PROGRAMME CODE: UAZO





FATIMA COLLEGE (AUTONOMOUS), MADURAI - 625018

Name of the Programme: B. Sc. ZOOLOGY

Programme Outcomes :

The learners will be able to

- PO1: Apply acquired scientific knowledge to solve complex issues.
- **PO2:** Attain Analytical skills to solve complex cultural, societal and environmental issues.
- **PO3:** Employ latest and updated tools and technologies to analyse complex issues.
- **PO4:** Demonstrate Professional Ethics that foster Community, Nation and Environment Building Initiatives.

PROGRAMME SPECIFIC OUTCOMES:

On completion of B.Sc. Zoology programme, the graduates would be able to

- PSO1: Gain comprehensive knowledge in different branches of Zoology Invertebrata, Chordata, Cell biology, Physiology, Environmental Biology, Biochemistry, Microbiology, Immunology, Embryology, Entomology, Genetics, Molecular Biology, Biotechnology, Biostatistics, Bioinformatics and Evolution.
- **PSO2:** Acquire technical skills in performing experiments in the field of Microbiology, Cell Biology, Biochemistry, Plant Physiology, Human Physiology, Molecular Biology, Environmental Biology, Developmental Biology, Biostatistics, Immunology, Evolution, Genetics, Clinical Laboratory Techniques, Biotechnology and Bioinformatics.



- **PSO 3:** Develop empathy and instill love towards conserving plants and animals.
- **PSO 4:** Express ideas and concept through seminar and assignments.
- **PSO 5:** Solve the environmental problems by applying the biological principles for minimizing pollutants in air, water and land.
- **PSO 6:** Develop environmental concern towards value of economically important plants, Biodiversity promote Bioremediation, Bio fertilizer and vegetative propagation.
- **PSO 7:** Adopt Good Laboratory Practice, bioethics and bio safety guidelines to ensure minimal use of animals during experiments.
- **PSO 8:** Exhibit the holistic growth by developing subject proficiency, interpersonal skills, and show vertical mobility in taking up PG courses and horizontal mobility by enrolling in B.Ed institution, clinical laboratory course and seek employment in schools, Medical coding and IT companies.
- **PSO 9:** Make them self employed/ Entrepreneur in the field of Sericulture, Vermitechnology, Ornamental fish culture, Dairy farming, Apiculture, Mushroom cultivation and Horticulture.
- **PSO 10:** Use of computers for Power point presentation, Virtual Dissection, analysis of bio- molecules using bioinformatics tools and computing biological data.
- **PSO 11:** Healthy diet pattern for combat life style disorder.



2019 - 2020

COURSE CODE	Course Title	Course Outcomes
19Z1CC1	Invertebrata	 CO 1: Describe the fundamental organization of animals CO 2: Explain the levels of organization of animal kingdom and origin of metazoan CO 3: List the general characters of animals from Phylum Protozoa to Phylum Echinodermata CO 4: Summarize the parasitic protozoans and types of nutrition in Protozoa CO 5: Classify Coelenterata based on Zooids CO 6: Narrate the parasitic adaptations of helminth parasites CO 7: Discriminate insects based on the modification of Mouth parts CO 8: Discuss the modifications of foot in Mollusca and water vascular system in star fish





		CO 9: Organize the diversity of animals from simple to complex through a chart/ model
19Z1CC2	Cell Biology	 CO 1:Explain the different types of microscopes. CO 2: Distinguish between Eukaryotic and Prokaryotic cells. CO 3: Describe the structure and functions of cell organelles. CO 4: Outline the steps involved in cellular respiration. CO 5: Discuss the structure and functions of Nucleic acids. CO 6: Explain the processes of cell division by mitotic &meiotic phase. CO 7: Outline the characteristics of Cancer.
19Z1CC3	Lab in Invertebrata & Cell Biology	 CO 1: Recognizes the levels of organization among Invertebrates. CO 2: Illustrate the Skill of Dissection of Organisms CO 3: Recalls the Structure and Functions of Cellular Organelles. CO 4: Summarize the unique features of different Phyla among Invertebrates.





		CO 5: Demonstrate skill of handling Microscopes.
19Z1NME	Maternity & Child Health	 CO 1: List male and female reproductive organs CO 2: Discuss the various women health related issues CO 3: Associate the hormonal secretions with the different phases of menstruation cycle. CO 4: Recall the warning signals of pregnancy CO 5: Discuss the major and minor problems during pregnancy CO 6: Classify the family planning methods with examples CO 7: Outline the immunization schedule
19Z2CC4	Chordata	 CO 1: Recall the levels of organization among Chordates. CO 2: Bring out the general characters of Chordates. CO 3: Classify the Phyla of Chordates up to order level. CO 4: Distinguish between the Classes of Chordates. CO 5: Evaluate the unique features of each Class of Chordates. CO 6: Identify the Systematic Position of Animals.

ANA COLL		Criterion : Metric : Year :	II – Teaching-Learning and Evaluation 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – B.Sc. ZOOLOGY 2015 - 2020	
	19Z2CC	25	Genetics	 CO 1: Define the different laws of Mendel. CO 2: Solve the problems related to monohybrid and dihybrid cross. CO 3: Explain the mechanism of Linkage and crossing over. CO 4: Outline the concept of sex-linked inheritance. CO 5: Discuss the types of mutation. CO 6: Explain different types of syndromes caused by chromosome abnormalities. CO 7: Identify the effective ways of diminishing the chronic genetic disorders.
	19Z2CC	26	Lab in Genetics &Chordata	 CO 1: Recognizes the levels of organization among Chordates. CO 2: Bring out the general characters of Chordates. CO 3: Classify Chordates up to class level. CO 4: Summarize the unique features of each Class of Chordates. CO 5: Distinguish the Mendelian Traits as Dominant and Recessive. CO 6: Develops the skill of dissecting organisms and displaying.





