

DEPARTMENT OF ZOOLOGY

PSO/CO



**PROGRAMME SPECIFIC OUTCOMES &
COURSE OUTCOMES OF
ZOOLOGY (UG & PG)**

KALYAN P.G. COLLEGE, SECTOR-7, BHILAI

VISION

1. To facilitate youth to develop Independent, Just, Compassionate, accommodating think and to skill them in mental and physical development in using thoughts and knowledge to transform world around to be better place.
2. To make available equal opportunity and ensure support without prejudice for gender, class, caste, religion, and economic status.
3. To provide a unique framing experience which will enable the students to realize their potential and to mould their overall personality.
4. To make available equal opportunities and ensure support without prejudice for gender, class, caste, religion and economic status.
5. To ensure recognition as an international leader in holistic education to achieve global competency in co-operate and social world.
6. To go beyond the recognized frontiers of social equity and justice and provide pioneering leadership action in bringing together the world.
7. To make available globally competitive education infrastructure compatible to the changing challenges of India's nation-building processes.

MISSION

1. Strengthen and embrace students from all sections and categories of the state that they are creators of their fate through variety of activities, academic and creating in them the local, political and cultural awareness and aiming to their overall activities.
2. Teamwork and leadership qualities are promoted by projects, seminars, group discussion, industrial visit, educational tours and motivating them towards community development.
3. Providing education to all by Strengthening and motivating the weaker section of the society for humanistic and social values towards our society, state and country.
4. Sensitize the youth and prepare young minds for socially responsible citizens for their better future.

UNDERGRADUATE PROGRAMME OUTCOMES – B.SC (ZOOLOGY)**LEARNING OUTCOMES:**

Under Graduate Program at Kalyan Post Graduate College, Bhilai , a student will have obtained

PO1	Environment protection and conservation-To gain basic knowledge about environment conservation, environment protection and environment improvementAlso to motivate them for the welfare of human and non-human communities.
PO2	To strengthen their communicative skills -To create interest among students in the field of zoology through different methods including power point presentation, group discussions, seminars.
PO3	Environment Sensitivity and sustainability – To sensitize towards environment and sustainability and significance of sustainable development.
PO4	Skills for understanding and learning -To escalate their skills for understanding and learning about some of the economic uses of various fauna through project work and educational tours.
PO5	To develop natural ability in the field of zoology, which proves beneficial in the field of research for society
PO6	To enhance the Knowledge in the field of modern tools and techniques and their practical use in the laboratory.
PO7	Social Interaction: Ability to elicit views of others, to demonstrate empathetic social concern and equity-centered national development, mediate disagreements and help to reach conclusions in group settings
PO8	To develop communication skill due to continue exposure given to them, which proves a boon for their future.
PO9	Ethics: Recognize different value systems, understand the moral dimensions of one's decisions, and accept responsibility for them.
PO10	Effective Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings. Able to explore and generate employment to other sections of the society.

PROGRAM SPECIFIC OUTCOMES:

At the end of B.Sc Zoology at Kalyan Post Graduate College, a student will have developed:

PSO1	To understand and capable to learn in the major field of classification, characteristics of Invertebrate and vertebrate animals, embryology, biochemistry, biotechnology.
PSO2	To develop capacity and to explore themselves in the field of Zoology and related subjects like Biotechnology, Biochemistry, Life-Sciences which proves beneficial in the field.
PSO3	To understand the concepts and principles of biochemistry, immunology, physiology, ethology, evolution, and environmental biology endocrinology, developmental biology, cell biology, genetics, and entomology, molecular biology and microbiology.
PSO4.	To develop technical skills in biotechnology, bioinformatics and biostatistics.
PSO5	To develop and Impart their knowledge in the field of Applied Zoology: Sericulture, Aquaculture, Poultry Farming, fish farming, Animal husbandry
PSO6	To Perform laboratory procedures in the areas of animal diversity, systematics, cell biology, genetics, biochemistry, immunology, developmental biology, environmental biology, science methodology,
PSO7	Identify and Classify common animals found in the near by area, Procedure and preservation of collections.
PSO8	Use of tools which are commonly used in the labs and are useful for all activities related to Zoology.
PSO9	To impart a good relationship with the nature and to protect the nature.
PSO10	To ensure that the students are equipped with expertise to make use of the opportunities and to tackle the challenges in the field of Zoology.

