

**HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY PATAN - 384 265  
NAAC'B' (CGPA) Accredited (State University)**

**UNDERGRADUATE PROGRAMME  
CBCS :: Semester :: Grading Pattern  
With effect from: June 2012 (In continuation)**

**Faculty:Science**

**Subject:Zoology**

**SYLLABUS**

**SEMESTER – III & IV**

**Total Number of Pages: 1 to 20**

**Submitted on  
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## **Choice Based Credit System-Semester-Grading System In Under Graduate B.Sc. Programme**

The 11<sup>th</sup> Five Year plan of India proposed various measures for academic reforms in higher education. To meet the challenges of the changing time and make the higher education in Indian Universities compatible with the universities in developed nations, the UGC (11<sup>th</sup> Plan, March 2009) and later on the Association of Indian Universities (AIU) stressed on the following recommendations:

- ☞ Semester System
- ☞ Choice Based Credit System
- ☞ Curriculum Development
- ☞ Examination Reforms
- ☞ Administrative Reforms

All the above recommendations for reforms have been reviewed in by representatives of various universities in the Gujarat State and considered for implementation with the aim of transforming Higher Education a transformation where students change from being passive recipients of knowledge to becoming active participants of the knowledge imbibing process. The education system in the State the changes from a teacher-centric to learner centric mode. It should aim at all -round integral development of students' personality so that they become good citizens of the new world order.

### **Salient Features of CBCS in UG Programme :**

1. zoology subject in the University/Affiliated Colleges shall offer undergraduate programme in faculty of science from the Academic year 2011 -2012
2. A student will have to get enrolled a core course depending upon his/her requirement of a degree in the said discipline of study. A student will have a choice of selecting an Elective as well as Foundation courses from a pool of courses.
3. Each course shall be assigned a specific number of credits.
4. A core course is the course which should compulsorily be studied by a candidate as a core requirement so as to get degree in a said discipline of study.
5. There shall be four core compulsory courses (Theory) each with 3 credits and their practical's each with 1.5 credits. Thus, credit weightage in Semester III and IV of B.Sc Programme for each core course shall be of 4.5 credits. In short, 4.5 credits multiplied by 4 cores compulsory courses equal to total of 18 credits.
6. in addition to the core courses, a student will have to choose Elective as well as foundation courses from a pool of courses.
7. Two courses of Elective, one each from Generic elective and Interdisciplinary/multidisciplinary/Subject centric electives shall have to be offered. The credit weightage for each Elective course shall be of 02 credits. Hence, a total credit weight-age for Elective courses shall be of 4 credits.
8. One Foundation (English Language) course shall have to be offered. The credit weight-age for foundation course shall be of 02 credits.

Each course shall have a unique course code. The core courses, Elective courses and the foundation courses shall be abbreviated respectively as CC, PC, EG, ES and FC.

1. Core Compulsory -CC
2. Practical core -PC
3. Elective Generic -EG  
Elective Subject -ES
4. Foundation Compulsory -FC

Each Academic year shall consist of two semesters, each of 15 weeks of teaching equivalent to 90 working days. The odd semester period shall be from July to November and the Even semester period shall be from December to April.

The course with 4 credits shall be of 60 hrs ( 15 weeks × 3 credits) duration. The course with 3 credits shall be of 45 hrs (15 weeks × 3 credits) duration. The course with 2 credits shall be of 30 hrs (15 weeks × 2 credits) duration.

A general framework for Bachelor of Science (B.Sc.) programme shall be as follows:

Semester wise credits						Total credits of the Programme
I	II	III	IV	V	VI	144
24	24	24	24	24	24	

The semester wise weightage of core, selective and foundation courses shall be as follows:

Academic year	Core compulsory courses	Elective courses	Foundation courses
Semester I & II	65-75%	15-20%	10-15%
Semester III & IV	65-75%	15-20%	10-15%
Semester V & VI	65-75%	15-20%	10-15%

**Attendance:**

The Attendance Rules as per the norms of Hemchandracharya North Gujarat University.