		CO 7: Interprets the Pedigrees.
19Z2NME	Maternity & Child Health	 CO 1: List male and female reproductive organs CO 2: Discuss the various women health related issues CO 3: Associate the hormonal secretions with the different phases of menstruation cycle CO 4: Recall the warning signals of pregnancy CO 5: Discuss the major and minor problems during pregnancy CO 6: Classify the family planning methods with examples CO 7: Outline the immunization schedule
Course Code	COURSE TITLE	COURSE OBJECTIVES
Z3CC6	Human Physiology	 Summarize the basic components and functions of the digestive system Organise major organs of the respiratory functions and their diseases Describe circulatory system and their functions

TIMA COLLA	Criterion	: II — Teaching-Learning and Evaluation	Fatima College
	Metric	: 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and	
		Course Outcomes (COs) - B.Sc. ZOOLOGY	
MADURAL	Year	: 2015 - 2020	
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Z3CC8	Microbiology	 List out the importance and scope of Microbiology. Describe the ultra structure of bacteria. Discuss the gene transfer methods of bacteria.
Z3SB1	Vermiculture	 Identify the different species of earthworm Describe the properties of Vermicompost Summarize the methods of Vermicomposting
Z3ACQ1	Allied Botany-I	 Identify the plant diseases with the help of symptoms and choose the control measures Identify the binomial name with the help of vernacular or common name Make use of economically important locally available plants
C3ACZ1	Allied Zoology-I	 Outline the general characters of different phyla up to class Summarize the structure and function of circulatory system, excretory organs. Explain the Mendelian Laws Of Inheritance & Allelism
Z4CC8	Environmental Biology	• Explain the structure and function of the Ecosystems



		 Compare and contrast different types of Ecosystem Infer the importance of Biodiversity and its conservation
Z4CC9	Evolution	 Recall the basic concepts of origin of life on earth. Relate the evidences of evolution by observing the morphology of organisms. Summarize the theories of evolution
Z4SB2	Herbal Technology	 Infer the role of advance technologies in the conservation and the production of medicinal plants Unravel of the phytochemistry of the active principle of the medicinal plants.
Z4CC10	Major Practical-II	 Estimate the dissolved O2 and CO2 in given water samples Infer the qualitative estimation of protein, urea, ammonia and creatinine Demonstration on staining techniques Demonstration on Serial dilution
Z4ACQ2	Allied Botany-II	• Compare and contrast the anatomical differences between the anatomical structures of Dicot and Monocot plants

			MAAC + CICLE Set Study he
COLLA	Criterion	: II - Teaching-Learning and E	ivaluation
I I I I I I I I I I I I I I I I I I I	Metric	: 2.6.1 – Programme Outcome	s (POs), Programme Specific Outcomes (PSOs) and
		Course Outcomes (COs) - B.S	Sc. ZOOLOGY
DURAL	Year	: 2015 - 2020	
			 Summarize the mechanism of photosynthesis and respiration in plants Explain the development of male and female reproductive organs in plants and infer flower and fruit setting in plants Explain the various techniques in the crop improvement programmes
Z4ACQ3	3	Allied Botany Practical	Construct suitable micro preparations
			• Make use of dissection microscope to display the floral parts of Angiosperms
		5	• Illustrate the anatomy of Monocot and dicot stem , root and leaf
		Ŕ	• Interpret experimental set ups in plant physiology
C4ACZ2	2	Allied Zoology-II	• Outline the general structure and function of a prokaryotic and eukaryotic cell.
			• Explain the various proposed models regarding the structure of
			Plasma membrane
			• Explains the structure and function of Nucleus, Mitochondria and Endoplasmic reticulum

TIMA COLLA	Criterion	: II — Teaching-Learning and Evaluation	Fatima College
	Metric	: 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and	
		Course Outcomes (COs) – B.Sc. ZOOLOGY	
MADURAL	Year	: 2015 - 2020	

C4ACZ3	Allied Zoology Practical	 Outline the Laboratory bio safety guidelines and good laboratory practices. Recall the Principle of Compound microscope Examine the Haemin Crystal under the microscope Recall the structure of human physiological model such as Ear, Eye and heart
Z5CC11	Biochemistry	 Describe the properties and biological significance of Biomolecules Classify amino acids based on the nature of their functional group. Discuss the metabolic pathways of carbohydrates, proteins and lipids. Describe the factors affecting the normal functions of the enzymes.
Z5CC12	Molecular Biology	 Illustrate the Watson and Crick model of DNA double helix Describe the mechanism of DNA replication and the role of enzymes Describe the transcription and translation in prokaryotes and





		eukaryotes
Z5CC13	Biophysics& Instrumentation	 Describe the principles of physics involved in the structure of biomolecules, energy transformation in living systems Relate the use of modern physical instruments for the exploration of knowledge in Biology.
Z5ME1	Embryology	 Recall the basic concepts of developmental biology. Tell how fertilization, cleavage and gastrulating occur. Relate the development of egg into a foetus, then into adult, among Vertebrates.
Z5ME2	Entomology	 Compare the morphological features of different orders. Summarize the beneficial aspects of insects. Identify the agricultural pests and the economic damage caused.
Z5SB3	Ornamental Fish Culture	 List the types of aquarium. Plan the use of common aquarium ornamental fish and aquatic plants to decorate it. Explain the techniques followed in ornamental fish breeding.