COURSE OUTCOMES:
COURSE PROFILE (B.Sc. ZOOLOGY)

B.Sc	Paper-1	Paper-2
B.Sc (Part-1)	CELL BIOLOGY AND NON CHORDATA	CHORDATA AND EMBROLOGY
B.Sc (Part-2)	ANATOMY AND PHYSIOLOGY	VETRTEBRATE ENDROCRINOLOGY, REPRODUCTIVE BIOLOGY, BEHAVIOUR, EVOLUTION AND APPLIED ZOOLOGY
B.Sc (Part-3)	Ecology,ENVIRONMENTAL BIOLOGY, TOXICOLOGY, MICROBIOLOGY AND MEDICAL ZOOLOGY	GENETICS CELLPHYSIOLOGY, BIOCHEMISTRY, BIOTECHNOLOGY AND BIOTECHNIQUES.

B.Sc. ZOOLOGY (PART-1)

At the end of this course, a student will have developed ability to:

PAPER	PAPER NAME	OUT COMES
PAPER-1	CELL BIOLOGY AND NON CHORDATA	CO1- To the basic idea about the structural and functional unit of life, their organelles, and an idea of hereditary material. CO2- To get the elementary idea about cell division , how it occurs, about the Cancerous cell, cell transformation and general idea about immunity. CO3- To Know about General characters and classification of phylum, Protozoa, porifera and coelenterate upto order. CO4- To know the basic idea about the classification of Phylum platyhelminths, Nemathelminths, Annelida, Arthropoda up to order. CO5- To get the Knowledge about Phylum Mollusca and Echinodermata, and their type study.

PAPER-2	CHORDATA AND EMBRYOLOGY	<p>CO1-To get the knowledge of classification of Chordates up-to Order.</p> <p>CO2-To understand the difference between the poisonous and non poisonous snake, also about the parental care in fishes.</p> <p>CO3- To get an idea how to Compare the comparative account of Prototheria, Metatheria, Eutherian and its affinities.</p> <p>CO4- To Know about the Structure of gametes, types of eggs, cleavage.</p> <p>CO5-To get an Idea of Embryonic induction, development of chick, extra embryonic membrane.</p>
LAB COURSE	ZOOLOGY PRACTICAL	<p>CO1-To gain the Knowledge About various systems of Earthworm, Palamon, Pila through different models.</p> <p>CO2- Collection of insects, and to study the mouth parts and types of adaptation .</p> <p>CO3-Slide preparation of various invertebrate's mouth parts.</p> <p>CO4-Study of characteristic features of various invertebrates and their collections.</p> <p>CO5- study of various cytological slides.</p>

B.Sc. ZOOLOGY (PART-11)

At the end of this course, a student will have developed ability to:

PAPER	PAPER NAME	OUT COMES
PAPER-1	ANATOMY AND PHYSIOLOGY	CO1 -Understand and compare the structure of integument, scales, hairs, feathers. Study of respiratory organs and air-sacs in birds. CO2 -Comparative study of Endoskeleton, Circulatory system and urogenital system. CO3 -To get the knowledge of Nervous System , Ear and Eye, and Various Gonads and Genital ducts. CO4 -To Understand and know about the comparative Anatomy of digestive, circulatory and respiratory organs among various Vertebrates. CO5 -To compare Excretion, Muscle contraction and Physiology of nerve impulse, Synaptic transmissions.
PAPER-2	VETRTEBRATE ENDOCRINOLOGY, REPRODUCTIVE BIOLOGY, BEHAVIOUR, EVOLUTION AND APPLIED ZOOLOGY	CO-1 To get the knowledge about various endocrine glands. Biosynthesis and secretion and endocrine disorder. CO2 -To Know about reproductive cycle in vertebrates, Menstruation, parturition, Pregnancy and hormonal regulation of gametogenesis. CO3 - To Understand, Evidences of organic evolution. Types of Variation, Mutation, Isolation and Natural selection. CO4 - Introduction of Ethology. Patterns of Behaviour Taxes, Reflexes, Drives and Stereotyped Behaviour. CO5 - To understand various types of cultures Aquaculture, Sericulture, Apiculture, Pisciculture, Poultry keeping.
LAB COURSE	Zoology Practical	CO1 -Identify and understand specified representative examples of the different chordates (Classification and character). CO2 - To know about Simple microscopic technique through unstained or stained permanent mounts. CO3 - Study how to prepare permanent histological, slides of various organs. CO4 - To Identify species and of honey bees and to study their life cycle.. CO5 -Key identification of specified bones of chordates.

