



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



Following members of the Board of Studies in Zoology were present for the meeting convened on Friday, 21<sup>st</sup> October 2022 at 10.30 am. in College.

Sr. No.	Name of the Faculty	Signature
1	Prof. Dr. Nandini Vaz Fernandes - Chairperson	
2	Ms. Filomena Pereira - Member Secretary	
3	Ms. Mithali Halarnkar	
4	Ms. Shalma Mascarenhas	
5	Ms. Prasanna Naik Gaonkar	
6	Prof. Dr. I.K. Pai - Academic Council nominee	
7	Dr. Sameer S. Terdalkar - Academic Council nominee	ABSENT ON INTIMATION
8	Prof. Dr. Shyama Soorambail Keshava - Vice Chancellor nominee	
9	Dr. Philip Mascarenhas - Industry representative	
10	Miss Karen Braganza - Alumnus	
11	Mrs. Regina Fernandes - PG Co-ordinator	



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**MINUTES OF THE 11<sup>th</sup> MEETING OF BOARD OF STUDIES IN ZOOLOGY (UG)**

Held on

21<sup>st</sup> October, 2022 at 10:30 am

At

Human Genetic Research Lab (CHGRL)

Vide Parvatibai Chowgule College of Arts and Science (Autonomous) notice (F.133C/ emailed on 11-10-2022) a meeting of the BoS was convened on 21st October, 2022 at 10:30 am in offline mode at Genetic Research Laboratory of Parvatibai Chowgule College of Arts and Science (Autonomous), Margao. Since the members represented the Quorum, the BoS began its proceedings.

**MEMBERS PRESENT**

1. Prof. Dr. Nandini Vaz Fernandes, *Chairman*
2. Prof. Dr. Shyama S.K, *Vice Chancellor Nominee*
3. Prof. Dr. I. K. Pai, *Academic Council Nominee*
4. Dr. Philip Mascarenhas, *Representative from Industry*
5. Ms. Karen Braganza, *Alumnus*
6. Ms. Filomena Pereira, *Member secretary*
7. Ms. Shalma Mascarenhas, *Member*
8. Ms. Mithali Halarnkar, *Member*
9. Ms. Prasanna Naik Gaonkar, *Member*
10. Ms. Abigail Fernandes, *Member*

**MEMBERS ABSENT ON INTIMATION**

Dr. Sameer Terdalkar, *Academic Council Nominee*

**PROCEEDINGS:**

At the onset, the chairman welcomed the members of Board of Studies (BoS) for the 11th BoS meeting. Member secretary then read out the minutes of the tenth BoS meeting which was held on 13<sup>th</sup> June, 2022 at 2:00 pm via online mode.

**AGENDA:**

1. Approval of Generic elective course (GEC)
2. Revision of the Course structure
3. NEP preparation
4. Any Other Business (A.O.B.)

## **PARTA: RESOLUTIONS**

### **1. APPROVAL OF GENERIC ELECTIVE COURSE**

Ms. Mithali Halarnkar presented the syllabus of the course 'Aquarium and Fish keeping' to be introduced as a Generic Elective course at the second semester (ZOO-II.GEC-2).

BoS members suggested change in course title from 'Aquarium and Fish keeping' to 'Ornamental Fisheries'. BoS members suggested adding visit to Fishery department/Estuarine Fish Farm /Fresh Water Fish Seed Farm as a part of the activities.

**Resolution:** Changes proposed were approved and the course 'Ornamental Fisheries' was resolved to be approved as generic elective course.

### **2. REVISED COURSE STRUCTURE**

Course code of 'Reproductive Biology and Assisted reproductive methods' was changed to 'ZOO-VI.E-17' from 'ZOO-VI.E-16'. Course code of "Bio-Entrepreneurship" altered in 10<sup>th</sup> BoS was restored as 'ZOO-VI.E-16'.