		• Compare the symptoms of various diseases prevalent in ornamental fish.
Z5SB4	Sericulture	 List the importance of sericulture as cottage industry and the support provided by Central Silk Board. Explain the different methods of vegetative propagation followed in mulberry cultivation. Outline the life cycle of mulberry silkworm and the methods of rearing. Find various diseases that affect silkworm and cocoon formation
Z6CC1	Immunolog	 Outline the types of immunity, immunization and origin of immune cells Explain the structure and properties of antigen and antibody Identify the immunological technique Describe the types and mechanism of immune response
Z6CC15	Biotechnology	 Identify the principles and applications of Biotechnology for the benefit of mankind Outline the development of transgenic plants, animals, and

TIMA COLLE	Criterion	: II — Teaching-Learning and Evaluation	Fatina College	
	Metric	: 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes	(PSOs) and	
		Course Outcomes (COs) – B.Sc. ZOOLOGY		
MADURAL	Year	: 2015 - 2020		
		microbes or products for spe	rific use	

		microbes or products for specific use
		• Discuss the solutions to problems concerning human activities in
		the field of Agriculture, Medicine. Industry and Environment
Z6ME3	Biostatistics	• Outline the importance of data collection and its types.
		• Estimate and interpret the data, by various measures including
		mean, median, and standard deviation.
Z6ME4	Clinical Laboratory	• Identify the different sterilization methods followed in clinical
	Technique	laboratory.
		• Explain the collection method and techniques used in laboratory
		for urine analysis.
		• Find the way to process clinical specimens safely according to
	S	established procedures.
Z6ME5	Bioinformatics	Enumerate the applications of bioinformatics
		List web browsers and search engines
		Classify biological databases
Z6ME6	Human Genetics	Classify the types of genetic disorders
		• Explain the mode of inheritance of congenital disorders

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Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and	
Course Outcomes (COs) – B.Sc. ZOOLOGY	RECEIPTION OF THE STATE
Vaduration Year : 2015 - 2020	6.0

Z6SB5	Apiculture	 Explain the scope of apiculture in India List the equipments used in bee keeping Outline the types of bee disease.
Z6SB6	Dairy Farming	 Recall the scope of Dairy Farming and Dairy Technology. Identify the features of various indigenous and exotic breeds of dairy cattle. Develop an idea regarding the formulation of value added dairy products. Describe the clinical findings, treatment and control measures of livestock diseases.
Z6CC16	Major Practical III	 Develop skills in handling basic equipments Relate the chemical properties biomolecules with the qualitative analytical tests of Bio molecules Demonstrate the genomic DNA isolation, DNA estimation and chromatography Identify the spotters



2018 - 2019

Course Code	Course Title	Course Objectives
Z1CC1	Cell Biology	 Distinguish between Eukaryotic and Prokaryotic cells. Describe the structure and functions of cell organelles. Explain the processes of cell division by mitotic & meiotic phase.
Z1CC2	Animal Diversity I	 Describe the fundamental organization of animals Explain the levels of organization of animal kingdom and origin of metazoan List the general characters of animals from Phylum Protozoa to Phylum Echinodermata .
Z1NME	Maternity and Child Health	 Discuss the various women health related issues Discuss the major and minor problems during pregnancy Classify the family planning methods with examples
Z2CC3	Animal Diversity II	• Bring out the general characters of Chordates.



		Classify the Phyla of Chordates upto order level.
		• Distinguish between the Classes of Chordates.
Z2CC4	Genetics	 Define the different laws of Mendel. Explain the mechanism of Linkage and crossing over. Explain different types of syndromes caused by chromosome abnormalities.
Z2CC5	Major Practical I	 Recognizes the levels of organization among Invertebrates. Develops the skill of dissecting organisms and displaying Demonstrate skill of handling Microscopes
Z2NME	Maternity and Child Health	 Discuss the various women health related issues Discuss the major and minor problems during pregnancy Classify the family planning methods with examples
Z3CC6	Human Physiology	 Summarize the basic components and functions of the digestive system and their disorders Organise major organs of the respiratory functions and their diseases





		Describe circulatory system and their functions
Z3CC8	Microbiology	 List out the importance and scope of Microbiology. Describe the ultra structure of bacteria. Discuss the gene transfer methods of bacteria
Z3SB1	Vermiculture	 Identify the different species of earthworm Describe the properties of Vermicompost Summarize the methods of Vermicomposting
Z3ACQ1	Allied Botany-I	 Identify the plant diseases with the help of symptoms and choose the control measures Identify the binomial name with the help of vernacular or common name Make use of economically important locally available plants
C3ACZ1	Allied Zoology-I	 Outline the general characters of different phyla up to class Summarize the structure and function of circulatory system, excretory organs. Explain the Mendelian Laws Of Inheritance &Allelism

TIMA COLLA	Criterion	: II - Teaching-Learning and Evaluation	Fatina College
	Metric	: 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and	
		Course Outcomes (COs) – B.Sc. ZOOLOGY	
MADURAL	Year	: 2015 - 2020	

Z4CC8	Environmental Biology	 Explain the structure and function of the Ecosystems Compare and contrast different types of Ecosystem Infer the importance of Biodiversity and its conservation
Z4CC9	Evolution	 Recall the basic concepts of origin of life on earth. Relate the evidences of evolution by observing the morphology of organisms. Summarize the theories of evolution
Z4SB2	Herbal Technology	 Infer the role of advance technologies in the conservation and the production of medicinal plants Unravel of the phytochemistry of the active principle of the medicinal plants.
Z4CC10	Major Practical-II	 Estimate the dissolved O2 and CO2 in given water samples Infer the qualitative estimation of protein, urea, ammonia and creatinine Demonstration on staining techniques Demonstration on Serial dilution

TIMA COLLE	Criterion	: II - Teaching-Learning and Evaluation	Fatina College
	Metric	: 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and	
		Course Outcomes (COs) – B.Sc. ZOOLOGY	
MADURAL	Year	: 2015 - 2020	

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Z4ACQ2	Allied Botany-II	• Compare and contrast the anatomical differences between the anatomical structures of Dicot and Monocot plants
		• Summarize the mechanism of photosynthesis and respiration in
		plants
		• Explain the development of male and female reproductive organs
		in plants and infer flower and fruit setting in plants
		• Explain the various techniques in the crop improvement
		programmes
744003	Allied Botany Practical	Construct suitable micro preparations
	Affied Dotally Hactical	• Construct suitable finero preparations
		• Make use of dissection microscope to display the floral parts of
		Angiosperms
		• Illustrate the anatomy of Monocot and dicot stem , root and leaf
		Interpret experimental set ups in plant physiology
C4ACZ2	Allied Zoology-II	• Outline the general structure and function of a prokaryotic and
		eukaryotic cell.
		• Explain the various proposed models regarding the structure of
		Plasma membrane
		• Explains the structure and function of Nucleus, Mitochondria



