



UNION CHRISTIAN COLLEGE ALUVA-2



SSR 5th CYCLE 2023

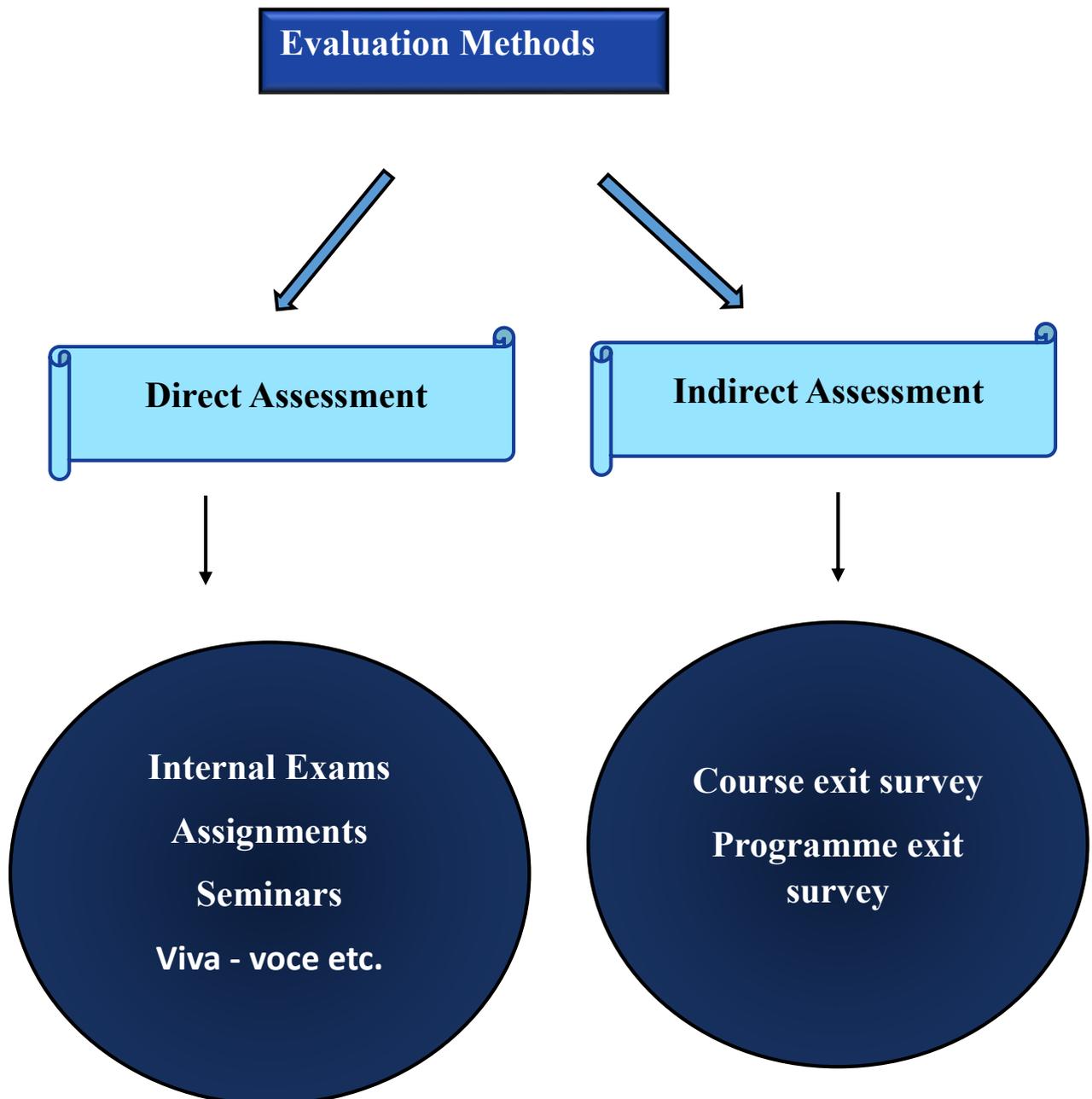


Criterion 2

2.6.2. Attainment of programme outcomes (POs) and course outcomes (COs)

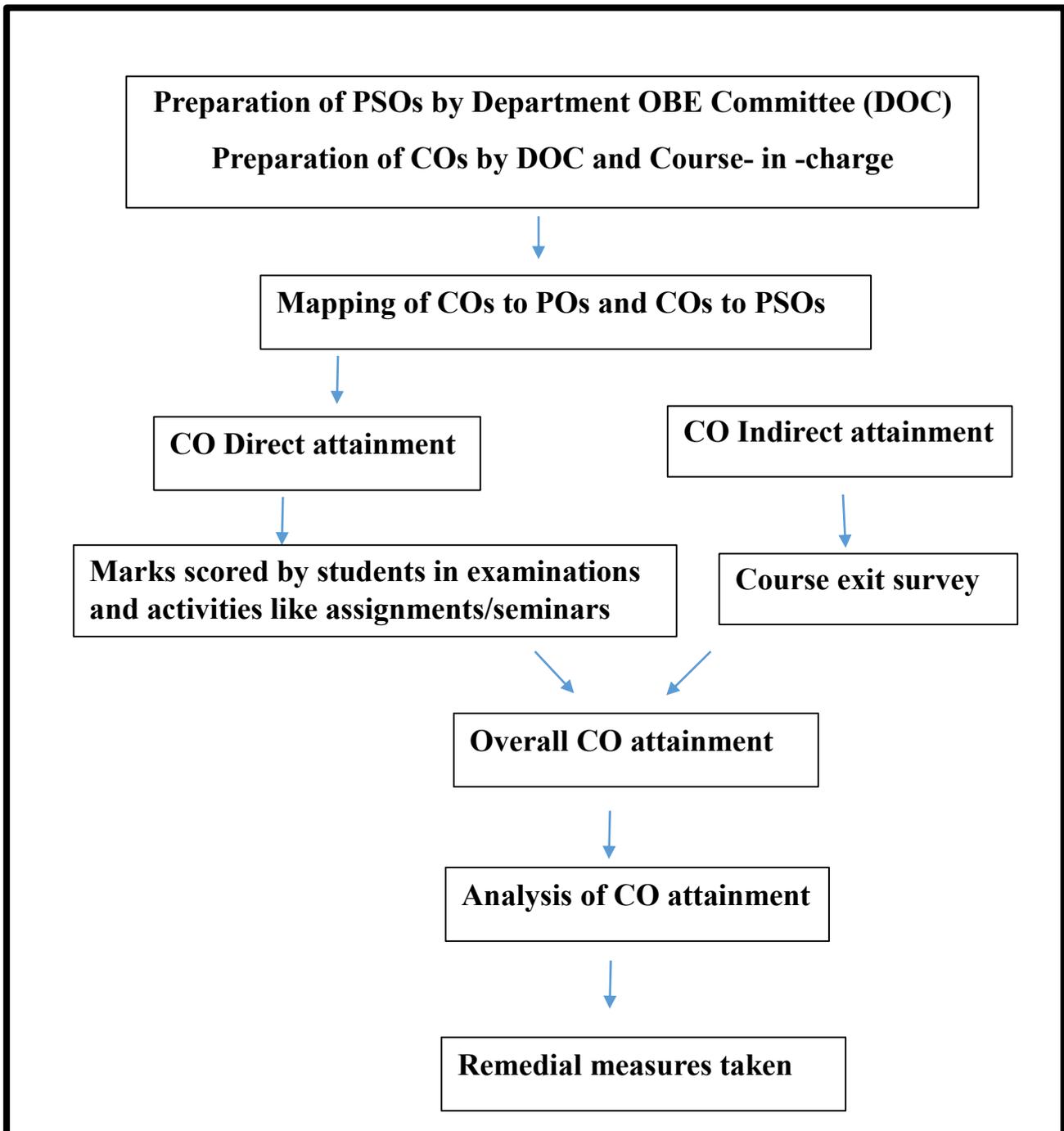


2.6.2. Attainment of programme outcomes (POs) and course outcomes (COs) are evaluated by the institution





Methodology for CO attainment analysis





Programme Outcomes – BA/BSc/BCom

On completion of UG programme, the student is expected to achieve the following programme outcomes

