

# FATIMA MATA NATIONAL COLLEGE

AUTONOMOUS

(Reaccredited with 'A' Grade by NAAC)

Affiliated to University of Kerala



## OUTCOME MAPPING

**IQAC** INTERNAL QUALITY ASSURANCE CELL

# **BSc ZOOLOGY**

## PROGRAMME OUTCOMES (POs)

<b>PO 1</b>	<p><b>Nationalistic Outlook and Contribution to National development:</b> Understand the distinct features of nationalistic outlook as enshrined in our Constitution and apply them towards national development, and nurture respect and love for the motherland, showing no discrimination based on gender, caste and creed.</p>
<b>PO 2</b>	<p><b>Fostering Global Competencies, and Technical and Intellectual proficiency:</b> Apply intellectual and technical skill to compete in a global setting and demonstrate proficiency in creating and applying appropriate technique, resources and modern IT tools for ensuring greater personal growth and global outlook.</p>
<b>PO 3</b>	<p><b>Values and Social Commitment:</b> Demonstrate the essence of human values through acts of social commitment, develop professional ethics and responsibilities; function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings; show respect for fellow beings by fair treatment, caring and concern; listen responsively, recognize the contributions of others, and engage in reflective practice; imbibe spirit of selfless service.</p>
<b>PO 4</b>	<p><b>Affective Skills and Integrity of Character:</b> Receive affective skills and organize activities displaying integrity of character, foster qualities such as emotional self-awareness, emotional reasoning and emotional self-management for addressing workplace challenges, and develop personal integrity and character.</p>
<b>PO 5</b>	<p><b>Critical Thinking, Problem Solving and Research-related Skills:</b> Develop critical thinking, and psycho-motor skills, create a sense of inquiry and research skills and take an analytical approach to learning for cutting edge areas.</p>
<b>PO 6</b>	<p><b>Environment and Sustainability:</b> Design measures which meet the global agenda of environment protection and sustainable development, develop consciousness to preserve the earth's finite resources, and wisdom, to balance human needs and the environment, and to instill an environmental consciousness.</p>
<b>PO 7</b>	<p><b>Quest for Excellence:</b> Receive skills towards holistic development and quest for excellence, recognize the need for, and have the preparation and ability to engage in an independent and life-long learning in the broadest context of technological change, develop healthy competition and setting parameters for excellence.</p>

## PROGRAMME SPECIFIC OUTCOMES (PSOs)

<b>PSO 1</b>	Develop linguistic skills and literary sensibility, and demonstrate an awareness on environment, disaster management and its associated problems.
<b>PSO 2</b>	Develop language proficiency, literary sensibility, values and critical thinking.
<b>PSO 3</b>	Create a sense of inquiry and a quest for higher learning
<b>PSO 4</b>	Develop environmental consciousness and preserve earth's resources to make the world a better place to live in
<b>PSO 5</b>	Apply appropriate technique by using modern techniques and tools
<b>PSO 6</b>	Understand the fundamental aspects of Chemistry through qualitative and quantitative investigations.
<b>PSO 7</b>	Identify the different forms and diversity of plant life, from microscopic algae to terrestrial tree forms, and do scientific experiments.

# PSO – PO MAPPING

	POs							
	1	2	3	4	5	6	7	
PSOs	1	x	x	x			x	x
	2	x	x	x				x
	3	x	x	x		x		x
	4		x	x		x	x	x
	5	x	x	x		x	x	x
	6		x	x		x	x	x
	7	x		x	x		x	x

## **COURSE OUTCOMES (COs)**

# **SEMESTER I**

**Course Code 19UEN111.1**  
**English I LANGUAGE SKILLS (90 Hours)**  
**Instructional hours per week: 54 credits**

Upon completion of this course, the student will be able to:	PSO
CO1. Understand the basics of Phonetics	1
CO2. Apply language skills in daily life situations.	1
CO3. Demonstrate sophisticated writing skills	1
CO4. Analyze and evaluate English literature	1

