FATIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF ZOOLOGY

B.Sc Zoology-Syllabus- 2020-2021

For those who joined in June 2019 onwards

I & II B.Sc Zoology

PROGRAMME CODE : UAZO

PART – I – TAMIL / FRENCH / HINDI– 12 CREDITS

PART – I – TAMIL

Offered by The Research Centre of Tamil

S.NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19TLC1	Language-Modern Literature	5	3	40	60	100
2.	II	19TLC2	Language - Bakthi Literature	5	3	40	60	100
3.	III	19TLC3	Language- Epic Literature	5	3	40	60	100
4.	IV	19TLC4	Language-Sangam Literature	5	3	40	60	100
			Total	20	12			

PART – I – FRENCH

Offered by The Department of French

S.NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19RLC1	PART 1 LANGUAGE FRENCH	5	3	40	60	100
2.	II	19RLC2	PART 1 LANGUAGE FRENCH	5	3	40	60	100
3.	III	19RLC3	PART 1 LANGUAGE FRENCH	5	3	40	60	100
4.	IV	19RLC4	PART 1 LANGUAGE FRENCH	5	3	40	60	100
			Total	20	12			

PART – I – HINDI

Offered by The Department of Hindi

S.NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19DLC1	PART 1 LANGUAGE HINDI	5	3	40	60	100
2.	II	19DLC2	PART 1 LANGUAGE HINDI	5	3	40	60	100
3.	III	19DLC3	PART 1 LANGUAGE HINDI	5	3	40	60	100
4.	IV	19DLC4	PART 1 LANGUAGE HINDI	5	3	40	60	100
			Total	**20**	**12**			

PART – II -ENGLISH – 12 CREDITS

Offered by The Research Centre of English

S.NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19E1LB1	BASIC COMMUNICATIVE ENGLISH	5	3	40	60	100
2.		19E1LI1	INTERMEDIATE COMMUNICATIVE ENGLISH	5	3	40	60	100
3.		19E1LA1	ADVANCED COMMUNICATIVE ENGLISH	5	3	40	60	100
4.	II	19E2LB2	ENGLISH COMMUNICATION SKILLS (BASIC)	5	3	40	60	100
5.		19E2LI2	ENGLISH FOR EMPOWERMENT (INTERMEDIATE)	5	3	40	60	100
6.		19E2LA2	ENGLISH FOR CREATIVE WRITING (ADVANCED)	5	3	40	60	100
7.	III	19ELC3	ENGLISH FOR DIGITAL ERA	5	3	40	60	100
8.	IV	19ELC4	ENGLISH FOR INTEGRATED DEVELOPMENT	5	3	40	60	100
			Total	**20**	**12**			

PART – III -MAJOR, ALLIED & ELECTIVES – 95 CREDITS

MAJOR CORE COURSES INCLUDING PRACTICALS : 60 CREDITS

S.NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks

1.	I	19Z1CC1	INVERTEBRATA	5	4	40	60	100
2.		19Z1CC2	CELL BIOLOGY	4	3	40	60	100
3.		19Z1CC3	LAB IN INVERTEBRATA & CELL BIOLOGY	3	2	40	60	100
4.	II	19Z2CC4	CHORDATA	5	4	40	60	100
5.		19Z2CC5	GENETICS	4	3	40	60	100
6.		19Z2CC6	LAB IN CHORDATA & GENETICS	3	2	40	60	100
7.	III	19Z3CC7	HUMAN PHYSIOLOGY	5	4	40	60	100
8.		19Z3CC8	ENVIRONMENTAL BIOLOGY	4	3	40	60	100
9.		19Z3CC9	LAB IN HUMAN PHYSIOLOGY & ENVIRONMENTAL BIOLOGY	3	2	40	60	100
10.	IV	19Z4CC10	MICROBIOLOGY	5	4	40	60	100
11.		19Z4CC11	EVOLUTION	4	3	40	60	100
12.		19Z4CC12	LAB IN MICROBIOLOGY& EVOLUTION	3	2	40	60	100