PO 1	Critical Thinking and Analytical Reasoning	Analyse, and evaluate evidences and arguments critically to formulate logical arguments and develop in-depth knowledge through critical evaluation of practices, policies and theories
PO 2	Scientific Reasoning and Problem Solving	Interpret and analyse quantitative/qualitative data and experimental evidences to draw unbiased conclusion, and develop problem solving skills.
PO 3	Communication skills	Develop intensive and extensive listening skills, analytical reading and writing skills so as to express themselves confidently.
PO 4	Leadership Skills	Demonstrate democratic values in employing effective team building and management strategies to work constructively and lead diverse teams.
PO 5	Equity, Inclusiveness and sustainability	Appreciate equity, inclusiveness and sustainability and acquire values of unity, secularism and national integration with a commitment to social service so as to act as dignified citizens.
PO 6	Moral and Ethical Reasoning	Recognise different value systems in conducting one's life, demonstrate the ability to identify ethical issues related to professional life.
PO 7	Lifelong Learning	Acquire skills for "learning how to learn" and develop skills for self-paced and self-directed learning so as to adapt to the changing demands of workplace through reskilling.



Programme Outcomes – MA/MSc

On completion of PG programme, the student is expected to achieve the following programme outcomes

PO1	Domain Knowledge	Construct deeper knowledge and expertise in specialized fields and integrate knowledge across subject areas.
PO2	Creative and Interdisciplinary Thinking	Develop a passion for experimenting, critically appraise and engage with others perspectives, enhance interdisciplinary thinking skills to formulate creative solutions to real life problems
PO3	Communication and Competency	Communicate effectively, critically assess and review ideas and present new perspectives in seminar and project presentations.
PO4	Research skills & Ethical practices	Acquire research skills in concerned subjects and allied fields, apply domain specific ethical principles and practices in academic professional and social engagements.
PO5	Leadership Skills	Demonstrate democratic values, commitment to social service, employ effective team building and management strategies, work constructively and lead diverse teams, develop strategic thinking with people skills.
PO6	Career readiness & higher education	Choose from diverse career options available in local, national and international realms, pursue higher education in multidisciplinary fields.
PO7	Lifelong Learning	Inculcate a habit of self- learning throughout life, through self - paced and self- directed learning aimed at personal development and adapting to changing demands of work place through reskilling.



Programme Specific Outcomes

Sample – B. Sc. Mathematics

On completion of the specified programme, the student is expected to achieve the following programme specific outcomes

PSO 1	Understand and apply the basic concepts and techniques logic, set theory, calculus in other areas of Mathematics
PSO 2	Relate real life situations with Mathematics and solve them logically
PSO 3	Familiarize with abstract structures and analysis which are relevant in other disciplines of Mathematics
PSO 4	Develop logical thinking and problem-solving skill
PSO 5	Understand Mathematics of nature and create positive attitude about the environment



Programme Specific Outcomes

Sample – M.A. English

On completion of the specified programme, the student is expected to achieve the following programme specific outcomes

PSO 1	Understand and critically analyse texts belonging to different genres
PSO 2	Ethically evaluate and respond to socio-cultural issues and representations
PSO 3	Comprehend and formulate theoretical approaches to texts
PSO 4	Involve in pedagogical and research activities
PSO 5	Appreciate the aesthetics and historicity of literary and cultural texts
PSO 6	Generate creative literary discourses and narratives
PSO 7	Engage in interactive communication and cogitation



Course Outcomes

Programme: B. Sc. Zoology

Semester: 2

Course Title: Animal Diversity – Non Chordata

On completion of the specified course, the student is expected to achieve the following course outcomes

CO1	Appreciate the diversity of life on earth
CO2	Understand different levels of biological diversity through the systematic classification of invertebrate fauna
CO3	Do taxa level identification of animals
CO4	Understand the evolutionary significance of invertebrate fauna
CO5	Have curiosity on invertebrate fauna around us
CO6	Understand the parasitic forms of lower invertebrates



OBE Question paper - Sample

Union Christian College, Aluva				
Code No: 626				
First Internal Exam March 2023				
Course Code: ZY2CRT02		Course Title: ANIMAL DIVERSITY - NON CHORDATA		
Faculty in charge: Niladevi K. N, Femi Anna Thomas		Max Marks: 30	Duration: 1 1/2 Hours	
Name:		Class No./ Reg No:		Semester:II
Course Outcome: CO1: Appreciate the diversity of life on earth CO2: Understand different levels of biological diversity through the systematic classification of invertebrate fauna CO3: Do taxa level identification of animals CO4: Understand the evolutionary significance of invertebrate fauna CO5: Have curiosity on invertebrate around us CO6: Understand the parasitic forms of lower invertebrates				
Sl No	Question	Bloom's Taxonomy (Revised)	CO	Marks
Section A Answer any five of the following (1 mark for each question) (1X5=5 marks)				
1	List out the different respiratory organs in arthropods	Remembering	CO1	
2	Comment on moulting	Understanding	CO1,CO2	
3	Cite an example for Class Merostomata	Remembering	CO1,CO2	
4	What are mesozoans?	Remembering	CO4	
5	Comment on gemmules	Understanding	CO2	
6	Analyze the differences between ostia and osculum	Analyzing	CO5	
Section B Answer any three of the following (5 marks for each question) (5X3=15 marks)				
7	Give the salient features of Subphylum Chelicerata	Understanding	CO1, CO2, CO3	
8	What are the salient features of the subphylum trilobitomorpha?	Understanding	CO1, CO2, CO3	
9	Evaluate the outline classification of kingdom animalia	Evaluating	CO1, CO2,CO3	



10	Analyze the characteristic features of phylum placozoa	Analyzing	CO2, CO4	
11	Explain the features of Rhopalura and Trichoplax	Understanding	CO2, CO4	
Section C Answer any <i>one</i> of the following (10 marks for each question) (10X1=10 marks)				
12	Analyze the salient features of phylum Arthropoda with the classification	Analyzing	CO1, CO2, CO3	
13	Elaborate on corals and coral reefs	Analyzing	CO1, CO5	



Internal Assessment based on OBE Question paper

Programme: B. Sc. Zoology

Course Title: Animal Diversity – Non Chordata

Semester: 2

Union Christian College, Aluva

Code No: 626

First Internal Exam March 2023

Course Code: ZY2CRT02		Course Title: ANIMAL DIVERSITY - NON CHORDATA		
Faculty in charge: Nila Devi K. N, Femi Anna Thomas		Max Marks: 30	Duration: 1 1/2 Hours	
Name: <i>Afnan Fatbin Manoj</i>		Class No./ Reg No: <i>451</i>	Semester: II	
		Name of Program: <i>Bsc Zoology</i>		

Course Outcome:
 CO1: Appreciate the diversity of life on earth
 CO2: Understand different levels of biological diversity through the systematic classification of invertebrate fauna
 CO3: Do taxa level identification of animals
 CO4: Understand the evolutionary significance of invertebrate fauna
 CO5: Have curiosity on invertebrate around us
 CO6: Understand the parasitic forms of lower invertebrates