 Criterion
 : II – Teaching-Learning and Evaluation

 Metric
 : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and
Course Outcomes (COs) – B.Sc. ZOOLOGY

 Year
 : 2015 - 2020



		and Endoplasmic reticulum
C4ACZ3	Allied Zoology Practical	 Outline the Laboratory bio safety guidelines and good laboratory practices. Recall the Principle of Compound microscope Examine the Haemin Crystal under the microscope Recall the structure of human physiological model such as Ear, Eye and heart.
Z5CC11	Biochemistry	 Describe the properties and biological significance of Bio molecules Classify amino acids based on the nature of their functional group. Discuss the metabolic pathways of carbohydrates, proteins and lipids. Describe the factors affecting the normal functions of the enzymes.
Z5CC12	Molecular Biology	 Illustrate the Watson and Crick model of DNA double helix Describe the mechanism of DNA replication and the role of





		enzymesDescribe the transcription and translation in prokaryotes and eukaryotes
Z5CC13	Biophysics& Instrumentation	 Describe the principles of physics involved in the structure of bio molecules, energy transformation in living systems Relate the use of modern physical instruments for the exploration of knowledge in Biology.
Z5ME1	Embryology	 Recall the basic concepts of developmental biology. Tell how fertilization, cleavage and gastrulating occur. Relate the development of egg into a foetus, then into adult, among Vertebrates.
Z5ME2	Entomology	 Compare the morphological features of different orders. Summarize the beneficial aspects of insects. Identify the agricultural pests and the economic damage caused.
Z5SB3	Ornamental Fish Culture	List the types of aquarium.Plan the use of common aquarium ornamental fish and aquatic

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			NAAC – 4" CYCLE – Self Study Report (S
	Criterion : 1 Metric : 2 (Year : 2	II – Teaching-Learning and 2.6.1 – Programme Outcom Course Outcomes (COs) – B 2015 - 2020	Evaluation es (POs), Programme Specific Outcomes (PSOs) and .Sc. ZOOLOGY
			 plants to decorate it. Explain the techniques followed in ornamental fish breeding. Compare the symptoms of various diseases prevalent in ornamental fish
Z5SB4		Sericulture	 List the importance of sericulture as cottage industry and the support provided by Central Silk Board. Explain the different methods of vegetative propagation followed in mulberry cultivation. Outline the life cycle of mulberry silkworm and the methods of rearing. Find various diseases that affect silkworm and cocoon formation
Z6CC1	.4	Immunology	 Outline the types of immunity, immunization and origin of immune cells Explain the structure and properties of antigen and antibody Identify the immunological technique Describe the types and mechanism of immune response
Z6CC1	.5	Biotechnology	• Identify the principles and applications of Biotechnology for the

			NAAC - 4 CTCLL - Self Study Report (55	
Criterion Metric Year		ion : II – Teaching-Learning and Evaluation c : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – B.Sc. ZOOLOGY : 2015 - 2020		
			 benefit of mankind Outline the development of transgenic plants, animals, and microbes or products for specific use Discuss the solutions to problems concerning human activities in the field of Agriculture, Medicine. Industry and Environment 	
Z6ME	3	Biostatistics	 Outline the importance of data collection and its types. Estimate and interpret the data, by various measures including mean, median, and standard deviation. 	

Z6ME4

Clinical Laboratory	• Identify the different sterilization methods followed in clinical
Technique	laboratory.

- Explain the collection method and techniques used in laboratory for urine analysis.
- Find the way to process clinical specimens safely according to established procedures

		established procedures.
Z6ME5	Bioinformatics	 Enumerate the applications of bioinformatics List web browsers and search engines Classify biological databases



Z6ME6	Human Genetics	 Classify the types of genetic disorders Explain the mode of inheritance of congenital disorders
Z6SB5	Apiculture	 Explain the scope of apiculture in India List the equipments used in bee keeping Outline the types of bee diseases
Z6SB6	Dairy Farming	 Recall the scope of Dairy Farming and Dairy Technology. Identify the features of various indigenous and exotic breeds of dairy cattle. Develop an idea regarding the formulation of value added dairy products. Describe the clinical findings, treatment and control measures of livestock diseases.
Z6CC16	Major Practical III	 Develop skills in handling basic equipments Relate the chemical properties biomolecules with the qualitative analytical tests of Biomolecules Demonstrate the genomic DNA isolation, DNA estimation and chromatography



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2017 - 2018

COURSE CODE	Course Title	COURSE OBJECTIVES
Z1CC1	Cell Biology	 Distinguish between Eukaryotic and Prokaryotic cells. Describe the structure and functions of cell organelles. Explain the processes of cell division by mitotic & meiotic phase.
Z1CC2	Animal Diversity I	 Describe the fundamental organization of animals Explain the levels of organization of animal kingdom and origin of metazoan List the general characters of animals from Phylum Protozoa to Phylum Echinodermata
Z1NME	Maternity and Child	• Discuss the various women health related issues