**Resolution:** Changes proposed were approved by the BoS members.

### **3. NEP PREPARATION**

Chairman, Prof. Dr. Nandini Vaz Fernandes, explained that the college is preparing to implement changes in view of NEP, by identifying Cluster colleges with the goal of having multidisciplinary courses. Chairman asked the BoS members for suggestions to align the programme in tune with the NEP. BoS members opined that there should be uniformity of lecture timings/timetable, credits, modes of assessment across the cluster colleges. Also distance and utilization of campus resources need to be well planned for practical based courses.

**Resolution:** The board resolved that the changes in the programme in view of the NEP can be deliberated only after receiving clear guidelines of implementation of NEP from the college /DHE.

### **4. AOB:**

**Academic Audit:** The Chairman explained the procedure of 'External Academic Audit' to the BOS members. The senior members of the BoS commented that the procedure defined by the college will give a status of comparison of processes and conformity to quality initiatives within the department/department faculty. Instead, having one panel, with members from various disciplines to assess all the departments across the college will give an insight into the effectiveness of the processes and academic works and also overall quality of the institution as a whole, including its strengths, weaknesses, opportunities and threats.

## PART B:

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

#### 1) APPROVAL OF GENERIC ELECTIVE COURSE

Change in the title of the new Generic Elective course 'Aquarium and Fish keeping' was suggested to be changed to 'Ornamental Fisheries'. Addition of visit to Fishery department/Estuarine Fish Farm /Fresh Water Fish Seed Farm as a part of the activities was suggested.

**Resolution:** Changes proposed were approved and the course 'Ornamental Fisheries' was resolved to be approved as generic elective course.

#### 2) REVISED COURSE STRUCTURE

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**Resolution:** Changes proposed were approved by the BoS members.

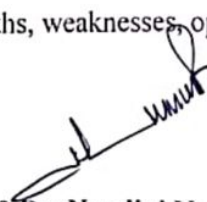
#### 3) NEP PREPARATION

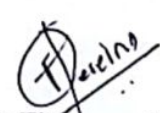
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**Resolution:** The board resolved that the changes in the programme in view of the NEP can be deliberated only after receiving clear guidelines of implementation of NEP from the college /DHE.

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**Academic Audit:** The Chairman explained the procedure of 'External Academic Audit' to the BOS members. The senior members of the BoS commented that the procedure defined by the college will give a status of comparison of the processes and conformity to quality initiatives within the department/department faculty. Instead, having one panel, with members from various disciplines to assess all the departments across the college will give an insight into the effectiveness of the processes and academic works and also overall quality of the institution as a whole, including its strengths, weaknesses, opportunities and threats.

  
**Prof. Dr. Nandini Vaz Fernandes**  
(Chairman BoS)

  
**Ms. Filomena Pereira**  
(Member Secretary)

*Date: 22<sup>nd</sup> October, 2022*

Existing	Changes proposed	Justification
ZOO-VI.E-16 Reproductive Biology and Assisted reproductive methods	ZOO-VI.E-17 Reproductive Biology and Assisted reproductive methods	ZOO-VI.E-16 code was allocated to Bio Entrepreneurship.  So code changed to ZOO-VI.E-17
	ZOO-VI.E-16 Bio Entrepreneurship	Reintroduced
	ZOO-II.GEC-2 Aquarium and Fish keeping	New Generic Elective course introduced