**Medium Instruction:**

The Medium of Instruction shall be of Gujarati medium. Student is free to write answers either in Gujarat or English language.

**Language of Question Paper:**

Question paper should be drawn in Gujarati language and its English version should be given.

**Evaluation Methods:**

1. A student shall be evaluated through Comprehensive Continuous Assessment (CCA)/ (Internal Evaluation) as well as the End of Semester examination (External Evaluation). The weight-age of CCA shall be 30%, where as the weight -age of the Semester end examination shall be 70%. There will be no internal evaluation in practical courses as well as in elective courses.
2. The Semester assessment (CCA)/ (Internal Evaluation) is spread through the duration of the course and is to be done by the Teacher teaching the course. The assessment is to be done by various means including:

Internal Test-20 marks  
Assignments/Seminar/MCQ exam,etc. - 05 marks  
Attendance -05 marks

The performance of student in each course is evaluated in terms of percentage of marks with a provision for conversion to grade point. Evaluation for each course shall be done by continuous internal assessment as well as semester end exam and will be consolidated at the end of the course.

3. The End of semester examination (External Evaluation) shall have an assessment based upon following perspective with respect to all the courses:
  - Evaluation with respect to Knowledge
  - Evaluation with respect to Understanding
  - Evaluation with respect to Skill
  - Evaluation with respect to Application
  - Higher Order Thinking Skills
4. With respect to the entire above component, there shall be following types of Questions from each unit of the course.
  - MCQs/Fill in the blanks/ Match the pairs, etc.
  - Short answer questions
  - Medium answer questions
  - Long answer questions
  - Examples/Problems, etc
5. The End of semester Examination (Theory) will be conducted by the University. A certified journal of the respective of the respective core compulsory course shall be produced at the time of practical examination. In practical exam there will be two practical (each from PC-301 & PC-302) each of 50 marks (40 marks for practical+10 marks for Viva). Number of student in a practical exam will be 20 to 24 and examiners will be 2.
6. It will be compulsory for a candidate to obtain passing percentage in both Internal as well as External Evaluation. The passing marks for each course shall be 40% or as decided by concern Board of Studies of the subject.
7. Promotion, Re-Admission and Time for Completion of Course, Procedure for Awarding Grades. Provision for Appeal, etc. as decided by the Hemchandracharya North Gujarat University.
8. Students, who opt zoology as core compulsory subject, should visit National Parks, Sanctuaries, reserve forests etc. within the state and/or outside the state. They should suppose to submit tour report at the time of examination.

**HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN**  
**B.Sc.Programme with 144 credits**  
**CBCS-Semester-Grading Pattern**  
**w.e.f. June-2011**