Sl No	Question	Bloom's Taxonomy (Revised)	CO	Marks
Section A Answer any five of the following (1 mark for each question) (1X5=5 marks)				
1	List out the different respiratory organs in arthropods	Remembering	CO1	1
2	Comment on moulting	Understanding	CO1, CO2	1
3	Cite an example for Class Merostomata	Remembering	CO1, CO2	1
4	What are mesozoans?	Remembering	CO4	1
5	Comment on gemmules	Understanding	CO2	1
6	Analyze the differences between ostia and osculum	Analyzing	CO5	1
Section B Answer any three of the following (5 marks for each question) (5X3=15 marks)				
7	Give the salient features of Subphylum Chelicerata	Understanding	CO1, CO2, CO3	4 3/4
8	What are the salient features of the subphylum trilobitomorpha?	Understanding	CO1, CO2, CO3	4 1/2
9	Evaluate the outline classification of kingdom animalia	Evaluating	CO1, CO2, CO3	
10	Analyze the characteristic features of phylum placozoa	Analyzing	CO2, CO4	
11	Explain the features of Rhopalura and Trichoplax	Understanding	CO2, CO4	4 3/4
Section C Answer any one of the following (10 marks for each question) (10X1=10 marks)				
12	Analyze the salient features of phylum Arthropoda with the classification	Analyzing	CO1, CO2, CO3	
13	Elaborate on corals and coral reefs	Analyzing	CO1, CO5	10

29/30

Solved
☆☆
29
Afnan



**Programme Outcome and Programme Specific Outcome
Calculation and Analysis**

**CO ATTAINMENT CALCULATION
COURSE WISE**



**CO ATTAINMENT FILES COMPILED FOR
EACH SEMESTER**



**CONSOLIDATED PO OF EACH SEMESTER
IS CALCULATED**



**SEMESTER WISE PO ATTAINMENTS OF ALL SIX
SEMESTERS CONSOLIDATED**



**PO ATTAINMENT AND PSO ATTAINMENT IS CALCULATED
FOR EACH PROGRAMME**



CO-PO and CO-PSO Mapping - Sample

Name of Programme		Computer Science	
Course Code and Course Title		EN1CCT01 - Fine-tune Your English	
Name of faculty		Alwin Alexander	
Semester		1	
PO 1	Critical Thinking and Analytical Reasoning	CO1	Understands the sentence as the basic unit and writes effectively
PO 2	Scientific Reasoning and Problem Solving	CO2	Understands the parts of speech in language and its application
PO 3	Communication skills	CO3	Understands the rules of subject-verb agreement and common concord errors in language
PO 4	Leadership Skills	CO4	Understands word formation techniques
PO 5	Equity, Inclusiveness and sustainability	CO5	Understands contextual usage of words
PO 6	Moral and Ethical Reasoning	CO6	Understands vocabulary related to body and its usage
PO 7	Lifelong Learning	CO7	Understands practical use of language

	PO 1	PO 2	PO3	PO4	PO5	PO6	PO 7	Outco me	Weig ht	Attainment percentage		
										Avera ge	Moder ate	High
CO1	1	2	3	1	1	1	1	CO1	10	40	50	70
CO2	1	2	1	1	1	1	2	CO2	9	40	50	70
CO3	1	1	1	1	2	1	1	CO3	8	40	50	70
CO4	1	1	1	1	1	1	2	CO4	8	40	50	70
CO5	1	1	1	1	2	2	1	CO5	9	40	50	70
CO6	1	1	1	1	1	1	1	CO6	7	40	50	70
CO7	1	1	1	1	1	1	1	CO7	7	40	50	70
Aggregate										40	50	70

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO1	1		1			1	
CO2		2		1		1	
CO3						1	
CO4	1	1	1				
CO5	1	1		1			
CO6			1		1		
CO7				1		1	1

	Outco me	Weig ht	Avera ge	Moder ate	High
CO1	CO1	3	40	50	70
CO2	CO2	4	40	50	70
CO3	CO3	1	40	50	70
CO4	CO4	3	40	50	70
CO5	CO5	3	40	50	70
CO6	CO6	2	40	50	70
CO7	CO7	3	40	50	70
Aggregate			40	50	70



Class Performance

Name of programme		Computer Science				
Name of course		Fine-tune Your English				
Name of faculty		Alwin Alexander				
Semester		1				
Year of admission		0				
Course code		EN1CCT01				
Number of students		26				
Course outcome	Attainment percentage Internal exam 1	Attainment percentage Internal exam 2	Activity attainment	Aggregate Direct attainment	Course Exit survey attainment (Indirect)	Aggregate attainment Level (Direct & Indirect)
CO1	45.38	100.00	100.00	81.79	100	85.44
CO2	74.34	100.00	0.00	74.34	100	79.47
CO3	70.27	100.00	0.00	70.27	100	76.22
CO4	73.53	100.00	0.00	73.53	100	78.83
CO5	60.15	100.00	0.00	60.15	100	68.12
CO6	44.94	100.00	0.00	44.94	100	55.95
CO7	30.77	100.00	0.00	30.77	100	44.62
Aggregate	57.06	100.00		78.53	100	69.81

Signature of
faculty

Date



CONSOLIDATED PO ATTAINMENT STATUS SEMESTER WISE

	ENICC T01	MATCR T01	CS1CR T01	CS1CR T02	CS1CM T01	CS1CR P01	CSCR T04	Tota l	Aggre gate	Achie ved
PO 1	0.70	0.82	0.70	0.82	0.70	0.92	0.70	5.35	0.76	YES
PO 2	0.73	0.83	0.73	0.83	0.73	0.83	0.73	5.39	0.77	YES
PO 3	0.70	0.84	0.70	0.84	0.70	0.84	0.70	5.31	0.76	YES
PO 4	0.73	0.85	0.73	0.85	0.73	0.85	0.73	5.45	0.78	YES
PO 5	0.70	0.86	0.70	0.86	0.70	0.86	0.70	5.37	0.77	YES
PO 6	0.73	0.87	0.73	0.87	0.73	0.87	0.73	5.51	0.79	YES
PO 7	0.70	0.88	0.70	0.88	0.70	0.88	0.70	5.43	0.78	YES
								PSO Attainment Level 60 %		
	ENICC T01	MATCR T01	CS1CR T01	CS1CR T02	CS1CM T01	CS1CR P01	CSCR T04	Tota l	Aggre gate	Achie ved
PS O1	0.82	0.70	0.89	0.75	0.69	0.81	0.70	5.36	0.77	YES
PS O2	0.83	0.73	0.83	0.73	0.73	0.83	0.73	5.39	0.77	YES
PS O3	0.84	0.70	0.84	0.70	0.70	0.84	0.70	5.31	0.76	YES
PS O4	0.85	0.73	0.85	0.73	0.73	0.85	0.73	5.45	0.78	YES
PS O5	0.86	0.70	0.86	0.70	0.70	0.86	0.70	5.37	0.77	YES
PS O6	0.87	0.73	0.87	0.73	0.73	0.87	0.73	5.51	0.79	YES
PS O7	0.88	0.70	0.88	0.70	0.70	0.88	0.70	5.43	0.78	YES



