

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**  
**COURSE PLAN**

**November 2023 – April 2024**

**Department** : Zoology  
**Name/s of the Faculty** : Dr. S. A. Vidhya (3 hours) and Dr. Parimalam M (2 hours)  
**Course Title** : Chordata  
**Course Code** : 23ZI/MC/CH24  
**Shift** : I

**COURSE OUTCOMES (COs)**

<b>COs</b>	<b>Description</b>	<b>CL</b>
<b>CO1</b>	Recall the classification, characteristic features, structural organisation, functions and special adaptations of Chordates	K1
<b>CO2</b>	Explain the classification, characteristic features, structural organisation, functions and special adaptations of Chordates	K2
<b>CO3</b>	Apply the acquired knowledge to identify Chordates and discuss their characteristics, structural organisation, functions and special adaptations	K3
<b>CO4</b>	Classify Chordates and examine their characteristics, structural organisation, functions and adaptations	K4
<b>CO5</b>	Evaluate phylogenetic relationships between taxa and compare the characteristics, structural organisation, functions and adaptations of Chordates	K5

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Nov 22 – 23, 2023 (Day Order 1 & 2)	Unit 1.1	Introduction	K1 -K5	1	CO 1-5	Discussion	Recapitulation
	Unit 1.1	Outline Classification	K1 -K5	1	CO 1-5	Lecture	Discussion
Nov 24-30, 2023 (Day Order 1 to 6)	Unit 1.1	Outline Classification (cont.)	K1 -K5	2	CO 1-5	Lecture	Discussion
	Unit 3.1	Amphibia: Characteristic Features and Classification up to order level	K1 -K5	3	CO 1-5	Chalk and Talk Observation of museum specimens	Agree, Disagree, Not sure – (Student-centred learning method)
Dec 1-7, 2023 (Day Order 1 to 6)	Unit 1.1	Systematic position of Balanoglossus	K1 -K5	2	CO 1-5	Powerpoint	Questioning
	Unit 3.1	Neoteny in Urodela - Parental Care in Amphibia	K1 -K5	3	CO 1-5	Lecture and Documentary	Oral quiz
Dec 8-9, 2023 (Day Order 1, 3)	Unit 3.2	Reptilia: Characteristic Features	K1 -K5	1	CO 1-5	Chalk and Talk Observation of museum specimens	Recapitulation

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Dec 11-15, 2023 (Day Order 2 to 6)	Unit 1.1	Characteristic Features of the Phylum Chordata	K1 -K5	1	CO 1-5	Powerpoint	Quiz
	Unit 1.2	Prochordates: Characteristic Features of Cephalochordata	K1 -K5	1	CO 1-5	Powerpoint	Quiz
	Unit 3.2	Reptilia: Classification up to order level	K1 -K5	2	CO 1-5	Audiovisual presentation	Mind map
Dec 16 – 22, 2023 (Day Order 1 to 6)	Unit 1.2	<i>Amphioxus</i> (type study)	K1 -K5	2	CO 1-5	Powerpoint	Discussion
	Unit 3.2	<i>Calotes versicolor</i> (type study)	K1 – K5	3	CO 1- 5	Lecture	Diagram test
Jan 3 – 6, 2024 (Day Order 1 to 4)	Unit 1.2	<i>Amphioxus</i> (type study)	K1 -K5	2	CO 1-5	Powerpoint	Discussion
	Unit 3.2	<i>Calotes versicolor</i> (type study) contd.	K1 -K5	1	CO 1- 5	Lecture	Hot seat activity for revision of important terms
Jan 8 – 12, 2024	<b>C.A. Test - I</b>						
Jan 13, 2024 (Day Order 1)	Unit 3.2	Turtle Conservation	K1 -K5	1	CO 1-5	Audiovisual presentation	Discussion

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Jan 18 -20, 2024 (Day Order 4 to 6)	Unit 1.2	Affinities of Amphioxus– Characteristic Features	K1 -K5	1	CO 1-5	Powerpoint	Questioning
	Unit 3.3	Identification of venomous and non- venomous snakes	K1 – K5	2	CO 1-5	Audiovisual presentation	Flash cards
Jan 22-29, 2024 (Day Order 1 to 6)	Unit 1.2	Retrogressive Metamorphosis in Urochordata	K1 -K5	2	CO 1-5	Powerpoint	Discussion
	Unit 3.3	Snakes of South India Poison Apparatus and Biting Mechanism	K1 -K5	3	CO 1-5	Documentary	Recapitulation
Jan 30 – Feb 2, 2024 (Day Order 1 to 4)	Unit 1.3	Agnatha: Characteristic Features and Affinities of Cyclostomata	K1 -K5	1	CO 1-5	Powerpoint	Discussion
	Unit 4.1	Aves: Characteristic Features	K1 -K5	1	CO 1-5	Chalk and talk	Recapitulation
Feb 3, 2024 (Day Order 2)	Unit 1.3	Basic differences between Lamprey and Hagfish	K1 -K5	1	CO 1-5	Chalk and Talk	Group discussion

