ST. TERESA'S COLLEGE, ERNAKULAM

(AUTONOMOUS)

Affiliated to Mahatma Gandhi University, Kottayam

CURRICULUM FOR

BACHELOR'S PROGRAMME

IN ZOOLOGY

Under Choice Based Credit & Semester System
& Outcome Based Education

(2018 Admissions)

BZOO - B.Sc. ZOOLOGY

PROGRAM SPECIFIC OUTCOMES

PSO1: Explain the major concepts and theoretical principles in the undergraduate programme in Zoology**.**

PSO2: Apply different domains of knowledge to deal with problems in Zoology

PSO3: Integrate critical thinking and scientific knowledge to design, perform, record and analyse experiments.cepts and emerging trends in Zoology**.**

PSO5: Apply the theoretical knowledge and skills in biology and Chemistry and environmental consciousness to identify, investigate and formulate new ideas and

PSO4: Develop communication skills to decipher and transmit the basic con concepts.

SEMESTER I

Course Code	Course Title	Credits	Course Type
EN1A01B18	Fine-Tune Your English	4	Common Course I
EN1A02B18	Pearls From The Deep	3	Common Course I
FR1A01B18	French Language And Communicative Skills -I	4	Common Course II
HN1A01B18	Kahaani Aur Upanyas	4	
MA1A01B18	Kathasahithyam	4	
ZY1B01B18	General Perspectives In Science & Protistan Diversity	2	Core Course
CH1C01B18	Basic Theoretical And Analytical Chemistry	2	Complementary Course I
BO1C01B18	Cryptogams, Gymnosperms And Plant Pathology	2	Complementary Course II

SEMESTER I

COMMON COURSE I

EN1A01B18– FINE-TUNE YOUR ENGLISH

Credits: 4

Total Lecture Hours: 90

Course Outcomes:

CO1: Recognize the basics of English grammar

CO2: Choose the appropriate word classes

CO3: Identify common errors in the use of English language in various contexts

CO4: Apply the rules of grammar to comprehend, speak, and write grammatically correct English

CO5: Compose materials for business communication

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	1	1	2	2
CO2	2	1	1	3	2
CO3	2	1	1	2	2
CO4	2	1	1	3	2
CO5	2	1	1	3	2

Syllabus Content:

Module I (18 Hours)

The Sentence and its Structure

How to Write Effective Sentences – Phrases: What are They? – The Noun Clauses – The Adverb Clause – "If All the Trees Were Bread and Cheese" – The Relative Clause – How Clauses are Conjoined

Module II (18 Hours)

Word-Classes and Related Topics

Understanding the Verb – Understanding Auxiliary Verbs – Understanding Adverbs – Understanding Pronouns – The Reflexive Pronoun – The Articles I – The Articles II – The Adjective – Phrasal Verbs – Mind your Prepositions

Module III (18 Hours)

To Err is Human

Concord – Errors – Common and Uncommon

Spelling and Pronounciation

Pronunciation: Some Tips – More Tips on Pronunciation – An awesome Mess? – Spelling Part II

Module IV (18 Hours)

Tense and Related Topics

'Presentness' and Present Tenses – The 'Presentness' of a Past Action – Futurity in English – Passivisation

Interrogatives and Negatives

Negatives – How to Frame Questions – What's What? – The Question Tag

Module V (18 Hours)

Conversational English

Some time expressions – Is John There Please?

Miscellaneous and General Topics

Reading

Letter Writing **In addition there will be an essay question on a general topic.**

SEMESTER I

COMMON COURSE I

EN1A02B18 - PEARLS FROM THE DEEP

Credits: 3

Total Lecture Hours: 72

Course Outcomes:

CO1: Name prominent literary figures and recognize various literary devices

CO2: Analyze inherent themes and motives

CO3: Identify the nuances of the age in which the literary work was written

CO4: Examine the different aspects of theatre

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	1	2	1
CO2	1	1	1	3	1
CO3	1	1	1	2	1
CO4	1	1	1	3	1