PO and PSO attainment – Sample

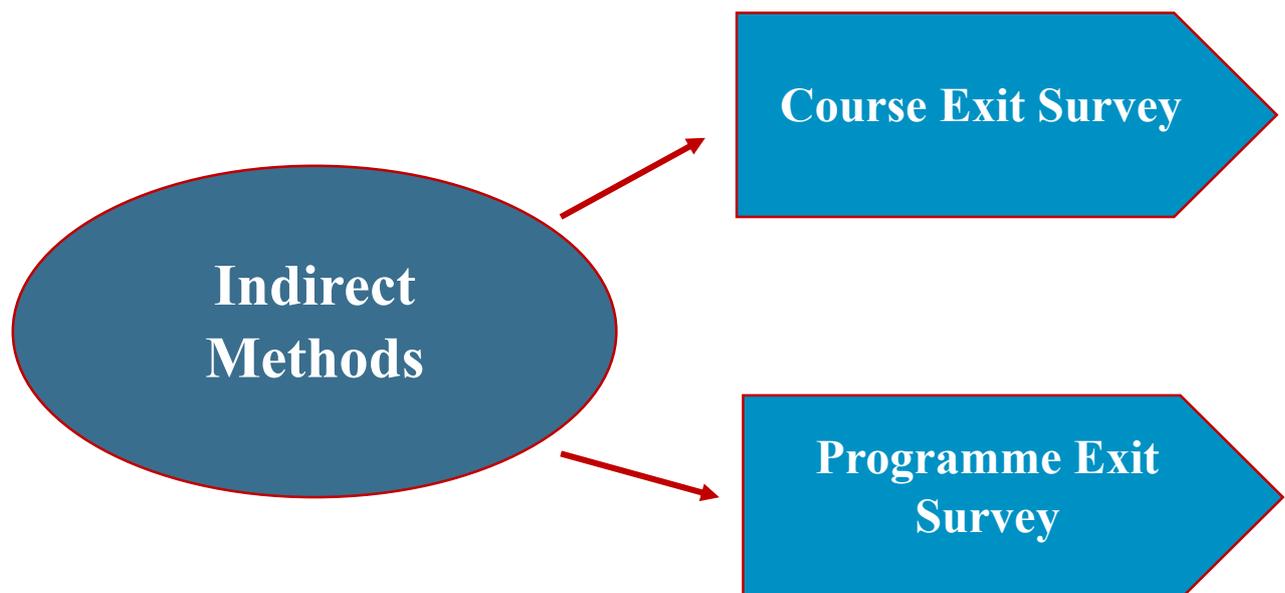
Name of Programme		Computer Science						Year of admission		2020
Name of class in charge		Ms. Greeshma K							PO/PSO Attainment Level 60 %	
CONSOLIDATED PO ATTAINMENT STATUS PROGRAMME WISE										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	Total		Attained
Sem 1	0.96	0.96	0.96	0.96	0.96	0.96	0.96	6.71	0.96	YES
Sem 2	0.86	0.89	0.92	0.95	0.98	0.77	0.54	5.91	0.84	YES
Sem 3	0.78	0.56	0.99	0.67	0.88	0.81	0.33	5.02	0.72	YES
Sem 4	0.75	0.91	0.95	0.00	0.61	0.75	1.54	5.51	0.79	YES
Sem 5	0.67	0.88	0.56	0.90	0.19	0.67	0.18	4.04	0.58	NO
Sem 6	0.97	0.89	0.05	0.52	0.96	0.97	2.54	6.90	0.99	YES

CONSOLIDATED PSO ATTAINMENT STATUS PROGRAMME WISE										
	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	Total		Attained
Sem 1	0.97	0.97	0.96	0.95	0.94	0.96	0.92	6.66	0.95	YES
Sem 2	0.78	0.56	0.99	0.67	0.88	0.23	0.26	4.37	0.62	YES
Sem 3	0.78	0.56	0.99	0.67	0.88	0.85	0.18	4.91	0.70	YES
Sem 4	0.86	0.89	0.92	0.95	0.98	0.77	0.54	5.91	0.84	YES
Sem 5	0.97	0.89	0.35	0.97	0.94	0.97	2.54	7.63	1.09	YES
Sem 6	0.96	0.96	0.96	0.96	0.96	0.96	0.96	6.71	0.96	YES



Evaluation of CO and PSO attainment levels

Indirect Assessment Methods





Course Exit Survey - Sample

Programme: B. Sc. Zoology

Semester: 2

Core Course: Animal diversity- Non Chordata

Questionnaire

1. You have gained basic knowledge about the non-chordate diversity
2. You have understood the systematic classification of invertebrate phyla
3. You are familiar with the representative animals under different taxa
4. You have understood the evolutionary significance of invertebrate fauna
5. The course has helped you to develop curiosity about the invertebrate fauna around us
6. You have acquired knowledge about the parasitic invertebrates and their significance
7. The course outcomes were clear and discussed upfront
8. Time devoted to each CO was quite adequate
9. Assessments were relevant to the stated COs
10. You are satisfied with the content of the course



Course Exit Survey - Sample

Programme: B. Sc. Zoology

Semester: 2

Core Course: Animal diversity – Non Chordata

20 responses

Summary Question Individual

atharathiraman@gmail.com < 1 of 20 >

Responses cannot be edited

Course Exit Survey_ Animal Diversity - Non Chordata

Course Exit Survey

Email *

atharathiraman@gmail.com

You have gained basic knowledge about the non-chordate diversity

Strongly Agree

Agree

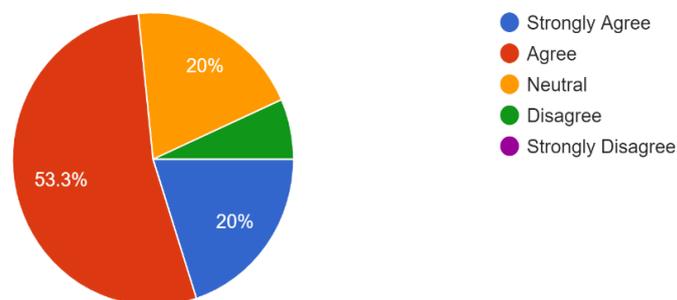
Neutral

Disagree

Strongly Disagree

You have acquired knowledge about the parasitic invertebrates and their significance