 Criterion
 : II – Teaching-Learning and Evaluation

 Metric
 : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

 Course Outcomes (COs) – B.Sc. ZOOLOGY

 Year
 : 2015 - 2020



	Health	 Discuss the major and minor problems during pregnancy Classify the family planning methods with examples
Z2CC3	Animal Diversity II	 Bring out the general characters of Chordates. Classify the Phyla of Chordates upto order level. Distinguish between the Classes of Chordates.
Z2CC4	Genetics	 Define the different laws of Mendel. Explain the mechanism of Linkage and crossing over. Explain different types of syndromes caused by chromosome abnormalities.
Z2CC5	Major Practical I	 Recognizes the levels of organization among Invertebrates. Develops the skill of dissecting organisms and displaying Demonstrate skill of handling Microscopes
Z2NME	Maternity and Child Health	 Discuss the various women health related issues Discuss the major and minor problems during pregnancy Classify the family planning methods with examples
Z3CC6	Human Physiology	• Summarize the basic components and functions of the digestive



		system
		• Organise major organs of the respiratory functions and their
		diseases
		• Describe circulatory system and their functions
Z3CC7	Microbiology	• List out the importance and scope of Microbiology.
		• Describe the ultra structure of bacteria.
		• Discuss the gene transfer methods of bacteria
Z3SB1	Vermiculture	• Identify the different species of earthworm
		Describe the properties of Vermicompost
		Summarize the methods of Vermicomposting
Z3ACQ1	Allied Botany-I	• Identify the plant diseases with the help of symptoms and
	B.	choose the control measures
	KIN KIN	• Identify the binomial name with the help of vernacular or
		common name
		Make use of economically important locally available plants
C3ACZ1	Allied Zoology-I	Outline the general characters of different phyla upto class
		• Summarize the structure and function of circulatory system,





		excretory organs. Explain the Mendelian Laws Of Inheritance & Allelism
Z4CC8	Environmental Biology	 Explain the structure and function of the Ecosystems Compare and contrast different types of Ecosystem Infer the importance of Biodiversity and its conservation
Z4CC9	Evolution	 Recall the basic concepts of origin of life on earth. Relate the evidences of evolution by observing the morphology of organisms. Summarize the theories of evolution
Z4SB2	Herbal Technology	 Infer the role of advance technologies in the conservation and the production of medicinal plants Unravel of the phytochemistry of the active principle of the medicinal plants.
Z4CC10	Major Practical-II	 Estimate the dissolved O2 and CO2 in given water samples Infer the qualitative estimation of protein, urea, ammonia and creatinine Demonstration on staining techniques





		Demonstration on Serial dilution	
Z4ACQ2	Allied Botany-II	 Compare and contrast the anatomical differences between the anatomical structures of Dicot and Monocot plants Summarize the mechanism of photosynthesis and respiration plants Explain the development of male and female reproductive orgatin plants and infer flower and fruit setting in plants Explain the various techniques in the crop improvement programmes 	in ans
Z4ACQ3	Allied Botany Practical	 Construct suitable micro preparations Make use of dissection microscope to display the floral parts Angiosperms Illustrate the anatomy of Monocot and dicot stem , root and le Interpret experimental set ups in plant physiology 	s of eaf
C4ACZ2	Allied Zoology-II	• Outline the general structure and function of a prokaryotic ar eukaryotic cell.	nd

Self Study Report (SSR) ΝΛΛΓ Ath CVCIE

			NAAC - 4 CYCLE - Self Study Report (SSR)
AT ADURAL	Criterion Metric Year	 II - Teaching-Learning and I 2.6.1 - Programme Outcome Course Outcomes (COs) - B. 2015 - 2020 	Evaluation es (POs), Programme Specific Outcomes (PSOs) and Sc. ZOOLOGY
C4A	ACZ3	Allied Zoology Practical	 Explain the various proposed models regarding the structure of Plasma membrane Explains the structure and function of Nucleus, Mitochondria and Endoplasmic reticulum Outline the Laboratory bio safety guidelines and good laboratory practices. Recall the Principle of Compound microscope Examine the Haemin Crystal under the microscope Recall the structure of human physiological model such as Ear, Eye and heart
Z50	CC11	Biochemistry	 Describe the properties and biological significance of Bio molecules Classify amino acids based on the nature of their functional group. Discuss the metabolic pathways of carbohydrates, proteins and lipids. Describe the factors affecting the normal functions of the enzymes.

Criter Metric Metric		 II - Teaching-Learning and Evaluation 2.6.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) - B.Sc. ZOOLOGY 2015 - 2020 	Fains Cologe
Z5C	C12	Molecular Biology & • Illustrate the Watson and Crick model of DNA double helix	

Z5CC12	Molecular Biology &	Illustrate the Watson and Crick model of DNA double helix
	Biotechnology	• Describe the mechanism of DNA replication and the role of
		enzymes
		• Describe the transcription and translation in prokaryotes and eukaryotes
		• Identify the principles and applications of Biotechnology for the
	R.	benefit of mankind
Z5CC13	Biophysics&	• Describe the principles of physics involved in the structure of
	Instrumentation	biomolecules, energy transformation in living systems
		• - Relate the use of modern physical instruments for the
		exploration of knowledge in Biology.
Z5ME1	Embryology	• Recall the basic concepts of developmental biology.
		• Tell how fertilization, cleavage and gastrulating occur.
		• Relate the development of egg into a foetus, then into adult,
	$\lambda _{r}$	among Vertebrates.
Z5ME2	Entomology	• Compare the morphological features of different orders.
		• Summarize the beneficial aspects of insects.





		• Identify the agricultural pests and the economic damage caused.
Z5SB3	Ornamental Fish Culture	 List the types of aquarium. Plan the use of common aquarium ornamental fish and aquatic plants to decorate it. Explain the techniques followed in ornamental fish breeding. Compare the symptoms of various diseases prevalent in ornamental fish
Z5SB4	Sericulture	 List the importance of sericulture as cottage industry and the support provided by Central Silk Board. Explain the different methods of vegetative propagation followed in mulberry cultivation. Outline the life cycle of mulberry silkworm and the methods of rearing. Find various diseases that affect silkworm and cocoon formation
Z6CC14	Immunology	• Outline the types of immunity, immunization and origin of immune cells