**Course Code 19UFR/HN/ML 111.1**  
**Additional Language I (72 Hours)**  
**Instructional hours per week: 43 credits**

**19UFR111.1 COMMUNICATION SKILLS IN FRENCH**

Upon completion of this course, the student will be able to:	PSO
CO1.Demonstrate a good comprehension of simple conversational French.	2
CO2. Use basic French expressions in daily communication	2
CO3.Develop short and intelligible texts in French on simple topics.	2

**19UHN111.1 PROSE AND ONE ACT PLAYS**

Upon completion of this course, the student will be able to:	PSO
CO1.Develop knowledge about various forms of prose genres	2
CO2.Identify the distinct features of theatre and stagecraft	2
CO3.Understand social values and social relationships	2

**19UML 111.1MALAYALA KAVITHA (ADDITIONAL LANGUAGE: I)**

Upon completion of this course, the student will be able to:	PSO
CO1. Identify and illustrate the features of Ancient Literature	2
CO2.Discuss the peculiarities of the Ancient Vocabulary	2
CO3.Categorize different Poetic Styles	2

**Course Code 19UEN121**  
**Foundation Course I WRITINGS ON CONTEMPORARY ISSUES (72 Hours)**  
**Instructional hours per week: 42 credits**

Upon completion of this course, the student will be able to:	PSO
CO1. Analyze issues of human rights in the society	1
CO2. Understand and evaluate grave issues of society	1
CO3. Analyze and address gender issues.	1
CO4. Discuss the effects of substance abuse.	1



**Course Code 19UZO141****Core Course I - Animal Diversity I**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand the taxonomic rules on animal classification	3,4
CO2	Understand Phylum Porifera to Echinodermata with taxonomic keys	3,4,5
CO3	Understand Phylum Nematoda and give examples of pathogenic Nematodes	3,4,5
CO4	Identify Protista up to phylum Platyhelminthes using examples from parasitic adaptation	3,4,5
CO5	Analyze diagnostic characters of phyla through examples	3,5
CO6	Evaluate economically important invertebrate fauna	4,5

**Course Code 19UCH131.4****Complementary Course I- THEORETICAL CHEMISTRY**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand the structure of atoms.	6
CO2	Understand the basics of bonding in molecules.	6
CO3	Understand the analytical methods in chemistry	6
CO4	Identify the agents of environmental threats	6
CO5	Apply the methods of waste water treatment	6

**COURSE CODE: 19UBO131****Complementary Course II - CRYPTOGAMIC BOTANY & PLANT PATHOLOGY**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand the structure, reproduction and life cycle of all lower plants.	7
CO2	Evaluate the economically important groups of lower plants.	7
CO3	Identify the plant diseases and effective control measures.	7

# **SEMESTER II**

**Course Code 19UENS211****English II ENVIRONMENTAL STUDIES (72 Hours)****Instructional hours per week: 43 credits**

Upon completion of this course, the student will be able to:	PSO
CO1. Define the scope of Environmental Science and identify the different types of natural resources.	1
CO2. Define and identify the ecosystems and biodiversity around us.	1
CO3. Analyze and assess the types of pollutions and social issues around us.	1
CO4. Understand the impact of population on environment.	1

**Course Code 19UEN212.1****English III ENGLISH GRAMMAR AND COMPOSITION (90Hours)****Instructional hours per week: 54 credits**

Upon completion of this course, the student will be able to:	PSO
CO1. Define and identify the basics of grammar	1
CO2. Identify and explain the different types of sentences.	1
CO3. Apply the rules of grammar in all situations of communication	1
CO4. Design written discourse.	1

**Course Code 19UFR/HN/ML211.1****Additional Language II (72Hours)****Instructional hours per week: 43 credits****19UFR211.1 TRANSLATION & COMMUNICATION IN FRENCH**

