



# THE MADURA COLLEGE

An Autonomous Institution affiliated to Madurai Kamaraj University

Re-accredited (3<sup>rd</sup> cycle) with 'A' grade by NAAC

Vidya Nagar, T.P.K. Road, Madurai – 625 011

## DEPARTMENT OF ZOOLOGY

### Course Outcomes mapped with POs

PROGRAMME : B.Sc. (Zoology)

Course Code	Course Title	CLO	Mapping of CO with PO				
			PO1	PO2	PO3	PO4	PO5
20U1TLA1	இக்கால இலக்கியம்	கவிதைகள் வெளிப்படுத்தும் மனித அன்பு, பெண்நிலைகள், மொழியின்சிறப்பு, தொழிலாளர் நிலை போன்றவற்றை அறியச் செய்தல்.	-	1	1	2	2
		கவிதைகளின் கருத்துப் பரிமாற்றம், உயர்மனிதச் செயல்பாடுகளை ஊக்குவித்து நடைமுறையில் பின்பற்றல்.	-	2	2	3	2
		கதையின் உள்ளடக்கம்,வடிவம் –மாந்தர் எண்ணம், உணர்வு, நடத்தை, சமூகப் பண்பாட்டுச் செயல்பாட்டில்- ஈடுபடுதல்.	-	3	1	-	2
		இலக்கிய வரலாற்றை நிரல்படுத்திப் படைப்பாளிகளின் அறிவுத்திறத்தில் ஈடுபடச்செய்தல்.	3	-	1	-	2
		மொழியின் சிறப்புகளைத் தொகுத்தல். படைப்பூக்கத்துடன் பிழை நீக்கித் தனித்துவமாக எழுதத் தூண்டல்.	-	-	3	-	2
20U1HLA1	Hindi 1	Use of singular, plural, numbers	-	1	1	2	2
		Use of sentences and choosing the right answer	-	2	2	3	2
		Able to translate and correct the sentences	-	3	1	-	2
		Able to write answers questions from prose	3	-	1	-	2
		Able to identify directions and seasons	-	-	3	-	2
20U1SLA1	Sanskrit I	Gain basic knowledge about Devanagari Script and understand Male/ Female/ Neuter Gender Words	-	1	1	2	2
		Identify Person/Number/Tense	-	2	2	3	2
		Know to substitute word without affecting Number / Tense/ Grammar and to enhance students attitude towards good behaviour through Subhashitani (Good says)	-	3	1	-	2
		Understand the Sanskrit Literature like Vedas, Vedangas and Epic Literature	3	-	1	-	2
		Translate from Sanskrit to English in Present / Future Tense	-	-	3	-	2
20U1NEN1	English-I	Use proper Parts of Speech while framing simple sentences	-	2	3	2	-

		Express practical skills of various types of writing dialogues and comprehend content in English	-	2	3	3	-
		Use proper tense forms in sentences and Classify kinds of sentences; convert from one type to another.	-	2	2	2	-
		Fill different challans , issue cheques, fill railway form in real life contexts and prepare advertisements on their own.	-	2	2	2	-
		Appreciate a literary work for its genre and evaluating ideas. To use language skills necessary for social,academic and professional purposes	-	2	3	3	-
<b>20U1VEN1</b>	<b>Value Education and Professional Ethics</b>	Describe the various value system and its familiarity	3	-	2	2	3
		List forty virtues and eighty values	3	-	2	2	3
		Outline the foundations on value oriented moral values	3	-	2	2	3
		Focus on relevance of various religion values and its similarities	2	-	2	2	3
		Build a value system and ethics in Education, Business and Teaching	3	2	2	2	3
<b>20U1ZMC1</b>	<b>Invertebrata – I</b>	Understand the diversity and basic taxonomy of Animal kingdom.	1	-	-	2	-
		Describe the general characters and outline classification from Protista to Platyhelminthes.	2	2	-	2	-
		Apply the knowledge to identify the fauna based on their unique characters.	1	2	2	2	2
		Analyse the importance and adaptation of the fauna in their habitat.	1	2	1	2	1
		Examine the role of Invertebrates in biological communities and ecological interactions.	2	2	1	3	3
<b>20U1ZMC2</b>	<b>Invertebrata - II</b>	Understand the diversity and basic taxonomy from Aschelminthes to Echinodermata.	1	-	-	-	-
		Recall the general characters and outline classification from Aschelminthes to Echinodermata.	2	2	1	2	-
		Apply the knowledge to identify the fauna based on their unique characters.	2	2	1	2	1
		Analyse the importance and adaptation of the fauna in their habitat.	2	2	2	2	-
		Evaluate the role of Invertebrates in biological communities and ecological interactions.	2	2	2	2	3
<b>20U2ZMP1</b>	<b>Major Practical – I</b>	Recall the diversity of Invertebrates.	2	2	-	2	2
		Understand the structure and functions of the organism.	2	2	1	2	2
		Apply the knowledge to identify the Invertebrates fauna based on their unique characters.	2	3	2	3	2
		Analyse the organs/systems and their role in Invertebrates.	2	2	-	2	-
		Examine the role of Invertebrates in biological communities and ecological interactions.	2	2	1	3	3
<b>20U1CAC1</b>	<b>Ancillary Chemistry - I</b>	To discuss atomic models, and occupancy of electrons on various quantum levels.	3	2	-	-	-
		To develop the overlapping of orbitals and hybridization of simple molecules	3	2	-	-	-

