Chowgule Education Society's
Parvatibai Chowgule College of Arts and Science
(Autonomous)
Accredited by NAAC with Grade 'A+'
Best Affiliated College-Goa University Silver Jubilee Year Award

MINUTES OF THE 14th MEETING OF BOARD OF STUDIES IN ZOOLOGY HELD ON 10TH FEBRUARY, 2024

Vide Parvatibai Chowgule College of Arts and Science (Autonomous) notice (F.133C/1295) dated 31/01/2024 a meeting of the BoS was convened on 10th February, 2024 at 10:30 am in online mode via google meet link https://meet.google.com/jyv-uzrk-zvu. Since the members represented the Quorum, the BoS began its proceedings.

MEMBERS PRESENT

1. Ms. Filomena Pereira, *Chairperson*
2. Dr. Sameer S. Terdalkar, *Academic Council Nominee*
3. Dr. Philip Mascarenhas, *Industry Representative*
4. Ms. Karen Braganza, *Alumnus*
5. Ms. Shalma Mascarenhas, *Member secretary*
6. Ms. Anthea Kirsteen Baracho, *Member*
7. Ms. Tessa Vaz, *Member*
8. Ms. Regina V. Fernandes, *Member*
9. Prof. Dr. Nandini Vaz Fernandes, *Member*

MEMBERS ABSENT (on Intimation)

1. Former Prof. Dr. I. K. Pai, *Academic Council Nominee*
2. Former Prof. Shyama Soorambail Keshava, *Vice Chancellor Nominee*
3. Ms. Neeha Sinai Borkar, *Member*

PROCEEDINGS:

At the onset, the chairperson Ms. Filomena Pereira welcomed the members of Board of Studies (BoS) for the 14th BoS meeting. Member Secretary, Ms. Shalma Mascarenhas discussed the minutes of the 13th BoS meeting held on 09th October, 2023 at 10:00 am via hybrid mode and the minutes were approved. The meet continued taking up the following agendas:

AGENDA:

1. Revision of CLO and alignment of CLO to PLO/PO in accordance with OBE
2. Approval of two Value Added Course Title and Syllabus
3. Revision of the curriculum of the PGDCGMLT, Clinical Pathology and Histopathology practical component
4. Any Other Business (A.O.B.)

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PART B:

RESOLUTIONS/RECOMMENDATIONS OF BoS THAT REQUIRE CONSIDERATION/ APPROVAL OF ACADEMIC COUNCIL

1. **TO REVISE CLO AND ALIGNMENT OF CLO TO PLO/PO IN ACCORDANCE WITH OBE**

To seek approval for the revised Course Learning Outcomes (CLOs) of the Major Core course "UG-ZOO-101: Animal Diversity: Non-chordates and Chordates", Minor Core Course "UG-ZOO-102: Introduction to Animal Diversity", Multidisciplinary Course "UG-ZOO-MDC1: Nutrition and Diet plans", Value Added Course "UG-ZOO-VAC1: Environment Protection Practices" and Skill Enhancement Course "UG-ZOO-SEC 1: Waste Management Techniques" to be offered at semester I (Annexure A-UG).

To seek approval for the revised Course Learning Outcomes (CLO) of the Major Core course "UG-ZOO-103: Cell and Molecular Biology", Minor Core Course "UG-ZOO-104: Techniques of cell study and chemistry", Multidisciplinary Course "UG-ZOO-MDC2: Techniques of Fish Preservation and Processing" and Skill Enhancement Course "UG-ZOO-SEC2: Bioentrepreneurship" to be offered at semester II (Annexure A-UG).

To seek approval for the revised Course Learning Outcomes of the Major Core Course "UG-ZOO-202: Biochemistry and Metabolic Regulation", Minor Core Course "UG-ZOO-203: Inheritance Pattern of Genetic Traits and Diseases", Multidisciplinary Course "UG-ZOO-MDC3: Aquarium Maintenance: Freshwater and Marine Fishes" offered at semester III (Annexure A-UG).

To seek approval for the revised Course Learning Outcomes of the Major Core Courses courses "UG-ZOO-204': Endocrinology and Assisted Reproductive Techniques", "UG-ZOO-206: Immunology" and "UG-ZOO-207: Fish Farming and Preservation Techniques" and of the Vocational Education and training course "UG-ZOO-VOC1: Aquaculture and Fisheries" offered at semester IV (Annexure A-UG).