ALLIEDCOURSES- 20 CREDITS

S.NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19Z1ACC1	ALLIED CHEMISTRY- I	3	3	40	60	100
2.		19Z1ACC2	LAB IN VOLUMETRIC ANALYSIS	2	2	40	60	100
3.	II	19Z2ACC3	ALLIED CHEMISTRY- II	3	3	40	60	100
4.		19Z2ACC4	LAB IN QUALITATIVE	2	2	40	60	100

			ORGANIC ANALYSIS					
5.	III	19Z3ACQ1	PLANT DIVERSITY & PLANT PATHOLOGY	3	3	40	60	100
6.		19Z3ACQ2	LAB- PLANT DIVERSITY & PLANT PATHOLOGY	2	2	40	60	100
7.	IV	19Z4ACQ3	DEVELOPMENTAL BOTANY &PLANT BREEDING	3	3	40	60	100
8.		19Z4ACQ4	LAB-DEVELOPMENTAL BOTANY &PLANT BREEDING	2	2	40	60	100

PART – IV – 20 CREDITS

S.No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	I	19G1VE	Value Education (Including Meditation in Action Movement)	1	1	40	60	100
2.		19Z1NME	Non Major Elective - Maternity and Child Health (Offered to other major Students)	2	2	40	60	100
3.	II	19G2VE	Value Education	1	1	40	60	100
4.		19Z2NME	Non Major Elective - Maternity and Child Health (Offered to other major Students)	2	2	40	60	100
5.	III	19G3EE	Environmental Education	1	1	40	60	100
6.		19Z3SB1	Vermitechnology	2	2	40	60	100
7.	IV	19G4EE	Environmental Education	1	1	40	60	100
8.		19Z4SB2	Mushroom Cultivation	2	2	40	60	100

III UG Zoology – Syllabus

SYLLABUS OFFERED FROM JUNE 2018 ONWARDS

Sem	Sub Code	Title	Hrs	Credits	Test	Assi	Qui	Int	Ext	Tot
V	Z5CC11	CORE SUBJECT (1) BIOCHEMISTRY	6	5	15	5	5	25	75	100
	Z5CC12	(2) MOLECULAR BIOLOGY	5	5	15	5	5	25	75	100
	Z5CC13	(3)BIOPHYSICS& INSTRUMENTATION	4	4	15	5	5	25	75	100
	Z5ME1/ Z5ME2	MAJORELECTIVE(1) EMBRYOLOGY/ ENTOMOLOGY	5	5	15	5	5	25	75	100
	Z5SB3	SKILL BASED SUBJECT(1) ORNAMENTAL FISH CULTURE	2	2	30	10	10	50	50	100
	Z5SB4	(2)SERICULTURE	2	2	30	10	10	50	50	100
	Z6CC16	MAJOR PRACTICAL-III	6	-	-	-	-	-	-	-
			30	23						
VI	Z6CC14	CORE SUBJECT (1) IMMUNOLOGY	5	5	15	5	5	25	75	100
	Z6CC15	(2) BIOTECHNOLOGY	5	5	15	5	5	25	75	100
	Z6ME3/ Z6ME4	MAJOR ELECTIVE (1) BIOSTATISTICS / CLINICAL LABORATORY TECHNIQUE	5	5	15	5	5	25	75	100
	Z6ME5/ Z6ME6	(2) BIOINFORMATICS / HUMAN GENETICS	5	5	15	5	5	25	75	100
	Z6SB5	SKILL BASED SUBJECT (1) APICULTURE	2	2	30	10	10	50	50	100
	Z6SB6	(2) DAIRY FARMNG	2	2	30	10	10	50	50	100
	Z6CC16	MAJOR PRACTICAL-III	6	6	-	-	-	40	60	100
			30	30						
		Mandatory Total Credits		140						
		Add on credits		20						
		TOTAL		160						