**General Pattern/Scheme of study component along with credits for Science faculty.**

Particulars	Course	Study component	Instruction Hrs/week	Examination			Credit
				Internal	Uni. Exam.	Total	
<b>B.Sc. Sem.-III</b>	<b>Semester-III</b>						
	<b>Core Compulsory(CC) Course</b>						
	<b>CC-I-3</b>	<b>Core Course-I (paper-3)</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>	<b>3</b>
	<b>CC-I-4</b>	<b>Core Course-I(Paper-4)</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>	<b>3</b>
	<b>CC-II-3</b>	<b>Core Course-II(Paper-3)</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>	<b>3</b>
	<b>CC-II-4</b>	<b>Core Course-II(Paper-4)</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>	<b>3</b>
		<b>Practical Core(PC) Course</b>					
	<b>PC-I-3</b>	<b>Practical Core Course-I (paper-3)</b>	<b>3</b>		<b>50</b>	<b>50</b>	<b>1.5</b>
	<b>PC-I-4</b>	<b>Practical Core Course-I (Paper-4)</b>	<b>3</b>		<b>50</b>	<b>50</b>	<b>1.5</b>
	<b>PC-II-3</b>	<b>Practical Core Course-II (Paper-3)</b>	<b>3</b>		<b>50</b>	<b>50</b>	<b>1.5</b>
	<b>PC-II-4</b>	<b>Practical Core Course-II (Paper-4)</b>	<b>3</b>		<b>50</b>	<b>50</b>	<b>1.5</b>
	<b>Foundation Course (FC)</b>						
	<b>FC-3</b>	<b>Foundation(Generic) Course-III Compulsory English (L.L)</b>	<b>2</b>	<b>30</b>	<b>70</b>	<b>100</b>	<b>2</b>
		<b>Elective Course (E)</b>					
	<b>EG-3</b>	<b>Elective (Generic) Course-III</b>	<b>2</b>		<b>50</b>	<b>50</b>	<b>2</b>
<b>ES-3</b>	<b>Elective (Subject) Course-III</b>	<b>2</b>		<b>50</b>	<b>50</b>	<b>2</b>	
		<b>30</b>	<b>150</b>	<b>650</b>	<b>800</b>	<b>24</b>	
<b>B.Sc. Sem.-IV</b>	<b>Semester-IV</b>						
	<b>Core Compulsory(CC) Course</b>						
	<b>CC-I-5</b>	<b>Core Course-I (paper-5)</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>	<b>3</b>
	<b>CC-I-6</b>	<b>Core Course-I (Paper-6)</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>	<b>3</b>
	<b>CC-II-5</b>	<b>Core Course-II (Paper-5)</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>	<b>3</b>
	<b>CC-II-6</b>	<b>Core Course-II (Paper-6)</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>100</b>	<b>3</b>
		<b>Practical Core (PC) Course</b>					
	<b>PC-I-5</b>	<b>Practical Core Course-I (paper-5)</b>	<b>3</b>		<b>50</b>	<b>50</b>	<b>1.5</b>

<b>PC-I-6</b>	<b>Practical Core Course-I (Paper-6)</b>	<b>3</b>		<b>50</b>	<b>50</b>	<b>1.5</b>
<b>PC-II-5</b>	<b>Practical Core Course-II (Paper-5)</b>	<b>3</b>		<b>50</b>	<b>50</b>	<b>1.5</b>
<b>PC-II-6</b>	<b>Practical Core Course-II (Paper-6)</b>	<b>3</b>		<b>50</b>	<b>50</b>	<b>1.5</b>
<b>Foundation Course (FC)</b>						
<b>FC-3</b>	<b>Foundation(Generic) Course-IV Compulsory English (L.L)</b>	<b>2</b>	<b>30</b>	<b>70</b>	<b>100</b>	<b>2</b>
	<b>Elective Course (E)</b>					
<b>EG-3</b>	<b>Elective (Generic) Course-IV</b>	<b>2</b>		<b>50</b>	<b>50</b>	<b>2</b>
<b>ES-3</b>	<b>Elective (Subject) Course-IV</b>	<b>2</b>		<b>50</b>	<b>50</b>	<b>2</b>
		<b>30</b>	<b>150</b>	<b>650</b>	<b>800</b>	<b>24</b>

**HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN**  
**B.Sc. Programme (CBCS-Semester-Grading pattern)**  
**Semester end Examination**  
**Format for Question paper Elective Courses (Subject) in Zoology**

There will be three questions. First and Second question will be from each respective Units and Third will contain questions from both units. The details of paper format as under.

(Times: 2 hours)

(Total Marks: 50)

- |   |    |
|---|----|
| 1. a. Answer the following (Any two out of three) | 8  |
| b. Attempt any two of following (out of three)    | 6  |
| c. Attempt any three (out of five)                | 6. |
| (Short answer or objective type questions)        |    |
| 2. a. Answer the following (Any two out of three) | 8  |
| b. Attempt any two of following (out of three)    | 6  |
| c. Attempt any three (out of five)                | 6  |
| (Short answer or objective type questions)        |    |
| 3. Answer the following (Any ten out of twelve)   | 10 |
| (MCQ type or objective type)                      |    |
-

**HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN**  
**B.Sc. Programme (CBCS-Semester-Grading pattern)**  
**Semester end Examination**  
**Format for Question paper Core Compulsory Courses in Zoology**

There will be five questions. Total marks of the each core compulsory course will be 70. Each question will carry equal marks. Format of paper will be as under. In case of Q-5 only one of the style can be adopted.