Syllabus Content

Module I (Fiction) **(18hours)**

Ernest Hemingway: The Old Man and the Sea

Module II (One Act Plays) **(18hours)**

Susan Glaspell: Trifles

Asif Currimbhoy: The Refugee

A.A Milne: The Boy Comes Home

Module III (Short Stories) **(18hours)**

Guy De Maupassant: Two Friends

O. Henry: The Gift of Magi

K.A Abbas: Sparrows

Flora Annie Steel: Valiant Vicky, the Brave Weaver

Module IV (Poems) **(18hours)**

Rumi: The Chance of Humming

Walter Scott: Lochinvar

John Keats: La Belle Dame Sans Mercy

Robert Frost: After Apple Picking

Chinua Achebe: Refugee Mother and Child

Kamala Das: My Grandmother's House

Ted Hughes: Jaguar

Pablo Neruda: Tonight I can Write the Saddest Lines

P.P Ramachandran: How Simple It Is!

SEMESTER I

COMMON COURSE II

FR1A01B18 – FRENCH LANGUAGE AND COMMUNICATIVE SKILLS -I

Credits: 4

Total Lecture Hours: 72

Course Outcomes:

CO1: Describe topics such as family, professions, time, place, likes and dislikes, daily life situations.

CO2: Develop language, vocabulary and grammar skills.

CO3: Articulate various speech sounds and their determined combinations.

CO4: Prepare conversations based on scenarios which helps while traveling

CO5: Articulate the concepts to express one's opinion in a specific situation.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	1	2	1
CO2	1	3	1	3	1
CO3	1	1	1	3	1
CO4	1	1	1	3	1
CO5	1	2	1	3	1

Syllabus Content:

Module I **(25 hours)**

La population L‟alphabet – Les chiffres – Identité – Se présenter – Poser des questions – Les professions – Les nationalités

Module II **(23 hours)**

La banlieue Demander une information, un prix – l‟heure – la ville

Module III **(24 hours)**

Quartier de Paris Décrire un lieu – Indiquer un prix, un itinéraire.

SEMESTER I

COMMON COURSE II

HN1A01B18 - KAHAANI AUR UPANYAS

Credits: 4

Total Lecture Hours: 72

Course Outcomes:

CO1: Discuss story content and structure in depth

CO2: Analyse characterisation and comment on the development of the characters as the story/ novel unfolds

CO3: Analyse short stories and novels on the basis of literary elements like plot, theme, metaphor, and image

CO4: Compare treatments of theme, character and subject matter of different short stories.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	1	2	1
CO2	1	1	1	3	1
CO3	1	1	1	3	1
CO4	1	1	1	3	1

Syllabus Content:

Module I **(16Hrs)**

Syllabus- Anthim Saakshya –Chandrakaanta Chapters 1 ,2

Eidgaah- Premchand

Module II **(20 hrs)**

Syllabus-Anthim Saakshya –Chandrakaanta Chapters 3, 4, 5 Jangal Ka Daah- Swayam Prakash ChchuttiKa Din- UshaPriyamvada

Module- III **(20hrs)**

Syllabus- Anthim Saakshya –Chandrakaanta Chapters 6,7,8MaaRasoi Mei Rehti Hai – Kumar Ambuj Kheer – Madhavi Kutty

Module IV **(16 Hrs)**

Syllabus- Anthim Saakshya –Chandrakaanta Chapters 9, 10 Heelibon Ki Baththakhe- Agyey

SEMESTER I

COMMON COURSE II

MA1A01B18 - KATHASAHITHYAM

Credits: 4

Total Lecture Hours: 72

Course Outcomes:

CO1: ചെറുകഥ, നോവൽ പഠനത്തിലൂടെ വായനാശേഷിയും ആസ്വാദനപ്രാപ്തിയും കൈവരിക്കൽ.

CO2: ചെറുകഥയുടെയും നോവലിന്റെയും കാലാനുസൃതമായ ഭാവുകത്വ പരിണാമം തിരിച്ചറിയൽ

CO3: നിലവിലുള്ള സാമൂഹ്യജീവിത യാഥാർഥ്യങ്ങളെ അഭിമുഖീകരിക്കാൻ പ്രാപ്തരാക്കൽ

CO4: ആശയവിനിമയം, ഭാഷാവിഷ്കരണം എന്നീ ശേഷികൾ കൈവരിക്കുന്നു

CO5: കഥ, നോവൽ എന്നിവയുടെ വ്യതിരിക്ത സവിശേഷതകൾ തിരിച്ചറിയുന്നു.