		To find the importance of organic compounds in daily life and to describe the types of organic reactions	3	2	-	-	-
		To inspect the types of adsorption and factors affecting the process	3	2	-	-	-
		To the characteristics of catalyst and to explicate the types of catalysis	3	2	-	-	-
20U1CAP1	Volumetric analysis	To get domain knowledge in estimation of inorganic compounds	3	2	-	-	-
		To design the basic laboratory techniques of volumetric analysis	3	2	-	-	-
		To develop the skills for doing any titrations and recording data	3	2	-	-	-
		To make scientific claims that is supported by their data and other observations	3	2	-	-	-
		To communicate the finding	3	2	2	2	-
20U2TLA2	இடைக்கால இலக்கியமும் உரைநடையும்	சிற்றிலக்கியங்கள் குறித்த அடிப்படைக் கருத்துகளைப் பெறுவர்.	1	-	3	-	2
		பக்தி இலக்கியங்கள் வெளிப்படுத்தும் சமயம் சார்ந்த செய்திகளைப் புரிவர்.	-	-	2	-	3
		சைவ வைணவ சித்தாந்த இறை தத்துவக் கருத்துகளைத் தெரிந்து நடைமுறைப்படுத்திக்கொள்வர்.	1	-	3	1	2
		இலக்கிய வரலாறு தரும் வாழ்வியல் கருத்துகளைப் பொருத்திப் பார்க்கும் திறன் பெறுவர்.	2	1	3	1	3
		மொழியின் நுட்பங்களின் மூலமாக ஆளுமைத் திறனை வளர்த்துக் கொள்வர்.	-	-	3	1	1
20U2HLA2	Hindi 2	Write stories and draft letter	1	-	3	-	2
		Use of proverbs and phrases in communication	-	-	2	-	3
		Learning morals from great Indian leaders	1	-	3	1	2
		Writing essays with creativity	2	1	3	1	3
		Using proverbs in speech and having knowledge of days in Hindi	-	-	3	1	1
20U2SLA2	Sanskrit II	Gain basic knowledge about the origin of Sanskrit Kavya Literature	1	-	3	-	2
		Understand Sanskrit Poetic Literature and Style of Writing Poems	-	-	2	-	3
		Compare Poetic Literature with Modern Life and to classify and discuss the importance of early literature	1	-	3	1	2
		Practice creativity and demonstrate different aspects of life as portrayed in Sanskrit Literature	2	1	3	1	3
		Learn Sanskrit Bhakti Literature and Tamil Chemmozhi Literature at basic levels	-	-	3	1	1
20U2NENG2	English-II	Use linkers to compose a coherent paragraph and to examine language skills through core subjects	-	2	3	2	-
		Use singular, plural, present and past tenses. 'will' and 'going to' to engage in meaningful conversations and writing tasks	-	2	3	3	-
		Classify appropriate pronunciation for "c" as "s", "k" and "ch" and classify letters / sound "p, b, th, v, w, tion" appropriately.	-	2	2	2	-
		Demonstrate practical skills of various types of media writing and reports Use appropriate expressions, ask for favor, offer suggestions and engage in meaningful telephonic conversations	-	2	2	2	-