B.Sc. ZOOLOGY (PART-111)

At the end of this course, a student will have developed ability to:

PAPER	PAPER NAME	OUT COMES
PAPER-1	ENVIRONMENTAL BIOLOGY, TOXICOLOGY, MICROBIOLOGY AND MEDICAL ZOOLOGY	<p>CO1- To know the scopes of Ecology. Communities and Ecosystems. Population- Characteristics and regulation of densities.</p> <p>CO2- To understand- Food chain in a freshwater ecosystem. Energy flow in ecosystem-Trophic levels, Conservation of Natural resources, Environmental impact Assessment.</p> <p>CO3- To get the basic idea of Toxicity, Types of toxicants, Principle of systematic toxicology, Animal poison.</p> <p>CO4- To know the General and Applied microbiology. Domestic Microbiology and Industrial microbiology.</p> <p>CO5- To Know Brief account of life-history and pathogenicity of the following pathogens with reference to man; Prophylaxis and treatment.</p>
PAPER-2	GENETICS CELLPHYSIOLOGY, BIOCHEMISTRY, BIOTECHNOLOGY AND BIOTECHNIQUES	<p>.CO1- To Know about Varieties of gene expression, Linkage, Linkage maps, Mutations, Human genetics.</p> <p>CO2- To Understand Transport across membrane - cell membrane; Mitochondria and Endoplasmic reticulum< Active transport, Enzymes and its nature</p> <p>CO3- To understand Basic structure and biological function. Of Amino acids and Peptides. Metabolism of Carbohydrate, Lipid, Protein</p> <p>CO4- To Know about Biotechnology - Scope and importance and applications of Recombinant DNA and Gene cloning, Cloned genes and other tools of biotechnology.</p> <p>CO5-To gain the knowledge of Principles and techniques of various biotechniques such as pH meter, Colorimeter, Microscopy-Light microscopes, Phase contrast and Electron microscopes. Centrifugation, Separation of biomolecules by chromatography, and Electrophoresis</p>
LAB COURSE	ZOOLOGY PRACTICAL	<p>CO1-To gain the knowledge to calculate population density, Percentage frequency, Relative density.</p> <p>CO2- To Know about Blood group detection (AB, AB & O), R.B.C., W.B.C. count, Blood coagulation time.</p> <p>CO3- To understand Working Principles of pH meter, Colorimeter, centrifuge and microscopes.</p> <p>CO4- To the methods for the Biochemical detection of Carbohydrate, Protein and Lipid.</p> <p>CO5- To know about the Study of Permanent slides preparation of Parasites.</p>

POSTGRADUATE PROGRAMME OUTCOMES – M.Sc. (ZOOLOGY)**LEARNING OUTCOMES:**

Post Graduate Program at Kalyan Post Graduate College, Bhilai , a student will have obtained

LEARNING COURSEOBJECTIVES

<i>PO1</i>	To understand and acquire knowledge in the major fields of Biosystematics and Biostatistics, Comparative chordate and non-chordates, Anatomy and physiology, Genetics, Evolution, Ecology, environmental biology, Animal behaviour, Endocrinology, Immunology, Reproductive Biology, Fish and Fisheries.
<i>PO2</i>	To understand and acquire knowledge in the major field of classification and characteristics of Invertebrate and Vertebrate animals and able to discuss the animal diversity.
<i>PO3-</i>	To develop knowledge and to understand how animals adapt to their environment through various objectives and how the living organism can reproduce.
<i>PO4-</i>	To gain Knowledge about Reproductive and Gametic biology and to become familiar with embryology, the development and function of gametes, embryo, placenta, amnion etc.
<i>PO5</i>	To enhance their knowledge in the field of Population genetics, evolution and animal behaviour which will prove fruitful through small group of teachings and group discussion, how the development take place from germ cells to adult human beings and also the changes in characters from one generation to next.
<i>PO6-</i>	To know about the tools and techniques used in various biological assays which help them to escalate their skills to understand its basic principle and its uses in the Biochemical, biotechnology, Microbiology, Biomedicine and in various fields
<i>PO7</i>	To increase their knowledge in Fish and Fisheries, so that they not only gain knowledge in this field but can generate employment for others by developing their own fish farms and also in collection, transportation and marketing.