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Feb 5- 6, 2024 (Day Order 5 to 6)	Unit 2.1	Pisces: Characteristic Features	K1 -K5	1	CO 1-5	Powerpoint	Discussion
	Unit 4.1	Aves: Classification up to order level	K1 -K5	2	CO 1-5	Audiovisual presentation	Oral quiz
Feb 7 – 14, 2024 (Day Order 1 to 6)	Unit 2.1	Pisces: Classification up to order level	K1 -K5	2	CO 1-5	Powerpoint	Questioning
	Unit 4.1	<i>Columba livia</i> (type study including endoskeleton)	K1 -K5	3	CO 1-5	Audiovisual presentation Observation of bird endoskeleton	Diagram test
Feb 15 – 22, 2024 (Day Order 1 to 6)	Unit 2.2	Type: <i>Scoliodon sorrakowah</i> (type study)	K1 -K5	2	CO 1-5	Powerpoint	Discussion
	Unit 4.1	<i>Columba livia</i> (type study including endoskeleton)	K1 -K5	2	CO 1-5	Audiovisual presentation Observation of bird endoskeleton	Label the diagram – activity
	Unit 4.2	Flightless Birds (Ratitae and Sphenisciformes): Characteristic features, adaptations, and examples	K1 -K5	1	CO 1-5	Audiovisual presentation	Recapitulation

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Feb 23 – 24, 2024 (Day Order 1 & 5)	Unit 2.2	Type: <i>Scoliodon sorrakowah</i> (type study)	K1 -K5	1	CO 1-5	Powerpoint	Discussion
	Unit 4.3	Flight Adaptations and Migration in Birds	K1 -K5	2	CO 1-5	Research Based Pedagogical Tool – Student-centred learning & evaluation method	Research Based Pedagogical Tool – Student-centred learning & evaluation method
Feb 26 – Mar 1, 2024 (Day Order 2 to 6)	Unit 2.2	Type: <i>Scoliodon sorrakowah</i> (type study)	K1 -K5	2	CO 1-5	Powerpoint	Discussion
	Unit 5.1	Mammalia: Characteristic Features and Classification up to order level	K1 -K5	2	CO 1-5	Audiovisual presentation	Recapitulation
Mar 2, 2024 (Day Order 1)	Unit 5.1	Adaptations and examples of Monotremes and Marsupials	K1 -K5	1	CO 1-5	Audiovisual presentation	Group quiz – for revision
Mar 4 –8, 2024	<b>C.A. Test - II</b>						

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Mar 9 – 16, 2024 (Day 6 & Day Order 1 to 6)	Unit 2.3	Accessory Respiratory Organs - Parental Care	K1 -K5	2	CO 1-5	Powerpoint/ Audio visual presentation	<b>Component quiz</b>
	Unit 5.2	Types of dentition with examples and toothless mammals	K1 -K5	2	CO 1-5	Audiovisual presentation	
	Unit 5.3	Flying mammals and their adaptations	K1 -K5	1	CO 1-5	Chalk and talk	
Mar 18 - 19, 2024 (Day Order 2 to 3)	Unit 2.3	Anadromous and catadromous migration in fishes with an example	K1 -K5	1	CO 1-5	Powerpoint	Discussion
Mar 20-22, 2024 (Day Order 4 to 6)	<b>REVISION</b>						

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**  
**COURSE PLAN**

**November 2023 – April 2024**

**Department** : Zoology  
**Name/s of the Faculty** : Dr. Amritha N  
**Course Title** : Developmental Biology  
**Course Code** : 23ZL/MC/DB23  
**Shift** : I

**COURSE OUTCOMES (COs)**

<b>COs</b>	<b>Description</b>	<b>CL</b>
<b>CO1</b>	Recall the important concepts and theories in Developmental Biology, Gametogenesis, stages in animal development, process of organogenesis, types and causes of infertility, Assisted Reproductive Technology, Totipotency, significance of folic acid deficiency, Teratogenesis and the mechanisms of metamorphosis and regeneration and the types and applications of stem cells and related ethical issues	K1
<b>CO2</b>	Describe the processes, concepts and theories relating to gametogenesis, fertilization, stages in animal development, process of organogenesis, types and causes of infertility, Assisted Reproductive Technology, Totipotency, significance of folic acid deficiency, Teratogenesis and the mechanisms of metamorphosis and regeneration and the types and applications of stem cells and related ethical issues	K2
<b>CO3</b>	Apply the knowledge obtained to explain concepts and theories relating to Developmental Biology, processes of gametogenesis, fertilization, stages in animal development, process of organogenesis, types and causes of infertility, Assisted Reproductive Technology, Totipotency, significance of folic acid deficiency, Teratogenesis and the mechanisms of metamorphosis and regeneration and the types and applications of stem cells and related ethical issues	K3



<b>CO4</b>	Analyse the concepts and theories relating to Developmental Biology, processes of gametogenesis, fertilization, stages in animal development, process of organogenesis, types and causes of infertility, Assisted Reproductive Technology, Totipotency, significance of folic acid deficiency, Teratogenesis and the mechanisms of metamorphosis and regeneration and the types and applications of stem cells and related ethical issues	<b>K4</b>
<b>CO5</b>	Evaluate the concepts and theories relating to developmental biology, processes of gametogenesis, fertilization, stages in animal development, process of organogenesis, types and causes of infertility, Assisted Reproductive Technology, Totipotency, significance of folic acid deficiency, Teratogenesis and the mechanisms of metamorphosis and regeneration and the types and applications of stem cells and related ethical issues	<b>K5</b>

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Nov 22 – 23, 2023 (Day Order 1 & 2)	1.1	Introduction, detailed outline of the syllabus. Introduction to principles of developmental biology – its definition, scope and history	K1 – K5	1	CO1 - 5	General discussion of the topic	Questioning
Nov 24-30, 2023 (Day Order 1 to 6)	1.1	Theories of development, preformation, epigenesis, pangenesis, recapitulation and biogenetic law, Theories of germplasm, mosaic, regulative and gradient, Organizers,	K1 – K5	3	CO1 - 5	Lecture Power point presentations	Discussion
Dec 1-7, 2023 (Day Order 1 to 6)	1.2	Gametogenesis Spermatogenesis – formation factors, variations, morphology and types of sperms Oogenesis – growth of egg, types and morphology of eggs	K1 – K5	4	CO1 - 5	Lecture Videos	Questioning