		Appreciate a literary work for its genre and evaluating ideas.	-	2	3	3	-
20U2EVS1	Environmental Science & Gender studies	Able to list out various ecosystems and their interactions	2	-	-	1	3
		To appreciate the nuances behind food webs and food chains	2	-	2	1	3
		Able to differentiate the importance of Hotspots and mega diversity centres.	2	3	-	1	3
		Able to identify different types of pollutions and provide solutions	2	-	-	3	3
		To analyze and identify the behavioral problems among student community with reference to gender.	2	3	-	3	3
20U2ZMC3	Chordata - I	Understand the diversity and basic taxonomy from Prochordate to Pisces.	2	2	1	2	-
		Describe the general characters and outline classification from Prochordate to Pisces.	2	2	2	2	1
		Apply the knowledge to identify the fauna based on their unique characters.	2	2	2	2	1
		Analyse the importance and adaptation of fauna in their habitat.	2	2	2	2	3
		Examine the role of Chordates in biological communities and ecological interactions.	2	2	2	2	3
20U2ZMC4	Chordata - II	Understand the diversity and basic taxonomy from Amphibia to Mammals.	1	2	1	2	
		List the general characters and outline classification from Amphibia to Mammals.	2	2	2	3	1
		Apply the knowledge to identify the fauna based on their unique characters.	1	3	2	3	2
		Analyse the importance and adaptation of fauna in their habitat.	2	3	2	3	2
		Assess the role of Chordates in biological communities and ecological interactions.	2	2	2	3	3
20U2ZMP2	Major Practical – II	Recall the diversity of Chordates.	2	2	-	2	2
		Understand the structure and functions of the organism.	2	2	1	2	2
		Apply the knowledge to identify the Chordate fauna based on their unique characters.	2	3	2	3	2
		Analyse the organs/systems and their role in Chordates.	2	2	-	2	-
		Examine the role of Chordates in biological communities and ecological interactions.	2	2	1	3	3
20U2CAC2	Allied Chemistry – II	To explain the applications of common ion effect and buffer action	3	2	-	-	-
		To indicate structure of carbohydrates and figure out the configuration of glucose	3	2	-	-	-
		To describe the preparation, properties and uses of glycine and alanine	3	2	-	-	-
		To classify proteins, vitamins and to explain the sources, functions and deficiency of vitamins A, B, C, D, E & K and to identify the role of various elements in plant growth	3	2	-	-	-
		To explain the types of polymers, corrosion and its control	3	2	-	-	-
20U2CAP2	Semi-micro qualitative analysis	To demonstrate the basic laboratory techniques of qualitative analysis.	3	2	-	-	-
		To demonstrate mastery of basic semi-micro qualitative analysis of simple salts containing one anion and one cation.	3	2	-	-	-

		To identify the interfering acid radical, eliminate interfering anion and to perform a systematic analysis	3	2	-	-	-
		To systematically analyse the general group cations.	3	2	-	-	-
		To infer analytical data and make scientific claims that is supported by their results and other observations.	3	2	2	2	1
20U2NCC1	INTRODUCTION TO NCC	Understand the structure, organization of NCC and armed forces.	2	1	1	2	2
		Develop leadership qualities and general knowledge from current affairs.	2	1	1	1	2
		Involve in social service activities and act in the emergency situation.	2	1	1	2	1
		Develop qualities like character, comradeship and discipline through regular training and field work.	2	1	1	1	2
		Improve secular outlook, spirit of adventure, ethics and ideals of selfless service.	2	1	1	1	2
20U2NPN	INTRODUCTION TO NATIONAL SERVICE SCHEME	To understand the aims and principles of NSS , the duties and responsibilities of an NSS volunteer to the society.	2	1	2	3	3
		To know the administrative structure of NSS, its plans and its execution.	2	1	2	3	3
		To acquire leadership qualities and democratic attitudes through the participation in various social activities	2	1	2	3	3
		To aid in character building and develop qualities like comradeship and discipline through regular training and field work.	2	1	2	3	3
		To develop the spirit of humanity and ideals of selfless service.	2	1	2	3	3
20U2YRC1	Introduction to Youth Red Cross	Equip to conduct social and health awareness programmes.	2	1	1	2	3
		Making awareness regarding red cross service and social activities	2	1	1	2	3
		Encourage and to youth members and other students to contribute in red cross activities.	2	1	1	2	3
		Develop qualities like compassion, kindness and caring sense through regular training and field work.	2	1	1	2	3
		Improve kind heartedness, spirit of humanity and ideals of selfless red cross service	2	1	1	2	3
20U2PED1	History of Physical Education	Know physical education in national and international level.	2	1	1	2	2
		Understand ancient Olympics, modern Olympics, first aid and yoga	2	1	1	1	2
		Comprehend games rules and ground measurements	2	1	1	2	1
		Develop their physique in good shape through regular work outs and exercises.	2	1	1	1	2
		Realize the need of physical education.	2	1	1	1	2
20U3TLA3	காப்பிய இலக்கியமும் நாவலும்	மனித அறம், அன்பு, செய்ந்நன்றி போன்றவற்றை அறியச் செய்தல்.	-	1	1	2	2
		அற மனப்பாங்கினை ஊக்குவித்துப் பின்பற்றல்.	-	2	2	3	2
		மனித அறம், பத்தி, உதவி செய்யும் மனப்பான்மை போன்றவற்றில் ஈடுபடுதல்.	-	3	1	-	2