Time: 3 hours

Total marks: 70

- |  |    |
|--|----|
| 1. a. Answer the following (Either one out of two or two out of three) | 8  |
| b. Attempt any one (out of two)  | 3  |
| c. Attempt any three of following (three out of five)                  | 3  |
| 2. a. Answer the following (one out of two or two out of three)        | 8  |
| b. Attempt any one (out of two)  | 3  |
| c. Attempt any three of following (three out of five)                  | 3  |
| 3. a. Answer the following (one out of two or two out of three)        | 8  |
| b. Attempt any one (out of two)  | 3  |
| c. Attempt any three of following (three out of five)                  | 3  |
| 4. a. Answer the following (one out of two or two out of three)        | 8  |
| b. Attempt any one (out of two)  | 3  |
| c. Attempt any three of following (three out of five)                  | 3  |
| 5. Answer the following (Any seven out of ten)                         | 14 |
| (Very short answer; fill in the blanks or objective type question)     |    |
| (At least two question from each unit)                                 |    |
| OR   |    |
| 5. a. Attempt the following (two out of three)                         | 10 |
| b. Attempt the any two (out of three)                                  | 04 |



**B.Sc. Semester-III**  
**ZOOLOGY**  
**Course – III**  
**CC Z-301 (NON CHORDATA)**

Credit: 3

Internal evaluation: 30 marks [5 – Attendance + 5 – Assignment/Seminar etc. + 20 Test]

External evaluation: 70 marks

**UNIT-I TAXONOMY**

- Primary knowledge of Taxa, Category, Rank and Lineus Hierarchy
- General characters and Classification of Higher Invertebrates up to orders;
- Classes of Annelida: Oligochaeta; Polychaeta; Hirudinaria
- Classes of Arthropoda: Onychophora; Crustacean; Myriopoda; Arachnida; Insecta
- Classes of Mollusca: Amphineura; Gastropoda; Scaphopoda; Pelecypoda Cephalopoda
- Classes of Echinodermata: Astroidea; Ophiuroidea; Echinoidea; Holothuroidea; Crinoidea
- Hemichordata:

**UNIT-II TYPE STUDY**

- **Leech:** General morphology and Body wall; Digestive system; Excretory system, Reproductive system, Nervous system
- **Cockroach:** General morphology,
  - o Digestive system;
  - o Respiratory System;
  - o Reproductive system,
  - o Nervous system

**UNIT-III GENERAL TOPICS**

- Nutrition in Protozoa
- Reproduction in Protozoa
- Spicules and Gemmule in Sponges
- Corals and Coral formation
- Parasitic adaptation in Helminthes
- Social Life in Insects

**UNIT-IV ECONOMIC INVERTEBRATES**

- Economic Importance of Protozoa
- Helminthes and Human diseases
- Insects as Friends and Foes
- Pharmaceuticals and Invertebrates
- Prevention and Control of Household Insects

**LABORATORY COURSE - III**  
**PC Z 301 (NON CHORDATA)**

**Credit: 1.5**

**\*Classification of Higher Invertebrates up to orders :**

**Annelida:** Aphrodite; Sabella; Earthworm; Pontobdella

**Arthropoda:** Daphnia; Lobster; Julus; Grass hopper; Limulus; Spider

**Mollusca:** Patella; Cyprea; Aplysia; Mytilus; Loligo; Den talium

**Echinodermata:** Astropecten; Opheolepis; Sand dollar; Holothuria;  
Antedon

**Hemichordata:** Balanoglossus

**\*Dissection of Leech (Demonstration only):**

External morphology;

Digestive system;

Reproductive system and

Nervous system

**Mountings:**

Jaws;

Salivary gland,

Testicular Nephridia

**\*Dissection of Cockroach (Demonstration only):**

External Morphology;