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Dec 8-9, 2023 (Day Order 1, 3)	1.3	Fertilization, definition, types, physico-chemical aspects of fertilization Parthenogenesis – Natural and Artificial	K1 – K5	3	CO1 - 5	Lecture and Discussion	Recapitulation
Dec 11-15, 2023 (Day Order 2 to 6 )	2.1	Cleavage – patterns, factors influencing cleavage, blastulation in frog and chick	K1 – K5	3	CO1 - 5	Lecture and Discussion AV presentation	Questioning
Dec 16 – 22, 2023 (Day Order 1 to 6)	2.2	Gastrulation – General Morphogenetic movements , Experiments by Speeman and Mangold, comparative study of gastrulation in Frog and Chick development	K1 – K5	4	CO1 - 5	Lecture and Discussion  Chalk and Talk  Videos	Short Test
Jan 3 – 6, 2024 (Day Order 1 to 4)	2.2	Cell lineage – Fate maps and their significance	K1 – K5	2	CO1 - 5	Lecture	Other Component – Poster presentation submission on <b>Jan 03, 2024</b>
Jan 8 – 12, 2024	<b>C.A. Test - I</b>						

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Jan 13, 2024 (Day Order 1)	2.3	Embryonic adaptation. Extra- embryonic and foetal membranes. Placenta-Types Placenta -Functions	K1 – K5	2	CO1 - 5	Lecture and Discussion	Group Discussion
Jan 18 -20, 2024 (Day Order 4 to 6)	3.1	Cell differentiation and differential activity	K1 – K5	2	CO1 - 5	Power point presentations	Questioning
Jan 22-29, 2024 (Day Order 1 to 6)	3.1	Organogenesis in Frog: Ectodermal Derivatives – Brain and Eye	K1 – K5	4	CO1 - 5	Power point presentations	Recapitulation
Jan 30 – Feb 2, 2024 (Day Order 1 to 4)	3.2	Mesodermal derivatives Heart and Blood Endodermal derivatives	K1 – K5	3	CO1 - 5	Lecture	Diagram Test
Feb 3, 2024 (Day Order 2)	3.3	Endodermal derivatives  Digestive tract and its derivatives	K1 – K5	1	CO1 - 5	Lecture  Power point presentations	Discussion
Feb 5- 6, 2024 (Day Order 5 to 6)	4.1	Metamorphosis in Insects and Amphibians	K1 – K5	2	CO1 - 5	Lecture AV presentations	Recapitulation

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Feb 7 – 14, 2024 (Day Order 1 to 6)	4.2	Metamorphosis in Insects and Amphibians, Regeneration-mechanism and types. Medical applications of regeneration	K1 – K5	4	CO1 - 5	Chalk and talk Power point presentations	Comprehension
Feb 15 – 22, 2024 (Day Order 1 to 6)	4.3	Concept of potencies: totipotency and pluripotency	K1 – K5	2	CO1 - 5	Lecture	Questioning
Feb 23 – 24, 2024 (Day Order 1 & 5)	4.3	Nuclear transfer experiments – embryonic and haemopoietic stem cells – ethical issues	K1 – K5	2	CO1 - 5	Lecture Discussion	Debate
Feb 26 – Mar 1, 2024 (Day Order 2 to 6)	5.1	Infertility in humans - Types and causes	K1 – K5	2	CO1 - 5	Power point presentations	Case studies
Mar 2, 2024 (Day Order 1)	5.2	Assisted Reproductive Technology: Induced Ovulation and its Applications – Superovulation	K1 – K5	2	CO1 - 5	Lecture Discussion	Group Discussion
Mar 4 –8, 2024	<b>C.A. Test - II</b>						

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Mar 9 – 16, 2024 (Day 6 & Day Order 1 to 6)	5.2	<i>In vitro Fertilisation</i> - Cryopreservation - Surrogate Motherhood – ethical issues - Folic acid deficiency and embryonic development	K1 – K5	4	CO1 - 5	Lecture Case study	<b>Component quiz</b> on March 11, 2024
Mar 18 - 19, 2024 (Day Order 2 to 3)	5.3	Teratogenic agents and their impact on embryonic development	K1 – K5	2	CO1 - 5	Lecture Case study Discussion	Questioning
Mar 20-22, 2024 (Day Order 4 to 6)	<b>REVISION</b>						

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**  
**COURSE PLAN**

**November 2023 – April 2024**

**Department** : Zoology  
**Name/s of the Faculty** : Dr. S. A. Vidhya, Dr. Amritha N, Dr. Rita Jayaraj and Dr. Parimalam M  
**Course Title** : Chordata and Developmental Biology Practical  
**Course Code** : 23ZL/MC/P222  
**Shift** : I

