



### List of New Course(s) Introduced

Department : **Zoology**

Programme Name : **B.Sc.**

Academic Year : **2018-19**

### **List of New Course(s) Introduced**

Sr. No.	Course Code	Name of the Course
01.	LS/ZOO/CC-101L	Non-Chordates-I (Protista to Pseudocoelomata)
02.	LS/ZOO/CC-102L	Principles of Ecology
03.	LS/ZOO/GE-101L	Aquatic Biology
04.	LS/ZOO/CC-201L	Non-Chordates-II (Coelomata)
05.	LS/ZOO/CC-202L	Cell Biology
06.	LS/ZOO/GE-201L	Environment and Public Health

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## Minutes of Meetings (MoM) of Board of Studies (BoS)

**Academic Year : 2018-19**

**School : School of Studies of Life Sciences**

**Department : Zoology**

**Date and Time : July 06, 2018 - 4:00 PM**

**Venue : Department of Zoology**

The scheduled meeting of member of Board of Studies (BoS) of Department of Zoology, School of Studies of Life Sciences, Guru Ghasidas Vishwavidyalaya, Bilaspur was held to design and discuss the B. Sc. Hons (I to VI semesters) scheme and syllabi.

The following members were present in the meeting:

1. Prof. Sangeeta Shukla (External Expert Member BoS, Dept. of Zoology., Jiwaji University, Gwalior)
3. Dr. Monika Bhadauria (HOD, Associate Prof., Dept. of Zoology, GGV.-cum Chairman, BOS)
4. Dr. Rohit Seth (Member BoS, Associate Professor, Dept. of Zoology, GGV)
5. Dr. Santosh Singh (Member, Assistant Professor, Dept. of Zoolgy, GGV)

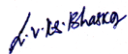
Following points were discussed during the meeting

1. The previous B.Sc. Zoology, Course (Session 2017-18) was scrutinized and changed as per CBCS scheme. The CBCS scheme was fully adopted as per UGC guidelines and courses were changed as per given syllabus by the UGC.
2. As per UGC CBCS guidelines the Generic elective, Skill Enhancement course and discipline specific electives were offered.
3. Total 14 core courses, 04 Generic elective, 02 Skill enhancement course, and 04 discipline specific elective were offered for I to VI semesters of B.Sc. Program.

The committee discussed and approved the scheme and syllabi. All courses were newly introduced in B. Sc Honors Zoology, (CBCS from I to IV semester).

### **List of new courses in 2018-19:**

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Signature & Seal of HOD

गुरु घासीदास विश्वविद्यालय  
(केन्द्रीय विश्वविद्यालय अधिनियम 2009 क्र. 25 के अंतर्गत स्थापित केन्द्रीय विश्वविद्यालय)  
कोनी, बिलासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya  
(A Central University Established by the Central Universities Act 2009 No. 25 of 2009)  
Koni, Bilaspur - 495009 (C.G.)

## Scheme and Syllabus

SCHEME AND SYLLABUS

2018-19

FOR

CHOICE BASED CREDIT SYSTEM (CBCS)

FOR B.Sc. HONOURS ZOOLOGY

DEPARTMENT OF ZOOLOGY

SCHOOL OF LIFE SCIENCES

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (CG)

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*Sandeep Singh*

*Daugala*

*Manish*  
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**B.Sc. Hon's (Zoology): CBCS 2018-2019**