		காவிய ஆசிரியர்களின் படைப்புதிறனை வெளிப்படுத்த வடிவ அமைப்பினை விளக்கி ஈடுபடச் செய்தல்.	3	-	1	-	2
		படைப்பின் பல் வடிவங்களை விளக்கிப் படைப்பாக்கத்தினை வெளிக் கொணரல்.	-	-	3	-	2
20U3HLA3	Hindi 3	Identify noun, pronoun and adjective in sentences	-	1	1	2	2
		Examine how a text interacts with a reader in the reading process for meaning and interpretation	-	2	2	3	2
		Classify rhymes, beats, sound pattern in a poem	-	3	1	-	2
		Explain various aspects of storytelling in terms of plot, character and form in One Act play	3	-	1	-	2
		Write simple sentences without committing errors of spelling and grammar	-	-	3	-	2
20U3SLA3	Sanskrit III	Gain knowledge of Indian Tradition through the origin of Popular Sanskrit Tales and Fables	-	1	1	2	2
		Achieve Moral Values through Sanskrit Fables – Pancatantra	-	2	2	3	2
		Comprehend Sanskrit Poetic Literature, Style of Writing Poems and Know the deepness of Indian Sanskrit Prose Literature	-	3	1	-	2
		Understand the Sanskrit Prosody through Alankaras	3	-	1	-	2
		Learn Sanskrit Prose Literature and Style of Writing Prose	-	-	3	-	2
20U3NENG3	English-III	Discover the deviant use of English both in written and spoken forms	-	2	3	2	-
		Explain the need for reference/study skills Make/take notes systematically in an organized manner	-	2	3	3	-
		Choose language for speaking with confidence in an intelligible and acceptable manner	-	2	2	2	-
		Develop an interest for reading and read independently unfamiliar texts with comprehension	-	2	2	2	-
		Examine and analyze a genre on their own	-	2	3	3	-
20U3ZMC5	Cell Biology & Biochemistry	Describe the cell theory, widely used cytological techniques and ultrastructure & functions of plasma membrane.	1	1	2	2	3
		Discuss the ultrastructure and functions of cell organelles.	2	1	2	1	2
		Examine the stages of cell cycle and metabolic cycles in mitochondria	2	1	2	1	2
		Investigate the mechanism of protein synthesis.	2	2	1	2	2
		Analyze the role of cellular components and enzymes in cell metabolism	1	1	3	2	3
20U3ZSM1	Applied Entomology	Describe the life cycle silkworm, honey bee and lac insects	1	1	1	1	2
		Outline the rearing techniques of economically important insects.	2	2	1	1	3
		Examine the rearing and cultivation methods for mulberry	2	2	1	1	3
		Analyse the uses of products derived from the culture of insects	2	3	1	1	3
		Investigate the role of insects in Forensic investigation	2	3	1	2	2