PO8	To sensitize towards environment and sustainability and significance of sustainable development. Ability to elicit views of others, to demonstrate empathetic social concern and equity-centered national development, mediate disagreements and help to reach conclusions in group settings.
PO9	To strengthen their communicative skills and to create interest among students in the field of zoology through different methods including power point presentation, group discussions, seminars
PO10	To escalate their skills for understanding and learning about some of the common species of fishes in our state, different techniques, recreation and economic uses of fishes and various fauna through project work and educational tours.

PROGRAM SPECIFIC OUTCOMES:

At the end of M.Sc Zoology at Kalyan Post Graduate College, a student will have developed

PROGRAMME SPECIFIC OUTCOME

PSO1	To Gain Knowledge in the field of taxonomy and procedure of nomenclature, which is the basic requirement for classification of different organisms due to diversity among them.
PSO2	To understand the latest and fast-growing field of population genetics, immunology, neuroendocrinology, circadian rhythms among animals.
PSO3	To know about the morphology, anatomy and physiology of different class of animals and therefore, encouraged them to become skilled through various models.
PSO4	To get Knowledge regarding environment degradation and take initiatives to protect environment, through various activities like campaigning, posters, so as to create awareness among other sections of the society also.
PSO5	To get Knowledge in the Specialized area of Reproductive biology and Fish & Fisheries the post graduate students of zoology can generate employment.
PSO6	To know about conservation of faun, protection, management and improvement of environment and utilizes it safely towards the environmental issues and development.
PSO7	To develop natural ability of learning not only in the field of zoology but also related subjects of life-science, like Biotechnology, Microbiology, and

	Biochemistry which proves beneficial in the field of research for society.
PSO8	To develop laboratory skill in Identification of animals, Fish and Fisheries, Animal behaviour, Environmental pollution which are also beneficial for higher education and employment.
PSO9	To gains an adequate knowledge about various techniques of biological assays, like spectroscopy, Microtome, electrophoresis, spectrophotometer, ultracentrifugation, cell culture etc.
PSO10	To develop communication skill due to continue exposure given to them by the department of zoology through various projects which proves a boon for their future

DISTRIBUTION OF PAPER FOR SEMESTER PATTERN

SEMESTER-I		
PAPER-I	BIOSYSTEMATICS AND BIODIVERSITY	80 MARKS
PAPER-II	STRUCTURE AND FUNCTION OF INVERTEBRATES	80 MARKS
PAPER-III	POPULATION GENETICS AND EVOLUTION	80 MARKS
PAPER-IV	TOOLS AND TECHNIQUES IN BIOLOGY	80 MARKS
	INTERNAL ASSESSMENT 20 MARKS EACH PAPER	80 MARKS
	LAB COURSE - I (BASED ON PAPER I AND II)	80 MARKS
	LAB COURSE - II (BASED ON PAPER III AND IV)	80 MARKS
	SEMINAR (TWO)	40 MARKS
	TOTAL MARKS =	600 MARKS

PAPER	NAME OF PAPER
Paper I	BIOSYSTEMATICS & BIODIVERSITY
Paper II	STRUCTURE & FUNCTIONS OF INVERTEBRATES
Paper III	POPULATION GENETICS & EVOLUTION
Paper IV	TOOLS AND TECHNIQUES IN BIOLOGY

COURSE OUTCOME

AT THE END OF THIS COURSE, A STUDENT WILL HAVE DEVELOPED ABILITY TO:

PAPER NAME	COURSE	OUTCOMES
PAPER I	BIOSYSTEMATICS & BIODIVERSITY	CO-1. To understand the Basic concepts of Biosystematics and taxonomy
		CO-2. Study the Dimensions of speciation and specific characters.
		CO-3. Study the Procedure keys in taxonomy.
		CO-4. Study of biodiversity, climatic change hot spots
PAPER II	STRUCTURE & FUNCTIONS OF INVERTEBRATES	CO-1. Study of organization of coelom, Locomotion.
		CO-2. Understand the Physiology of Nutrition, digestion and respiration
		CO-3. To gain knowledge about the Excretion and Nervous system.
		CO-4. Get the knowledge of Concept and significance of Minor phyla and various larval forms in invertebrates.
PAPER III	POPULATION GENETICS & EVOLUTION	CO-1. Understand the basic knowledge about Origin of life (Biotic & Abiotic concepts, Evidence of Evolution.
		CO-2. Understand the Molecular evolution (varieties of genomics evolution.
		CO-3 to study about pattern and organization of reproductive isolation.
		CO-4. Study the Origin of Higher categories.
PAPER IV	TOOLS AND TECHNIQUES IN BIOLOGY	CO-1. To understand the Importance and application of Biological and chemical assay studies
		CO-2. Study the Microscopy principles of light transmission and functioning.
		CO-3 Study the Various Microbiological techniques and tissue culture.
		CO-4. To understand the principals and techniques of Nucleic acid Hybridization, cryopreservation, separation of DNA etc.
LAB COURSE I	BIOSYSTEMATICS AND INVERTEBRATE STRUCTURE AND FUNCTIONS	<ol style="list-style-type: none"> To gain knowledge regarding invertebrates through museum specimens. Observation of permanent slides of invertebrates. Biodiversity in grassland, preservation methods in different invertebrates.

**LAB
COURSE II****POPULATION
GENETICS AND
EVALUTION AND
TECHNIQUES**

1. To study the Preparation of Human Chromosomes, , Pedigree analysis, BMI, Morphometric analysis
2. Various techniques used in Biology.

COURSE PROFILE**DISTRIBUTION OF PAPER FOR SECOND SEMESTER PATTERN****SEMESTER-II**

MOLECULAR BIOLOGY AND BIOTECHNOLOGY	80 Marks	
GENERAL PHYSIOLOGY AND ENDOCRINOLOGY	80 Marks	
DEVLOPMENTAL BIOLOGY	80 Marks	
QUANTITATIVE BIOLOGY AND COMPUTER APPLICATION	80 Marks	
Internal Assessment 20 marks each paper	80 Marks	
Lab course – I (Based on paper I and II)		80 Marks
Lab course – II (Based on paper III and IV)		80 Marks
Seminar (Two)		40 Marks
Total Marks = 600 Marks		

Paper	Name of Paper
Paper I	MOLECULAR BIOLOGY AND BIOTECHNOLOGY
Paper II	GENERAL PHYSIOLOGY AND ENDOCRINOLOGY
Paper III	DEVLOPMENTAL BIOLOGY
Paper IV	QUANTITATIVE BIOLOGY AND COMPUTER APPLICATION

COURSE OUTCOME**AT THE END OF THIS COURSE, A STUDENT WILL HAVE DEVELOPED ABILITY TO:**

Paper Name	Course	Outcomes
PAPER I	MOLECULAR BIOLOGY AND BIOTECHNOLOGY	CO1- To understand the Importance of digestion and metabolism
		CO-2. To study the muscle functions and various types of movements.
		CO-3 to understand about the mechanism and application of gene Therapy.
		CO-4 To get the Knowledge of application of biotechnology in various sectors.
PAPER II	GENERAL PHYSIOLOGY AND ENDOCRINOLOGY	CO-1. Understand The process of Digestion and Metabolism
		CO-2. To Know about the functions of Muscle and Movement.
		CO-3. To understand about endocrinology and Biosynthesis of hormones
		CO-4. Get the knowledge about the mechanism of Hormone actions.
PAPER III	DEVLOPMENTAL BIOLOGY	CO-1. Understand the basic knowledge of Oogenesis , vitellogenesis and spermatogenesis.
		CO-2. Understand the Biological and biochemical role of Fertilization.
		CO-3. Study the Formative movements, fate Maps and Organogenesis
		CO-4. To know about Differentiation, Metamorphosis and teratology.
PAPER IV	QUANTITATIVE BIOLOGY AND COMPUTER APPLICATION	CO-1. To gain insight into Digital computerization and its application
		CO-2. To study MS Office, Excel, PowerPoint.
		CO-3 To Know about Organization, representation of data and central tendency.
		CO-4. To understand the test of significance, corelation, Regression
LAB COURSE I	MOLECULAR BIOLOGY AND BIOTECHNOLOGY AND GENERAL PHYSIOLOGY AND ENDOCRINOLOGY	To gain knowledge of Isolation of DNA, RNA, cell biology related practical's, Various separation methods. Estimation of RBC, WBC, Blood group detection.
LAB COURSE II	DEVLOPMENTAL BIOLOGY and QUANTITATIVE BIOLOGY AND COMPUTER APPLICATION	To Study slides of development biology, Caudal regeneration, Observation of the effect of thyroid hormone. Study of Central tendency, ANOVA, correlation, Probability.