**School of Life Sciences**

Semester I				
Course Opted	Course Code	Name of the course	Credit	H/week
Core Course-1 Theory	LS/ZOO/CC-101 L	Non Chordates - I (Protista to Pseudocoelomate)	4	4
Core Course-1 Practical	LS/ZOO/CC-101 P	Lab Course	2	4
Core Course-2 Theory	LS/ZOO/CC-102 L	Principles of Zoology	4	4
Core Course-2 Practical	LS/ZOO/CC-102 P	Lab Course	2	4
Generic Elective-1 Theory	LS/ZOO/GE-101 L	Aquatic Biology	4	4
Generic Elective-1 Practical	LS/ZOO/GE-101 P	Lab Course	2	4
Ability Enhancement Compulsory Course-1	LS/ZOO/AE-101/EC	English Communication / MIL (Hindi Communication)	4*	4
Extracurricular activity		Tour, Field visit/ Industrial training/ NSS/ Swachhita/ Vocational Training/ Sports/ others	2	(2)
<b>TOTAL</b>			<b>24</b>	<b>28</b>
Semester II				
Core Course-3 Theory	LS/ZOO/CC-201 L	Non Chordates - II (Coelomates)	4	4
Core Course-3 Practical	LS/ZOO/CC-201 P	Lab Course	2	4
Core Course-4 Theory	LS/ZOO/CC-202 L	Cell Biology	4	4
Core Course-4 Practical	LS/ZOO/CC-202 P	Lab Course	2	4
Generic Elective-2 Theory	LS/ZOO/GE-201 L	Environment and Public Health	4	4
Generic Elective-2 Practical	LS/ZOO/GE-201 P	Lab Course	2	4
Ability Enhancement Compulsory Course-2	LS/ZOO/AE-201/ES	Environmental Science	4*	4
Extracurricular activity		Tour, Field visit/ Industrial training/ NSS/ Swachhita/ vocational Training/ Sports/ others	2	(2)
<b>Total</b>			<b>24</b>	<b>28</b>
Summer Internship: 15 days		Swayam Swachhita / NSS / Industrial/ others	2	100
Semester III				
Core Course-5 Theory	LS/ZOO/CC-301 L	Diversity of chordates	4	4
Core Course-5 Practical	LS/ZOO/CC-301 P	Lab Course	2	4
Core Course-6 Theory	LS/ZOO/CC-302 L	Physiology: Controlling and Coordinating systems	4	4
Core Course-6 Practical	LS/ZOO/CC-302 P	Lab Course	2	4
Core Course-7 Theory	LS/ZOO/CC-303 L	Fundamentals of Biochemistry	4	4
Core Course-7 Practical	LS/ZOO/CC-303 P	Lab Course	2	4
Generic Elective-3 Theory	LS/ZOO/GE-301 L	Food Nutrition and Health	4	4
Generic Elective-3 Practical	LS/ZOO/GE-301 P	Lab Course	2	4
Skill Enhancement Course-1	LS/ZOO/SEC-301 L	Sericulture	2	4
Skill Enhancement Course-1	LS/ZOO/SEC-301 P	Lab Course	2	4
<b>Total</b>			<b>28</b>	<b>34</b>
Semester IV				
Core Course-8 Theory	LS/ZOO/CC-401 L	Comparative anatomy of vertebrates	4	4
Core Course-8 Practical	LS/ZOO/CC-401 P	Lab Course	2	4
Core Course-9 Theory	LS/ZOO/CC-402 L	Physiology: Life Sustaining Systems	4	4
Core Course-9 Practical	LS/ZOO/CC-402 P	Lab Course	2	4
Core Course-10 Theory	LS/ZOO/CC-403 L	Biochemistry of Metabolic Processes	4	4