20U3ZMP3	Major Practical – III	Recall the operational methods and uses of microscopes, camera lucida, stage and ocular micrometers.	1	2	2	2	2
		Understand the cytological and biochemical techniques.	2	2	1	2	2
		Apply the knowledge to	1	2	2	2	1
		Analyse the preparation of cells and tissues, cell division and cell counts.	1	2	1	2	2
		Examine the quantitative and qualitative analysis of carbohydrate, proteins and lipids.	2	2	1	3	3
20U3BAC1	Ancillary Botany - I	Analyze the plant kingdom with specific groups and their features and economic importance	3	2	3	2	3
		Apply the characters for identification of fungi and lichens	3	1	2	3	2
		Understand the general characters and life cycle of Bryophytes and Pteridiophytes	2	2	3	1	3
		Examine the characters for grouping of plant kingdom	1	1	1	1	2
		Analyze the structure and reproduction in Gymnosperms	1	1	1	1	1
20U3BAP1	Ancillary Botany Practical - I	Observation of morphological and anatomical features of lower plant groups.	3	3	3	2	3
		Enable to identify the flowering plants with their morphological characters.	3	1	1	3	2
		Analyze the pathological specimens and its infective agents.	1	2	2	1	2
		Examine the anatomical feature of higher plants.	1	1	2	1	1
		Knowledge on physiological mechanisms of plants system.	1	1	1	1	1
20U4TLA4	பண்டைய இலக்கியமும் நாடகமும்	பண்டையகால மக்களின் அகம் மற்றும் புறம் சார்ந்த வாழ்வியல் நிலைகளை அறியச்செய்தல்.	-	1	1	2	2
		தனிமனித அறம், பொது அறம் ஆகியவற்றை நீதிநூல்களின் வாயிலாக அறியச்செய்தல்.	-	2	2	3	2
		நாடகம் தொடர்புடைய சிந்தனைகள், உணர்வுகள், உள்ளடக்கம், நடை போன்றவற்றைப் புரியவைத்தல். நாடகம் நடிக்கப் பழக்குதல்.	-	3	1	-	2
		தமிழ் இலக்கிய வரலாற்றையும் பண்பாட்டையும் அறியச்செய்தல்.	3	-	1	-	2
		மொழியின் சிறப்புகளுடன், அகப்பொருள் மற்றும் புறப்பொருள்களின் திணை, துறைகளை அறியச்செய்தல்.	-	-	3	-	2
20U4HLA4	Hindi 4	Apply speak, read and write Hindi at the basic level.	-	1	1	2	2
		Identify rhyme, beats, sound pattern in a poem.	-	2	2	3	2
		Analyse novel closely, paying attention to linguistic and stylistic variations.	-	3	1	-	2
		Use language for speaking with confidence in an Acceptable manner	3	-	1	-	2
		Write simple sentences without committing errors of grammar	-	-	3	-	2
20U4SLA4	Sanskrit IV	Learn about the Origin of Indian Sanskrit Drama Literature	-	1	1	2	2

		Achieve Moral Values through Indian Sanskrit Drama Literature – Karnabharam	-	2	2	3	2
		Realize Sanskrit drama Literature, method of Writing Dramas and the depth of Indian Sanskrit Drama Literature	-	3	1	-	2
		Understand the importance and role of Sanskrit drama Literature and know great Dramatists	3	-	1	-	2
		Learn Ethical Values of Human Life through Various Authors and their Dramas	-	-	3	-	2
20U4NEN4	English-IV	Examine their own ability to improve their own competence in using the language and Show their learnt useful interpersonal soft skills.	-	2	3	2	-
		Re-state a piece of text either orally or in writing with learnt soft skills	-	2	3	3	-
		Apply their useful creative skill in writing like CVs, drafting and reading	-	2	2	2	-
		Investigate the importance of writing in academic life, analyze graphs,charts,grids and other visual supports to understand a text.	-	2	2	2	-
		Apply connecting ideas to continue discussions and apply diagrammatic information – interpretations maps, graphs, pie- charts and note-taking. Communicate with others effectively.	-	2	3	3	-
20U4ZMC6	Developmental Biology	Understand the basic concepts, structures and types of gametes and fertilization.	1	-	1	-	-
		Describe the process of cleavage, blastulation and gastrulation.	1	-	2	-	-
		Apply the knowledge to arrange sequences in developmental processes in order.	1	-	2	-	-
		Analyse the importance of applied embryology.	1	2	2	2	1
		Examine the clinical implications of development and the mechanisms that intervene in developmental alterations.	2	2	1	2	3
20U4ZMP4	Major Practical – IV	Understand the different stages of chick embryo.	2	2	-	2	-
		Describe the process of cleavage, blastulation and gastrulation.	2	2	-	2	-
		Apply the knowledge to mount the egg and sperm of chosen animals and transverse section of testis and ovary	2	2	1	3	2
		Analyse the cleavage stages, blastula, gastrula and neurula of frog.	2	2	2	2	1
		Examine the fertilization and developmental stages of Invertebrate & Vertebrates.	2	2	-	3	3
20U4ZSM2	Medical Zoology	Describe communicable and non-communicable diseases	2	2	1	3	2
		Explain the causative organism of various diseases.	2	3	2	3	2
		Examine the transmitting vectors, mode of transmission, symptoms and prophylaxis.	2	3	3	3	3
		Investigate the health problems in human and to rectify the same.	2	3	3	3	3
		Assess the medical importance of vector borne disease, protozoan diseases, Helminthic diseases and Ectoparasites.	2	3	3	3	3
20U4BAC2	Allied Botany – II	Able to understand the various cell and tissue types and the scientific basis behind it	3	3	3	2	3
		Report/Identify the various cell and tissue types and different group of plant species	3	1	1	3	3