**COURSE OUTCOMES (COs)**

<b>COs</b>	<b>Description</b>	<b>CL</b>
<b>CO1</b>	Submit a record of practical work carried out in the laboratory and/or a report on a field/laboratory visit and/or report of campus faunal survey	K1
<b>CO2</b>	Illustrate and describe chordate spotters	K2
<b>CO3</b>	Demonstrate skills to mount the otolith of fish and scales of different fishes, and computer simulated dissection (not for evaluation)	K3
<b>CO4</b>	Examine the habit and habitat of campus fauna and identify the stages of chordate development and different types of placenta of chordates	K4
<b>CO5</b>	Dissect and display the viscera and digestive system of fish	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Nov 22 – 23, 2023 (Day Order 1 & 2)	No Class						
Nov 24-30, 2023 (Day Order 1 to 6)	3	General instructions and introduction  Mount of Ctenoid scale of Mullet and Cycloid scale of Carp	K3	3	CO 3	Explanation with diagrams Demonstration	Evaluation of the mount
	4	Observation, Identification and description of the following Chordates: Prochordata 1. <i>Balanoglossus</i> 2. <i>Amphioxus</i> 3. <i>Ascidia</i> Agnatha 1. <i>Petromyzon</i> 2. <i>Myxine</i>	K2		CO 2	Explanation with diagrams  Identification of Chordate spotters (preserved/dry specimens) or photographic plates	Evaluation of the Observation notebook



Dec 1-7, 2023 (Day Order 1 to 6)	3	Mount of Placoid Scale of Shark	K3	3	CO 3	Explanation with diagrams Demonstration	Evaluation of the mount
	4	Observation, Identification and description of the following Chordates:  Pisces 1. <i>Trygon</i> 2. <i>Acipenser</i> 3. <i>Hippocampus</i> 4. <i>Catla catla</i>	K2		CO 2	Explanation with diagrams  Identification of Chordate spotters (preserved/dry specimens) or photographic plates	Evaluation of the Observation notebook
Dec 8-9, 2023 (Day Order 1, 3)	2	Observation, identification and description of the following: 1. Sections of testis and ovary of a mammal. 2. Different kinds of vertebrate eggs (frog, reptile, bird and mammal). 3. Different kinds of sperm (frog, bird and mammal)	K4	3	CO 4	Explanation with diagrams  Identification of Developmental Biology spotters (microscopic slides/preserved specimens) or photographic plates	Evaluation of the Observation notebook

Dec 11-15, 2023 (Day Order 2 to 6)	1	Dissection Fish: Viscera and Digestive system	K5	3	CO 5	Explanation with diagrams Demonstration	Evaluation of the dissection
	3	Mount of Otolith of Fish	K3		CO 3	Explanation with diagrams Demonstration	Evaluation of the mount  Evaluation of the Observation notebook
Dec 16 – 22, 2023 (Day Order 1 to 6)	2	Identification of any ten chordate fauna on SMC Campus (Observation and analysis of habit, habitat and adaptive features)	K4	3	CO 4	Guided campus faunal survey  Audiovisual presentation	Evaluation of campus faunal survey reports and presentations

Jan 3 – 6, 2024 (Day Order 1 to 4)	4	<p>Observation, Identification and description of the following Chordates:</p> <p>Amphibia</p> <ol style="list-style-type: none"> <li>1. <i>Duttaphrynus melanostictus</i></li> <li>2. <i>Ambystoma tigrinum</i></li> <li>3. Axolotl larva of <i>Ambystoma</i></li> <li>4. <i>Ichthyophis</i></li> </ol> <p>Reptilia</p> <ol style="list-style-type: none"> <li>1. <i>Chameleon</i></li> <li>2. <i>Dryophis</i></li> <li>3. <i>Daboia russelli</i></li> <li>4. <i>Testudo elegans</i></li> </ol>	K2	3	CO 2	<p>Explanation with diagrams</p> <p>Identification of Chordate spotters (preserved/dry specimens) or photographic plates</p>	Evaluation of the Observation notebook
Jan 8 – 12, 2024	<b>C.A. Test - I</b>						
Jan 13, 2024 (Day Order 1)	No Class						
Jan 18 -20, 2024 (Day Order 4 to 6)	No Class						
Jan 22-29, 2024 (Day Order 1 to 6)	<b>Practical CA 1</b> <b>Evaluation of Record Notebook</b>						



<p>Feb 7 – 14, 2024 (Day Order 1 to 6)</p>	<p>2</p>	<p>Observation, identification and description of the following:</p> <p>Whole mounts of 13, 24, 33, 48, 72 and 96 hours chick embryo.</p>	<p>K4</p>	<p>3</p>	<p>CO 4</p>	<p>Explanation with diagrams</p> <p>Identification of Developmental Biology spotters (microscopic slides/preserved specimens) or photographic plates</p>	<p>Evaluation of the Observation notebook</p>
<p>Feb 15 – 22, 2024 (Day Order 1 to 6)</p>	<p>4</p>	<p>Observation, Identification and description of the following Chordates:</p> <p>Mammalia</p> <ol style="list-style-type: none"> <li>1. <i>Pteropus giganteus</i></li> <li>2. <i>Manis crassicaudata</i></li> <li>3. <i>Loris gracilis</i></li> <li>4. <i>Osphranter rufus</i></li> </ol> <p>Osteology</p> <ol style="list-style-type: none"> <li>1. Aegithognathous palate</li> <li>2. Desmognathous palate</li> <li>3. Synsacrum</li> <li>4. Rabbit Dentition</li> <li>5. Dog Dentition</li> </ol>	<p>K2</p>	<p>3</p>	<p>CO 2</p>	<p>Explanation with diagrams</p> <p>Identification of Chordate spotters (preserved/dry specimens or bones) or photographic plates</p>	<p>Evaluation of the Observation notebook</p>