Department of Zoology, School of Life Sciences, GGV, Bilaspur

**CORE COURSE I**

**LS/ZOO/CC-101 L**

**NON-CHORDATES I: PROTISTA TO PSEUDOCOELOMATA**

**THEORY**

**(Credits 4)**

<b>Unit 1: Protista, Parazoa and Metazoa</b>	<b>19</b>
General characteristics and classification up to classes; Study of <i>Euglena</i> , <i>Amoeba</i> and <i>Paramecium</i> ; Life cycle and pathogenicity of <i>Plasmodium vivax</i> and <i>Entamoeba histolytica</i> ; Locomotion and Reproduction in Protista; Evolution of symmetry and segmentation of Metazoa	
<b>Unit 2: Porifera</b>	<b>7</b>
General characteristics and classification up to classes; Type study of <i>Sycon</i> ; Canal system and spicules in sponges	
<b>Unit 3: Cnidaria</b>	<b>12</b>
General characteristics and classification up to classes; Type study of <i>Obelia</i> ; Polymorphism in Cnidaria, Corals and coral reefs	
<b>Unit 4: Ctenophora</b>	<b>4</b>
General characteristics and Evolutionary significance	
<b>Unit 5: Platyhelminthes</b>	<b>10</b>
General characteristics and classification up to classes; Type study, larval forms and pathogenicity of <i>Fasciola hepatica</i>	
<b>Unit 6: Nematelminthes</b>	<b>8</b>
General characteristics and classification up to classes; Type study of <i>Ascaris lumbricoides</i> ; Life cycle and pathogenicity of and <i>Wuchereria bancrofti</i> ; Parasitic adaptations in helminthes	

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**CORE COURSE II**

**LS/ZOO/CC-102 L**

**PRINCIPLES OF ECOLOGY**

**THEORY**

**(Credits 4)**

<b>Unit 1: Introduction to Ecology</b>	<b>6</b>
History of ecology; Autecology and synecology; Levels of organization; Laws of limiting factors-Liebig's law of minimum and Shelford's law of tolerance; Study of physical factors	
<b>Unit 2: Ecosystem</b>	<b>12</b>
Types of ecosystems with one example in detail; Trophic levels; Food chain: Detritus and grazing food chains, Linear and Y-shaped food chains; Food web; Energy flow through ecosystem; Ecological pyramids and Ecological efficiencies; Nutrient and biogeochemical cycle (nitrogen cycle); Human modified ecosystem	
<b>Unit 3: Population</b>	<b>18</b>
Unique and group attributes of population: Density, natality, mortality, life tables, fecundity tables, survivorship curves, age and sex ratio, dispersal and dispersion, Exponential and logistic growth, equation and patterns, r and k strategies; Population regulation-density-dependent and independent factors; Population interactions;	
<b>Unit 4: Community</b>	<b>10</b>
Community characteristics: species richness, dominance, diversity, abundance, vertical stratification, Ecotone and edge effect; Ecological Succession, Types of Succession, Theories pertaining to climax community	
<b>Unit 5: Human impact on environment</b>	<b>10</b>
Environmental Pollution: Air, water and noise pollution; Global environmental issues: Greenhouse effect, Acid rain, Global Warming, Ozone depletion.	
<b>Unit 6: Applied Ecology</b>	<b>4</b>
Ecology in Wildlife Conservation and Management	

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**CORE COURSE III**

**LS/ZOO/CC-201 L**

**NON-CHORDATES II: COELOMATA**

**THEORY**

**(Credits 4)**

<b>Unit 1: Introduction to Coelomates</b>	<b>2</b>
Evolution of coelom and metamerism	
<b>Unit 2: Annelida</b>	<b>10</b>
General characteristics and Classification up to classes; Type study of <i>Pheretima</i>	
<b>Unit 3: Arthropoda</b>	<b>17</b>
General characteristics and Classification up to classes; Type study of <i>Periplaneta</i> ; Vision and Respiration in Arthropoda; Larval forms in Arthropoda; Metamorphosis in Insects; Social life in bees and termites	
<b>Unit 4: Onychophora</b>	<b>4</b>
General characteristics and Evolutionary significance with special reference to <i>peripatus</i>	
<b>Unit 5: Mollusca</b>	<b>15</b>
General characteristics and Classification up to classes; Type study of <i>Pila</i> ; Respiration in Mollusca; Torsion and detorsion in Gastropoda; Pearl formation in bivalves; Evolutionary significance of trochophore larva	
<b>Unit 6: Echinodermata</b>	<b>12</b>
General characteristics and Classification up to classes; Type study of <i>Asterias</i> ; Water-vascular system in Asteroidea; Larval forms in Echinodermata; Affinities with Chordates	

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**CORE COURSE IV**

**LS/ZOO/CC-202 L**

**CELL BIOLOGY**

**THEORY**

(Credits 4)