CO6: പുതുകാലജീവിതാനുഭവങ്ങൾ വിലയിരുത്താൻ പര്യാപ്തരാകുന്നു

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	1	3	1
CO2	1	1	1	3	1
CO3	1	1	1	3	1
CO4	1	1	1	3	1
CO5	1	1	1	3	1
CO6	1	1	1	3	1

ഖണ്ഡം ഒന്ന് **10 മണിക്കൂർ**

1.പൂവമ്പഴം -കാരൂർ
2.ഭൂമിയുടെ അവകാശികൾ -വൈക്കം മുഹമ്മദ്ബഷീർ

ഖണ്ഡം രണ്ട് **15മണിക്കൂർ**

1.കടൽ -ടി .പദ്മനാഭൻ
2.പെരുമഴയുടെ പിറ്റേന്ന് -എം. ടി. വാസുദേവൻ നായർ
3.മാനാഞ്ചിറടെസ്റ്റ് -വി .കെ.എൻ
4.തരിശു നിലം –മാധവിക്കുട്ടി

ഖണ്ഡം മൂന്ന് **15മണിക്കൂർ**

1.ആർക്കറിയാം -സക്കറിയ
2.ഓരോഎഴുത്തുകാരിയുടെഉള്ളിലും -സാറാജോസഫ്
3.തിരുത്ത് -എൻ .എസ് .മാധവൻ
4.മോഹമഞ്ഞ -കെ .ആർ .മീര

ഖണ്ഡം നാല് **10 മണിക്കൂർ**

1.അഗ്നി -സിതാര.എസ്
2.ബിരിയാണി –സന്തോഷ് എച്ചിക്കാനം
3.മോദസ്ഥിരനായി അങ്ങ്വസിപ്പൂമല പോലെ -എസ്. ഹരീഷ്
4.സ്നേഹബഹുമാനപെട്ട അന്നാമ്മയ്ക്ക്ഗീതാലക്ഷ്മി എഴുതുന്ന കത്ത് –പ്രിയ എ .എസ്
5.ചിലസ്വപ്നങ്ങളിൽ .....സീതാലക്ഷ്മിയുടെ കറുത്ത മുടിയിഴ -ഇന്ദുമേനോൻ

ഖണ്ഡം അഞ്ച് **22മണിക്കൂർ**

ആടുജീവിതം -ബന്യാമിൻ

SEMESTER I

CORE COURSE

ZY1B01B18 - GENERAL PERSPECTIVES IN SCIENCE & PROTISTAN DIVERSITY

Credits: 2

Total Lecture Hours: 36

Course outcome

CO1: Explain perspectives in science

CO2: Differentiate the systematic principles for classification of animals.

CO3: Identify Protistan Diversity

CO4: Distinguish Parasitic protists

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	1	1	2	1
CO2	3	1	2	2	1
CO3	3	1	2	1	1
CO4	3	1	2	1	2

Syllabus Content

PART I PERSPECTIVES IN SCIENCE 8Hrs

Module I Introduction to Scientific Studies 4 Hrs

Types of knowledge: practical, theoretical, and scientific knowledge. What is science, Features of science, Deductive and inductive models, scientific temper, empiricism, vocabulary of science.

Module II What is Biology?4 Hrs

Life and its manifestations, History of Biology: Biology in ancient times Landmarks in the progress of Biology. Branches of Zoology, Scope of Zoology

PART II SYSTEMATICS 10 Hrs

Module III Taxonomic Principles and tools

Systematic, Taxonomy, Phylogeny [Brief account], Approaches to taxonomy, Molecular taxonomy, Bar coding, Tree of Life, Zoological nomenclature, International Code of Zoological Nomenclature (ICZN), Law of Priority. Five Kingdom Classification; Linnaean classification, Basis for Animal kingdom classification [Levels of organization, Symmetry, Coelom], Identification tools: Taxonomic key. Types: Single access key- Dichotomous [linked and nested] and Polytomous key, Multi access key, Computer aided Interactive Key, Advantages and Disadvantages.