**REVISED COURSE STRUCTURE  
THREE YEARS PROGRAMME – BACHELOR OF SCIENCE IN ZOOLOGY  
(B.Sc. Zoology)**

MESTER	CORE COURSES		ELECTIVE COURSES					SKILL ENHANCEMENT COURSES (SE) AND GENERIC ELECTIVE COURSE(GEC)
I	ZOO-I.C-1 Animal Diversity : Non Chordates	ZOO-I.C-2 Cell and Molecular Biology						ZOO-I.GEC-1 Health and Nutrition
II	ZOO-II.C-3 Diversity and Biological Systems of Chordates	ZOO-II.C-4 Fundamentals of Animal and Human Genetics						ZOO-II.GEC-2 Ornamental Fisheries
III	ZOO-III.C-5 Human Physiology		ZOO-III.E-1 Vertebrate Endocrinology	ZOO-III.E-2 Basic microbiology and Fundamentals of Animal Biotechnology	ZOO-III.E-3 Environmental Toxicology	ZOO-III.E-4 Parasitology		ZOO-III.SE-1 Waste Management Techniques
IV	ZOO-IV.C-6 Biochemistry and Metabolic Regulation		ZOO-IV.E-5 Animal cell culture and Applications	ZOO-IV.E-6 Aquaculture and Fisheries	ZOO-IV.E-7 Immunology	ZOO-IV.E-8 Evolutionary Biology		ZOO-IV.SE-2 BioEntrepreneurship
V	ZOO-V.C-7 Developmental Biology		ZOO-V.E-9 Molecular Genetics and Forensic Science	ZOO-V.E-10 Economic Zoology	ZOO-V.E-11 Ecology and Ethology	ZOO-V.E-12 Fish Preservation and Processing		
VI	ZOO-VI.C-8 Wildlife Biology		ZOO-VI.E-13 Health and Nutrition	ZOO-VI.E-14 Basic and Applied Entomology	ZOO-VI.E-15 Laboratory Techniques in Pathology	ZOO-VI.E-16 Bio Entrepreneurship	ZOO-VI.E-17 Reproductive Biology and Assisted reproductive methods	

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**GENERIC ELECTIVE COURSE: ORNAMENTAL FISHERIES**

**COURSE CODE:** ZOO-II.GE-2  
**MARKS:** 100  
**CREDITS:** 04  
**CONTACT HOURS:** THEORY : 60 HOURS (04 LEC/WEEK)  
**COURSE OBJECTIVES:** To learn the basic principles, themes and steps involved in setting up and maintaining ornamental fishes in an aquarium.  
**COURSE OUTCOME:** Upon successful completion of the course, students will be able:  
 CO1: To comprehend the key skills needed to set up an aquarium.  
 CO2: To identify and differentiate the different ornamental fishes.  
 CO3: To understand composition of fish food that provides complete nutritional benefits.  
 CO4: To analyze the required budget to set up a well maintained home aquarium.

MODULE	TOPICS	CONTACT HOURS
<b>MODULE 1:</b> Introduction to ornamental fisheries	1.1 History of ornamental fisheries - Aesthetic value and Potential scope. 1.2 Types of aquaria and setup (Salinity, Temperature & Location, Aquarium accessories) 1.3 Aquarium Filters and types of filtration methods (Mechanical, Chemical & Biological -Nitrogen Cycle); Precautions to be taken for an ideal aquarium; 1.4 Case study- Visit to 03 aquarium outlets to understand the type of aquaria commonly preferred by the customers (portfolio submission).	15 hours
<b>MODULE 2:</b> Aquarium set-up	2.1: Criteria of selection for aquarium fishes- behaviour, interaction 2.2 Types of aquarium feed – Live and Artificial feed. Preparation and composition of formulated fish feeds. 2.3 Fish handling and care - Live fish transport, Fish handling, packing and forwarding techniques, tank cleaning, 2.4 Ornamental aquatic plants. 2.5: Activity: Create a fish tank with the right parameters for fresh water fishes.	15 hours
<b>MODULE 3:</b> Aquarium Fishes-I	Characters, habits, sexual dimorphism, social behaviour of: 3.1 Freshwater ornamental fishes - Guppy, Neon fish, Gold fish, Angel fish, siamese fighting fish, barbs, Rasboras, Betta fish, Danios fishes, tetras, Gouramis, loaches, suckermouth catfish. 3.2 Study of bacterial, viral, fungal diseases of ornamental fishes and their control. 3.2 Case study- Conduct a survey to study type of fishes commonly preferred and reason for the preference (portfolio submission).	15 hours
<b>MODULE 4:</b> Aquarium Fishes-II	Characters, habits, sexual dimorphism, social behaviour of: 4.1 Brackish ornamental fishes - Black Molly, Sword tail & Ray fish. 4.2 Marine ornamental fishes- Anemones, Moorish idol & Butterfly fish 4.3. Breeding habits of ornamental fishes 4.4 Activities: Create a fish tank with the fishes of your choice and setup and give detailed justification for the choice (Portfolio submission).	15 hours