15 responses



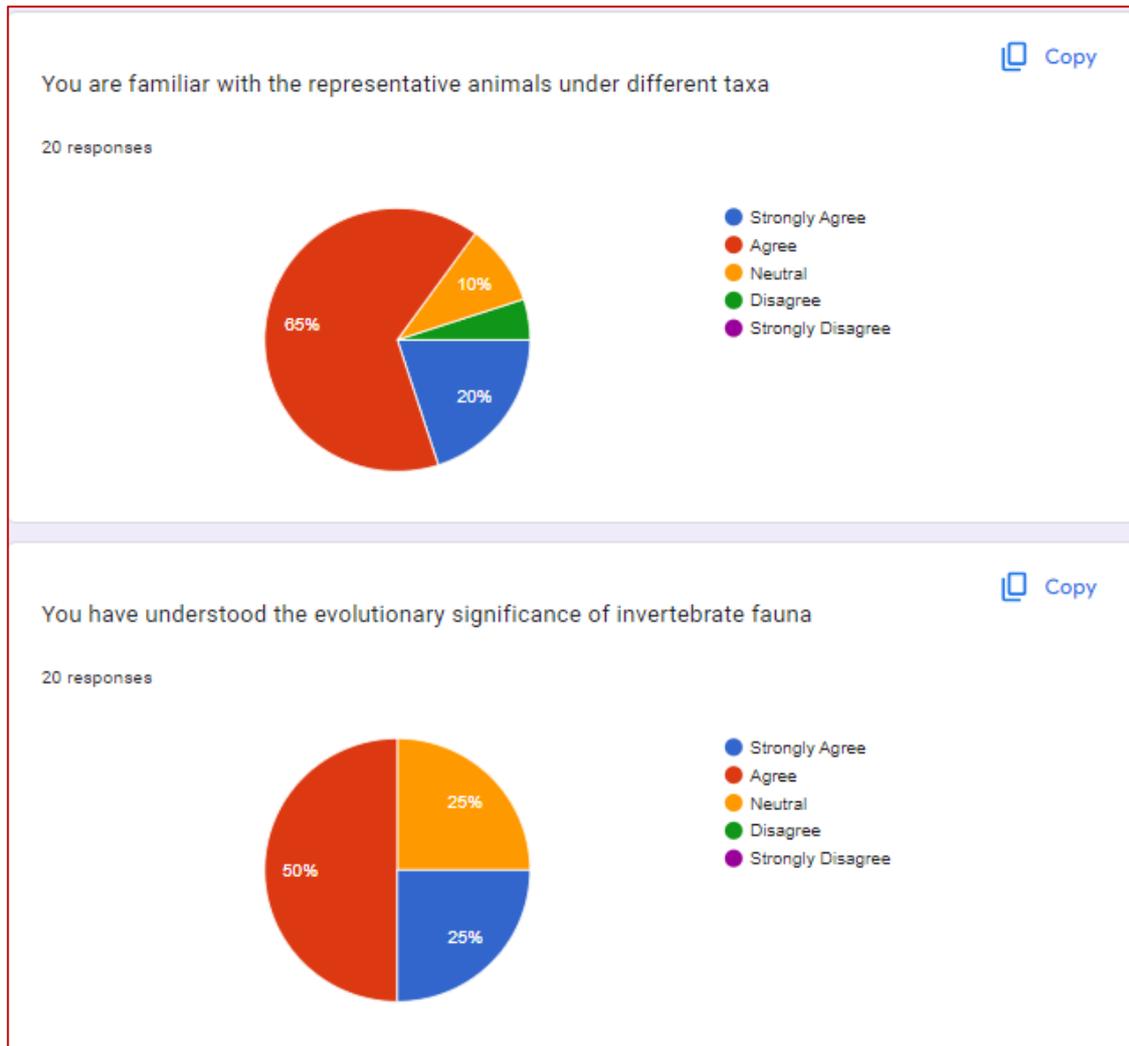


Course Exit Survey - Sample

Programme: B. Sc. Zoology

Semester: 2

Core Course: Animal diversity – Non Chordata



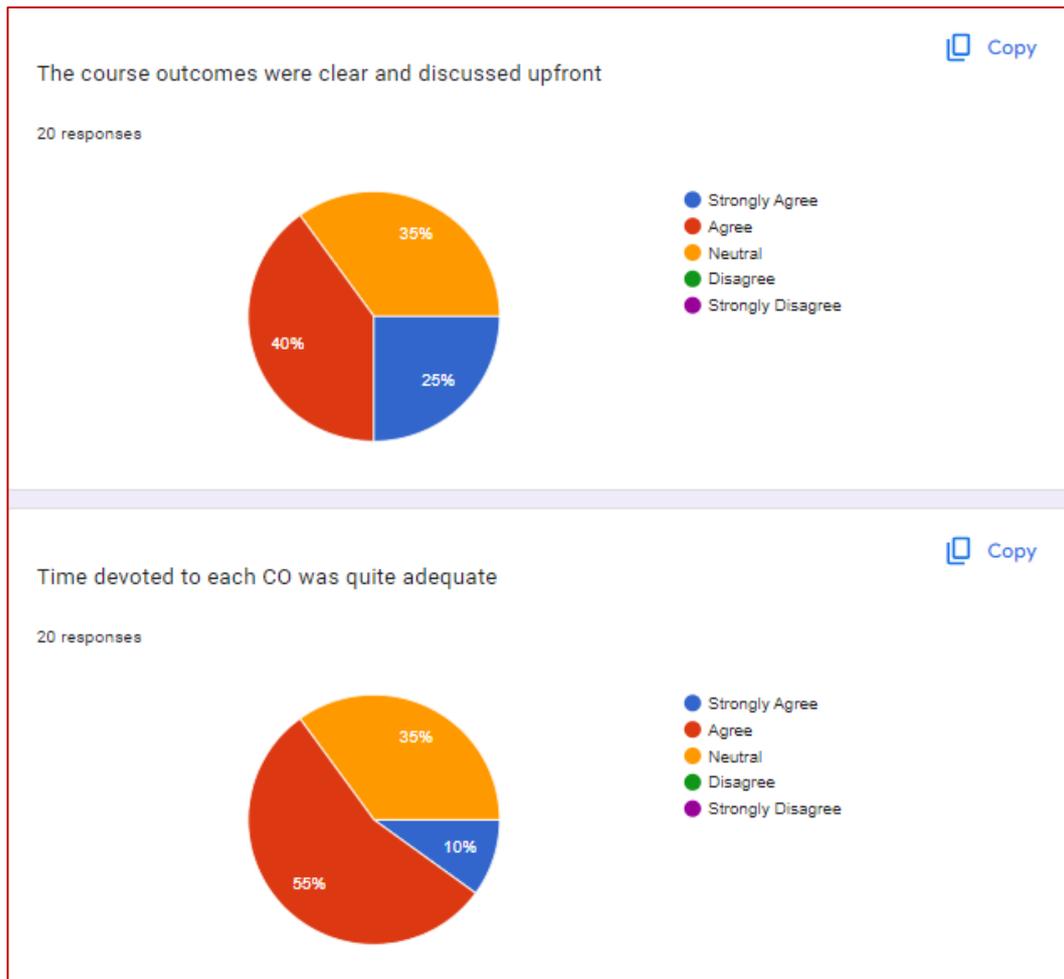


Course Exit Survey - Sample

Programme: B. Sc. Zoology

Semester: 2

Core Course: Animal diversity – Non Chordata





Programme Exit Survey - Sample

B. Sc. Zoology (2020-23)

Questionnaire

1. You have understood the basic concepts and general principles in Zoology
2. You have gained knowledge about various taxa of animals, their adaptations and interactions with environment
3. You have understood the importance of ecological/environment conservation and sustainability
4. You have acquired theoretical knowledge and practical skills in various disciplines of biology
5. You have acquired the scientific temper and critical thinking skills to address issues like social inequality, human rights violation, sexual and reproductive health concerns
6. You are equipped with basic knowledge to build up a career in vocational or applied zoology
7. You have developed communication skills to decipher and transmit fundamental concepts and emerging trends in Zoology
8. You are satisfied with the curriculum of the programme that you have studied
9. You are planning to take up higher studies/career in the fields related to zoology
10. You are planning to embark on a career in a different industry



Programme Exit Survey - Sample

B. Sc. Zoology (2020-23 batch)

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Exit Survey_UG 2023 ☆ All changes saved in Drive

Questions Responses 28 Settings

28 responses [Link to Sheets](#)

Accepting responses

Summary Question Individual

aishaaj7777@gmail.com < 1 of 28 >

Responses cannot be edited

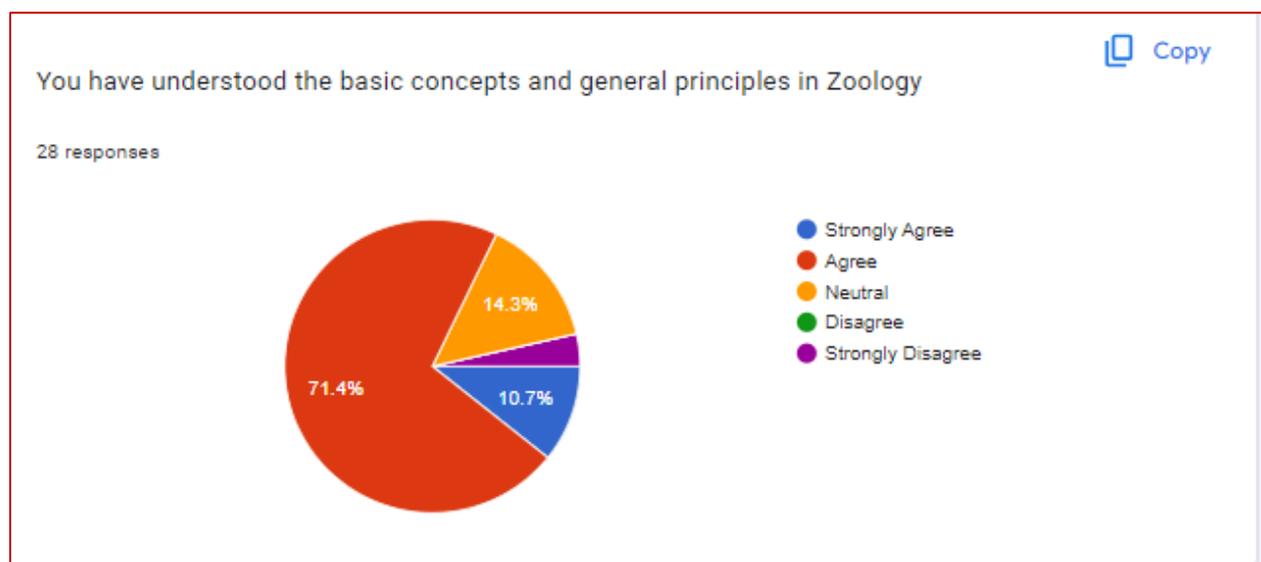
Exit Survey_UG 2023
Program Exit Survey_ B Sc Zoology