Add on credits

Courses	Semester	Credits	Marks
Computer Literacy	I – Science; II - Arts	2	100
Foundation course – Arts and science	I & II	3+3	50+50
Meditation Action Movement	I-IV	2	100
Human Rights	V	2	100
Out Reach Programmes	V & VI	3	100
Project	VI	4	100
Reading Culture	I-VI	1	-
TOTAL		20	

OLD

2019

II B.Sc. ZOOLOGY

SEMESTER III

Z3CC6 - HUMAN PHYSIOLOGY

(For those who join in 2017 onwards)

HRS/WEEK: 4 **CREDITS: 3**

Objectives: Understanding the complex organization of different organ systems and their functions-syllabus framed to help the students understand the human organization.

UNIT I: DIGESTIVE SYSTEM [12 Hrs]

Structure and Functions of digestive system.-Buccal glands, Gastric, Intestinal glands, Liver and their functions-Digestion- Buccal, Gastric and Intestinal digestion-Important digestive enzymes for CHO, Protein and Lipid and their mode of action.

UNIT II: RESPIRATORY SYSTEM AND CIRCULATORY SYSTEM [12Hrs]

Respiration and Respiratory muscles-Respiratory pigment-Pulmonary Respiration – Mechanism of Respiration-Transport of O2- Oxygen dissociation curve and Bohr effect-Transport of CO2 –Chloride Shift -Rate & Control of Respiration-BMR, RQ, Anoxia and Hypoxia (Definitions only- Composition of Blood – Plasma and Corpuscles- Blood clotting Functions of human heart - Haemodynamic principle--Cardiac Cycle

UNIT III: URINOGENITAL SYSTEM [12 Hrs]

Renal function – Physiology of urine formation – Hormonal control-Urinary bladder – Micturition – Dialysis-Female Reproductive system and Functions of female sex organs – Ovary, Uterus, and Vagina-Structure and Functions of Male Reproductive System-Role of Hormones in Menstrual cycle.

UNIT IV: NEUROMUSCULAR SYSTEM [12 Hrs]

Structure of skeletal, non-striated and cardiac muscles- Structure and Properties of muscle – Skeletal, Non-striated & Cardiac-Physiology of skeletal muscle contraction-Electrokinematic theory and Sliding Filament theory

Structure and functions of Neuron-Reflex Action-Reflex Arc-Chemical co-ordination-Synaptic Transmission.

UNIT V: HORMONES AND SENSE ORGANS [12 Hrs]

Endocrine glands and their secretions – Structure and Functions of Pituitary, Thyroid, Parathyroid, Pancreas and Adrenal glands

Sense organ – Eye – Anatomy & Physiology of Vision –Myopic retinopathy and Glaucoma-Ear –Structure and Functions

TEXT BOOK

1. Vijaya DJ. Prep Manual For Undergraduates Physiology,Second Edition,B.I. Published by Churchill Livingstone, New Delhi, 2001.

REFERENCES

1. Das P.K. Hand-Book of Human Physiology, First Edition. Current Books International, Calcutta, 1995.

2. Vidya R. Handbook of Human Physiology,Seventh Edition, Jaypee Brothers Medical Publishers Pvt. Ltd.1993.

3. Parker S. Human Body-Eyewitness Science Book, Dorling Kindersley Ltd., London, 1996.

4. Arthur J. Vander, James H. Sherman and Dorothy S. Luciano.Human Physiology: The Mechanism of Body Function, International edition, Fifth Edition, McGraw-Hill Publishing Company, 1970.

5. Sarada S and MadhavanKuttyK. Textbook of Human Physiology, Revised by H.D. Singh, 6th Edition, S. Chand and Company Ltd., New Delhi, 2004.

NEW

2020

5%

II B.Sc. (Zoology)

SEMESTER – III (Human Physiology)

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UAZO	19Z3CC7	HUMAN PHYSIOLOY	Lecture	5	4

COURSE DESCRIPTION

The course focuses on the complex organization of different organ systems and their functions.