**Reference Books:**

- 1) Bailey M and Sandford G (2020). *Aquarium Fish: A Definitive Guide to Identifying and Keeping Freshwater and Marine Fishes*. Hermes House London, UK.
- 2) Jagtap HS, Mukherjee SN & Nanware SS (2009). *Practical Manual of Pisciculture and Aquarium Keeping*. Daya Publishing House, India.
- 3) Newman E(2022). *Successful Fish Keeping: A guide to fish keeping in an aquarium*. Independently Published. ISBN-13 : 979-8827863397
- 4) Raj H(2022). *Text book of Aquarium Fish Keeping*. S Vinesh and company Publishers, India.
- 5) Saha S(2022). *Concept of Aquarium Fish Keeping*. Techno world publishers, India.

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2	Ms. Filomena Pereira - Member Secretary	
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**MINUTES OF THE 11<sup>th</sup> MEETING OF BOARD OF STUDIES IN ZOOLOGY(PG)**

Held on

21<sup>st</sup> October, 2022 at 10:30 am

At

Human Genetic Research Lab (CHGRL)

Vide Parvatibai Chowgule College of Arts and Science (Autonomous) notice (F.133C/1184 emailed on 11-10-2022) a meeting of the BoS was convened on 21st October, 2022 at 10:30 am in offline mode at Genetic Research Laboratory of Parvatibai Chowgule College of Arts and Science (Autonomous), Margao. Since the members represented the Quorum, the BoS began its proceedings.

**MEMBERS PRESENT**

1. Prof. Dr. Nandini Vaz Fernandes, *Chairman*
2. Prof. Dr. Shyama S.K, *Vice Chancellor Nominee*
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5. Ms. Karen Braganza, *Alumnus*
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7. Ms. Shalma Mascarenhas, *Member*
8. Ms. Mithali Halarnkar, *Member*
9. Ms. Prasanna Naik Gaonkar, *Member*
10. Ms. Abigail Fernandes, *Member*
11. Ms. Regina Fernandes, *Coordinator- PGDCGMLT*

**MEMBERS ABSENT ON INTIMATION**

Dr. Sameer Terdalkar, *Academic Council Nominee*

**PROCEEDINGS:**

At the onset, the chairman welcomed the members of Board of Studies (BoS) for the 11th BoS meeting. Member secretary then read out the minutes of the tenth BoS meeting which was held on 13<sup>th</sup> June, 2022 at 2:00 pm via online mode.

**AGENDA:**

1. Revision of PG Diploma Course structure
2. Revision of a Core course – Clinical Biochemistry.
3. Any Other Business (A.O.B.)



## PART A: RESOLUTIONS

### 1. Revision of course structure and an elective course of 'Post Graduate Diploma In Clinical Genetics And Medical Lab Techniques' (PGDCGMLT)

#### a) Revision of the course Structure

Chairman, Prof. Dr. Nandini Vaz Fernandes presented the revised course structure of the post graduate diploma-PGDCGMLT. She explained that the changes were done to adjust courses to accommodate internship/hand-on training within the academic year to conform to PG ordinances of the College. Two courses were shuffled between semester I and II and internship was accommodated in the semester II.

**Resolution:** Revised course structure was approved by the BoS members.

#### b) Revision of Core course 'Clinical Biochemistry- II'.

Chairman presented the revised syllabus of the core course "Clinical Biochemistry- II" with three additional practicals. The board members also suggested minor changes in practical 1,2 and 9 for clarity and specificity.

**Resolution:** Revised course syllabus of 'Clinical Biochemistry –II' was approved by the BoS members.

### 2. AOB

Hands-on training/Internship - BoS members suggested that a format be prepared to maintain daily work done by the students during internship/training. This record book needs to be duly signed by the Lab technician.