Digestive system;

Reproductive system and

Nervous system

**Mountings:** Mouthparts;

Gizzard;

Spiracles

**\*Study of following with Permanent slides or Specimens**

- To study spicules and Gemmules in porifera thro' Permanent slides
- To Study parasitic adaptations of Liver fluke and Tapeworm
- To Study social life of Ants and House fly

**\*To study Protozoans/Helminthes which cause diseases, their  
Symptoms and preventive measures**

**Protozoan:**

Entamoeba; Trypanosoma; Leishmania; Girdia; Plasmodium; Balantidium

**Helminthes:**

*Ascaris lumbricoidus* (Ascariasis); *Ancylostoma* (Ancylostomiasis); *Enterobium vermicularis* (Enterobiasis); *Trichinella spiralis* (Trichonosis); *Wuchereria bancrofti* (Filariasis)

**\* To study economically beneficial Insects/Invertebrates through  
specimens.**

Silkworm; Honey bee; Lac-Insect; Prawn; Pearl Oyster

**HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN**

**Practical Examination**

**B.Sc. Sem. III Zoology**

**PC Z 301 (Non Chordata)**

Time:

Total Marks: 50

Date:

- 1. Identify the tagged organ/ organ system from the dissected animal, draw its labeled diagram and show it to examiner. 10**
  - 2. Identify/Prepare a temporary mounting of \_\_\_\_\_ from 05 the dissected animal / from the given slide. Draw a labeled diagram and show it to examiner.**
  - 3. Identify the given specimen; mention its pathogenicity, symptoms 05 and preventive measure.**
  - 4. Do as directed: 15**
    - 1. Identify and classify it up to order with proper reasons.**
    - 2. Identify and classify it up to order with proper reasons.**
    - 3. Identify and describe its economic importance.**
    - 4. Identify and comment on its usefulness in the life of animal.**
    - 5. Identify and describe**
  - 5. Viva-voce 10**
  - 6. Journal 05**
-

**B.Sc. Semester-III  
ZOOLOGY  
Course-IV**

**CC Z 302 (APPLIED ZOOLOGY)**

Credit: 3

Internal evaluation: 30 marks [ 5 – Attendance + 5 – Assignment/Seminar etc. + 20 Test]

External evaluation: 70 marks

**UNIT-I POULTRY SCIENCE AND DAIRY INDUSTRY**

-Introduction; Reproductive system of Hen; Formation and structure of egg;  
Types of Poultry house; Types of Poultry appliances; Poultry diseases;  
Poultry product; Primary knowledge of dairy industry

**UNIT-II FISHERIES OF GUJARAT**

-Classification of Fishes; Boats and Nets (Gears); Pomphret fishery; Pearl  
fishery; Prawn fishery

**UNIT-III ENTOMOLOGY**

-What is an Insect? Types of Mouthparts; Types of Metamorphosis; Types  
of damage and controlling measures of selected crop pests  
-Lac culture

**UNIT-IV BIOSTATISTICS**

-**BIOSTATISTICS**: Frequency distribution; Mean; Median and Mode; class;  
graph/figure.

## **LABORATORY COURSE-IV**

### **PC Z 202 (Applied Zoology)**

#### **Credit: 1.5**

- Structure of egg of hen through model or boiled egg.
- To study reproductive system of hen through Model
- Different types of poultry house through models
- Different types of brooders and feeders through models
- Different types of Boats through models
- Different types of Nets through sample nets
- Life cycle of cockroach
- Life cycle of housefly
- Life cycle of butterfly
- Life cycle of Mosquito
- Important insect pests through specimens
- Temporary mounting of Insect mouthparts
- Calculation of examples related to Frequency distribution
- Calculation of examples related to Mean
- Calculation of examples related to Median
- Calculation of examples related to Mode

**HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN**  
**Practical Examination**  
**B.Sc. Sem. III Zoology**  
**PC Z 302 (Applied zoology)**

Time:

Total Marks: 50

Date:

1. Identify the tagged part from given model or specimen, draw a labeled diagram, state the function of each tagged part and show it to examiner.  
(hen egg/reproductive system) 6
  2. Prepare a temporary mounting of mouth parts of given Insect, sketch a labeled diagram and show it to examiner. 7
  3. Identify life cycle of given specimen, sketch a labeled diagram and explain importance of each stage of life cycle. 5
  4. Calculate Mean/Mode/Standard deviation from the given data. 5
  5. Do as directed. (Specimen) 12
    - a. Identify and describe its structure. (Poultry house)
    - b. Identify and describe its use. (brooder/feeder)
    - c. Identify and describe. (boat/net)
    - d. Identify and describe its pattern of damage (Insect pest)
  6. Viva voce 10
  7. Journal 05
-

**B.Sc. Semester-IV  
ZOOLOGY  
Course-V  
CC Z 401 (CHORDATA)**

Credit: 3

Internal evaluation: 30 marks [ 5 – Attendance + 5 – Assignment/Seminar etc. + 20 Test]

External evaluation: 70 marks

**UNIT-I TAXONOMY**

- General and diagnostic characters of Anamniotes and advancement over Non-chordata
- Origin of Chordata
- General body Plan of Vertebrata
- Classification of Anamniotes up to orders (Urochordata, Cephalochordata, Cyclostomata; Chondrichthyes, Osteichthyes; Amphibia)

**UNIT-II ANATOMY**

- **Amphioxus**: External morphology; Digestive system; Nervous system
- **BONY FISH** : Digestive system; Arterial system and Reproductive system
- **FROG**: Skeletal system: Vertebral Column; Appendicular skeleton (Girdles and bones of Forelimbs and Hind limbs); Venous System ; Nervous system

**UNIT-III GENERAL TOPICS**

- Migration in Fishes
- Types of Scales and Fins in fishes
- Parental care in Amphibians
- Identification of Poisonous and Non-poisonous Snake and Biting mechanism of poisonous snake; First Aid
- Beak and Feet in Birds
- Dentition in Mammals

**UNIT-IV ECONOMIC VERTEBRATA**

- Introduction of Types of Fisheries
- Preservation of fishes
- Byproducts of fish Industry
- Economic importance of Herpets
- Usefulness of Birds

**LABORATORY COURSE – V**

**PC Z 401 (Applied Zoology)**

**Credit: 1.5**

**\* Classification of following Anamniotes up to orders**

**Urochordata:** Ascidia; Botryllus, Doliolum, Salpa, Oikopleura

Cephalochordata: Amphioxus

**Cyclostoma:** Petromyzon; hag fish

**Chondrichthys:** Sphyrina, Electirc ray, Sting ray, Chimera

**Osteichthys:** Acipenser, Eel, Cat fish, Rohu, Hippocampus,  
Exocoetus, Echeneis, Sole fish, Protopterus

**Amphibia:** Ichthyophis, Salamander, Necturus, Bufo, Hyla, Alytus

**\* Dissection (Demonstration only):**

**Any Edible Bony Fish:** External characters; Digestive system;  
Arterial system; Reproductive system

**Toad:** External characters, Venous system, Nervous system

- To study types of scales through Permanent slides.
- To study types of different types of fins from preserved specimens
- To study the parental care in Ichthyophis, Salamandar, Hyla, Alytes,  
*Pipa americana*
- Identification of Poisonous and Nonpoisonous Snakes.
- Modification of beaks in birds
- Modification of feet in birds
- Dentition in Rabbit, Horse, Dog, Cat, Man
- Byproduct of fishes through specimens



**HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN**

**Practical Examination**

**B.Sc. Sem. IV Zoology**

**PC Z 401 (Chordata)**

Time:

Total Marks: 50

Date:

- 1. Identify the tagged organ/ organ system from the dissected animal, 10  
draw its labeled diagram and show it to examiner.**
  - 2. Identify/Prepare a temporary mounting of \_\_\_\_\_ from 05  
the dissected animal / from the given slide. Draw a labeled diagram  
and show it to examiner.**
  - 3. Identify the given snake and justify its poisonous or non-poisonous  
nature 05**
  - 4. Do as directed: 15**
    - 1. Identify and classify it up to order with proper reasons.**
    - 2. Identify and classify it up to order with proper reasons.**
    - 3. Identify and describe its adaptations (beak & feet)**
    - 4. Identify and comment on its usefulness in the life of animal.  
(Dentition)**
    - 5. Identify and describe (Parental care, fish byproduct, fins)**
  - 5. Viva 10**
  - 6. Journal 05**
-

**B.Sc. Semester-IV  
ZOOLOGY  
Course-VI**

**CC Z 402 (HISTOLOGY AND PHYSIOLOGY)**

Credit: 3

Internal evaluation: 30 marks [ 5 – Attendance + 5 – Assignment/Seminar etc. + 20 Test]

External evaluation: 70 marks

**UNIT-I HISTOLOGY and TOOLS**

- Introduction of Histology
- Type of Tissues (Structure and their functions): Epithelial tissue, Muscular tissue, Connective tissues (Connective tissue proper, Skeletal tissue, Vascular tissue, Nervous tissues
- Structure and Types of Microtome
- Process of Microtomy

**UNIT-II HISTOLOGY**

Structure and functions of following Mammalian Organs:

Digestive organs: Stomach and Intestine;

Digestive glands: Liver and Pancreas;

Excretory organ: Kidney;

Respiratory organ: Lung;

Gonads: Testis; Ovary

**UNIT-III PHYSIOLOGY**

**Digestion:** - Digestion and absorption of Food stuffs : Protein, Carbohydrates, Lipids, Nucleic acids

**Respiration:** Structure of Respiratory system;  
Mechanism of breathing and its regulation

**UNIT-IV PHYSIOLOGY OF BLOOD**

Blood groups;

Structure and function of Hemoglobin;

Blood Circulation and Blood Pressure;

Conduction and regulation of Heartbeat,

Cardiac Cycle and ECG;

Transport of gases

**LABORATORY COURSE-VI**  
**PC Z 402 (Histology and Physiology)**

**Credit: 1.5**

- To study different types of Tissue through Permanent Slides: Epithelial tissue; Areolar connective tissue; blood as a tissue; cardiac muscle, skeletal muscle
  - To study structure of Microtome
  - To study the process of Microtomy
  - Preparation of Permanent mounting of Mammalian Kidney, Testis and Stomach.
  - Histological structure of mammalian organs through Permanent slides: Stomach; Intestine; Liver; pancreas; Kidney; Lung; Testis; Ovary
  - The effect of salivary amylase on Carbohydrate
  - The principle and function of Sphygmomanometer
  - Determination of blood groups with the help of Antisera
  - Measurement of Haemoglobin in Human blood
  - Differential count of WBCs
  - Total counting of WBCs in human blood
  - Preparation of Haemin crystals. (Demonstration)
-

**HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN**

**Practical Examination  
B.Sc. Sem. VI Zoology  
PC Z 402 (Histology and Physiology)**

Time:

[Total Marks: 50

Date:

- 1. Perform an experiment that prove partial digestion of carbohydrate occurs in the mouth(buccal cavity). 08**
- 2. Prepare a temporary mounting of given histological slide & Identify, show it to examiner and justify. 05**
- 3. Determine your own blood group and check the total amount of WBC in the blood. 10**

**OR**

- 3. Determine gram/percentage of haemoglobin and check the percentage of different type of WBC in the blood.**
- 4. Do as directed: (Specimens) 12**
  - a. Identify and explain its structure/composition. (Tissue, Heart)**
  - b. Identify and describe its principle & function.  
(Microtome/Sphygmomanometer)**
  - c. Identify and describe its importance.  
(haemin crystal, haemocytometer, haemoglobinometer, Antisera)**
  - d. Identify and draw a labeled diagram. (T.S. of Organs)**
- 5. Viva voce 10**
- 6. Journal 05**