Feb 23 – 24, 2024 (Day Order 1 & 5)	1	Computer simulated dissection (not for evaluation) Frog – All systems	K5	3	CO 5	Computer simulated dissection using simulation software.	Evaluation of the Observation notebook
	2	Observation, identification and description of the following:  1. Sections through brain, heart, eye and ear of frog on prepared slides  2. Placenta of shark, sheep and pig	K4		CO 4	Explanation with diagrams  Identification of Developmental Biology spotters (microscopic slides/preserved specimens) or photographic plates	
Feb 26 – Mar 1, 2024 (Day Order 2 to 6)	<b>Practical CA 2 Evaluation of Record Notebook</b>						
Mar 2, 2024 (Day Order 1)	No Class						
Mar 4 –8, 2024	<b>C.A. Test - II</b>						
Mar 9 – 16, 2024 (Day 6 & Day Order 1 to 6)	<b>REVISION</b>						

Mar 18 - 19, 2024 (Day Order 2 to 3)	<b>REVISION</b>
Mar 20-22, 2024 (Day Order 4 to 6)	No Class

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**  
**COURSE PLAN**

**November 2023 – April 2024**

**Department** : **ZOOLOGY**  
**Name/s of the Faculty** : **Dr. Rita Jayaraj (2hrs)**  
**Course Title** : **Environmental Studies**  
**Course Code** : **23ZL/GC/ES12**  
**Shift** : **I**

**COURSE OUTCOMES (COs)**

<b>COs</b>	<b>Description</b>
<b>CO1</b>	Articulate the interdisciplinary context of environmental issues
<b>CO2</b>	Adopt sustainable alternatives that integrate science, humanities and social perspectives
<b>CO3</b>	Appreciate the importance of biodiversity and a balanced ecosystem
<b>CO4</b>	Calculate one's carbon footprint



<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Nov 22 – 23, 2023 (Day Order 1 & 2)	1	Introduction: The multidisciplinary nature of environmental studies; Environmental Ethics- Role of the Individual in protecting the environment		1		Discussion – Is environmental studies needed? Role of society and individual in harming environment.	Debate
Nov 24-30, 2023 (Day Order 1 to 6)		Natural Resources: renewable (forests and water)and non-renewable (minerals)- energy resources: renewable and non-renewable sources, impact of overexploitation		2		Lecture and PowerPoint Presentation	Questioning
Dec 1-7, 2023 (Day Order 1 to 6)	1	Ecosystems: terrestrial (forest, grassland and desert)		2		Lecture and PowerPoint Presentation	Questioning
Dec 8-9, 2023 (Day Order 1, 3)	1	Ecosystems: and aquatic (ponds, oceans and estuaries);		1		Lecture Audio Visual Presentation	Comprehension
Dec 11-15, 2023 (Day Order 2 to 6 )	1	Ecosystems: Structure and function		2		Chalk and Talk	Discussion

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Dec 16 – 22, 2023 (Day Order 1 to 6)	1	Biodiversity: India as a mega-diversity nation;		2		Lecture Audio Visual Presentation	Questioning
Jan 3 – 6, 2024 (Day Order 1 to 4)	1	Threats to biodiversity; <i>in-situ</i> and <i>ex-situ</i> conservation of biodiversity		1		Lecture PowerPoint Presentation	Comprehension
Jan 8 – 12, 2024	<b>C.A. Test - I</b>						
Jan 13, 2024 (Day Order 1)	2	Environmental Pollution: Air, Water, Noise and Plastic Pollution		1		Lecture PowerPoint Presentation	Discussion
Jan 18 -20, 2024 (Day Order 4 to 6)	2	Pollution: causes, effects and control measures		2		Lecture Audio Visual Presentation	Debate
Jan 22-29, 2024 (Day Order 1 to 6)	1	Solid Waste Management, Source Segregation and Rain Water Harvesting		2		Lecture PowerPoint Presentation	Questioning
Jan 30 – Feb 2, 2024 (Day Order 1 to 4)	2	The Environmental Dimension of Sustainable Development: The United Nations Sustainable Development Goals of the 2030 Agenda		1		Chalk and Talk	Other Component Assignment

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Feb 3, 2024 (Day Order 2)	2	Climate Change and Environmental Disasters: Natural Disasters		1		Audio Visual Presentation	Discussion
Feb 5- 6, 2024 (Day Order 5 to 6)	2	Floods, earthquakes, cyclones, tsunamis and landslides		1		Lecture PowerPoint Presentation	Questioning
Feb 7 – 14, 2024 (Day Order 1 to 6)	2	Man-made disasters: Bhopal Gas Tragedy and Chernobyl Nuclear Disaster		1		Chalk and Talk	Discussion
Feb 15 – 22, 2024 (Day Order 1 to 6)	2	Environmental Movements: Chipko, Silent Valley and Narmada Bachao Andolan		1		Lecture PowerPoint Presentation	Comprehension
Feb 23 – 24, 2024 (Day Order 1 & 5)		International Agreements: Montreal Protocol, Kyoto Protocol and Climate Change Conferences		1		PowerPoint Presentation	Discussion
Feb 26 – Mar 1, 2024 (Day Order 2 to 6)		An Overview of Environmental Laws in India: Environmental (Protection) Act 1986,		1		Chalk and Talk	Questioning

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Mar 2, 2024 (Day Order 1)	3	Biological Act, 2002, National Green Tribunal Act, 2010, Coastal Regulation Zone Notification, 2011		1		PowerPoint Presentation	Quiz
Mar 4 –8, 2024	<b>C.A. Test - II</b>						
Mar 9 – 16, 2024 (Day 6 & Day Order 1 to 6)	3	A study of the eco- friendly initiatives on campus Environmental documentary film		1		Audio Visual Presentation	Discussion
Mar 18 - 19, 2024 (Day Order 2 to 3)	3	The highlights of Environmental Encyclical- <i>Laudato si</i> -On Care for our Common Home  Environmental Calendar		1		PowerPoint Presentation	Debate
Mar 20-22, 2024 (Day Order 4 to 6)	<b>REVISION</b>						