		 Explain the structure and properties of antigen and antibody Identify the immunological technique Describe the types and mechanism of immune response
Z6CC15	Genetic Engineering	 Identify the principles and applications of Recombinant DNA technology for the benefit of mankind Outline the development of transgenic plants, animals, and microbes or products for specific use
Z6ME3	Biostatistics	 Outline the importance of data collection and its types. Estimate and interpret the data, by various measures including mean, median, and standard deviation.
Z6ME4	Clinical Laboratory Technique	 Identify the different sterilization methods followed in clinical laboratory. Explain the collection method and techniques used in laboratory for urine analysis. Find the way to process clinical specimens safely according to established procedures.
Z6ME5	Bioinformatics	• Enumerate the applications of bioinformatics





		List web browsers and search enginesClassify biological databases
Z6ME6	Human Genetics	 Classify the types of genetic disorders Explain the mode of inheritance of congenital disorders
Z6SB5	Apiculture	 Explain the scope of apiculture in India List the equipments used in bee keeping Outline the types of bee diseases
Z6SB6	Dairy Farming	 Recall the scope of Dairy Farming and Dairy Technology. Identify the features of various indigenous and exotic breeds of dairy cattles. Develop an idea regarding the formulation of value added dairy products. Describe the clinical findings, treatment and control measures of livestock diseases.
Z6CC16	Major Practical III	 Develop skills in handling basic equipments Relate the chemical properties biomolecules with the qualitative analytical tests of Biomolecules

ATTIMA COLLAR	Criterion Metric	 II – Teaching-Learning and Eva 2.6.1 – Programme Outcomes (Course Outcomes (COs) – B.Sc. 	lluation POs), Programme Specific Outcomes (PSOs) and ZOOLOGY	Fatma College
MADURAL	Year	: 2015 - 2020		
			• Demonstrate the genomic DNA isolation, DNA estimation and	

LEAD

chromatography

• Identify the spotters

2016 - 2017

COURSE CODE	Course Title	COURSE OBJECTIVES
Z1CC1	Cell Biology	 Distinguish between Eukaryotic and Prokaryotic cells. Describe the structure and functions of cell organelles. Explain the processes of cell division by mitotic & meiotic phase.
Z1CC2	Animal Diversity I	 Describe the fundamental organization of animals Explain the levels of organization of animal kingdom and origin of metazoan List the general characters of animals from Phylum Protozoa to Phylum Echinodermata

TIMA COLLA	Criterion	: II - Teaching-Learning and Evaluation		Fatima College
AN CONTRACTOR	Metric	: 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and		
		Course Outcomes (COs) – B.Sc. ZOOLOGY		
MADURAL	Year	: 2015 - 2020	V	
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Z1NME	Maternity and Child Health	 Discuss the various women health related issues Discuss the major and minor problems during pregnancy Classify the family planning methods with examples
Z2CC3	Animal Diversity II	 Bring out the general characters of Chordates. Classify the Phyla of Chordates upto order level. Distinguish between the Classes of Chordates.
Z2CC4	Genetics	 Define the different laws of Mendel. Explain the mechanism of Linkage and crossing over. Explain different types of syndromes caused by chromosome abnormalities.
Z2CC5	Major Practical I	 Recognizes the levels of organization among Invertebrates. Develops the skill of dissecting organisms and displaying Demonstrate skill of handling Microscopes
Z2NME	Maternity and Child Health	 Discuss the various women health related issues Discuss the major and minor problems during pregnancy Classify the family planning methods with examples

TIMA COLLA	Criterion	: II — Teaching-Learning and Evaluation	Fatima College
	Metric	: 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and	
		Course Outcomes (COs) – B.Sc. ZOOLOGY	
MADURAL	Year	: 2015 - 2020	

Z3CC6	Human Physiology	 Summarize the basic components and functions of the digestive system Organise major organs of the respiratory functions and their diseases Describe circulatory system and their functions
Z3CC7	Microbiology	 List out the importance and scope of Microbiology. Describe the ultra structure of bacteria. Discuss the gene transfer methods of bacteria
Z3SB1	Vermiculture	 Identify the different species of earthworm Describe the properties of Vermicompost Summarize the methods of Vermicomposting
Z3ACQ1	Allied Botany-I	 Identify the plant diseases with the help of symptoms and choose the control measures Identify the binomial name with the help of vernacular or common name Make use of economically important locally available plants

TIMA COLLE	Criterion	: II - Teaching-Learning and Evaluation	Fatima College
	Metric	: 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and	
		Course Outcomes (COs) - B.Sc. ZOOLOGY	
MADURAL	Year	: 2015 - 2020	

C3ACZ1	Allied Zoology-I	 Outline the general characters of different phyla upto class Summarize the structure and function of circulatory system, excretory organs. Explain the Mendelian Laws Of Inheritance & Allelism
Z4CC8	Environmental Biology	 Explain the structure and function of the Ecosystems Compare and contrast different types of Ecosystem Infer the importance of Biodiversity and its conservation
Z4CC9	Evolution	 Recall the basic concepts of origin of life on earth. Relate the evidences of evolution by observing the morphology of organisms. Summarize the theories of evolution
Z4SB2	Herbal Technology	 Infer the role of advance technologies in the conservation and the production of medicinal plants Unravel of the phytochemistry of the active principle of the medicinal plants.
Z4CC10	Major Practical-II	• Estimate the dissolved O2 and CO2 in given water samples

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			NAAC – 4 CYCLE – Self Study Report (S	> 5K
Criterio Metric Year		rion : II – Teaching-Learning and Evaluation tc : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – B.Sc. ZOOLOGY : 2015 - 2020		
			 Infer the qualitative estimation of protein, urea, ammonia and creatinine Demonstration on staining techniques Demonstration on Serial dilution 	
Z	łACQ2	Allied Botany-II	 Compare and contrast the anatomical differences between the anatomical structures of Dicot and Monocot plants Summarize the mechanism of photosynthesis and respiration in plants Explain the development of male and female reproductive organs in plants and infer flower and fruit setting in plants Explain the various techniques in the crop improvement 	

	Ŕ		programmes
Z4ACQ3	Allied Botany Practical	•	Construct suitable micro preparations
		D	Make use of dissection microscope to display the floral parts of Angiosperms
			Illustrate the anatomy of Monocot and dicot stem , root and leaf Interpret experimental set ups in plant physiology