Email *

aishaaj7777@gmail.com

You have understood the basic concepts and general principles in Zoology

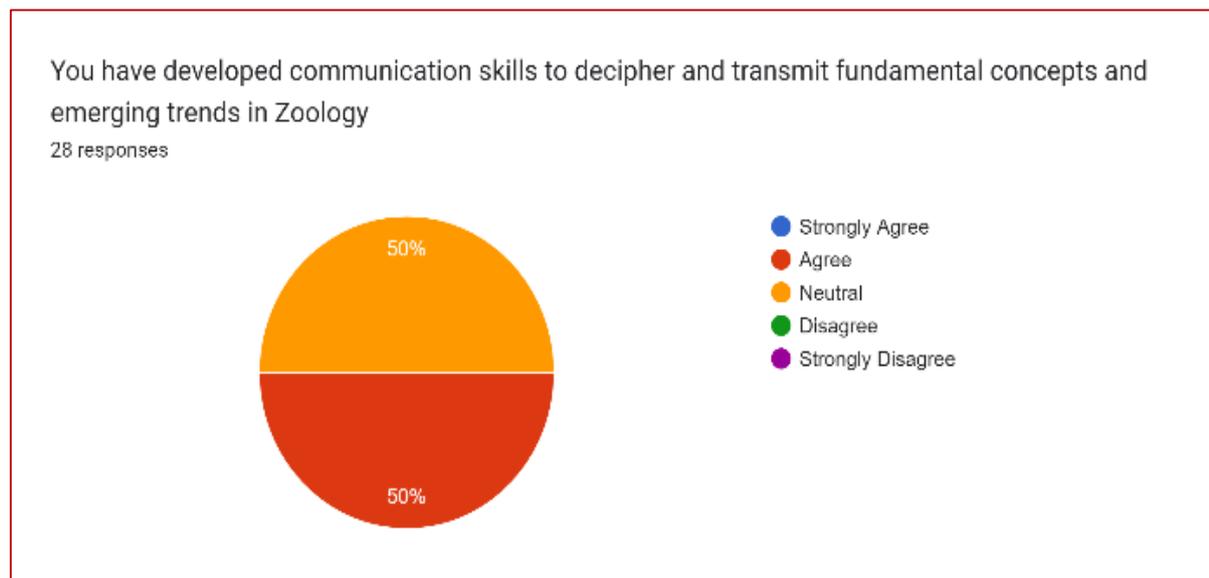
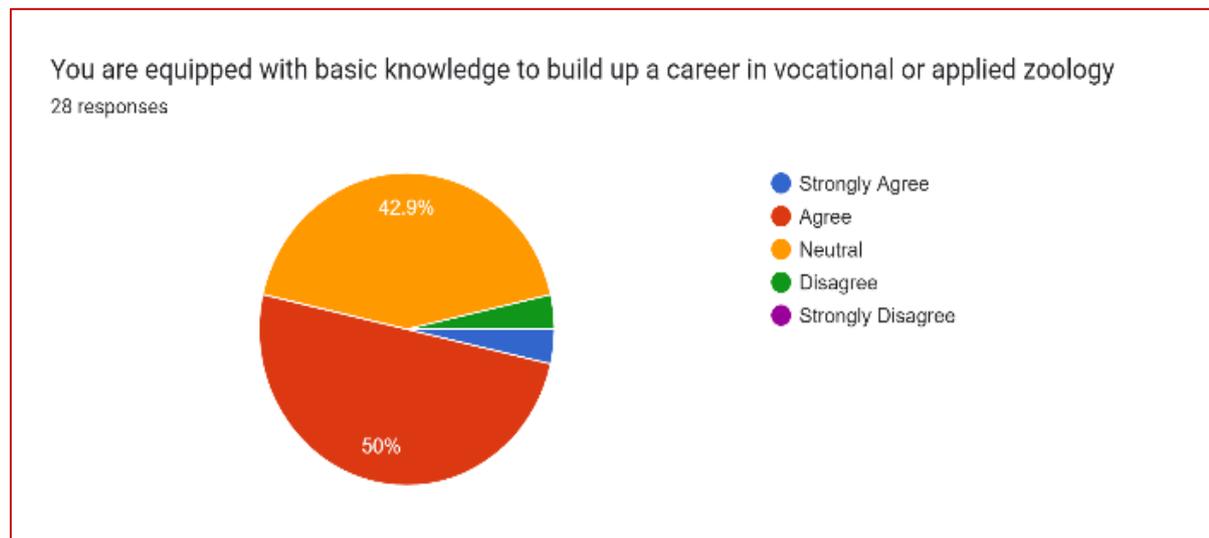
Strongly Agree
 Agree
 Neutral
 Disagree
 Strongly Disagree





Programme Exit Survey - Sample

B. Sc. Zoology (2020-23 batch)



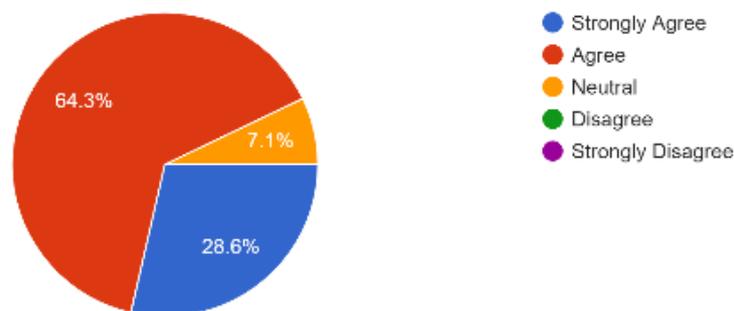


Programme Exit Survey - Sample

B. Sc. Zoology (2020-23 batch)

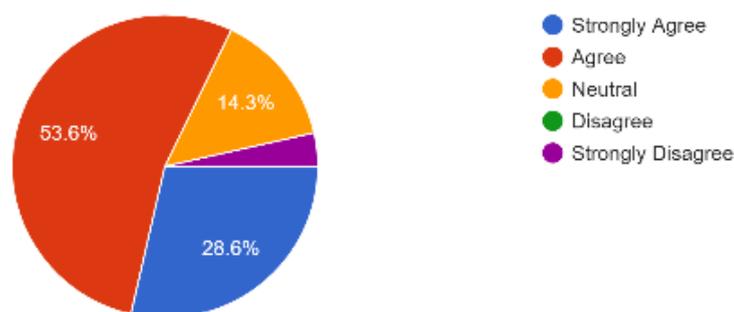
You have understood the importance of ecological/environment conservation and sustainability

28 responses



You have acquired the scientific temper and critical thinking skills to address issues like social inequality, human rights violation, sexual and reproductive health concerns