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**  
**COURSE PLAN**

**November 2023 – April 2024**

**Department** : Zoology  
**Name/s of the Faculty** : Ms. Albina Jerome D (2 hrs.) & Dr. M. Parimalam (2 hrs.)  
**Course Title** : General Zoology II  
**Course Code** : 23ZL/AC/GZ24  
**Shift** : I

**COURSE OUTCOMES (COs)**

<b>COs</b>	<b>Description</b>	<b>CL</b>
<b>CO1</b>	recall the physiological adaptations related to colour change, bioluminescence, diving, high altitude and changes in various systems during exercise and aging, various intraspecific and interspecific behaviours, learning behaviour and abnormal behaviours in animals, different patterns of inheritance, types of mutations, types and applications of stem cells, different types of immunity, types of antigen and antibodies and their biological activity, hypersensitivity reactions, autoimmune disorders and vaccines, evolutionary strategies and human evolutionary stages	<b>K1</b>
<b>CO2</b>	outline the physiological adaptations related to colour change, bioluminescence, diving, high altitude and changes in various systems during exercise and aging, various intraspecific and interspecific behaviours, learning behaviour and abnormal behaviours in animals, different patterns of inheritance, types of mutations, types and applications of stem cells, different types of immunity, types of antigen and antibodies and their biological activity, hypersensitivity reactions, autoimmune disorders and vaccines, evolutionary strategies and human evolutionary stages	<b>K2</b>
<b>CO3</b>	apply the knowledge to describe the physiological adaptations related to colour change, bioluminescence, diving, high altitude and changes in various systems during exercise and aging, various intraspecific and interspecific behaviours, learning behaviour and abnormal behaviours in animals, different patterns of inheritance, types of mutations, types and	<b>K3</b>

	applications of stem cells, different types of immunity, types of antigen and antibodies and their biological activity, hypersensitivity reactions, autoimmune disorders and vaccines, evolutionary strategies and human evolutionary stages	
<b>CO4</b>	analyse the mechanisms involved in physiological adaptations related to colour change, bioluminescence, diving, high altitude and changes in various systems during exercise and aging, various intraspecific and interspecific behaviours, learning behaviour and abnormal behaviours in animals, different patterns of inheritance, types of mutations, types and applications of stem cells and related ethical issues, different types of immunity, types of antigen and antibodies and their biological activity, hypersensitivity reactions, autoimmune disorders and vaccines, evolutionary strategies and human evolutionary stages	<b>K4</b>
<b>CO5</b>	evaluate the mechanisms involved and elaborate on the physiological adaptations related to colour change, bioluminescence, diving, high altitude and changes in various systems during exercise and aging, various intraspecific and interspecific behaviours, learning behaviour and abnormal behaviours in animals, different patterns of inheritance, types of mutations, types and applications of stem cells and related ethical issues, different types of immunity, types of antigen and antibodies and their biological activity, hypersensitivity reactions, autoimmune disorders and vaccines, evolutionary strategies and human evolutionary stages	<b>K5</b>

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Nov 22 – 23, 2023 (Day Order 1 & 2)	2.1	Introduction- Animal Associations: Commensalism, Mutualism, Parasitism and Predation	K1 - K5	2	CO1 - CO5	Discussion and Audio Visual Presentation	Questioning
Nov 24-30, 2023 (Day Order 1 to 6)	2.2	Play: General Attributes of Play and Examples	K1 - K5	2	CO1 - CO5	Audio Visual Presentation	Oral Quiz
	3.1	Introduction – Human Chromosomes – Lethal Genes: types and examples	K1 - K5	2	CO1 - CO5	PowerPoint Presentation	Discussion
Dec 1-7, 2023 (Day Order 1 to 6)	2.2	Courtship Behaviour: Steps and function - Courtship in birds (Sandgrouse, Bower bird, Baya weaver bird, Asian Koel & Indian Peafowl)	K1 - K5	2	CO1 - CO5	Audio Visual Presentation	Short Test
	3.2	Patterns of Inheritance: Autosomal Dominant (Hypercholesterolaemia), Autosomal Recessive (Albinism)	K1 - K5	2	CO1 - CO5	PowerPoint Presentation	Quiz
Dec 8-9, 2023 (Day Order 1, 3)	2.3	Learning Behaviour: Forms of Learning	K1 - K5	2	CO1 - CO5	PowerPoint Presentation	Discussion

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Dec 11-15, 2023 (Day Order 2 to 6)	2.4	Abnormal Behaviour in Domestic and Zoo Animals	K1 - K5	1	CO1 - CO5	PowerPoint Presentation	Questioning
	3.2	X- linked Dominant (Hypophosphatemia), X-linked Recessive (Duchenne Muscular Dystrophy)	K1 - K5	2	CO1 - CO5	PowerPoint/ Video presentation	Discussion
Dec 16 – 22, 2023 (Day Order 1 to 6)	2.4	Abnormal Behaviour in Domestic and Zoo Animals	K1 - K5	2	CO1 - CO5	PowerPoint Presentation	Questioning
	3.2	Y-linked (Hypertrichosis) and Mitochondrial inheritance (Kearns Sayre Syndrome)	K1 - K5	2	CO1 - CO5	PowerPoint Presentation	Group Discussion
Jan 3 – 6, 2024 (Day Order 1 to 4)	1.1	Introduction - Chromophores: mechanism of colour change in cold blooded vertebrates	K1 - K5	2	CO1 - CO5	Lecture and PowerPoint Presentation	Oral Quiz
	3.3	Mutation Classification	K1 - K5	1	CO1 - CO5	PowerPoint Presentation	Quiz
Jan 8 – 12, 2024	<b>C.A. Test - I</b>						