TIMA COLLE	Criterion	: II — Teaching-Learning and Evaluation	Fatima College
	Metric	: 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and	
		Course Outcomes (COs) - B.Sc. ZOOLOGY	
MADURAL	Year	: 2015 - 2020	

C4ACZ2	Allied Zoology-II	 Outline the general structure and function of a prokaryotic and eukaryotic cell. Explain the various proposed models regarding the structure of Plasma membrane Explains the structure and function of Nucleus, Mitochondria and Endoplasmic reticulum
ACZ3	Allied Zoology Practical	 Outline the Laboratory bio safety guidelines and good laboratory practices. Recall the Principle of Compound microscope Examine the Haemin Crystal under the microscope Recall the structure of human physiological model such as Ear, Eye and heart
Z5CC11	Biochemistry	 Describe the properties and biological significance of Biomolecules Classify amino acids based on the nature of their functional group. Discuss the metabolic pathways of carbohydrates, proteins and lipids.





		• Describe the factors affecting the normal functions of the enzymes.
Z5CC12	Molecular Biology & Biotechnology	 Illustrate the Watson and Crick model of DNA double helix Describe the mechanism of DNA replication and the role of enzymes Describe the transcription and translation in prokaryotes and eukaryotes
Z5CC13	Biophysics& Instrumentation	 Describe the principles of physics involved in the structure of biomolecules, energy transformation in living systems Relate the use of modern physical instruments for the exploration of knowledge in Biology.
Z5ME1	Embryology	 Recall the basic concepts of developmental biology. Tell how fertilization, cleavage and gastrulating occur. Relate the development of egg into a foetus, then into adult, among Vertebrates.
Z5ME2	Entomology	 Compare the morphological features of different orders. Summarize the beneficial aspects of insects.





		• Identify the agricultural pests and the economic damage caused.
Z5SB3	Ornamental Fish	• List the types of aquarium.
	Culture	• Plan the use of common aquarium ornamental fish and aquatic
		plants to decorate it.
		• Explain the techniques followed in ornamental fish breeding.
		• Compare the symptoms of various diseases prevalent in
		ornamental fish
Z5SB4	Sericulture	 List the importance of sericulture as cottage industry and the support provided by Central Silk Board. Explain the different methods of vegetative propagation followed in mulberry cultivation. Outline the life cycle of mulberry silkworm and the methods of rearing. Find various diseases that affect silkworm and cocoon formation
Z6CC14	Immunology	• Outline the types of immunity, immunization and origin of



	M	 Explain the structure and properties of antigen and antibody Identify the immunological technique Describe the types and mechanism of immune response
Z6CC15	Genetic Engineering	 Identify the principles and applications of Recombinant DNA technology for the benefit of mankind Outline the development of transgenic plants, animals, and microbes or products for specific use
Z6ME3	Biostatistics	 Outline the importance of data collection and its types. Estimate and interpret the data, by various measures including mean, median, and standard deviation.
Z6ME4	Clinical Laboratory Technique	 Identify the different sterilization methods followed in clinical laboratory. Explain the collection method and techniques used in laboratory for urine analysis. Find the way to process clinical specimens safely according to established procedures.



Z6ME5	Bioinformatics	 Enumerate the applications of bioinformatics List web browsers and search engines Classify biological databases
Z6ME6	Human Genetics	 Classify the types of genetic disorders Explain the mode of inheritance of congenital disorders
Z6SB5	Apiculture	 Explain the scope of apiculture in India List the equipments used in bee keeping Outline the types of bee diseases
Z6SB6	Dairy Farming	 Recall the scope of Dairy Farming and Dairy Technology. Identify the features of various indigenous and exotic breeds of dairy cattles. Develop an idea regarding the formulation of value added dairy products. Describe the clinical findings, treatment and control measures of livestock diseases.
Z6CC16	Major Practical III	Develop skills in handling basic equipments



- Demonstrate the genomic DNA isolation, DNA estimation and chromatography
- Identify the spotters

2015 - 2016

COURSE CODE	COURSE TITLE	Course Objectives
Z1CC1	Cell Biology	 Distinguish between Eukaryotic and Prokaryotic cells. Describe the structure and functions of cell organelles. Explain the processes of cell division by mitotic & meiotic phase.
Z1CC2	Animal Diversity I	 Describe the fundamental organization of animals Explain the levels of organization of animal kingdom and origin of metazoan List the general characters of animals from Phylum Protozoa to





		Phylum Echinodermata
Z1NME	Maternity and Child Health	 Discuss the various women health related issues Discuss the major and minor problems during pregnancy Classify the family planning methods with examples
Z2CC3	Animal Diversity II	 Bring out the general characters of Chordates. Classify the Phyla of Chordates up to order level. Distinguish between the Classes of Chordates.
Z2CC4	Genetics	 Define the different laws of Mendel. Explain the mechanism of Linkage and crossing over. Explain different types of syndromes caused by chromosome abnormalities.
Z2CC5	Major Practical I	 Recognizes the levels of organization among Invertebrates. Develops the skill of dissecting organisms and displaying Demonstrate skill of handling Microscopes
Z2NME	Maternity and Child Health	 Discuss the various women health related issues Discuss the major and minor problems during pregnancy





		Classify the family planning methods with examples
Z3CC6	Human physiology	• Summarize the basic components and functions of the digestive system
		Organise major organs of the respiratory functions and their diseases
		Describe circulatory system and their functions
Z3CC7	Microbiology	 List out the importance and scope of Microbiology. Describe the ultra structure of bacteria. Discuss the gene transfer methods of bacteria
Z3SB1	Vermiculture	 Identify the different species of earthworm Describe the properties of Vermicompost Summarize the methods of Vermicomposting
Z3ACQ1	Allied Botany I	 Identify the plant diseases with the help of symptoms and choose the control measures Identify the binomial name with the help of vernacular or common name