28 responses





Strategies for improving the outcome

Remedial Teaching - Sample

Programme: B. A. Economics

Semester: 6

Course Title: International Economics, Indian Economy & Quantitative Methods

Teacher in charge: Ms. Nino Baby

Sl. No.	Name	Signature
1.	Albin Ouseppachan	
2.	Sayoj K. Sebastian	
3.	Amritha Bimal	
4.	Anjana Balakrishnan	
5.	Sandha V. Kurian	
6.	Shilpa Sankarsh	
7.	Hannah Lisa Varghese	
8.	Joel Jacob	
9.	Fasna: C.S	
10.	Uopika Capi	
11.	Sujith A.M	
12.	Agnes Paulose	
13.	Seeja Shyfa	
14.	Alitha Biju	
15.	Licetha T.S	
16.	Chinchi K.H	
17.	Raghi Shaji	
18.	Adhithya N.S	
19.	Sujith A.M	
20.	Agnes Paulose	
19.	Thomas P. Jimmy	
20.	Reksana.V.N	
21.	Saravani.P.S	
22.	Rumana C.N	
23.	Saleel V.S	
24.	Achu Mohanan	
25.	Arunkumar.C.K	
26.	Midhun Alian	

Sl. No.	Name	Signature
1.	Arunkumar.C.K	
2.	Midhun Alian	
3.	Achu Mohanan	
4.	Sujith A.M	
5.	Sayoj:ic. Sebastian	
6.	Anjana Balakrishnan	
7.	Amritha Bimal	
8.	Jaseena.K.S	
9.	Fathima.K.T	
10.	Fathima kabir	
11.	Harikrishnan Babu	
12.	Devika Suresh	
13.	Joel Thomas Jacob	
14.	Arus.S	
15.	Adhithya N.S	
16.	Sumayya Salim	
17.	Shilpa.S	
18.	Jismi Baby	
19.	Aparna K.M	
20.	Haritha N.R	
21.	Chinchi K.H	
22.	Uopika Capi	
23.	Fasna:L.S	



COURSE FILE

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Sample

PROGRAMME:	B. Sc.
COURSE: Chordate Diversity	SEMESTER: II
COURSE CODE: ZY2CMTO2	COURSE TYPE: Theory
COURSE IN CHARGE:	Dr. Niladevi K.N.

Nominal Roll of Students undertaking the course

Sl. No.	Reg No.	Name of Candidate
1	220021021640	ADITHYA RAGHUNATH
2	220021021641	AKSHAY SABU
3	220021021642	ANANYA ANI
4	220021021643	ANNA T SAJI
5	220021021644	ANSHAD K N
6	220021021645	ARYA V
7	220021021646	ASHWIN BIJU
8	220021021647	ASIF ALI M N
9	220021021648	AYISHATHU SAFVANA A
10	220021021649	BAHIRA R B
11	220021021650	DEVIPRIYA T B
12	220021021651	DIYA FATHIMA T P
13	220021021652	FATHIMA K R
14	220021021655	GAYATHRI GIRISHANKER
15	220021021657	JAHANVIYA T
16	220021021658	MUHAMMED AFSAL V A
17	220021021659	NILEENA K I V
18	220021021660	RAMSEENA K M
19	220021021661	RIZWANA K S
20	220021021663	SADHIYA ASHRAF
21	220021021664	SRAVYA K R
22	220021021665	SWALIHA P A
23	220021021666	VIDHU KRISHNA



Syllabus

CHORDATE DIVERSITY SEMESTER II. ZY2CMTO2

36 Hrs

Credits 2

Module I

4 Hrs

Phylum Chordata: Fundamental characters and outline classification up to class.

Sub phylum Urochordata: General characters,

Classification:

Class 1: Larvacea (eg: Oikopleura)

Class 2: Ascidiacea (eg: Ascidia), Retrogressive metamorphosis.

Class 3: Thaliacea (eg: Salpa)

Sub phylum Cephalochordata: Salient features (eg: Branchiostoma)

Module II

6 Hrs

Sub phylum Vertebrata: Salient features

Division Agnatha : salient features and classification

Class 1: Cyclostoma (eg: Petromyzon)

Class 2: Class Ostracodermi (eg: Cephalopsis)

Division Gnathostomata: Salient features

Super class Pisces

Super class Tetrapoda.

Super class Pisces: Salient features and classification

Class 1: Chondrichthyes (eg: N

arcine)

Class 2: Osteichthyes (eg: Latimeria)

General Topic: Accessory respiratory organs in fishes.

Module III

14 Hrs

Super class Tetrapoda: Salient features

Class 1: Amphibia: Salient features. **Type study:** *Euphlyctis hexadactyla* - Habitat, morphology, sexual dimorphism, coelom and viscera, skeletal system, digestive system, respiratory system, circulatory system, excretory system, nervous system, sense organs, reproductive system, development.

Classification up to order:

Order 1: Urodela (eg: Amblystoma)

Order 2: Anura (eg: Bufo)

Order 3: Apoda (eg: Ichthyophis)



Module IV

6 Hrs

Class Reptilia: Salient features and classification up to subclass

Sub class 1: Anapsida (eg: Chelone)

Sub class 2: Diapsida (eg: Chamaeleon)

Sub class 3: Parapsida (eg: Ichthyosaurus)

General Topics: Poisonous and non poisonous snakes of Kerala.

Class Aves: Salient features and classification up to subclass

Sub class Archeornithes (eg: Archaeopteryx)

Sub class Neornithes (eg: Struthio)

General Topics: Flight adaptation of birds

Module V

6 Hrs

Class Mammalia: Salient features and classification up to subclass

Sub class 1: Protheria (eg: Echidna)

Sub class 2: Metatheria (eg: Macropus)

Sub class 3: Eutheria (eg: Elephas)

General Topic: General adaptation of aquatic mammals with example.



COURSE DELIVERY PLAN

NAME OF THE PROGRAMME: B Sc	NAME OF THE DEPARTMENT: ZOOLOGY
NAME OF THE COURSE: Chordate Diversity	SEMESTER: 2
COURSE CODE: ZY2CMT02	COURSE CATEGORY: Theory
DURATION OF THE COURSE (Hrs): 36	NUMBER OF CREDITS: 2
NAME OF THE INSTRUCTOR: Dr. Niladevi K.N.	ACCADEMIC YEAR :2022-23

Course Objectives:

Sl. No.	Description
1	To make the student observe the diversity in chordates and their systematic position.
2	To make the student aware of the economic importance of some chordates
3	To learn the physiological and anatomical peculiarities of some vertebrate species through type study.
4	To stimulate the students' curiosity in vertebrates living associated with them

PERIOD	MODULE	TOPIC	PERTAINING CO, POs	BLOOMS TAXONOMY LEVEL	INSTRUCTIONAL METHOD	ASSESSMENT METHODS
1-4	I	Fundamental characters and outline classification of chordata upto class. Sub phylum Urochordata: General characters, Classification: Class 1: Larvacea (eg: Oikopleura) Class 2: Ascidiacea (eg: Ascidia), Retrogressive metamorphosis. Class 3: Thaliacea (eg: Salpa) Sub phylum Cephalochordata: Salient features (eg: Branchiostoma)	CO1, CO3, PO1 PO2 PO3 PO7	Remember Understand Analyse	Lecture/ PPT/Discussion/ activity	Test/Quiz/ Assignment/ Seminar
5-10	II	Sub phylum Vertebrata: Salient features Division Agnatha : salient features and classification Class 1: Cyclostoma Class 2: Class Ostracodermi Division Gnathostomata: Salient features Super class Pisces: Salient features and classification Class 1: Chondrichthyes. Class 2: Osteichthyes General Topic: Accessory respiratory organs in fishes.	CO2, CO3 PO1 PO2 PO3 PO7	Understand Analyse	Lecture/ PPT/Discussion/ activity	Test/Quiz/ Assignment/ Seminar