COURSE PROFILE**DISTRIBUTION OF PAPER FOR THIRD SEMESTER PATTERN****SEMESTER-III**

Paper-I	Comparative Anatomy of vertebrate	80 Marks
Paper-II	Animal Behaviour	80 Marks
Paper-III	Environmental Physiology and population Ecology	80 Marks
Paper-IV	Immunology and Parasitism	80 Marks
	Internal Assessment 20 marks each paper	80 Marks
	Lab course – I (Based on paper I and II)	80 Marks
	Lab course – II (Based on paper III and IV)	80 Marks
	Seminar (Two)	40 Marks
	Total Marks =	600 Marks

Paper	Name of Paper
Paper I	Comparative Anatomy of vertebrate
Paper II	Animal Behaviour
Paper III	Environmental Physiology and population Ecology
Paper IV	Immunology and Parasitism

COURSE OUTCOME

At the end of this course, a student will have developed ability to:

PAPER NAME	COURSE	OUTCOMES
PAPER I	COMPARATIVE ANATOMY OF VERTEBRATE	CO-1. To understand the Origin, classification of Vertebrates.
		CO-2. Comparative Study the Limbs, Jaws, Girdles
		CO-3. Study the Heart, Aortic Arches in different groups of vertebrates.
		CO-4. Comparative Study the Brain, digestive system, sense organs in different groups of vertebrates.
PAPER II	ANIMAL BEHAVIOUR	CO-1. To Understand Histological perspective of ethology, Rhythms and its types.
		CO-2. Understand the methods of learning , communication, reproductive biology etc.
		CO-3. To gain knowledge about the Orientation and Neural as well as hormonal control of behaviour.
		CO-4. Understand the basic knowledge of hormonal control of behavioural patterns.
PAPER III	ENVIRONMENTAL PHYSIOLOGY AND POPULATION ECOLOGY	CO-1. Understand the basic knowledge of Population dynamics, population density, Population evolution and community dynamics.
		CO-2. Understand the Types of adaptation in vertebrates- Aerial, Terrestrial, Aquatic and cave.
		CO-3. To get the knowledge of Stress Physiology, acclimatization, Physiology, Mechanism of adaptation.
		CO-4. To know about Stress physiology in different body conditions.
PAPER IV	IMMUNOLOGY AND PARASITISM	CO-1. To gain insight into Concept of Immune system, types of cell and organs involved in it. Monoclonal antibodies, Antigen and Antibodies interaction.
		CO-2. To study about T-cells, and B-cells, Activation, maturation and differentiation.
		CO-3. Autoimmune disease, Immunization, transplantation, Vaccine development.