		Make use of economically important locally available plants
C3ACZ1	Allied Zoology I	 Outline the general characters of different phyla upto class Summarize the structure and function of circulatory system, excretory organs. Explain the Mendelian Laws Of Inheritance & Allelism
Z4CC8	Environmental Biology	 Explain the structure and function of the Ecosystems Compare and contrast different types of Ecosystem Infer the importance of Biodiversity and its conservation
Z4CC9	Molecular Biology & Biotechnology	 Illustrate the Watson and Crick model of DNA double helix Describe the mechanism of DNA replication and the role of enzymes Describe the transcription and translation in prokaryotes and eukaryotes
Z4CC10	Major Practical II	 Estimate the dissolved O2 and CO2 in given water samples Infer the qualitative estimation of protein, urea, ammonia and creatinine Demonstration on staining techniques



 Criterion
 : II – Teaching-Learning and Evaluation

 Metric
 : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and
Course Outcomes (COs) – B.Sc. ZOOLOGY

 Year
 : 2015 - 2020



		Demonstration on Serial dilution
Z4SB2	Herbal Technology	 Infer the role of advance technologies in the conservation and the production of medicinal plants Unravel of the phytochemistry of the active principle of the medicinal plants.
Z4ACQ2	Allied Botany II	 Compare and contrast the anatomical differences between the anatomical structures of Dicot and Monocot plants Summarize the mechanism of photosynthesis and respiration in plants Explain the development of male and female reproductive organs in plants and infer flower and fruit setting in plants Explain the various techniques in the crop improvement programmes
Z4ACQ3	Allied Botany Practical	 Construct suitable micro preparations Make use of dissection microscope to display the floral parts of Angiosperms Illustrate the anatomy of Monocot and dicot stem , root and leaf





		• Interpret experimental set ups in plant physiology
C4ACZ2	Allied Zoology II	 Outline the general structure and function of a prokaryotic and eukaryotic cell. Explain the various proposed models regarding the structure of Plasma membrane Explains the structure and function of Nucleus, Mitochondria and Endoplasmic reticulum
C4ACZ3	Allied Zoology Practical	 Outline the Laboratory bio safety guidelines and good laboratory practices. Recall the Principle of Compound microscope Examine the Haemin Crystal under the microscope Recall the structure of human physiological model such as Ear, Eye and heart
Z5CC11	Biochemistry	 Describe the properties and biological significance of Biomolecules Classify amino acids based on the nature of their functional group.



		• Discuss the metabolic pathways of carbohydrates, proteins an
		lipids.
		• Describe the factors affecting the normal functions of the
		enzymes.
Z5CC12	Evolution	• Recall the basic concepts of origin of life on earth.
		• Relate the evidences of evolution by observing the morphology of
		organisms.
		Summarize the theories of evolution
Z5CC13	Biophysics &	• Describe the principles of physics involved in the structure of
	Instrumentation	biomolecules, energy transformation in living systems
	781	• Relate the use of modern physical instruments for th
		exploration of knowledge in Biology.
Z5ME1	Embryology	• Recall the basic concepts of developmental biology.
		• Tell how fertilization, cleavage and gastrulating occur.
		• Relate the development of egg into a foetus, then into adul
		among Vertebrates.
Z5ME2	Entomology	Compare the morphological features of different orders.

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				NAAC – 4 th CYCLE – Self Study Report (SSI
ANDURAL REAL	Criterion : II – Teaching-Learning and Evaluation Metric : 2.6.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) – B.Sc. ZOOLOGY Year : 2015 - 2020			
				Summarize the beneficial aspects of insects.
				• Identify the agricultural pests and the economic damage caused.
Z5SB3		Ornamental Culture	Fish	 List the types of aquarium. Plan the use of common aquarium ornamental fish and aquatic plants to decorate it. Explain the techniques followed in ornamental fish breeding. Compare the symptoms of various diseases prevalent in ornamental fish
Z5SB4		Sericulture		 List the importance of sericulture as cottage industry and the support provided by Central Silk Board. Explain the different methods of vegetative propagation followed in mulberry cultivation.

• Outline the life cycle of mulberry silkworm and the methods of rearing

• Find various diseases that affect silkworm and cocoon formation

Z6CC14

Immunology



	immune cells
	• Explain the structure and properties of antigen and antibody
	Identify the immunological technique
	• Describe the types and mechanism of immune response
Genetic engineering	• Identify the principles and applications of Recombinant DNA
	technology for the benefit of mankind
	• Outline the development of transgenic plants, animals, and
	microbes or products for specific use
Biostatistics	• Outline the importance of data collection and its types.
	• Estimate and interpret the data, by various measures including
ب ک	mean, median, and standard deviation.
Clinical Laboratory	• Identify the different sterilization methods followed in clinical
Technique	laboratory.
	• Explain the collection method and techniques used in laboratory
	for urine analysis.
	• Find the way to process clinical specimens safely according to
	established procedures.
	Genetic engineering Biostatistics Clinical Laboratory Technique



Z6ME5	Bioinformatics	 Enumerate the applications of bioinformatics List web browsers and search engines Classify biological databases
Z6ME6	Human Genetics	 Classify the types of genetic disorders Explain the mode of inheritance of congenital disorders
Z6SB5	Apiculture	 Explain the scope of apiculture in India List the equipments used in bee keeping Outline the types of bee diseases
Z6SB6	Dairy Farming	 Recall the scope of Dairy Farming and Dairy Technology. Identify the features of various indigenous and exotic breeds of dairy cattles. Develop an idea regarding the formulation of value added dairy products. Describe the clinical findings, treatment and control measures of livestock diseases.
Z6CC16	Major Practical III	• Develop skills in handling basic equipments



Relate the chemical properties biomolecules with the quantative analytical tests of Biomolecules
Demonstrate the genomic DNA isolation, DNA estimation and

chromatography

• Identify the spotters

