

Course Outcome

Sub:-Zoology

B.Sc. Sem.:- 1 to 6

Year:-2015-2016

Sem.	Course Code	Course Title	Course Objective		Expected Outcome
			Theory	Practical	
1	Zoo-101	Mammalian anatomy, Histology and Physiology of Urinary system:Non chordates animal diversity, Genetics, Animal biotechnology and Economic Zoology	<p>[101] This course is designed to acquaint students with mammalian anatomy and physiology.</p> <p>Students will be aware of the basic structure, internal anatomy and physiology of human kidney and related diseases.</p> <p>To acquaint students with the general plan of invertebrate system by studying representative types [Animal]</p> <p>To acquaint students with cytology genetics, concepts of bio technology and techniques of animal tissue culture and various lab equipments.</p>	<p>[102] To study the analysis of urine [Physical and Chemical analysis].</p> <p>Study of Ascaris lumbricoides through slides and specimen.</p> <p>Study of cell organelles through charts.</p> <p>Study of genetics through charts.</p> <p>Study of genetic problems by solving them.</p>	<ul style="list-style-type: none"> Acquainted with the mammalian anatomy and physiology which prove helpful to them in research field or basic sciences. Students may know the anatomy and physiology of kidney which helps students to know about the structural peculiarities and what to do to maintain health of kidney. Students may also know about the kidney related diseases and their remedies and preventive measure. They learn structure of cell organelles tools, techniques, types and applicability of animal tissue culture. Acquainted with the latest technological development in the field of Bio technology and

					<p>tissue culture.</p> <ul style="list-style-type: none"> • They also become familiar with laboratory equipments and their uses in this field.
2	Zoo-103	Mammalian anatomy, Histology, Physiology, Non chordate animal diversity, Cell biology, Genetics and Animal bio technology	<p>[103] This course is designed to acquaint students with mammalian anatomy and physiology of blood.</p> <p>This course is designed to acquaint student with anatomical and histological study of heart and cardiac tissue and its physiology and clinical connection.</p> <p>To understand basic taxonomy and diversity of invertebrate animal and with physiological processes and their importance.</p> <p>To understand cellular organization and structure of cell organelles.</p> <p>Able to understand basic concept of classical genetic and their applications.</p>	<p>[104] To study the physiology of blood by performing experiments.</p> <p>To study the cardiology through models, charts and photographs.</p> <p>Study of life cycle of plasmodium through charts and slides.</p> <p>Study of cell organelles through charts.</p> <p>Study of genetics through charts as per theory syllabus.</p> <p>Study of genetic problem by solving them.</p>	<ul style="list-style-type: none"> • Students will learn about morphology and anatomy of cardiac tissue and blood. • Students will know about their functioning, Importance, Abnormalities, Causes for abnormalities and diseases develop due to this. • Students will learn about the taxonomy which will make students master in identification of organisms which is very much in demand in zoological field. • Students will come to know the basic concepts of cellular organization, Cell organelles, types and importance. • Student will also able to know and apply their applications after studying classical genetics.
3	Zoo-201	Animal diversity[Non chordates, Cytology, Genetics and animal bio	<p>[201] Students will aware of basic taxonomy of non chordates.</p> <p>Students will learn to</p>	<p>[203-A] To study the classification of non chordates up to classes giving reasons.</p>	<ul style="list-style-type: none"> • Students will be aware of basic taxonomy of non chordates. • Students will learn to identify non