Upon completion of this course, the student will be able to:	PSO
CO1. Analyze translated texts.	2
CO2. Apply fine translation skills in the target language.	2
CO3. Demonstrate better language proficiency with the assistance of translation.	2

**19UHN211.1 FICTION, SHORT STORY & NOVEL**

Upon completion of this course, the student will be able to:	PSO
CO1. Analyze various issues of Nationalistic outlook, Women empowerment, and Dalit Chetana discussed in Hindi Novel & Short Stories	2
CO2. Develop essential skills of vocabulary enhancement & sentence structure	2
CO3. Realise human values as documented in literary texts	2

### **19UML 211.1 GADHYAM : RACHANAYUM PADAVUM**

Upon completion of this course, the student will be able to:	PSO
CO1. Understand different Phases of Malayalam Prose	2
CO2. Demonstrate critical skills	2
CO3. Analyze the relation between Heritage and Culture	2

#### **Core courses**

##### **19UZO241: Animal Diversity II**

Upon completion of this course, the student will be able to:		PSO
CO1	Identify general characteristics and classification of vertebrates	3,4,5
CO2	Analyse the unique features and evolutionary relationships between each chordate group	4,5
CO3	Understand the nature and bionomics of vertebrates	5
CO4	Classify Phylum Hemi Chordata to Mammalia with examples	5
CO5	Evaluate the adaptations and economic importance of specific vertebrates	3,5

#### **Course Code: 19UCH231.4**

##### **Complementary Course III - INORGANIC AND BIOINORGANIC CHEMISTRY**

Upon completion of this course, the student will be able to:		PSO
CO1	Evaluate the biological importance of organometallic compounds.	6
CO2	Apply the basics of nuclear chemistry	6
CO3	Analyze transition metal complexes	6
CO4	Understand the chemistry of biological processes	6
CO5	Analyze the biochemistry of trace elements	6

#### **COURSE CODE: 19UBO231**

##### **Complementary Course IV - ANATOMY, EMBRYOLOGY AND MICROTECHNIQUE**

Upon completion of this course, the student will be able to:		PSO
CO1	Identify the angiosperms based on internal structure.	7
CO2	Understand the concepts and mechanisms of various methods of reproduction in angiosperms.	7
CO3	Apply preservation techniques of plant materials	7

# **SEMESTER III**

**Course Code 19UEN311.1****English IV READINGS IN LITERATURE I (90 Hours)****Instructional hours per week: 54credits**

Upon completion of this course, the student will be able to:	PSO
CO1.Understand the various forms of Literature.	1
CO2.Analyze the prose writings of Indian authors.	1
CO3.Evaluate the poems by Indian authors.	1
CO4. Appraisal of short stories in English by Indian authors.	1

**Course Code 19UFR/HN/ML311.1Additional Language III (90 Hours)****Instructional hours per week: 54 credits****19UFR311.1 LITERATURE IN FRENCH**

Upon completion of this course, the student will be able to:	PSO
CO1.Demonstrate knowledge of French and Francophone literature.	2
CO2.Develop literary sensibility in French and Francophone literature.	2
CO3.Interpret simple literary texts in French and thereby enrich one's vocabulary.	2

**19UHN311.1 POETRY AND GRAMMAR**

Upon completion of this course, the student will be able to:	PSO
CO1.Interpret the ideology of different Poets	2
CO2.Demonstrate positive approach towards nature & society	2
CO3.Analyse the features of Ancient, Medieval & Modern Poems	2
CO4. Apply the rules of grammar in all situations of communication	2

**19UML311.1 DRISHYAKALA SAHITHYAM-BHAGAM 1**

Upon completion of this course, the student will be able to:	PSO
CO1.Develop Critical View and Creativity	2
CO2. Understand Racial, Gender, Environmental Issues	2
CO3. Analyze how language becomes a medium of culture	2