<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Jan 13, 2024 (Day Order 1)	1.1	Bioluminescence: mechanism, examples and significance	K1 - K5	1	CO1 - CO5	Lecture and PowerPoint Presentation	Quizziz quiz
Jan 18 -20, 2024 (Day Order 4 to 6)	3.3	Chromosomal aberrations (Types and Examples)	K1 - K5	2	CO1 - CO5	PowerPoint Presentation	Discussion
Jan 22-29, 2024 (Day Order 1 to 6)	1.2	Adaptations to diving and high altitudes	K1 - K5	2	CO1 - CO5	Lecture	Short Test  <b>Component Video Assignment submission</b>
	3.4	Stem Cells: Sources and types	K1 - K5	2	CO1 - CO5	PowerPoint Presentation / Video presentation	Quiz
Jan 30 – Feb 2, 2024 (Day Order 1 to 4)	1.3	Exercise Physiology: respiration in exercise and cardiovascular system in exercise	K1 - K5	2	CO1 - CO5	Lecture and Audio Visual Presentation	Short Quiz
	3.4	Application and ethical issues	K1 - K5	1	CO1 - CO5	PowerPoint Presentation	Discussion
Feb 3, 2024 (Day Order 2)	1.3	Exercise Physiology: respiration in exercise and cardiovascular system in exercise	K1 - K5	1	CO1 - CO5	Lecture and Audio Visual Presentation	Short Quiz

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Feb 5- 6, 2024 (Day Order 5 to 6)	5.1	Introduction to evolution	K1 - K5	1	CO1 - CO5	Lecture	Questioning
Feb 7 – 14, 2024 (Day Order 1 to 6)	1.4	Physiology of ageing: causes - changes in major systems	K1 - K5	2	CO1 - CO5	Lecture and PowerPoint Presentation	Questioning
	5.1	Coevolution	K1 - K5	2	CO1 - CO5	PowerPoint Presentation	Discussion
Feb 15 – 22, 2024 (Day Order 1 to 6)	4.1	Immune System: Introduction - Innate Immunity and Acquired Immunity (Humoral and Cell Mediated Immunity)	K1 - K5	2	CO1 - CO5	Lecture and PowerPoint Presentation	Quizziz quiz
	5.2	Mimicry and coloration - Types and significance	K1 - K5	2	CO1 - CO5	PowerPoint Presentation / Audio Video presentation	Discussion
Feb 23 – 24, 2024 (Day Order 1 & 5)	4.2	Types of Antigens - Antibody Classes and their Biological Activity	K1 - K5	2	CO1 - CO5	Audio Visual Presentation	Class Test
	5.3	Distribution of Animals - Types	K1 - K5	1	CO1 - CO5	PowerPoint Presentation	Discussion  <b>Component Assignment Submission</b>

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Feb 26 – Mar 1, 2024 (Day Order 2 to 6)	4.3	Hypersensitivity reactions: types - Autoimmune disorders: Causes and Significance (eg. Rheumatoid Arthritis)	K1 - K5	1	CO1 - CO5	PowerPoint Presentation	Discussion
	5.3	Barriers and Methods of dispersal of animals	K1 - K5	2	CO1 - CO5	PowerPoint Presentation	Group Discussion
Mar 2, 2024 (Day Order 1)	4.3	Hypersensitivity reactions: types - Autoimmune disorders: Causes and Significance (eg. Rheumatoid Arthritis)	K1 - K5	1	CO1 - CO5	PowerPoint Presentation	Discussion
Mar 4 –8, 2024	<b>C.A. Test - II</b>						
Mar 9 – 16, 2024 (Day 6 & Day Order 1 to 6)	4.4	Vaccines: Types - National Immunisation Schedule (NIS) for infants, children and pregnant women	K1 - K5	2	CO1 - CO5	Lecture and PowerPoint Presentation	<b>Component Quiz</b>
	5.4	Stages in Human Evolution - Cultural history	K1 - K5	2	CO1 - CO5	PowerPoint Presentation	Discussion and Quiz

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Mar 18 - 19, 2024 (Day Order 2 to 3)	4.4	Vaccines: Types - National Immunisation Schedule (NIS) for infants, children and pregnant women	K1 - K5	1	CO1 - CO5	Flipped class	Discussion
Mar 20-22, 2024 (Day Order 4 to 6)	<b>REVISION</b>						

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**

**COURSE PLAN**

**November 2023 – April 2024**

**Department** : Zoology  
**Name/s of the Faculty** : Ms. Albina Jerome D & Dr. M. Parimalam  
**Course Title** : General Zoology II  
**Course Code** : 23ZL/AC/GZ24  
**Shift** : I