		CO-4. To understand the immune response to Cancer, SARS, CoV-2.
LAB COURSE I	COMPARATIVE ANATOMY OF VERTEBRATE AND ANIMAL BEHAVIOUR	<ol style="list-style-type: none">1. To gain knowledge of museum specimens of chordate.2. Observation of the following in the pre-dissected specimens of Vertebrates.3. Study of permanent slides of vertebrates.4. Osteology of Amphibia, Reptile, Bird and Mammal. Skulls of dog, cat and monkey.5. Behaviour aspects of phototactic and phototaxis behaviour.
LAB COURSE II	ENVIRONMENTAL PHYSIOLOGY AND POPULATION ECOLOGY AND IMMUNOLOGY AND PARASITISM	To gain knowledge of Blood film, identification of cells, DOT blots, ELISA, Blood coagulation, Population Dynamics

COURSE PROFILE

DISTRIBUTION OF PAPER FOR SEMESTER PATTERN

SEMESTER-IV

Paper-I	BIOCHEMISTRY (COMPULSORY)	80 Marks
Paper-II	NEUROPHYSIOLOGY (COMPULSORY)	80 Marks
Paper-III	ICTHYOLOGY-(FISH) STRUCTURE AND FUNCTIONS(OPTINAL)	80 Marks
Paper-IV	PISICULTURE – ECONOMIC IMPORTANCE OF FISH (OPTINAL)	80 Marks
	Internal Assessment 20 marks each paper	80 Marks
	Lab course – I (Based on paper I and II)	80 Marks
	Lab course – II (Based on paper III and IV)	80 Marks
	Seminar (Two)	40 Marks
	Total Marks =	600 Marks

M.Sc. FOURTH SEMESTER

Paper	Name of Paper
Paper I	BIOCHEMISTRY (COMPULSORY)
Paper II	NEUROPHYSIOLOGY (COMPULSORY)
Paper III	ICTHYOLOGY-(FISH) STRUCTURE AND FUNCTIONS (OPTINAL)
Paper IV	PISICULTURE AND ECONOMIC IMPORTANCE OF FISH (OPTINAL)

COURSE OUTCOME

At the end of this course, a student will have developed ability to:

PAPER NAME	COURSE	OUTCOMES
PAPER I	BIOCHEMISTRY (COMPULSORY)	CO-1.To understand the Basic concepts of Structure and biochemical synthesis of proteins and amino acids.
		CO-2. Study of the structure and classification of carbohydrate, lipids and fatty acids.
		CO-3. Study the Procedure Vitamins, enzymes and nomenclature. keys.
		CO-4. Study of Hormonal regulation of protein, carbohydrate and lipids.
PAPER II	NEUROPHYSIOLOGY (COMPULSORY)	CO-1. Study of Histological and physiological structures of nervous system.
		CO-2. Understand the Physiology Nervous system, spinal cord, grey and white matter.
		CO-3. To gain knowledge about the Cerebrum, Cerebellum, Brain stem.
		CO-4. Get the knowledge of Concept of Autonomic nervous system, reflex action,
PAPER III	ICTHYOLOGY-(FISH) STRUCTURE AND FUNCTIONS (OPTINAL)	CO-1. Understand the basic knowledge about Originevolution and classification of fishes.
		CO-2. Understand the structure of accessory respiratory organs, airbladder, excretion,

PAPER IV	PISICULTURE AND ECONOMIC IMPORTANCE OF FISH (OPTINAL)	osmoregulation.
		CO-3 to study about pattern and organization of coloration in fishes, sound production, deep sea adaptation.
		CO-4. Study the Migration in fishes, Parental care, Hill stream fishes.
		CO-1. To understand the Importance and application of collection of fishes, types of ponds, Management of fish Farm.
		CO-2. Study the Composite fish culture, prawn culture, Some fisheries recourses of C.G.
		CO-3 Study the Various types of Costal and offshore fishes,
		CO-4. Methods of Fish preservation, marketing of fishes' Economic importance, fish disease.
LAB COURSE I	BIOCHEMISTRY AND NEUROPHYSIOLOGY	1. Estimation of biochemical enzymes and anti-oxidants.
		2. Estimation of Protein, oil, carbohydrate,
		3. Study of nervous system of various groups of chordates.
LAB COURSE II	ICTHYOLOGY-(FISH) STRUCTURE AND FUNCTIONS and PISICULTURE AND ECONOMIC IMPORTANCE OF FISH	<ol style="list-style-type: none"> To study the various organs of fishes, clay modal preparation of various class of fishes, osteology of fishes, accessory respiratory organs in fishes. Histology and histochemical preparation of slides in fishes through microtomy.



Bruceeeel
 PRINCIPAL
 Kalyan Post Graduate College
 Bhilai Nagar (C.G.)