		Apply the learned information to identify and control plant diseases and efficient management.	2	2	1	1	2
		Able to examine the various functions of plants to clarify the role of nutrients in plant growth and development	1	2	2	2	2
		Analyze the value of photosynthetic and the role of respiration as the sustaining life processes	1	1	1	1	1
<b>20U4BAP2</b>	<b>Allied Practical – I</b>	Observation of morphological and anatomical features of lower plant groups.	3	3	3	2	3
		Enable to identify the flowering plants with their morphological characters.	3	1	1	3	2
		Analyze the pathological specimens and its infective agents.	1	2	2	1	2
		Examine the anatomical feature of higher plants.	1	1	2	1	1
		Knowledge on physiological mechanisms of plants system.	1	1	1	1	1
<b>20U4ZNM2</b>	<b>Economic Zoology</b>	Understand the insect and animal types, rearing techniques and it uses.	2	2	2	3	3
		Describe the economically important of animals.	1	2	2	3	2
		Apply the knowledge to execute the methodology for field practice.	2	2	2	3	3
		Analyse the problem in culture practices and to rectify the same.	2	3	2	3	3
		Infer the biological importance of Apiculture, Sericulture, Poultry farming, Dairy farming, Pisciculture, Edible oyster and Perl oyster culture.	2	3	2	3	3
<b>20U4NCC2</b>	<b>Field training in NCC</b>	Understand the geography, important world organizations and will do various drills with & without arms.	2	2	1	2	2
		Read maps and related sign systems.	2	1	1	2	1
		Comprehend the types of weapons, field crafts and battle crafts.	2	1	1	2	2
		Develop qualities like character, comradeship and discipline through regular training and field work.	2	1	1	1	2
		Improve secular outlook, spirit of adventure, ethics and ideals of selfless service.	2	1	1	1	2
<b>20U4NPN</b>	<b>Community Services</b>	To provide an opportunity to become responsible members of the society by taking part in community service.	2	2	1	3	2
		To enable students acquire life skills and knowledge, through the involvement in environmental awareness activities	2	2	1	3	2
		To understand gender difference and learn to give equal respect to members of the opposite gender, develop service spirit and participate collectively in community programmes.	2	2	1	3	2
		To develop qualities like compassion, kindness and caring sense through regular training and field work in health awareness programmes.	2	2	1	3	2
		To become responsible citizens with a sound knowledge of the Indian Constitution and Fundamental Rights and be prepared for selfless service to the community.	2	2	1	3	2
<b>20U4YRC4</b>	<b>Introduction to Youth Red Cross</b>	Equip to conduct social and health awareness programmes.	2	1	1	2	3
		Making awareness regarding red cross service and social activities	2	1	1	2	3

		Encourage and to youth members and other students to contribute in red cross activities.	2	1	1	2	3
		Develop qualities like compassion, kindness and caring sense through regular training and field work.	2	1	1	2	3
		Improve kind heartedness, spirit of humanity and ideals of selfless red cross service	2	1	1	2	3
20U4PED2	Physical Education and games	Understand the meaning, benefits and essentials of yoga and meditation.	2	1	1	2	2
		Maintain good physical and mental health by doing exercises, yoga and by taking nutritive foods.	2	1	1	1	2
		Know the rules and regulations of games like boxing, fencing, judo, basketball, cricket, hockey.	2	1	1	2	1
		Develop their physique in good shape through regular work outs and exercises.	2	1	1	1	2
		Realize the need of physical education.	2	1	1	1	2
20U5ZMC7	Genetics	Understand the basic principles of inheritance at the molecular, cellular and organism levels.	2	3	2	2	3
		Describe the significance of linkage, crossing over and chromosomal abnormalities.	2	3	2	3	3
		Examine the types of mutagens and DNA repair mechanism	2	2	2	3	2
		Analyze the hereditary disorders and the importance of genetic counseling	2	3	2	3	3
		Evaluate the role of gene, plasmid, operon concept and significance of modern genetics	2	2	2	2	3
20U5ZMC8	Animal Physiology	Understand the basic concepts, structures and mechanism of digestion of biomolecules.	1	3	1	1	1
		Describe the process of clotting mechanism and the proteins involved.	1	3	2	2	2
		Apply the knowledge to learn about the origin and conduction of heart beat and its regulation.	1	3	2	2	2
		Analyse the importance of vision and hearing.	1	2	2	2	1
		Examine the clinical implications of Reproductive Physiology.	2	2	1	3	3
20U5ZMC9	Evolution	Understand the origin of life and evidences of evolution.	3	1	1	2	1
		Describe the theories of organic evolution.	3	1	1	2	1
		Apply the knowledge to identify the adaptation and isolation of animals.	3	1	1	2	1
		Analyze the evolution of higher animals.	3	1	1	2	1
		Examine the zoogeographical regions and animal distribution.	3	1	1	2	2
20U5ZSM3	Ornamental fish culture	Understand the basic principles and techniques of Ornamental fish culture.	1	-	-	-	-
		Analyses the water quality of the Aquarium	1	2	2	1	2
		Apply the knowledge on Breeding techniques of ornamental fishes and fish feed formulation	1	2	2	2	2
		Explain the causative organism of various diseases on aquarium fishes	1	1	1	-	1
		Examine the transportation methods and packing methods of ornamental fishes.	1	-	-	-	2