**Course Code: 19UZ0321****Foundation Course II - Experimental Zoology, Instrumentation, Biostatistics and Bioinformatics**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand the fundamental characteristics of science and its impact on human life	3,4,5
CO2	Compare Zoology in relation to other Sciences	3,4
CO3	Apply scientific methods for scientific data interpretation	4,5
CO4	Evaluate bioethical issues related to research, publication, patents, plagiarism	3,5
CO5	Use tools and techniques in Biology	3,5

**Course Code: 19UCH331.4****Complementary Course V: ORGANIC CHEMISTRY**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand the mechanism of organic reactions	6
CO2	Understand the basics of stereochemistry of organic compounds	6
CO3	Understand preparation and properties of carbohydrates.	6
CO4	Analyze biomolecules like amino acids, proteins and enzymes.	6
CO5	Evaluate the biological role of lipids and nucleic acids.	6
CO6	Identify industrially important polymers	6

**COURSE CODE: 19UB0331****Complementary Course VI- PLANT SYSTEMATICS AND CROP IMPROVEMENT**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand the diversity of plant and basic concepts of plant morphology.	7
CO2	Identify angiosperm plants.	7
CO3	Apply the techniques of plant breeding.	7
CO4	Identify the economically and ethno botanically valuable plants.	7

# **SEMESTER IV**



**Course Code 19UEN411.1**  
**English V READINGS IN LITERATURE II (90 Hours)**  
**Instructional hours per week: 54 credits**

Upon completion of this course, the student will be able to:	PSO
CO1. Critically analyse poetry in English	1
CO2. Understand and demonstrate the dynamics of theatre	1
CO3. Analyze prose pieces in English	1
CO4. Evaluate literature in the global context.	1

**Course Code 19UFR/HN/ML411.1**  
**Additional Language IV (90 Hours)**  
**Instructional hours per week: 54 credits**  
**19UFR411.1 CULTURE AND CIVILIZATION**

Upon completion of this course, the student will be able to:	PSO
CO1. Identify the distinct features of French culture and civilization	2
CO2. Appraise role of cultural knowledge in learning a foreign language.	2
CO3. Compare cultural practices as they relate to French and one's own culture.	2

**19UHN411.1 DRAMA, TRANSLATION & COMMUNICATIVE HINDI**

Upon completion of this course, the student will be able to:	PSO
CO1. Evaluate literary texts against the corresponding social backgrounds	2
CO2. Understand theory & practice of Translation	2
CO3. Develop skills of writing letters in official language Hindi	2
CO4. Develop communication skills in Hindi	2

**19UML411.1 DRISHYAKALA SAHITHYAM- BHAGAM 2**

Upon completion of this course, the student will be able to:	PSO
CO1. Develop creative and critical skill	2
CO2. Analyze Racial, Gender and Environmental Issues	2
CO3. Analyze Language as a medium of culture	2

**Course Code 19UZ0441****Core Course III: Environmental Biology, Habitat Destruction and Disaster Management**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand the principles, applications and management of environmental science	3,4
CO2	Evaluate various aspects of anthropogenic impact on environment.	3,4
CO3	Understand basic concepts of disaster management	4,5
CO4	Analyze the inherent morphological and physiological basis of behavioural pattern exhibited by vertebrates	3,5
CO5	Apply the conservation strategies.	4,5
CO6	Understand the basic animal distribution pattern globally	4,5

**Course Code: 19UZ0442****Core Course IV - Practical I**

Upon completion of this course, the student will be able to:		PSO
CO1	Use bio instruments used for Zoological studies	3,4,5
CO2	Demonstrate simple dissection and mountings	4,5
CO3	Analyze conventional organ system in common animals	5
CO4	Identify typical and economically important specimen	3