**COURSE OUTCOMES (COs)**

<b>COs</b>	<b>Description</b>	<b>CL</b>
<b>CO1</b>	Submit a record of practical work carried out in the laboratory and/or report on pedigree analysis and Mendelian traits	<b>K1</b>
<b>CO2</b>	Illustrate and describe the bioluminescent organisms, immune cells, animal associations and evolutionary adaptations	<b>K2</b>
<b>CO3</b>	Demonstrate the skills to identify the Barr body in squamous epithelial cells, to determine the blood groups and to detect the presence of HCG in the urine sample	<b>K3</b>
<b>CO4</b>	Analyse the behaviour of animals, pedigree of some human inherited traits/diseases/disorder, Mendelian traits and normal and abnormal Karyotypes	<b>K4</b>
<b>CO5</b>	Estimate the oxygen consumption in an aquatic animal with reference to body weight	<b>K5</b>

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Nov 22 – 23, 2023 (Day Order 1 & 2)	<b>No Class</b>						
Nov 24-30, 2023 (Day Order 1 to 6)	4	<p style="text-align: center;"><b><u>Spotters</u></b></p> <p><b>Animal Associations:</b> Parasitism - <i>Wuchereria bancrofti</i> and <i>Sacculina</i> on Crab Mutualism - Sea Anemone on Hermit Crab Commensalism - <i>Echeneis</i> Predation – <i>Octopus</i></p>	K2	2	CO2	Identification of organisms using Museum Specimens/Photographic plate	Evaluation of Observation note book
Dec 1-7, 2023 (Day Order 1 to 6)	1	Oxygen consumption in an aquatic animal with reference to body weight	K5	2	CO5	Demonstration & Explanation	Evaluation of the titre value, calculation and inference
Dec 8-9, 2023 (Day Order 1, 3)	<b>No Class</b>						
Dec 11-15, 2023 (Day Order 2 to 6)	2	Time Budgeting of Courtship and Play Behaviour	K4	2	CO4	Explanation and activity	Evaluation of the activity

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
		Observation and identification of Karyotypes: Normal male and female, Turner's, Klinefelter's and Down's syndrome karyotypes	K4		CO4	Identification of karyotypes using Photographic plate	Evaluation of Observation note book

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Dec 16 – 22, 2023 (Day Order 1 to 6)	3	Squamous epithelium squash preparation – Barr body	K3	2	CO3	Demonstration & Explanation	Evaluation of the slide
Jan 3 – 6, 2024 (Day Order 1 to 4)	1	Oxygen consumption in an aquatic animal with reference to body weight (Repeat)	K5	2	CO5	Brief overview of procedure	Evaluation of the titre value, calculation and inference
	4	<b><u>Spotters</u></b> <b>Bioluminescent animals -</b> Comb Jelly, Firefly and Angler fish	K2		CO2	Identification of organisms using Museum Specimens/Photographic plate	Evaluation of Observation note book
Jan 8 – 12, 2024	<b>C.A. Test - I</b>						
Jan 13, 2024 (Day Order 1)	<b>No Class</b>						
Jan 18 -20, 2024 (Day Order 4 to 6)	<b>Practical CA 1</b> <b>Evaluation of Observation &amp; Record Notebook</b>						



Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jan 22-29, 2024 (Day Order 1 to 6)	3	ABO - Blood Grouping and Rh – Typing	K3	2	CO3	Demonstration & Explanation	Inference of the ABO blood grouping and Rh-typing experiment
Jan 30 – Feb 2, 2024 (Day Order 1 to 4)	2	Pedigree Analysis of some human inherited traits/disorders/diseases  Study of any five Mendelian Traits	K4	2	CO4	Explanation	Report on Pedigree analysis of some human inherited traits/disorders/diseases and Mendelian traits
Feb 3, 2024 (Day Order 2)	<b>No Class</b>						
Feb 5- 6, 2024 (Day Order 5 to 6)	<b>No Class</b>						
Feb 7 – 14, 2024 (Day Order 1 to 6)	3	Pregnancy test: ELISA- Qualitative Test for Pregnancy	K3	2	CO3	Demonstration & Explanation	Inference of the Pregnancy test
Feb 15 – 22, 2024 (Day Order 1 to 6)	4	<b><u>Spotters</u></b> <b>Immune cells</b> - Basophil, Neutrophil, Eosinophil, Phagocyte and Dendritic cell	K2	2	CO2	Identification of cells using Photographic plate	Evaluation of Observation note book

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Feb 23 – 24, 2024 (Day Order 1 & 5)	4	<p><b><u>Spotters</u></b></p> <p><b>Coevolution:</b></p> <p>a) Plant and Pollinator - Centropogon flower and Hummingbird</p> <p>b) Predator and Prey - Rough-skinned Newt and Garter Snake</p> <p><b>Mimicry and Colouration:</b></p> <p>a) Batesian mimicry - Crimson Rose/Common rose and Common Mormon</p> <p>b) Mullerian mimicry - Bees and Wasps</p> <p>c) Protective Colouration - Sand Grasshopper</p> <p>d) Aggressive Colouration - Poison Dart Frog</p> <p><b>Stages in the evolution of man</b></p>	K2	2	CO2	Identification of coevolution, mimicry and colouration and stages in the evolution of man using Photographic plate	Evaluation of Observation note book
Feb 26 – Mar 1, 2024 (Day Order 2 to 6)	<b>Revision</b>						
Mar 2, 2024 (Day Order 1)	<b>No Class</b>						

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Mar 4 –8, 2024		<b>C.A. Test - II</b>					
Mar 9 – 16, 2024 (Day 6 & Day Order 1 to 6)		<b>Practical CA 2 Evaluation of Observation &amp; Record Notebook</b>					
Mar 18 - 19, 2024 (Day Order 2 to 3)		<b>No Class</b>					
Mar 20-22, 2024 (Day Order 4 to 6)		<b>REVISION</b>					