PART III PROTISTAN DIVERSITY 18 Hrs

Module IV Kingdom Protista

Type: Paramecium

Salient features of Kingdom Protista

Classification of Protista up to phyla

1. Phylum Rhizopoda : Eg. Amoeba
2. Phylum Actinopoda : Eg. Actinophrys
3. Phylum Dinoflagellata : Eg. Noctiluca
4. Phylum Parabasalia : Eg. Trichonympha
5. Phylum Metamonada : Eg. Giardia
6. Phylum Kinetoplasta : Eg. Trypanosoma
7. Phylum Euglenophyta : Eg. Euglena
8. Phylum Cryptophyta : Eg. Cryptomonas
9. Phylum Opalinata : Eg. Opalina
10. Phylum Bacillariophyta : Eg. Diatoms
11. Phylum Chlorophyta : Eg. Volvox
12. Phylum Choanoflagellata : Eg. Proterospongia
13. Phylum Ciliophora : Eg. Balantidium coli
14. Phylum Sporozoa : Eg. Plasmodium
15. Phylum Microsporidia : Eg. Nosema
16. Phylum Rhodophyta : Eg. Red Alga

(Mention any five general characters for each phylum. Detailed accounts of examples are not necessary.)

General Topics: 3 Hrs

1. Parasitic protists (diseases mode of transmission and prophylactic measures) - Entamoeba, Trypanosoma, Plasmodium (detailed account of life cycle), Leishmania.

SEMESTER I

COMPLEMENTARY COURSE I

CH1C01B18 BASIC THEORETICAL AND ANALYTICAL CHEMISTRY

Credits: 2

Total Lecture Hours: 36

Course Outcomes:

CO1: Describe the Bohr atom model, types of bonds, Valence bond and VSEPR theories and Hybridization.

CO2: Explain the periodic properties of elements and concepts of chemical equilibrium.

CO3: Identify methods for separating a given organic compound from a reaction mixture and quantification of inorganic metal ions using titrimetric and gravimetric analysis

CO4: Differentiate between column chromatography, PC, TLC, GC, IEC and HPLC techniques

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	1	1	2
CO2	1	1	2	1	3
CO3	1	1	2	1	2
CO4	1	1	2	1	2

Syllabus content

Module 1 : Atomic Structure and Chemical Bonding (12 Hrs)

Atomic Structure: Bohr atom model and its limitations, Dual nature of matter and radiation.Photoelectric effect, de Broglie equation, Heisenberg's uncertainty principle, Concept of orbital, Quantum numbers, shapes of orbitals (*s*, *p*, *d*), Electronic configuration of atoms - Aufbau principle, Hund's rule of maximum multiplicity, Pauli's exclusion principle.

Chemical Bonding: Introduction – Type of bonds. Ionic bond: Factors favouringtheformation of ionic bonds. Covalent bond: Valence bond theory – Coordinate bond. VSEPR theory and examples. Hybridisation: - sp^3, sp^2 and *sp* (ethane, ethene, ethyne). Intermolecular forces - Hydrogen bonding in H_2O - Dipole-dipole interactions.

Module II : Fundamental Concepts in Chemistry (9 hrs)

Periodic Properties: Modern periodic law – Long form of periodic table. Periodicity inproperties: Atomic radii, ionic radii, ionization enthalpy, electron affinity (electron gain enthalpy) and electronegativity (Pauling scale). Atomic mass - Molecular mass - Mole concept – Molar volume - Oxidation and reduction – Oxidation number and valency - Equivalent mass.

Concept of Equilibrium: Acids and Bases - Arrhenius, Lowry-Bronsted and Lewis theories.Ionic product of water - pH and pOH, Strengths of acids and bases - K_a and K_b, pK_a and pK_b. Buffer solution. Solubility, solubility product, common ion effect and their applications.

Module III : Basic Principles of Analytical Chemistry (9 Hrs)

Methods of Analysis: Volumetric method of analysis - General principles. Primary andsecondary standards, criteria for primary standards, preparation of standard solutions, standardization of solutions, end point. Acid base, redox and complexometric titrations and corresponding indicators. Double burette method of titration: Principle and advantages. Microanalysis and its advantages. Gravimetric method of analysis: General principles.