**Course Code: 19UCG431.4****Complementary Course VII: PHYSICAL CHEMISTRY**

Upon completion of this course, the student will be able to:		PSO
CO1	Analyze the rates of chemical reactions.	6
CO2	Demonstrate the basics of ionic equilibria	6
CO3	Identify the properties of colloidal and its applications	6
CO4	Apply UV-Visible and NMR spectroscopy	6
CO5	Apply the instrumental methods used in chemical analysis	6
CO6	Identify different liquid systems	6

**Course Code: 19UCH432.4****Complementary Course IX : LABORATORY COURSES**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand the reactions of functional groups in organic compounds	6
CO2	Identify the organic compounds	6
CO3	Demonstrate micro scale analysis	6
CO4	Demonstrate accuracy and precision in volumetric estimations	6
CO5	Compile the data on experiments	6

**COURSE CODE: 19UBO431****COMPLEMENTARY COURSE-VIII – PLANT PHYSIOLOGY AND APPLIED BOTANY**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand the physiological and biochemical aspects in plants.	7
CO2	Analyze the role, structure and importance of biomolecules in plants.	7
CO3	Apply techniques related to plant physiology and biochemistry.	7
CO4	Understand the applied branches of botany.	7

**Course Code: 19UBO432****Complementary Course X: Practical**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand the diversity and organization of lower plant forms	7
CO2	Understand the mechanism of propagation of lower plant forms	7
CO3	Identify and characterize the lower plant forms	7
CO4	Identify plant diseases caused by lower plant forms	7

# **SEMESTER V**

### **19UZ0541: Cell Biology and Molecular Biology**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand the basic structure and function of a cell	5
CO2	Understand the concepts of cell signalling and signal transductions	3,5
CO3	Understand the concept of cell division and abnormal cell division leading to cancer	3,5
CO4	Analyze the characteristic features of aging	3,5
CO5	Analyze the principles of molecular biology and gene manipulation	4,5
CO6	Demonstrate the mechanism and application of bacterial recombination	4,5

### **19UZ0542: Genetics and Biotechnology**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand the basic concept of genetic mechanism operating in man	3,4,5
CO2	Understand the mechanism of crossing over and inheritance patterns in man.	3,5
CO3	Analyze DNA technology, modern techniques like PCR, Hybridoma technology, gene therapy and Human cloning	3,4,5
CO4	Evaluate the ethical implications in animal science and biotechnology	3,4,5

### **19UZ0543: Microbiology and Immunology**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand basics of microbial classification.	3,4
CO2	Understand the concept of techniques in microbiology	4,5
CO3	Evaluate the scope and importance of clinical immunology and the inherent dangers of microbes	3,4,5
CO4	Analyze the principles and mechanisms of immunology	3,4,5
CO5	Analyze the malfunctioning and disorders of the immune system	4,5
CO6	Identify microbes and their economic importance with reference to pathogenic forms	4,5

**19UZ0544: Practical II - Cell Biology, Genetics, Bioinformatics, Biotechnology, Immunology and Microbiology**

Upon completion of this course, the student will be able to:		PSO
CO1	Apply hematological and microbiological techniques	3,4
CO2	Identify chromosomal arrangements during cell division	5
CO3	Understand chromosomal aberrations in man	3,5
CO4	Analyze conventional biotechnological procedures	3,4,5
CO5	Demonstrate routine blood analysis	5

**19UZ0551.1: Human Health and Sex Education**

Upon completion of this course, the student will be able to:		PSO
CO1	Evaluate the issues of health, sex, fitness, and well-being	4,5
CO2	Understand the importance of good health	3,4,5
CO3	Judge clean sexual habits	3,5
CO4	Appraise matters related to gender	3,4,5

# **SEMESTER VI**

**19UZ0641: Physiology and Biological chemistry**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand the concepts of nutritional physiology and the inherent disorders/deficiencies involved therein.	3,5
CO2	Analyze the phenomenon of circulatory physiology with focus on cardio-vascular Disease	5
CO3	Understand respiratory physiology and inherent disorders	3,5
CO4	Understand renal physiology, renal disorders and treatment mechanism	3,5
CO5	Understand the concept of muscle physiology and nerve physiology focusing on nervous disorders	3,5
CO6	Evaluate public health and broader social issues	3,5
CO7	Analyze the structure and functions of bio-molecules and their role in metabolism	3,5

