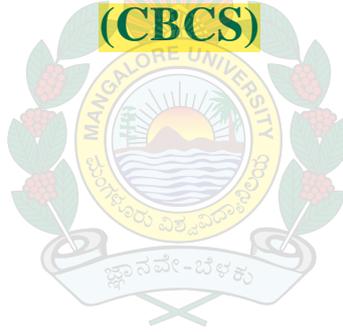


**Mangalore University**  
**Department of Applied Zoology**



**M.Sc. Zoology**  
**Choice Based Credit System**  
**(CBCS)**



**SYLLABUS**

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2016

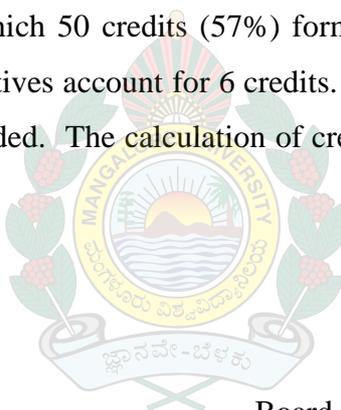
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## PREAMBLE

In an attempt to make the post graduate courses competitive and on par with the global standards, University Grants Commission had directed implementation of Choice-Based Credit System. The syllabi of various courses are being updated by Mangalore University. In keeping with the current style and developments in Animal Sciences the course content is being modified. To provide an opportunity to the student to opt for various courses customised for his/her inclination, choice is provided through soft-core courses and open elective courses. A solid grounding in a subject is provided through hard-core courses which are mandatory. There will thus, be a component of hard-core, soft-core and open-elective courses. Open-elective courses are to be opted during 2<sup>nd</sup> and 3<sup>rd</sup> Semester.

The present syllabus designed by the Board of studies spans over IV semesters. It will have a total of 88 credits, of which 50 credits (57%) form the hard-core, 32 credits (36%) form the soft-core and open electives account for 6 credits. The scheme of examinations and internal assessment is also provided. The calculation of credits and CGPA will be as per the guidelines of the University



Chairman  
Board of Studies

**M.Sc. ZOOLOGY**  
**CHOICE BASED CREDIT SYSTEM (CBCS)**  
**SEMESTER PATTERN**

**Scheme of Examinations and Evaluation;**

One credit of a course shall normally be evaluated for 30-35 marks in the final assessment (internal assessment + final examination). Thus a 5 credit course shall normally carry 150 marks and a 4 credit course shall normally carry 100 marks.

The theory and practical component of a course shall be evaluated as below;

<b>3 hours of theory (3 credits)</b>	<b>Marks</b>
Internal assessment	30
Final examination	70

**4 hours Practical (2 credits)**

Internal assessment	15
Final examination	35

Total 150

Thus a course with 3 hours of lectures (3 credits) and 4 hours of practical/laboratory (2 credits) shall carry 150 marks in the final assessment.

Soft core (practical) – 2hrs (1 credit), 2 practical are clubbed for 2 credits

Internal assessment: 15 (7.5 marks for each of the course clubbed)

Final examination : 35 (17.5 marks for each of the course clubbed)

**Internal assessment shall be as below:**

**Theory**

- a. 2 objective tests for a total of 20 marks
- b. 1 theory test for a total of 70 marks
- c. The marks obtained shall be reduced to 30
- d. Assignment/Seminar may be given in lieu of an objective test as decided by the departmental council.

**Practical/laboratory**

- a. Continuous assessment or a practical test ordinarily during 14<sup>th</sup> week for 10 marks.
- b. Records to be valued for 5 marks. The total maximum shall be 15 marks.

## **Project work(field/ laboratory work)**

Project work carries 5 credits (field/laboratory). Internal assessment shall be based on

	<b>Marks</b>
a) one objective test in the field of study	10
b) one viva voce	35
<b>Total</b>	<b>45</b>

Final examination shall carry 105 marks and the dissertation shall be sent for central valuation. A dissertation/project report shall be evaluated by 2 examiners one external and one internal from out of the panel of examiners prepared by the B.O.S. and approved by the University.

## **Pattern of Question Paper**

### ***Theory***

One question (question I) with five subdivisions (a-e) representing all units with each subdivision carrying 2 marks. Five questions (question II to VI) of 12 mark each. One question from each unit of the syllabus. A question may have not more than 3 subdivisions (Example. II a, b, c) all carrying equal marks.

Q I. a-e : Short questions one from each unit.  $5 \times 2 = 10$

QII to QVI : Each question for 12 marks (One question of 12 marks or Two questions of 6 marks each or three questions of 4 marks each) representing unit 1 to 5 with internal choice.

### ***Practical***

The final practical examination for 35 marks may have one or two major (10 to 12 marks) and one or two minor (5 – 8 marks) questions with 5 marks for viva voce. The final pattern can be arrived at by the departmental council.