To seek approval for the Programme Learning Outcome (PLOs) for the Programme in Zoology (Annexure B)

2. **REVISION OF THE CURRICULUM OF THE PGDCGMLT, CLINICAL PATHOLOGY AND HISTOPATHOLOGY PRACTICAL COMPONENT**

To seek approval for the revised syllabus of the course "PGDP-CGMLT-DSC-408: Clinical Pathology and Histopathology": As a revision, an addition of one activity based practical "Case studies on biopsy tissues, urine analysis, stool examination, semen analysis, other body fluids (sputum, CSF, pleural, peritoneal and synovial)" was done (Annexure I-PG).

The Chairperson thanked the members of the Board of Studies in Zoology for their valuable contribution and active participation in the meeting.

The following members of the Board of Studies in Zoology were present for the meeting.

1. Ms. Filomena Pereira, Chairperson
2. Dr. Sameer S. Terdalkar, Academic Council Nominee
3. Dr. Philip Mascarenhas, Industry Representative
4. Ms. Karen Braganza, Alumnus
5. Ms. Shalma Mascarenhas, Member secretary
6. Ms. Anthea Kirsteen Baracho, Member
7. Ms. Tessa Vaz, Member

8. Ms. Regina V. Fernandes, Member
9. Prof. Dr. Nandini Vaz Fernandes, Member

Members absent with intimation

1. Former Prof. Dr. I. K. Pai, Academic Council Nominee
2. Former Prof. Shyama Soorambail Keshava, Vice Chancellor Nominee (online)
3. Ms. Neeha Sinai Borkar, Member

Ms. Shalma Mascarenhas
Member secretary
Board of Studies

Ms. Filomena Pereira
Chairperson
Board of Studies

Dated: 26th February, 2024

Annexure A:UG

(Summary of changes incorporated in the existing approved syllabus if any)

Semester	Course Title	Existing (Indicate only the unit where the change is proposed)	Changes Proposed	Specify the reason for the change
I	UG-ZOO-101: Animal Diversity: Non-chordates and Chordates	CO1: Be familiar with identification of the non-chordates from chordates. CO2: Identify the non-chordates and chordates and classify them up to the class/order level. CO4: Able to appreciate the process of evolution and understand how it progressed from simple, unicellular cells to complex, multicellular organisms.	CLO1: Identify Non-Chordates from Chordates based on morphological and anatomical features. CLO2: Identify and classify Non-Chordates and Chordates up to Class/Order level. CLO4: Be able to use taxonomic keys to identify Non-Chordates and Chordates.	To aid mapping and attainment of Course Learning Outcomes (CLOs) in accordance with Outcome Based Education (OBE)
I	UG-ZOO-102: Introduction to Animal Diversity'	CO1: Be able to classify and identify the non-chordates. CO2: Be able to classify and identify the chordates.	CLO 1: Understand the basic concepts of animal kingdom, taxonomy and nomenclature. CLO 2: Identify and Classify Non-Chordates from Chordates. CO4: Be able to use taxonomic	

		CO4: Understand the process of evolution of animal diversity.	keys to identify Non-Chordates and Chordates.	
I	UG-ZOO-MDC1: Nutrition and Diet plans	CO2: Identify the types of various nutrients in our diet. CO3: Correlate diet with diseases related to nutrient deficiency or overdose.	CLO 2: Correlate diet with diseases related to nutrient deficiency or overdose. CLO 3: Perform tests for assessing food quality	Four COs reduced to three CLOs as it is a three-credit course
I	UG-ZOO-VAC1: Environment Protection Practices	CO1: Understand the basic rules and regulations governing environment conservation and protection. CO2: Adopt practices for energy, water and wildlife conservation. CO3: Identify means of reducing waste production. CO4: Demonstrate Recycle, Reduce, Reuse. in the daily activities	CLO 1: Understand the basic rules and regulations governing environment conservation and protection CLO 2: Identify means of waste reduction and resource conservation.	Four COs reduced to two CLOs as it is a two-credit course

I	UG-ZOO-SEC 1: Waste Management Techniques	CO2: Write about the laws governing waste management CO3: Identify means of reducing waste production. CO4: Perform composting techniques / procedures	CO2 and CO3 were reframed as CLO2: Explain waste treatment methods and laws governing waste management. CLO3: Perform composting techniques / procedures	Four COs reduced to three CLOs as it is a three-credit course
II	UG-ZOO-103: Cell and Molecular Biology	CO1: Have an understanding of cell, it's organelles and their function. CO2: Demonstrate deeper understanding of what 'life is and how it functions at cellular level. CO3: Contrast cellular membrane structure and function, fine structure and function of cell organelles.	CLO1: Understand the fundamentals of Cell Study methods and biomolecules. CLO2: Understand membrane structure, ultrastructure and functions of Cellular components. CLO3: Explain cell signaling pathways and mechanisms of cellular transport.	To aid mapping and attainment of Course Learning Outcomes (CLOs) in accordance with Outcome Based Education (OBE)
II	UG-ZOO-104: Techniques of cell study and chemistry	CO1: Have an understanding of microscopy for cell studies.	CLO1: Understand the fundamentals of cell study methods, ultrastructure and	