<b>Unit 1: Overview of Cells</b>	<b>8</b>
Prokaryotic and Eukaryotic cells, Virus, Viroids, Mycoplasma, Prions, Cell Theory,	
<b>Unit 2: Plasma Membrane</b>	<b>12</b>
Various models of plasma membrane, Structure And Function of Plasma Membrane. Transport across membranes: Active and Passive transport, Facilitated transport. Cell junctions: Tight junctions, Desmosomes, Gap junctions	
<b>Unit 3: Cellular Organelles And Endomembrane System</b>	<b>12</b>
Structure and Functions: Endoplasmic Reticulum, Golgi Apparatus, Lysosomes, Peroxisomes. Mitochondria: Structure, Semi-autonomous nature, Endosymbiotic hypothesis, Mitochondrial Respiratory Chain, Chemi-osmotic hypothesis.	
<b>Unit 4: Cytoskeleton</b>	<b>8</b>
Structure and Functions: Microtubules, Microfilaments and Intermediate filaments	
<b>Unit 5: Nucleus</b>	<b>10</b>
Structure of Nucleus: Nuclear envelope, Nuclear pore complex, Nucleolus. Chromatin: Euchromatin and Hetrochromatin and packaging (nucleosome). Giant Chromosomes: Polytene And Lampbrush	
<b>Unit 6: Cell division and Signaling</b>	<b>10</b>
Mitosis, Meiosis, Cell cycle and its regulation. GPCR and Role of second messenger (cAMP)	

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## GENERIC ELECTIVE COURSES

LS/ZOO/GE-101 L

### AQUATIC BIOLOGY

#### THEORY

(Credits 4)

##### UNIT 1: Aquatic Biomes

Brief introduction of the aquatic biomes: Freshwater ecosystem (lakes, wetlands, streams and rivers), estuaries, intertidal zones, oceanic pelagic zone, marine benthic zone and coral reefs.

##### UNIT 2: Freshwater Biology

**Lakes:** Origin and classification, Lake as an Ecosystem, Lake morphometry, Physico-chemical Characteristics: Light, Temperature, Thermal stratification, Dissolved Solids, Carbonate, Bicarbonates, Phosphates and Nitrates, Turbidity; dissolved gases (Oxygen, Carbon dioxide). Nutrient Cycles in Lakes-Nitrogen, Sulphur and Phosphorous.

**Streams:** Different stages of stream development, Physico-chemical environment, Adaptation of hill-stream fishes.

##### UNIT 3: Marine Biology

Salinity and density of Sea water, Continental shelf, Adaptations of deep sea organisms, Coral reefs, Sea weeds.

##### UNIT 4: Management of Aquatic Resources

Causes of pollution: Agricultural, Industrial, Sewage, Thermal and Oil spills, Eutrophication, Management and conservation (legislations), Sewage treatment Water quality assessment- BOD and COD.

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*Sankar*

*Dasgupta*



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**GENERIC ELECTIVE COURSES**

**ZOO/GE-201 L**

**ENVIRONMENT AND PUBLIC HEALTH**

**THEORY**

**(Credits 4)**

**Unit 1: Introduction**

Sources of Environmental hazards, hazard identification and accounting, fate of toxic and persistent substances in the environment, dose Response Evaluation, exposure Assessment.

**Unit 2: Climate Change**

Greenhouse gases and global warming, Acid rain, Ozone layer destruction, Effect of climate change on public health

**Unit 3: Pollution**

Air, water, noise pollution sources and effects, Pollution control

**Unit 4: Waste Management Technologies**

Sources of waste, types and characteristics, Sewage disposal and its management, Solid waste disposal, Biomedical waste handling and disposal, Nuclear waste handling and disposal, Waste from thermal power plants, Case histories on Bhopal gas tragedy, Chernobyl disaster, Bhopal disaster and Three Mile Island accident and their aftermath.

**Unit 5: Diseases**

Causes, symptoms and control of Tuberculosis, Asthma, Cholera, Minamata disease, typhoid

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