## List of Hard core, Soft-core and Open Elective courses

Semester	Code Number	Hard core courses
I	ZOH 401	Animal Taxonomy and Evolution
I	ZOH 402	Biological Chemistry
II	ZOH 451	Comparative Physiology
II	ZOH 452	Toxicology and Cancer Biology
II	ZOH 453	Animal Cell Biotechnology
III	ZOH 501	Genetics and Quantitative Biology
III	ZOH 502	Nutrition and Metabolism
III	ZOH 503	Neurobiology and Behaviour
IV	ZOH 551	Biology of Immune System
IV	ZOP 552	Project work
		<b>Soft core courses</b>
I	ZOS 403	Comparative Anatomy
I	ZOS 404	Tools and Techniques in Biology
I	ZOS 405	Entomology
II	ZOS 454	Adaptation Biology
II	ZOS 455	Molecular Cell Biology
II	ZOS 456	Developmental Biology
III	ZOS 504	Fisheries and Aquatic Biology
III	ZOS 505	Animal Breeding
III	ZOS 506	Environmental Biology
IV	ZOS 553	Wildlife Conservation and Management
IV	ZOS 554	Statistics and Bioinformatics
IV	ZOS 555	Radiation Biology
		<b>Open Elective courses</b>
II	ZOE 457	Parasites and diseases
III	ZOE 507	Vermitechnology

## Overview and Schematic Syllabus

### I Semester

Course Code	Hard/Soft core courses	Lecture Hrs/Week	PracticalsHr s/Week	Credit	Max Marks
ZOH401	Animal Taxonomy and Evolution	3	-	3	100
ZOH402	Biological Chemistry	3	-	3	100
ZOS403	Comparative Anatomy	3	-	3	100
ZOS404	Tools and Techniques in Biology	3	-	3	100
ZOS405	Entomology	3	-	3	100
ZOP 406	Animal Taxonomy and Evolution	-	4	2	50
ZOP 407	Biological Chemistry	-	4	2	50
ZOP 408	Comparative Anatomy and Tools & Techniques in Biology	-	2+2	1+1	50
ZOP 409	Tools & Techniques in Biology and Entomology	-	2+2	1+1	50
ZOP 410	Entomology and Comparative Anatomy	-	2+2	1+1	50
				18	550

Any two of the soft core courses to be opted/offered. The practical examinations for soft core courses to be clubbed to one practical examination of 50 marks

### II Semester

Course Code	Hard/Soft/Open elective courses	Lecture Hrs/Week	Practicals Hrs/Week	Credit	Max marks
ZOH451	ComparativePhysiology	3	-	3	100
ZOH452	Toxicology and Cancer Biology	3	-	3	100
ZOH453	Animal Cell Biotechnology	3	-	3	100
ZOS454	Adaptation Biology	3	-	3	100
ZOS455	Molecular Cell Biology	3	-	3	100
ZOS456	Developmental Biology	3	-	3	100
ZOE457	Parasites and diseases	3	-	3	100
ZOP 458	ComparativePhysiology	-	4	2	50
ZOP 459	Toxicology and Cancer Biology	-	4	2	50
ZOP 460	Animal Cell Biotechnology	-	4	2	50
ZOP 461	Adaptation Biology and Molecular Cell Biology	-	2+2	1+1	50
ZOP 462	Molecular Cell Biology and Developmental Biology	-	2+2	1+1	50
ZOP 463	Developmental Biology and Adaptation Biology	-	2+2	1+1	50
				26	800

Any two of the soft core courses to be opted/offered. The practical examination for soft core courses to be clubbed to one practical examination of 50 marks.

### III Semester

Course Code	Hard/Soft/Open elective courses	Lecture Hrs/Week	Practicals Hrs/Week	Credit	Max Marks
ZOH501	Genetics and Quantitative Biology	3	-	3	100
ZOH502	Nutrition and Metabolism	3	-	3	100
ZOH503	Neurobiology and Behavior	3	-	3	100
ZOS504	Fisheries and Aquatic Biology	3	-	3	100
ZOS505	Animal Breeding	3	-	3	100
ZOS506	Environmental Biology	3	-	3	100
ZOE507	Vermitechnology	3	-	3	100
ZOP 508	Genetics and Quantitative Biology	-	4	2	50
ZOP 509	Nutrition and Metabolism	-	4	2	50
ZOP 510	Neurobiology and Behavior	-	4	2	50
ZOP 511	Fisheries & Aquatic Biology and Animal Breeding	-	2+2	1+1	50
ZOP 512	Animal Breeding and Environmental Biology	-	2+2	1+1	50
ZOP 513	Environmental Biology and Fisheries & Aquatic Biology	-	2+2	1+1	50
				26	800

Any two of the soft core courses to be opted/offered. The practical examination for soft core courses to be clubbed to one practical examination of 50 marks.

### IV Semester

Course Code	Hard/Soft/Open elective courses	Lecture Hrs/Week	Practicals Hrs/Week	Credit	Max marks
ZOH551	Biology of Immune System	3	-	3	100
ZOP552	Project work		8(Field\ labwork)	5	150
ZOS553	Wildlife Conservation and Management	3	-	3	100
ZOS554	Statistics and Bioinformatics	3	-	3	100
ZOS555	Radiation Biology	3	-	3	100
ZOP 556	Biology of Immune System	-	4	2	50
ZOP 557	Wildlife Conservation & Management and Statistics & Bioinformatics	-	2+2	1+1	50
ZOP 558	Statistics & Bioinformatics and Radiation Biology	-	2+2	1+1	50
ZOP 559	Radiation Biology and Wildlife Conservation & Management	-	2+2	1+1	50
				18	550

Any two of the soft core courses to be opted/offered. The practical examination for soft core courses to be clubbed to one practical examination of 50 marks.

**Grand Total of Maximum Marks**

**2700**