<b>20U5ZIDC</b>	<b>Biodiversity &amp; Conservation Biology</b>	Understand the biodiversity and important areas of biodiversity in India	1	1	2	2	-
		Describe the techniques for the sampling of wild animals.	2	2	2	2	2
		Apply the knowledge to identify the sex and age of wild animals	2	2	2	3	2
		Analyse the physiological and health status of wild animals	2	3	1	3	3
		Examine the methods of wildlife conservation and role of people and organisations on biodiversity conservation.	2	3	2	3	3
<b>20U5ZME1(A)</b>	<b>Forensic Science</b>	Describe the significance of forensic science, its types and functions	2	3	2	3	3
		Examine various evidences in crime scene and utilize cyber crime for preventive measures.	2	3	1	3	3
		Investigate documents, ballistics and fingerprints by applying different techniques.	2	2	2	3	3
		Analyse the DNA derived from various sources and identify the type of narcotics.	2	3	2	3	3
		Investigate the role of insects in Forensic Science	2	3	1	3	3
<b>20U5ZME1(B)</b>	<b>Animal Behaviour</b>	Understand the basic principles of ethology, its origin and history	2	3	2	2	3
		Describe the patterns of animal behaviour.	2	3	2	3	3
		Examine the social behaviour, communication in animals and sexual behaviour.	2	2	2	3	2
		Analyze the role of pheromones and reproductive behaviour patterns.	2	3	2	3	3
		Evaluate the types and characteristics of biological rhythms in animals.	2	2	2	2	3
<b>20U5ZMP5</b>	<b>Major Practical – V</b>	Learn the methods to validate the genetic laws	3	2	3	2	2
		Understand the techniques used in genetics, biodiversity & conservation biology	2	1	1	1	3
		Apply the knowledge to enquire forensic investigation	3	2	2	2	1
		Analyse the methods of biodiversity conservation	1	1	1	3	2
		Verify the theoretical knowledge through experiments and field visits	3	2	2	3	3
<b>20U5ZMP6</b>	<b>Major Practical – VI</b>	Recall the operational methods and uses of instruments using in physiology.	1	2	2	2	2
		Understand the physiology of animal and evolution of life.	2	2	1	2	2
		Apply the knowledge to oxygen consumption of fish with reference to body weight and temperature.	1	2	2	2	1
		Analyse the nitrogenous waste products in fish tank water, bird excreta and mammalian urine.	1	2	1	2	2
		Examine the type of fossils, vestigial organs of man and evolutionary important animals.	2	2	1	3	3
<b>20U6ZMC10</b>	<b>Microbiology and Immunology</b>	Understand the basic concepts, classification, characters and systematic position of microbes.	1	-	1	-	-
		Describe the process of sterilization and preservation	1	-	2	-	-
		Apply the knowledge in preparing and maintaining the cultures.	1	-	2	-	-
		Analyze the significance of microbes in the field.	1	2	2	2	1
		Examine the importance of Immunogens and Immunization.	2	2	1	2	3