		technology]	<p>identify non chordates to their special feature.</p> <p>Students will become familiar with important phenomena of few non chordates.</p> <p>To acquaint students with the concept of genetics and bio technology along with the techniques of animal cell culture and various lab equipments.</p>	<p>To study the life cycle of Earth warm through charts.</p> <p>To study the kinds of Coral reefs and Symmetry.</p> <p>To study the types and general function of lysosomes and cytoskeleton through charts.</p> <p>To study the morphological and physiological characteristics of cancer cell through charts.</p> <p>To study the different genetic phenomena through charts.</p> <p>To study the equipments for animal cell culture through instrument and charts.</p>	<p>chordates from their special feature.</p> <ul style="list-style-type: none"> • Students will know about important phenomena of few non chordates. • Students will know about economic importance of few animals.
3	Zoo-202	Animal diversity [chordates, human histology, Mammalian physiology]	<p>[202]</p> <p>This course is designed to acquaint student with the basic taxonomy of chordates.</p> <p>Students will learn to identify chordates with their special features.</p> <p>Students will become familiar with types study of a typical chordate animal and important phenomena of non</p>	<p>[203-B]</p> <p>To study the classification of some chordates up to their order level through specimen and charts.</p> <p>Identification of snakes by specimens.</p> <p>Study of sharks through charts and permanent mounting.</p> <p>To study the histology of some</p>	<ul style="list-style-type: none"> • Students will be aware of basic taxonomy of chordates. • Students will learn to identify chordates from their special features. • Students will learn type study of typical chordates. • Student will become master in identification of histological structure, their arrangements and

			<p>chordates.</p> <p>Students will become familiar with identification of some venoms and non venoms snakes.</p> <p>Student acquaint with the basic histology of various human digestive organs.</p> <p>Students will aware of physiology of digestion and absorption.</p>	<p>human digestive organs.</p> <p>To study the action of human salivary amylase on starch by performing experiment.</p>	<p>physiological aspects.</p>
4	Zoo-204	Animal diversity [Non chordates and Chordates, Human Histology, Comparative anatomy of vertebrates].	<p>[204]</p> <p>This course is designed to know the classification of some advanced non chordates with suitable examples.</p> <p>Students will acquaint with morphology and functional anatomy of a typical arthropod.</p> <p>Students will learn metamorphosis and mouth parts of some insects.</p> <p>Students will acquaint with the basic structure and histology of various human organs.</p> <p>Students will come to know comparative anatomy of vertebrate heart and kidney.</p>	<p>[206-A]</p> <p>To study identification and classification of invertebrates up to class.</p> <p>Study of cockroach by chart.</p> <p>To study the temporary mounting of mouth parts of some insects through charts.</p> <p>To study the identification and histological study of some human organs.</p> <p>To study the comparative anatomy of vertebrate heart and kidney.</p>	<ul style="list-style-type: none"> • Students will be aware of basics of non chordates and learn to identify non chordates from their special feature. • Student will become familiar with important phenomena of few non chordates. • By studying the representative type of non chordate will learn and understand the arrangement structure and function of various systems. • Students will come to know about histology and comparative anatomy.