COURSE OBJECTIVE

- To understand the structure and functions of digestive, respiratory, circulatory, urinogenital, neuromuscular system and sense organs.
- To introduce the physiological concepts of Homeostasis and control mechanisms.
- Learning in depth about the structure and functions of various Endocrine glands

UNITS

UNIT –I DIGESTIVE SYSTEM **(15 HRS.)**

1%

Structure and Functions of digestive system - Buccal glands, Gastric, Intestinal glands, Liver and their functions - Mechanical and chemical digestion of food: Buccal, Gastric and Intestinal digestion - Important digestive enzymes for CHO, Protein, lipids- Absorption of minerals, and vitamins - Hormonal control of secretion of enzymes in gastrointestinal tract. Symptoms and causes of - Peptic ulcer, Gastroparesis, Constipation, Irritable Bowel Syndrome (IBD) Hemorrhoids.

Self Study - Structure and Functions of digestive system

UNIT –II RESPIRATORY SYSTEM AND CIRCULATORY SYSTEM (15 HRS.)

Histology of trachea and lung - Respiration and Respiratory muscles- Respiratory pigment-Pulmonary Respiration – Mechanism of Respiration- Transport of O2- Oxygen dissociation curve and Bohr effect-Transport of CO2 –Chloride Shift - carbon monoxide poisoning - Rate & Control of Respiration- BMR, RQ, Anoxia and Hypoxia (Definitions only) - Respiratory disorder - Cyanosis, Apnoea, Asthma, Pneumonia. Composition of Blood – Plasma and Corpuscles- Blood clotting Structure and functions of human heart - Haemodynamic principle--Cardiac Cycle. Symptoms and causes of - Stroke - Coronary heart disease - Hypertension - Myocardial infarction.

Self Study - Respiratory pigment

UNIT –III UROGENITAL SYSTEM (15 HRS.)

Renal function – Mechanisms of urine formation – Hormonal control-Urinary bladder – Regulation of water balance - Regulation of acid-base balance- Micturition – Dialysis.

4 %

Female Reproductive system and Functions of female sex organs: - Role of Hormones in pregnancy and parturition. Symptoms and causes of - Haematuria, Urinary tract infection, Hypospadias, Interstitial cystitis, Endometriosis .

Self Study - Renal function

UNIT –IV NEUROMUSCULAR SYSTEM (15 HRS.)

Structure of skeletal, non-striated and cardiac muscles- Structure and Properties of muscle – Skeletal, Non-striated & Cardiac-Physiology of skeletal muscle contraction-Electro kinematic theory and Sliding Filament theory. Muscular disorder - Muscular dystrophy, Fibromyalgia

Structure and functions of Neuron-Reflex Action-Reflex Ac-Chemical co-ordination- Synaptic Transmission. Symptoms and causes of– Alzheimer's diseases.

Self Study - Structure and functions of Neuron

UNIT –V HORMONES AND SENSE ORGANS (15 HRS.)

Endocrine glands and their secretions – Structure and Functions of

Pituitary, Thyroid, Parathyroid, Pancreas- islets of langerhans, Adrenal glands and. b). Sense organ – Eye – Anatomy & Physiology of Vision – Myopic retinopathy and Glaucoma. Ear –Structure and Functions – Cholesteatoma - Crohn's disease.

Self Study - Sense organ - Eye - Ear general function

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (HRS.)

DIGITAL OPEN EDUCATIONAL RESOURCES

1.https://www.oercommons.org/courses/anatomy-and-physiology-4/view

2.https://www.oercommons.org/courses/anatomy-and-physiology-i/view

3.https://www.youtube.com/watch?v=X3TAROotFfM

4. https://openstax.org/books/biology-2e/pages/34-1-digestive-systems

5.https://openstax.org/books/anatomy-and-physiology/pages/10-5-types-of-muscle-fibers

6.https://openstax.org/books/anatomy-and-physiology/pages/17-1-an-overview-of-the-endocrine-system

REFERENCES:

TEXT BOOK:

1. Vijaya D.J. Prep Manual For Undergraduates Physiology, Second Edition, B.I. Published by Churchill Livingstone, New Delhi, 2001.

