription and translation both in prokaryotes and eukaryotes. Gene regulation and cancer biology are also taught in this course.

**Semester V:**

This Semester is divided in to two core courses, CC-XI and CC-XII. The Core Course XI deals with Toxicology, Biotechnology & Zoogeography. Toxicology deals with Poisons, or more correctly the study of how chemicals interfere with the normal function of biological system. Biotechnology deals with technological application that used biological systems or living organisms to make or modify products or process for specific use. Zoogeography deals with the distribution of animals present & past species. The Core Course XII deals with Endocrinology and Reproductive Biology & Cell Biology. Endocrinology deals with structure and function of the different endocrine gland and hormones secreted by the glands and their effects. Cell biology. Attending this course, the students absorbs conceptual knowledge in understanding about animal cell, its membrane, various cellular organelles of importance and cell signalling mechanism.

**Semester VI:**

This Semester is divided in to two core courses, CC-XIII and CC-XIV. The Core Course XIII Applied & Economic Zoology & Immunology. Applied & Economic Zoology is included in national syllabus it deals with insect pasts, animal pasts, natural anemies, beneficial insects and beneficial animals also about animal breeding and animal cultures. With the study Immunology the students acquire basic concept of pathogenicity, life cycle, diagnosis and control of important parasites. Also, they get the opportunity to study the innate and acquired immune system of human. They also get the preliminary knowledge about advanced immunological techniques vital for saving life.

The Core Course CC-XIV deals with Mammalian Physiology & Development Biology. In Mammalian Physiology the students learn about the various systems that are essential for sustenance of life. These includes digestive system, respiratory system, blood vascular system, urino-genital system, endocrine system and nervous system. With the study of Developmental biology Students assimilate adequate knowledge in understanding early (gametogenesis and fertilization), late (fate of germ layers, extra embryonic membrane and placenta) and post embryonic developments (metamorphosis, regeneration and aging) along with various implications of developmental biology (teratogenesis, IVF and ESC).

**Skill Enhancement Courses:**

AECC, Environmental Studies & SEC’s provide a multitude of opportunities to our students.

In department of Zoology, the options for AECC & SEC’s are as follows:

AECC – Languages like English ,Hindi and others. (SEM-I)

Environmental Studies (SEM-II)

SEC- Environment & Public Health(SEM-III), Life Skills & Personality Development(SEM-IV) & Value & Moral Education(SEM-V).

**Discipline Specific Electives:**

DSE’s in Department of Zoology are specialized and advanced courses of main stream which are designed in a manner so that they provide extended scope and exposure to a specific domain. These courses nurture the student’s proficiency and skills so that they become oriented towards higher studies and subsequently get encouraged to choose research as a career.

In department of Zoology, the options for DSE’s are as follows:

DSE-1- Economic Zoology

DSE-2 – Biostatistics

DSE-3- Wild life conservation & Management

DSE-4- Agrochemical & Pest Management

Undergraduate General Course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Semester | Course Name | Course  Detail | Course  Credit | Total  Marks |
| I | 1. Animal Diversity(Non chordates): I 2. Animal behavior | CC-1 | 6 | 100 |
| AECC(Language) | AECC | 2 | 50 |
| II | 1. Animal Diversity(Non chordates): II 2. Ecology | CC-2 | 6 | 100 |
| Environmental Studies | AECC | 2 | 50 |
| III | 1. Animal Diversity –Chordates 2. Endocrinology | CC-3 | 6 | 100 |
| Environment & Public Health | SEC | 2 | 50 |
| IV | 1. Evolution 2. Palaeontology 3. Genetics 4. Molecular Biology | CC-4 | 6 | 100 |
| Life Skills & Personality Development3 | SEC | 2 | 50 |
| V | Economic Zoology | DSE-1 | 6 | 100 |
| Biostatistics | DSE-2 | 6 | 100 |
| G.E  Santal Hul, First war of freedom struggle (1857), Gandhian Phase of National Movement, Preamble to the constitution, Fundamental Rights and Fundamental Duties etc. | G.E-1 | 6 | 100 |
| Value & Moral Education |  | 2 | 50 |
| VI | DSE Wild life conservation & Management | DSE-3 | 6 | 100 |
| G.E  Current Event National and International importance, Indian Economy, Free market Economy, Niti Ayog, Problem of Agriculture Sector in Jharkhand and tribal way of life etc. | G.E-2 | 6 | 100 |
| Agrochemical & Pest Management | DSE-4 | 6 | 100 |

**Semester I:**

This semester deals with CC-I: Animal Diversity. deals with basic concept of taxonomy and non-chordates where emphasis is given to identify the major groups of non-chordate organisms, to classify them within a phylogenetic framework. The students learn to compare and contrast the characteristics of animals that differentiate them from other related forms of life. Life cycles of important parasites from these animal taxa are also taken in to account. Animal behaviour deals with link between organism and environment and between nervous system, and ecosystem. Behaviour plays a critical role in biological adaptation.

**Semester II:**

This semester deals Ecology deals with the interaction between living organisms and their environment.

**Semester III:**

This semester deals with CC-III: The students learn to identify different animals based on morphological characters that differentiate them from other related forms of life. Apart from knowing how to classify them the students get the opportunity to learn about their evolution and biology. Endocrinology deals with structure and function of the different endocrine gland and hormones secreted by the glands and their effects.

**Semester IV:**

This semester deals with CC-IV: The students acquire knowledge about origin of life and its evolution. Various theories (Lamarckism, Darwinism and Neo-Darwinism) are discussed to review the concept of evolution. Macro and micro evidences of evolution along with detailed idea of population genetics are taught under this course. Interpretation of phylogenetic trees and evolution of man are also dealt with under this course.

Palaeontology. deals with the history of life .The history is written in the fossil and geological record, paleontology allows to place living organisms in both evolutionary and geological context.

Genetics. deals with principles of genetics. The students become competent in gathering information about various aspects of genetics including Mendelian genetics and its extension, linkage and crossing over, mutation and sex determination.

Molecular Biology. deals with molecular biology. The students become proficient in knowing structure of DNA & RNA, replication, transcription and translation both in prokaryotes and eukaryotes.Also learn about about protein synthesis

**Semester V and VI:**

These two semesters comprise of Discipline specific electives (DSE).

**Semester V and VI:**

**GE -1** is compulsory for all streams of General Course Science ,arts and commerce of Fifth semester. The objective of these paper is to motivate students to learn glorious aspects of our freedom struggle, making of the constitution, its silent features and philosophy so that they may immerge as response able citizen of the nation and perform successfully in various competitive examinations conducted by public service commission, Bank and Railways for requirement of personnel.

**GE -2** is compulsory for all streams of General Course Science ,arts and commerce of Sixth semester. The objective of these paper is to enhance the awareness level of students about current events of national as well as international importance, economy and trivial way of life so that they may be able to perform better in various competitive examinations an d manage to strive smoothly towards self dependence