4	Zoo-205	Animal diversity [Chordates, Fishery biology], Human parasitology and wildlife of India	<p>[205] This course is designed to acquaint student with basic of some chordate phyla.</p> <p>Students will learn to identify chordate from their special features.</p> <p>Student will become aware of important phenomena of few chordates.</p> <p>Student will aware of basic fishery biology, Identification of few fresh water and marine fishes. Fishing gears, nets, Boats and their operating system.</p> <p>Some basic information about home aquarium.</p> <p>Students will learn about wildlife, their significance, their management and conservation.</p> <p>Students will know about economic importance of various parasites.</p>	<p>[206-B] To study the classification of some chordates animal up to order giving reasons through charts and specimen.</p> <p>Study of fishing gears through charts, Photographs and specimen.</p> <p>To study the identification of some marine and fresh water fishes through charts and specimen.</p> <p>Study by photographs of some endangered fauna of India along with scientific names.</p> <p>Study by specimen or photograph of wildlife management tools and maps of Gujarat.</p> <p>Study of human parasitology through charts, specimens and slides.</p>	<ul style="list-style-type: none"> • Students will learn to identify chordates from their special feature. • Student will become familiar with important phenomena of few chordates. • By knowing about fishes, their identification, their importance, their management, catching, handling and storage practices. • Students will be benefited by gaining knowledge about establishment of aquarium, their management, aquarium fishes, their diseases and remedies. This will prove helpful them in self earning process or even can settle small business. • By gaining knowledge about wildlife, tools, laws, NP and sanctuaries, student can help society in preservation and conservation of wildlife and will also prove helpful them in preparing of competitive examination. • Student will know about economic importance of few
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					pathogenic and other parasites, their hosts and their pathogenicity.
5	Zoo-301	Ecology, Animal diversity [Non chordates]	<p>[301]</p> <p>Students will aware about ecology and biotic community.</p> <p>Students will know about types and function of ecosystem.</p> <p>Student will acquaint with ecological succession.</p> <p>Student will understand the importance of living organisms, their relationships and environment that will encourage them to protect environment and various life forms.</p> <p>Student will learn about life cycle of some representative invertebrate animals.</p> <p>Students will aware of some general topics.</p>	<p>[306-A1]</p> <p>To study the Earth worm through charts, slides and specimens.</p> <p>To study the life cycle of cuttle fish through charts, slides and specimens.</p> <p>To study the life cycle of starfish through charts, slides and specimens.</p> <p>To study classification and peculiarities of non chordates part-1 & 2.</p>	<ul style="list-style-type: none"> • Students become familiar with the Ecology. • Students aware about what are ecosystem and its importance. • Student will know how ecosystem is formed and functioning which are basic need for conserving nature. • Students will involve in protection and conservation activities of environment and other natural resources. • This will help students to understand well the anatomy and physiology of organisms.
5	Zoo-302	Animal diversity [Chordates]	<p>[302]</p> <p>Students will learn about life cycle of some representative vertebrate animals, some general topics which cover their behavior, patterns of living, adaptation, etc.</p>	<p>[306-A2]</p> <p>To study the titrimetric estimation of hardness in water.</p> <p>Study of life cycle of Labeo through charts and slides.</p> <p>Study of pigeon through charts, models and specimens.</p>	<ul style="list-style-type: none"> • Students will gain knowledge about human anatomy and physiology by comparing them with studying life cycle of vertebrate animals.

				<p>To study classification and peculiarities of some chordate animals through charts, models and specimens.</p> <p>To study the comparative anatomy of aortic arches and brain through charts, models and specimens.</p>	
5	Zoo-303	Animal Biochemistry	<p>[303]</p> <p>Students will aware about scope of biochemistry.</p> <p>Students will become familiar with basic structure of monosaccharide, disaccharide, polysaccharide and proteins.</p> <p>Students will know about various biological significance of carbohydrates and proteins.</p>	<p>[306-B1]</p> <p>To study the detection of carbohydrate.</p> <p>To study the detection of proteins.</p> <p>Colorimetric estimation of proteins and glucose.</p> <p>Preparation of atomic models of carbohydrates and proteins.</p>	<ul style="list-style-type: none"> • Students become familiar with the biochemistry. • Students develop skills to identify the carbohydrates and proteins. • Student can classify carbohydrates and proteins. • Students will know the basic structure of various food components. • These are basic needs for any professional lab practices.
5	Zoo-304	Cytology and Developmental biology.	<p>[304]</p> <p>Students will learn about basic knowledge of types and working of different kinds of microscopes, Electrophoresis, Centrifugation, Karyotyping techniques and their applications.</p> <p>Students will come to know about</p>	<p>[306-B2]</p> <p>To study the centrifuge, TEM, SEM with the help of charts, models.</p> <p>To study the structure and peculiarities of plasma membrane and Polytene, lamp brush chromosome through charts and models.</p>	<ul style="list-style-type: none"> • Students will become familiar and gain knowledge to use such different lab equipments and their applications. • Students will be aware of Karyotyping, cell organelles, chromosomes and cell differentiation. • Students become handy in some