REFERENCE BOOKS:

1. Kashyap. V., (2019). A text book of Animal Physiology and Biochemistry. Kedar Nath Ram Nath, Meerut.
2. Silverthorn D.U., (2016). Human Physiology an Integrated Approach. 6th Edition, Pearson Education Services. Pvt. Limited.
3. Suresh R., (2012). Essentials of Human physiology. Regional Institute of Medical Sciences, Imphal, Manipur.
4. Sherwood L., (2009). Principles of Human Physiology. 3rd Edition, Cengage Learning India private Limited, New Delhi.
5. Sarada S., & Madhavan K. K., (2004). Textbook of Human Physiology, Revised by H.D. Singh, 6th Edition, S. Chand and Company Ltd., New Delhi,
6. Parker S., (1996). Human Body-Eyewitness Science Book, Dorling Kindersley Ltd., London,

7. Das P.K., (1995). Hand-Book of Human Physiology, First Edition. Current Books International, Calcutta,
8. Vidya R., (1993). Handbook of Human Physiology, Seventh Edition, Jaypee Brothers Medical Publishers Pvt. Ltd.

OLD

2019

II B.Sc., ZOOLOGY

III SEMESTER

Z3CC7- MICROBIOLOGY

(For those who join in 2017 onwards)

HRS/WEEK: 3 **CREDITS: 3**

Objective:

To understand the fundamentals of the world of Microbes, distribution and their application for human welfare.

UNIT I: INTRODUCTION TO MICROBIOLOGY [9 hrs]

The historical development and scope of Microbiology -Sterilization and disinfections - physical and chemical methods - Culture media – Types -Culture methods – Isolation of bacteria by Pure culture techniques.

UNIT II: BACTERIA [9 hrs]

Outline classification of Bacteria according to Bergey's Manual -Morphology and Physiology of Bacteria – Nutrition and growth - Identification of Bacteria – Staining (Simple & Gram), Phenol red & Lipid hydrolysis Tests and Motility test.

UNIT III: VIRUSES [9 hrs]

General properties of Viruses – DNA & RNA viruses – examples- Physical and Chemical - Viral Multiplication - Cultivation of Viruses - Types of cultures and assay - Classification and Nomenclature of Viruses - Bacteriophages, Viriods and Prion (Short notes only)

UNIT IV: MICROBES IN THE ENVIRONMENT [9hrs]

Bacteriology of Water- Microbes in Pond, lake, Sea and domestic water-methods of purification of water: Water potability analysis, determination of sanitary quality- Bacteriology of Air – Microbes in air and Measurement of air contamination - Biogeochemical cycles – Nitrogen Cycle and Phosphorus Cycle - Microbes for alternate source of energy – Hydrogen producing bacteria - *Halobacterium halobium*

UNIT V: MICROBES IN HUMAN WELFARE [9 hrs]

Normal microbial flora of Human Body – Opportunistic, Beneficial, Harmful, Nosocomial infections – Probiotics - Bacteriology of Food: Food Spoilage, food Poisoning- Botulism- Microbes in Food products and Industrial products: Citric acid & Ethanol production.

TEXTBOOK:

1. Ananthanarayan, R, and Panicker C.K, (2009) Textbook of Microbiology, 8th Edition, Universities Press (India) Private Limited.

REFERENCE BOOKS:

1.Pelczar M.J., E.C.S Chan and N.R. Kreig, Microbiology, 5th Edition, Tata McGraw Hill Edition. United States, 2002.

2. Gerard J. Tortora, Berdell R. Funke and Christine L. Case, Microbiology: An Introduction,11th Edition. United States, 2005.

3.Joanne M. Willey, Linda M. Sherwood, Christopher J. Woolverton,Prescott's Microbiology, 8th Edition. New Delhi, 2010.

NEW

2020

5%

II B.Sc.