		CO2: Explain the techniques of cell fractionation, Chromatography and Electrophoresis used for studying cell biology CO3: Contrast cell bonds and their functions in the cells.	functioning of cell organelles. CLO2: Understand biomolecules and their functions. CO3: Explain cell signaling pathways and mechanism of cellular transport.	
II	UG-ZOO-MDC 2: Techniques of Fish Preservation and Processing	CO1: Obtain understanding of locally available fishes. CO2: Discuss the economic benefits of fishes CO3: Explain the nutritional values and products obtained from the fishes CO4: Perform some protocols of Fish processing and preservation.	CLO1: Gain comprehensive understanding about locally available fishes and Non-Pisces. CLO2: Explain the nutritional values and products obtained from the fishes CLO3: Perform techniques of Fish processing and preservation.	Four COs reduced to three CLOs as it is a three-credit course
II	UG-ZOO-SEC 2: Bioentrepreneurship	CO1: Understand concept of	CLO1: Understand basic principles of Entrepreneurship.	Four COs reduced to three CLOs as it is a three-credit course

		business Proposals. CO2: familiar with the methodologies and regulations required to start anenterprise. CO3: Identify opportunities available in life science for start-ups. CO4: Generate Ideas and initiate a Business Plan.	CLO2: Understand concept of business Proposals. CLO3: Generate Ideas and initiate a Business Plan.	
III	UG-ZOO-202: Biochemistry and Metabolic Regulation	CO4: Appreciate better the interactions between the biological molecules.	CLO4: Perform colorimetric estimations of lipids, proteins, DNA and carbohydrates.	To aid mapping and attainment of Course Learning Outcomes (CLOs) in accordance with Outcome Based Education (OBE)
III	UG-ZOO-203: Inheritance Pattern of Genetic Traits and Diseases	CO4: Understand the impact of changes occurring at gene level on human health and its diagnosis.	CLO4: Verify inheritance patterns.	To aid mapping and attainment of Course Learning Outcomes (CLOs) in accordance with Outcome Based Education (OBE)
III	UG-ZOO-MDC3: Aquarium Maintenance:	CO3: To be able to formulate fish food that provides with	CLO3: To create and design aquariums.	Four COs reduced to three CLOs as it is a three-credit course

	Freshwater and Marine Fishes	complete nutritional benefits' and CO4: To analyse the required budget to set up a well maintained home aquarium.		
IV	UG-ZOO-204: Endocrinology and Assisted Reproductive Techniques	CO2: Understand the underlying principles and disorders associated with hormone functions. CO3: Learn techniques of histology and tissue identification. CO4: Correlate the infertility causes to the functioning of human reproductive tract.	CLO2: Explain etiology of endocrine conditions and understanding on reproductive biology. CLO3: Propose appropriate options of reproductive technologies and explain laws pertaining to it. CLO4: Gain practical knowledge in basic endocrine and reproductive techniques.	To aid mapping and attainment of Course Learning Outcomes (CLOs) in accordance with Outcome Based Education (OBE)
IV	UG-ZOO-206: Immunology	CO3: Know about the techniques used in detecting immunological diagnosis. CO4: Perform immunoassays	CLO3: Gain knowledge on cytokines, complement system and immune dysfunction. CLO4: Gain practical knowledge in basic	To aid mapping and attainment of Course Learning Outcomes (CLOs) in accordance with Outcome Based Education (OBE)

		for disease detection.	immunological laboratory techniques.	
IV	UG-ZOO-207: Fish Farming and Preservation Techniques	CO3: Know strategies of improving the social and economic benefits derived from aquaculture and fisheries. CO4: Initiate business enterprise in area of aquaculture.	CLO3: Explain techniques of fish handling and preservation. CLO4: Perform methods of identification, quality assurance and preservation.	
IV	UG-ZOO-VOC1: Aquaculture and Fisheries	CO1: Understand conservation and sustainability of aquaculture resources. CO4: Initiate business enterprise in area of aquaculture	CLO1: Explain types of fisheries in India. CO4: Understand identification of fishes, non-pisces, gears and crafts	

Annexure B

DEPARTMENT OF ZOOLOGY

Programme Learning Outcomes (PLOs)

After successful completion of a three years Bachelor's degree in Zoology, the student will be able to:

PLO-1: Sound subject knowledge, good practical procedure skills, field-based skills and Research Aptitude	Have strong foundation of fundamentals and modern concepts of Zoology and be able to formulate plan of procedure and execute procedural and field-based skills. Execute research plan, collect, collate, analyse, interpret and derive rational conclusions.
PLO-2: Environment and Sustainability, Ethics and Social responsibility	Be aware of environmental issues and commit towards sustainable development at local/national and global context. Recognize and understand professional ethics/human values and be responsible.
PLO-3: Critical thinking, Problem solving skills, Individual and Team work, Communication skills and Life Skills.	Think critically, identify, analyse problems and further attempt to develop solutions that meet the specified goals. Function effectively at various levels, capacities and situations. Communicate proficiently as a responsible member of society.
PLO-4: Use of Technology	Apply appropriate IT tools efficiently in their daily life-professional and personal. Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of change.

Annexure-I

Summary of the changes incorporated in syllabus of "Post Graduate Diploma in Clinical Genetic & Medical Laboratory Techniques (PGDCG&MLT)

Semester	Course	Existing	Changes suggested	Reason
II	PGDP-CGMLT-DSC-408: Clinical Pathology & Histopathology	PGDP-CGMLT-DSC-408: Clinical Pathology & Histopathology: Activity Based Practical 1-5 activities	PGDP-CGMLT-DSC-408: Clinical Pathology & Histopathology: Practical 6 Sr. No (a to e) **Addition of 06 Activity based practical: Case studies on** biopsy tissues, urinalysis, stool examination, semen analysis, other body fluids (sputum, CSF, pleural, peritoneal and synovial)	**To offer more knowledge and exposure to the students.on diseases and their diagnostic tests.**

Annexure-I

Revised Syllabus, of

"Post Graduate Diploma in Clinical Genetic & Medical Laboratory Techniques (PGDCG&MLT)

(To be implemented w.e.f. Academic Year 2024- 2025)

Course Title : Clinical Pathology & Histopathology
Course Code : PGDP-CGMLT-DSC-408
Credits : 04 [02 – Theory: 02 – Practical]
Marks : 100 [50 – Theory: 50 – Practical]

Course Objectives:

Learning techniques of collection of samples such as body fluids and tissues for studying cytological aspect.

Hands on training in learning techniques of processing the tissue samples for further analyses and treatment of particular disease.

Course Learning Outcomes

Upon completion of the course, the student will be able to:

CLO1 Describe and demonstrate staining techniques for pathological evaluations.
CLO2 Explain different techniques used for examining body fluids.
CLO3 Process tissue and Perform histopathological techniques
CLO4 Examine body sample for pathological analysis.

PRACTICALS

Lab Based Practical works:

1. Histopathological techniques: fixation, dehydration, clearing, impregnation, embedding, decalcification.
2. Microtomes knives and their sharpening, section cutting, errors in section cutting, frozen sectioning, mounting media.
3. Routine staining techniques: routine staining, hematoxylin and eosin (H &E) staining.
4. Grossing and Museum techniques.
5. Examination of urine: Physical and chemical.
6. Examination of urine: multiple reagent strips methods, microscopic.
7. Pregnancy tests.
8. Sputum examination
9. Stool examination
10. Semen analysis.

Activity Based Practical Works:

1. Special staining virtual demonstrations
   a. P.A.S., Verhoeff's,
   b. Massons trichrome,
   c. Von Giessons,
   d. Fat stains and other stains.
2. C.S.F. examination (02 Practicals)
3. Examination of body cavity fluids: pleural, peritoneal and synovial.

4. Exfoliative cytology: principles, Papanicolauo staining procedure.
5. Fine needle aspiration cytology (F.N.A.C): hematoxylin and eosin (H &E), MGG staining.

6. **Case studies:**

   a. Biopsy tissues
   b. Urinalysis
   c. Stool examination
   d. Semen analysis
   e. Other body fluids (Sputum, CSF, Pleuural, peritoneal and synovial)

REFERENCE BOOKS:

Mandatory:

1. *Praful B. Godkar, Darshan P. Godkar (2003) Textbook of Medical Laboratory Technology, II Edition.*

Supplementary:

1. *Mohan H(2017).Practical pathology. Jaypee Medical publishers, New Delhi.*
2. *Mukherjee KL (1988) Volume II:Medical Laboratory Technology,Tata McGraw-Hll Publishing Company Ltd. New Delhi.*
3. *Chatterjee MN (2013): Textbook of Medical Biochemistry eight edition: Jaypee Brothers Medical Publishers Pvt Ltd, New Delhi.*