<b>20U6ZMC11</b>	<b>Biotechnology</b>	Understand the basic concepts, types of restriction, endonuclease and process of recombinant DNA technology.	3	2	1	1	3
		Describe the methods of DNA Isolation, PCR, electrophoresis, blotting techniques and DNA finger printing.	3	3	1	1	2
		Apply the knowledge to culture the animal cells.	3	2	1	1	3
		Analyze the importance of genetically modified organisms and its significance.	3	3	1	3	2
		Assess the importance of enzymes, artificial enzymes, biosensors and the methods involved in cryopreservation.	3	3	1	1	3
<b>20U6ZMC12</b>	<b>Ecology</b>	Describe the concepts of ecology and species, population dynamics and growth curves, ecology of population and community.	3	2	1	1	1
		Discuss the biogeochemical cycles, food chain and web, pyramids and trophic levels, energy flow and animal relationships.	3	1	2	1	1
		Examine the characteristic features, types and faunal adaptations in various ecosystems and ecological effects of dams, hydroelectric projects and Aquaculture.	2	1	1	2	1
		Investigate the types, causes, effects and management of pollution and wastes.	3	1	1	2	1
		Analyze the natural resources and their importance and conservation.	2	1	1	1	2
<b>20U6ZSM4</b>	<b>Vermiculture</b>	Understand the Basic concepts, Characters and role of earthworms in vermiculture.	1	1	1	1	1
		Describe the vermiculture process , different categories , Monoculture, polyculture.	1	2	2	1	2
		Examine the parameters of vermicomposting and selection of materials for vermicomposting,	1	2	2	1	2
		Investigate the vermicomposting of wastes in field pits, ground heaps and in tank,	1	2	2	1	2
		Assess the role of intestinal microbes of earthworms on the decomposition of organic wastes, vermiwash and organic forming	2	2	2	1	2
<b>20U6ZME2(A)</b>	<b>Biophysics, Biostatistics &amp; Bioinformatics</b>	Understand the basic concepts of biophysics and biophysical principles of cell membrane conductivity and biochemical reactions	2	1	1	-	2
		Recall the concepts and mechanism of bioenergetics and bioluminescence.	2	2	1	-	2
		Apply the statistical knowledge to for data collection and presentation	2	2	3	1	1
		Analyse the inferential statistical tests to draw conclusion for the biological study and experiments	2	3	3	1	3
		Evaluate the role of role of biophysics, biostatistics and bioinformatics to the modern biological research	3	2	2	2	3
<b>20U6ZME2(B)</b>	<b>Preventive and Social Medicine</b>	Understand the social medicine, natural history of disease and responsibilities of communities and private sectors in health.	3	3	1	2	1
		Describe the significance of infrastructure and legislation of health in India.	3	3	2	3	1

		Examine the types and uses of Epidemiology and significance of social, economical, and behavioural factors on health and diseases.	2	3	1	3	2
		Analyze the health problems in India, diseases and National Health Mission.	2	3	1	2	3
		Evaluate the environment, public health, gender issues and women health.	3	3	2	3	3
20U6ZME3(A)	Animal Farming	Understand the animal types, rearing techniques and its uses.	1	1	1	1	2
		Describe the economically important of animals and its culture methods.	2	2	1	1	3
		Apply the knowledge to execute the methodology for field practice.	2	2	1	1	3
		Analyse the problem in culture practices and to rectify the same.	2	3	1	1	3
		Infer the biological importance of Poultry farming, Dairy farming, Pisciculture, Prawn culture, Edible oyster and Perl oyster culture.	2	3	1	2	2
20U5ZME3(B)	Fishery Biology	Understand the basic principles, prospects, problems and current status of Fisheries.	1	-	-	-	-
		Describe the biology of marine and freshwater fisheries	1	-	-	-	-
		Analyses the freshwater, Estuarine and brackish water fisheries and their economics.	1	2	2	2	
		Apply the knowledge on Induced Breeding techniques of food fishes estimation of the Age and Growth.	1	2	2	2	2
		Explain the protozoan, fungal and bacterial parasites of fishes	1	2	-	2	2
20U6ZMP7	Major Practical – VII	Understand the various techniques involving in Ecology, Biophysics, Biostatistics & Bioinformatics.	2	2	-	2	-
		Describe the different water quality parameters.	2	2	-	2	-
		Apply the knowledge to calculate the biological data.	2	2	1	3	2
		Analyze the database of Bioinformatics.	2	2	2	2	1
		Examine the economic important animals and their diseases.	2	2	-	3	3
20U6ZMP8	Major Practical – VIII	Understand the various techniques involving in Microbiology, Immunology and Biotechnology.	2	2	-	2	-
		Describe the different staining techniques of microorganisms.	2	2	-	2	-
		Apply the knowledge to extract the DNA and RNA from the animal tissue.	2	2	1	3	2
		Analyze the blood group in man and lymphoid organs in chick.	2	2	2	2	1
		Examine the electrophoretic separation of DNA and amplification of DNA using PCR.	2	2	-	3	3



Chairman/BOS

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