			<p>plasma membrane, Centriole, chromosomes, cilia flagella and cell differentiation.</p> <p>To acquaint student with basic of embryology and its modern application.</p>	<p>To study the different slides of animal cells.</p> <p>To study cell techniques by preparing temporary sites by performing experiments.</p> <p>To study cleavage of eggs by charts.</p> <p>To study through permanent slide, the whole mount of 21, 33, 48 and 72 hours old chick embryos.</p>	<p>practical aspects of embryology. This will help them to work in IVF a laboratory which is in great demand now a day.</p>
5	Zoo-305 SEC	Apiculture, Sericulture	<p>[305] Students will come to know different aspects of apiculture and sericulture.</p>	-----	<ul style="list-style-type: none"> • By studying apiculture and sericulture students can set their own business or consultation.
6	Zoo-307	Ecology, pollution, animal diversity [Chordates], Molecular biology and Genetics	<p>[307] Students will aware about Ecology and adaptation.</p> <p>Students will know about structure and function of Ecosystem.</p> <p>Student will become familiar with types of Ecosystem.</p> <p>Students will learn about types and causes of pollution.</p> <p>Students will aware about morphology and anatomy of a typical vertebrate animal.</p> <p>Students will learn basics of molecular biology and genetics.</p>	<p>[312-A1] To study the ecological adaptation of some typical animals through charts and specimens.</p> <p>To study the biomes and stratification through charts.</p> <p>To study the titrimetric estimation of water sample and colorimetric estimation of phosphate and sulphate.</p> <p>To study of shark and rat through charts.</p> <p>To study of molecular biology</p>	<ul style="list-style-type: none"> • Student becomes familiar with ecology and adaptations. • Students aware about what are ecosystem and its importance. • Students will know how ecosystem formed and functioning. These are basic need for conserving nature. • Students will involve in protection and conservation activity of environment and other natural resources. • Students become familiar with causes and types of pollution. It will

			They also aware of some genetic disorder.	through charts. To study of genetic problems.	<p>help them to understand properly about causes of pollution and that will help in prevention of pollution.</p> <ul style="list-style-type: none"> • Students will gain knowledge about different human systems while studying a typical vertebrate animal. • Student will familiar with molecular biology and some basic laws of genetics. This will help them to improve their knowledge in this field and prove helpful them in their research work.
6	Zoo-308	Human physiology	[308] Students can learn about the function of different human system and their significance.	<p>[312-A2] Study of immunity through charts and slides.</p> <p>Study of blood physiology by performing experiments.</p> <p>Study of respiration through charts.</p> <p>Study of reproduction through charts.</p> <p>Study of muscle contraction through charts.</p>	<ul style="list-style-type: none"> • Student will gain knowledge about different human system and their physiological process will help them to understand any abnormalities or diseases caused by metabolic error.
6	Zoo-309	Animal biochemistry and metabolism	[309] Students will aware about scope of biochemistry.	[312-B1] Colorimetric estimation of cholesterol and creatinine.	<ul style="list-style-type: none"> • Student will gain knowledge about basic structure of lipids and enzyme. • The study of

			Students will become familiar with basic structure of lipids, enzymes and their metabolism.	Study of lipids through charts. Preparation of atomic models of lipids. Study of enzymes through charts. Study of metabolism through charts.	metabolism will help them to understand physiology.
6	Zoo-310	Toxicology, Animal Biotechnology, Animal behavior, Mammalian histology	[310] To acquaint student with the concept of Toxicology and Biotechnology. Tissue culture techniques and various lab equipments. To acquaint student with patterns of animal behavior. Students will learn about histology and endocrinological functions of some human glands.	[312-B2] To study the methods of histo technology. To study mammalian histology through permanent slides of endocrine glands. To study of toxicology by LD 50 chart. To study of animal biotechnology through charts and specimens. To study of animal behaviour through charts.	<ul style="list-style-type: none"> • Students will gain knowledge about toxicology and various culture techniques along with application. • By studying the histo technology students will gain the knowledge about preparation of histological permanent slides. That will help them to earn. • Student will become familiar with different types of animal behavior and their importance and application. • Students will come to know the structure and function of human endocrine glands.
6	Zoo-311 SEC	Cancer biology, Cytological techniques	[311] Students will aware about cancer, its types, types of cancer tumors, characteristic of cancer cells, onchogenic viruses and life cycle.	-----	<ul style="list-style-type: none"> • Student will become familiar with causes of cancer, types of cancer, anatomy of cancerous cells, and preventive measures of cancer. • Cytological

			Students will acquaint with cytological techniques like slide preparation, fixation, dehydration, embedding, sectioning and staining.		techniques will help students in slide preparation.
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