**Resolution:** The chairman assured that necessary format will be prepared as suggested.

## **PART B:**

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

#### **1. Approval of the revised course structure and a core course of 'Post Graduate Diploma in Clinical Genetics and Medical Lab Techniques' (PGDCGMLT)**

##### **a) Revision of the course Structure**

Two courses were shuffled between semester I and II and internship was accommodated in the semester II.

**Resolution:** Revised course structure was approved by the BoS members.

##### **b) Revision of Core course 'Clinical Biochemistry- II'**

Three practicals were added to the core course .Clinical Biochemistry- II'. The board members also suggested minor changes in practical 1,2 and 9 for clarity and specificity.

**Resolution:** Revised course syllabus of 'Clinical Biochemistry –II' was approved by the BoS members.

##### **c) AOB**

Hands-on training/Internship - BoS members suggested that a format be prepared to maintain daily work done by the students during internship/training. This record book needs to be duly signed by the Lab technician.

The chairman assured that necessary format will be prepared as suggested.

The foregoing minutes of the meeting were e-mailed by the Chairman after the meeting and were unanimously approved by all the members present.



**Prof. Dr. Nandini Vaz Fernandes**  
(Chairman BoS)



**Ms. Filomena Pereira**  
(Member Secretary)

*Date: 22<sup>nd</sup> October, 2022*

Existing	Changes proposed	Justification
Clinical Biochemistry II in Sem II	Clinical Biochemistry II in Sem I	Adjusting courses for accommodating internship/hand-on training within the academic year to conform to PG ordinances of the College.
Hematology and Transfusion Medicine in Sem II	Hematology and Transfusion Medicine in Sem I	
Clinical Genetic Techniques I in Sem I	Clinical Genetic Techniques I in Sem II	
Clinical Microbiology (General and Systemetic) IN Sem I	Clinical Microbiology (General and Systemetic) IN Sem II	

**POST GRADUATE DIPLOMA PROGRAMME IN  
CLINICAL GENETICS AND MEDICAL LABORATORY TECHNIQUES  
(PGDCG&MLT)**

SEMESTER	COURSE CODE	CORE COURSES	ELECTIVE COURSES (Any Two)	NUMBER OF CREDITS	CONTACT HOURS	MARKS
SEMESTER I	PGD-CGMLT-C2	Clinical Biochemistry I		Theory = 02 Practical = 02	Theory = 30 Practical = 60	Theory = 50 Practical = 50
	PGD-CGMLT-C5	Clinical Biochemistry II		Theory = 02 Practical = 02	Theory = 30 Practical = 60	Theory = 50 Practical = 50
	PGD-CGMLT-E1		Clinical Pathology and Histopathology	Theory = 02 Practical = 02	Theory = 30 Practical = 60	Theory = 50 Practical = 50
	PGD-CGMLT-E5		Hematology and Transfusion Medicine	Theory = 02 Practical = 02	Theory = 30 Practical = 60	Theory = 50 Practical = 50
	PGD-CGMLT-E2		SWAYAM course: Analytical Techniques	Theory = 04 credits	Swayam Online	Theory = 100
	PGD-CGMLT-E3		SWAYAM course: Essentials Of Biomolecules: Nucleic Acids And Peptides	Theory = 04 credits	Swayam Online	Theory = 100
SEMESTER	COURSE CODE	CORE COURSES	ELECTIVE COURSES (Any 01)	NUMBER OF CREDITS	CONTACT HOURS	MARKS
SEMESTER II	PGD-CGMLT-C1	Clinical Genetic Techniques I		Theory = 02 Practical = 02	Theory = 30 Practical = 60	Theory = 50 Practical = 50
	PGD-CGMLT-C3	Clinical Microbiology (General and Systemetic)		Theory = 02 Practical = 02	Theory = 30 Practical = 60	Theory = 50 Practical = 50
	PGD-CGMLT-C4	Clinical Genetic Techniques II		Theory = 02 Practical = 02	Theory = 30 Practical = 60	Theory = 50 Practical = 50
	PGD-CGMLT-E4		Clinical Parasitology, Mycology and Virology	Theory = 02 Practical = 02	Theory = 30 Practical = 60	Theory = 50 Practical = 50
	PGD-CGMLT-E6		SWAYAM course- Biomolecules: Structure, Function In Health And Disease	Theory = 04 credits	Swayam Online	Theory = 100
	PGD-CGMLT-E7		SWAYAM course- Immunology	Theory = 04 credits	Swayam Online	Theory = 100
Internship (Elective)	240 hours Internship.			08 credits		Report/ Portfolio = 100