**19UZ0642: Developmental Biology and Experimental Embryology**

Upon completion of this course, the student will be able to:		PSO
CO1	Identify the various stages in developing embryo	3,5
CO2	Analyze the initial developmental procedures in Amphioxus, Frog and chick	4,5
CO3	Apply state-of- the art experimental procedures in embryology.	3,5
CO4	Analyze the principle of developmental biology and sophisticated embryological techniques	3,4,5
CO5	Understand the mechanisms used to produce different cell and tissue types and ensure these cells develop in the correct position and identity.	5
CO6	Analyze stem cell therapy, tissue engineering and regenerative medicine.	3,4,5

**19UZ0643: Ethology, Evolution and Zoogeography**

Upon completion of this course, the student will be able to:		PSO
CO1	Understand the physiological basis of behavior	3,4
CO2	Identify the different types of communication system among animals	4,5
CO3	Understand organic evolution with reference to man	3,4,5
CO4	Categorize the distribution of animals in the biosphere	3,4,5
CO5	Understand organic evolution and paleontology	3,4,5



**19UZ0644: Practical III – Physiology and Biological Chemistry, Molecular Biology and Biostatistics**

Upon completion of this course, the student will be able to:		PSO
CO1	Demonstrate basic principles in physiology	3,5
CO2	Identify the clinical procedures for blood & urine analysis	5
CO3	Apply simple biochemical laboratory procedures	3,5
CO4	Apply enzyme kinetics.	3,5
CO5	Assess normal and abnormal constituents of body fluids.	5

**19UZ0645: Practical IV - Developmental Biology, Ecology, Ethology, Evolution and Zoogeography**

Upon completion of this course, the student will be able to:		PSO
CO1	Identify the different embryological stages in Vertebrates	3,5
CO2	Analyze placental types of mammals	5
CO3	Evaluate hydro biological parameters	4,5
CO4	Appraise the ecosystem dynamics	3,4,5

**19UZ0661.1: Ornamental Fish culture**

Upon completion of this course, the student will be able to:		PSO
CO1	Appraise the entrepreneurial potentials in ornamental fish farming	3,4,5
CO2	Understand the diversity of ornamental fishes and the scope of culture and trade	3,4,5
CO3	Demonstrate setting up and maintenance of aquarium	3,5
CO4	Apply the culture breeding and marketing techniques of common indigenous ornamental fishes	3,4,5

## COURSE – PSO MAPPING

Course Code	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
19UEN111.1	*						
19UENS211	*						
19UENS211	*						
19UEN212.1	*						
19UEN311.1	*						
19UEN411.1	*						
19UFR111.1		*					
19UFR211.1		*					
19UFR311.1		*					
19UFR411.1		*					
19UML111.1		*					
19 UML 211.1		*					
19 UML 311.1		*					
19 UML411.11		*					
19UHN111.1		*					
19UHN211.1		*					
19UHN311.1		*					
19UHN411.1		*					
19UZO141			*	*	*		
19UZO241			*	*	*		
19UZO321			*		*		
19UZO441			*	*	*		
19UZO442			*		*		
19UZO541			*		*		
19UZO542			*		*		
19UZO543			*	*	*		
19UZO544			*		*		
19UZO551.1			*	*	*		
19UZO641					*		
19UZO642			*	*			
19UZO643				*	*		
19UZO644			*		*		
19UZO645			*	*	*		
19UZO661.1					*		
19UCH131.4						*	
19UCH231.4						*	
19UCH331.4						*	
19UCH431.4						*	
19UCH432.4						*	
19UBO131							*
19UBO231							*
19UBO331							*
19UBO431							*
<b>Botany Practical</b>							*