Reporting of Analytical Data: Precision and accuracy – Types of errors – Ways of expressing precision – Methods to reduce systematic errors.

Separation and Purification Techniques: Recrystallisation, use of drying agents, sublimation. General principles of distillation, fractional distillation, distillation under reduced pressure. Solvent extraction.

Module 1V: Chromatographic Techniques (6 Hrs)

Chromatography - Principle of differential migration. Classification of chromatographic methods. Basic principle and uses of Thin layer chromatography (TLC), Paper chromatography (PC), R_f value, Column chromatography, Gas chromatography(GC), High performance Liquid chromatography (HPLC), Ion Exchange chromatography (IEC).

SEMESTER I

COMPLEMENTARY COURSE II

BO1C01B18 - CRYPTOGAMS, GYMNOSPERMS AND PLANT PATHOLOGY

Credits: 2

Total Lecture Hours: 36

Course Outcomes:

CO1: Identify the different cryptogam specimens by a detailed study of their characteristics and life cycles.

CO2: Explain the morphological, anatomical and reproductive features of bryophytes, pteridophytes and gymnosperms and their life cycles.

CO3: Describe the evolutionary advancement and diversity of the plant world

CO4: Identify major plant diseases based on symptoms, their causative organisms and the control measures adopted.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	2	1	2
CO2	1	1	2	1	2
CO3	1	1	2	1	3
CO4	1	1	2	1	3

Syllabus Content:

CRYPTOGAMS (27 hours)

Module I: Algae (13 hrs)

Algae: General characters of algae and their classification up to classes (F E Fritsch); range of thallus variation in Algae. Reproduction and life history of the following groups with reference to the types mentioned: Cyanophyceae - Nostoc; Chlorophyceae - (Volvox, Spirogyra, Cladophora - vegetative features only), Oedogonium; Phaeophyceae – Sargassum; Rhodophyceae – Polysiphonia. Economic importance of Algae: food, industry, medicine, biofertilizers; algal bloom.

Module II: Fungi and Lichens (9 hours)

Fungi:General characters and outline on the classification of fungi by Ainsworth. General characters, thallus structure, reproduction and life history of the following groups with reference to the types mentioned: Zygomycotina – Rhizopus; Ascomycetes – Xylaria; Basidiomycetes – Puccinia. Economic importance of Fungi: as food, industry, decomposition of organic matter. Fungal toxins and human health. Lichens: Classification based on thallus morphology. Usnea - morphology and anatomy of vegetative and reproductive structure. Economic importance of lichen: food, industry, medicine.

Module III: Bryophytes (5 hours)

Bryophytes:General characters of Bryophytes. Morphology, anatomy, reproduction and life cycle of Riccia. Pteridophytes: General characters of Pteridophytes. Morphology, anatomy (stem), reproduction and life cycle of Selaginella.

Module IV: Gymnosperms (4hours)

Gymnosperms:General characters of Gymnosperms. Morphology, anatomy (stem, root, coralloid root, rachis and leaf let), reproduction and life cycle of Cycas.

PLANT PATHOLOGY (5 hrs)

Module V: Plant Diseases (5hours)

Plant diseases: Classification of plant diseases on the basis of causative organism and symptoms. Study the following diseases with special emphasis on causative organism, symptoms and control measures: (i) Nut fall of Arecanut (ii) Bacterial blight of Paddy (iii) Leaf mosaic of Tapioca.

PRACTICAL (36 hours)

1. Micropreparation and identification preparation of the following: (i) Algae: Vegetative structure of Nostoc, Volvox, Spirogyra, Oedogonium, Cladophora, Polysiphonia. Vegetative and reproductive structure of Sargassum. (ii) Fungi: Vegetative and reproductive structure of Rhizopus, Xylaria, Puccinia. (iii) Lichen: Morphology of Usneathallus and apothecium. (iv) Bryophytes: Ricciathallus morphology and anatomy. (v) Pteridophytes: Selaginella – morphology (vegetative and reproductive) and anatomy (stem). (vi) Gymnosperms: Cycas – morphology (vegetative and reproductive) and anatomy of corolloid root, rachis and leaflet. 2. Identify plant diseases mentioned in the syllabus.