**b) Approval of the revised Core course 'Clinical Biochemistry- II',**

**CORE COURSE: CLINICAL BIOCHEMISTRY II  
PGD-CGMLT-C5**

<b>COURSE CODE:</b>	PGD-CGMLT-C5
<b>MARKS:</b>	100 [ 50 – Theory ; 50 – Practical]
<b>CREDITS:</b>	04 [02 – Theory ; 02 – Practical]
<b>CONTACT HOURS</b>	THEORY :30 HOURS (02 LEC/WEEK) PRACTICALS :60 HOURS (02 PRACTICAL / WEEK)
<b>COURSE OBJECTIVES:</b>	<ul style="list-style-type: none"> <li>• Testing, observing and analyzing blood function test</li> <li>• Knowledge about the Clinical aspects and use of it during performance of test.</li> </ul>
<b>COURSE OUTCOME</b>	<p>On completion of the course the student should be able to:</p> <p>CO 1: Understand and explain clinical significance of metabolism of biomolecules. CO2: Explain the significance of function tests of body systems CO 3: Perform Chemical examination of body fluids. CO4: Conduct Liver, Thyroid and Kidney function tests.</p>

MODULE	TOPICS	CONTACT HOURS
<b>Module 1: Carbohydrate, Protein, Lipid Metabolism</b>	<ul style="list-style-type: none"> <li>• Carbohydrate metabolism: Clinical aspects of Regulation of Blood sugar and Diabetes</li> <li>• Protein metabolism: starvation, and protein energy malnutrition</li> <li>• Lipid metabolism : Clinical aspects of lipid profile, atherosclerosis.</li> </ul>	10
<b>Module 2: Function Tests 1</b>	<ul style="list-style-type: none"> <li>• Gastric function tests.</li> <li>• Pancreatic function tests.</li> <li>• Cardiac function test</li> </ul>	10
<b>Module 3: Function Tests 2</b>	<ul style="list-style-type: none"> <li>• Liver function tests.</li> <li>• Thyroid function tests.</li> <li>• Kidney function test</li> </ul>	10

**PRACTICAL COMPONENT OF PGD-CGMLT-C5: CLINICAL BIOCHEMISTRY II  
[DURATION – 02 HRS/WEEK]**

Lab Based Practical works: (22 Practicals)

1. Chemical analysis of saliva
  2. Chemical analysis of gastric juices.
  3. Estimation of blood sugar: Enzymatic method (GOD-POD); Folin – Wu – Tube, Glucometer, GTT and its interpretation
  4. Routine urine analysis
  5. Complete urine analysis
  6. Kidney function tests:
    - a. Estimation of serum urea using Diacetyl-monoxime method.
    - b. Estimation of serum Creatinine using Jaffe's method.
    - c. Estimation of serum uric acid.
  7. Lipid profile tests:
    - a. Estimation of serum cholesterol.
    - b. Estimation of serum triglycerides.
  8. Liver function tests:
    - a. Estimation of serum Bilirubin.
    - b. Estimation of serum proteins by Biuret method.
    - c. Estimation of serum albumin by BCG method.
    - d. Estimation of serum alkaline phosphatase.
    - e. Estimation of SGPT
    - f. Estimation of SGOT.
  9. Pancreatic function test: Serum Amylase (01 Prac)
- Activity Based Practical works-Analysis of reports: (08 Practicals)
1. CSF Examination
  2. Renal Clearance test
  3. Kidney function test

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