11-24	III	Super class Tetrapoda: Salient features Class 1: Amphibia: Salient features. Type study: <i>Euphlyctis hexadactyla</i> - Habitat, morphology, sexual dimorphism, coelom and viscera, skeletal system, digestive system, respiratory system, circulatory system, excretory system, nervous system, sense organs, reproductive system. Classification up to order: Order 1: Urodela (eg: Amblystoma) Order 2: Anura (eg: Bufo) Order 3: Apoda (eg: Ichthyophis)	CO2 CO3 CO4 PO1 PO2 PO3 PO7	Understand Analyse Evaluate	Lecture/ PPT/Dis cussion/ activity	Test/Quiz/ Assignment/ Seminar
25-30	IV	Class Reptilia: Salient features and classification up to subclass Sub class 1: Anapsida (eg: Chelone) Sub class 2: Diapsida (eg: Chamaeleon) Sub class 3: Parapsida (eg: Ichthyosaurus) General Topics: Poisonous and non poisonous snakes of Kerala. Class Aves: Salient features and classification up to subclass Sub class Archeornithes (eg: Archaeopteryx) Sub class Neornithes (eg: Struthio). Flight adaptations of bird	CO2, CO3 PO1 PO2 PO3 PO5 PO7	Understand Analyse Evaluate	Lecture/ PPT/Dis cussion/ activity	Test/Quiz/ Assignment/ Seminar
30-36	V	Class Mammalia: Salient features and classification up to subclass Sub class 1: Prototheria (eg: Echidna) Sub class 2: Metatheria (eg: Macropus) Sub class 3: Eutheria (eg: Elephas) General Topic: General adaptation of aquatic mammals with example.	CO2, CO3 PO1 PO2 PO3 PO5 PO7	Understand Analyse	Lecture/ PPT/Dis cussion/ activity	Test/Quiz/ Assignment/ Seminar



LESSON PLAN 1

TOPIC: Module 1 – Fundamental characters and outline classification of Chordata up to class	LEVEL: Tertiary Level	DURATION: 1 Hr
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Objectives of the Lesson:

- To familiarise the students with the salient features of phylum chordata
- To make the students aware of the classification of Chordata into different classes
- To instil curiosity among students about the animal species around us

Topic	Objectives	Instructional Methods	Pertaining COs	Remarks/ Observations
1. Introduction	To familiarize the students with the salient features of Phylum Chordata	Lecture	CO1, CO3	
2. Background information	To familiarize the students with the basic principles of animal classification	Lecture	CO1, CO3	
3. Explaining the content	To make students aware of the criteria considered for chordate classification	Lecture, Discussion	CO1, CO3	
4. Content elaboration	To familiarize the students with the features of representative animals	PPT, Discussion, Activity	CO1, CO3	
7. Conclusion	To conclude about the vertebrate classification	Lecture, Discussion	CO1, CO3	



COURSE DATA SHEET

PROGRAMME:	B Sc
COURSE: Chordate Diversity	SEMESTER: II
COURSE CODE: ZY2CMTO2	COURSE TYPE: Complementary
COURSE IN CHARGE:	Dr. Niladevi K.N.

Course Objectives

Sl. No.	Description
1	To make the student observe the diversity in chordates and their systematic position.
2	To make the student ware of the economic importance of some chordates
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Programme outcomes

PO1: Critical Thinking and Analytical Reasoning

PO2: Scientific Reasoning and Problem Solving

PO3: Communication skills

PO4: Leadership Skills

PO5: Equity, Inclusiveness and sustainability

PO6: Moral and Ethical Reasoning

PO7: Lifelong Learning

Course Outcomes (CO)

CO1	Understand the basic concepts about chordates
CO2	Study and understand the various systems and adaptations of chordates
CO3	Understand the classification of phylum chordata
CO4	Understand various systems in detail through type study
CO5	Stimulate the student's curiosity in chordate diversity



Correlation between Programme outcomes (PO) and Course outcomes (CO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2	3	1	0	1	0	3
CO2	2	3	1	0	1	0	2
CO3	1	3	1	0	0	0	2
CO4	0	3	1	0	0	0	1
CO5	2	1	1	0	1	1	3

Justification for CO-PO mapping

CO No.	Related PO	Justification
CO1	PO1, PO2, PO3, PO5, PO7	<p>Study of basic concepts of chordates requires analytical reasoning as the phylum includes a variety of organisms with complex morphological features (PO1)</p> <p>The inclusion of different organisms under one class is based on common ancestry and evolutionary relationships (PO2)</p> <p>Evaluations done on the basis of seminar presentations will enhance the communication skill of students (PO 3)</p> <p>Basic knowledge of chordate diversity is essential as they are inevitable for sustainability (PO 5)</p> <p>Humans come under phylum Chordata and any knowledge acquired about the phylum will be of immense significance throughout ones' life (PO7)</p>
CO2	PO1, PO2, PO3, PO5, PO7	<p>Understanding of various systems and adaptations of chordates involves analytical reasoning (PO 1)</p> <p>Biological system is highly complex and proper understanding of the same requires scientific reasoning (PO 2)</p> <p>Seminar presentations and group discussions improve the communication skill of students (PO 3)</p> <p>The sustenance of nature relies greatly on the adaptational features of each group of organisms (PO5)</p> <p>The anatomy and physiology of various systems of chordates have a basic pattern, including that of humans (PO7)</p>



CO3	PO1, PO2, PO3, PO7	Classification of phylum into lower taxa which includes animals that are quite diverse and complex (PO1) Chordate classification is based on relatedness between different group of organisms (PO2) Communication skill can be improved by the preparation and presentation of classification charts (PO3) Knowledge of animal classification is absolutely needed to understand our ecosystem functioning (PO7)
CO4	PO 2, PO3, PO7	Type study helps to extrapolate the basic pattern of structures into animals of higher taxa (PO 2) Presentations on comparative study will improve the communication skills (PO 3) Lifelong understanding of biological system at the basic level is possible (PO7)
CO5	PO1, PO2, PO3, PO5, PO6, PO7	Understanding the vast diversity of chordates by analyzing the salient features of each taxa (PO1) Systematic study of chordates is highly complex and based on scientific reasoning (PO2) Presentations helps to improve communication skill of the students (PO3) Chordate diversity is an essential component of sustainable ecosystem (PO5) Ethical reasoning is involved in demonstrating higher organisms as a model to study the anatomical and morphological features (PO6) Thorough knowledge on the systematics and functional aspects of chordates is obtained (PO7)



Correlation between Course outcomes (CO) and Programme Specific outcomes (PSO)

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

Justification for CO-PSO mapping

CO No.	Related PSO	Justification
CO1	PSO1 PSO2 PSO5	Study of basic concepts of chordates will help to understand the related theoretical principles (PSO1) Chordate diversity is an essential component of ecological sustainability (PSO2) Seminar presentations and group discussions improve the communication skill of students (PSO 5)
CO2	PSO1 PSO2 PSO4 PSO5	Knowledge about systems and adaptations are part of the basic concepts of zoology (PSO 1) Various systems and adaptations of chordates have evolved as the result of animal-environment interactions (PSO2) Detailed study of different anatomical systems helps to develop skills required in biological sciences (PSO 4) Presentations and group discussions will help to improve the communication skill of students (PSO 5)
CO3	PSO2 PSO4 PSO5	Systematic Classification takes into account the ecological interaction of animals (PSO 2) Classification system is an essential component to develop theoretical skills associated with chordate diversity (PSO 4) Communication skills can be improved by the preparation and presentation of classification charts (PSO 5)



CO4	PSO1 PSO2 PSO4 PSO5	Type study helps to learn the basic pattern of structures in detail (PSO 1) Type study of a particular organism discuss in detail their ecological role and conservation status (PSO2) Elaborate study of type organism includes both theoretical and practical aspects (PSO 4) Detailed reporting of each system by students will aid in the improvement of communication skills (PSO 5)
CO5	PSO1 PSO2 PSO4 PSO5	Understanding the basic concepts of chordate diversity will help to stimulate student's curiosity (PSO1) Students will be curious to learn animal- environment interactions and conservation strategies of different chordates (PSO2) Students develop interest to learn more about the theoretical and practical skills associated with the course (PSO 4) Presentations and discussions help to improve communication skill of the students (PSO 5)

Prepared by
Course-in-Charge

Approved by
Head of the Department