SEMESTER – IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UAZO	19Z4CC10	MICROBIOLOGY	Lecture	5	4

COURSE DESCRIPTION

This course deals with the study of microorganisms and its interaction with the environment.

COURSE OBJECTIVES

- To understand the fundamentals of the world of Microbes, distribution and their application for human welfare.
- To understand the structural similarities and differences among various microorganisms.
- To know various types of Culture media and the techniques for isolation of pure cultures of microbes.
- Comprehend the intricate interaction between viruses and host cells.

UNIT –I INTRODUCTION TO MICROBIOLOGY (15HRS.)

The historical development and scope of Microbiology -Sterilization and disinfections - physical and chemical methods - Culture media – Types - Culture techniques – Batch, Continuous, Synchronous and Fed-batch – Methods of culturing bacteria – Isolation of bacteria by Pure culture techniques. - Identification of Bacteria – Staining (Simple & Gram), Phenol red & Lipid hydrolysis Tests and Motility test.

Self-Study- Scope of Microbiology

UNIT –II BACTERIA (15 HRS.)

Outline classification of Bacteria according to Bergey's Manual -Morphology and Physiology of Bacteria – Nutrition and growth –Bacterial respiration- Bacterial reproduction- Conjugation – Transformation and Transduction- Economic importance.

5%

Self-Study- Economic importance.

UNIT –III VIRUSES (15 HRS.)

General properties of Viruses –Structure of viruses- TMV, Adenovirus, Bacteriophages – Shape of viruses (Polyhedral, helical and complex)- Classification and Nomenclature of Viruses - DNA & RNA viruses – Viral Multiplication - Cultivation of Viruses - Types of cultures and assay - Viriods, Virion and Prion (Short notes only)

UNIT –IV MICROBES IN THE ENVIRONMENT (15 HRS.)

Bacteriology of Water- Microbes in Pond, lake, Sea and domestic water- methods of purification of water: Water potability analysis, determination of sanitary quality- Microbes in air and Measurement of air contamination - Biogeochemical cycles -Nitrogen Cycle, Phosphorus Cycle, Nitrogen fixation - Microbes for alternate source of energy - Hydrogen producing bacteria - *Halobacterium halobium.*

Self-Study- Biogeochemical cycles -Nitrogen Cycle

UNIT –V INDUSTRIAL MICROBIOLOGY (15 HRS.)

Fermentation technology – Fermentor – Types of fermentor – Production of microbial products through fermentor – Production of Antibiotics (Penicillin, Streptomycin & Tetracyclines), Organic acids (Citric acid & Acetic acid), Solvents (Ethyl alcohol & Glycerol), Yeast (Brewer's and Baker's), Single cell proteins (Bacterial proteins).

TEXT BOOK:

Anandhanarayanan. R and Panicker C.K., (2016). Text book of Microbiology, 8th Edition, Universities Press (India) Private Limited.

REFERENCES:

1. Pelczar, M.J., Chan, E.C.S and Krieig N.R.,(2008). Microbiology, 5th Edition, Tata McGraw Hill Edition. United States.
2. Tortora G.J, Funke B.R and Case C.L., (2009).Microbiology: An Introduction,11th Edition, United States.
3. Prescott L.M. Harley J.P and Klein D.A., (2010) Microbiology, 8th Edition. New Delhi.
4. Patel A.H. (2008).Industrial microbiology, Macmillan India LTD, Chennai.

Digital Open Educational Resources (DOER) :

1. https://libguides.wccnet.edu/oer-subjects/microbiology
2. https://library.fvtc.edu/Microbiology/OER
3. https://www.oercommons.org/browse?f.keyword=microbiology
4. http://oer2go.org/mods/en-boundless/www.boundless.com/microbiology/textbooks/boundless-microbiology-textbook/industrial-microbiology-17/index.html
5. https://www.merlot.org/merlot/viewMaterial.htm?id=484489821

Head of the Department

Dr. A. TAMIL SELVI
Head, Dept. of Zoology
FATIMA COLLEGE (AUTONOMOUS)
MADURAI-625 018