

S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

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DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY
CIRCULAR NO.ACAD/NP/B.Sc.-Ist Yr./SEM.-I & II/157/2013

It is hereby notified for information of all concerned that, on the recommendations of the Boards of Studies, Ad-hoc Boards, and Faculty of Science, the Academic Council at its meeting held on 25-03-2013 has accepted the following revised syllabi for **B.Sc. First Year** progressively under the Faculty of Science :-

Sr. No.	Revised Syllabus	
[1]	B.Sc. [Physics]	Semester- I & II,
[2]	B.Sc. [Dairy Science & Technology]	Semester- I & II,
[3]	B.Sc. [Industrial Chemistry]	Semester- I & II,
[4]	B.Sc. [Geology]	Semester- I & II,
[5]	B.Sc. [Chemistry]	Semester- I & II,
[6]	B.Sc. [Botany]	Semester- I & II,
[7]	B.Sc. [Electronics] Science	Semester- I & II,
[8]	B.Sc. [Fisheries]	Semester- I & II,
[9]	B.Sc. [Microbiology]	Semester- I & II,
[10]	B.A. [Statistics]	Semester- I & II,
[11]	B.Sc. [Statistics]	Semester- I & II,
[12]	B.Sc. [Zoology]	Semester- I & II,
[13]	B.Sc. [Textile and Interior Decoration]	Semester- I & II,
[14]	B.Sc. [Home Science]	Semester- I & II,
[15]	B.A. / B.Sc. [Mathematics]	Semester- I & II.

This is effective from the Academic Year 2013-2014 and onwards.

These syllabi are available on the University Website www.bamu.net

All concerned are requested to note the contents of this circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/NP/B.SC.-IST YEAR/
Sem-I & II/2013/5132-541
A.C.S.A.I.No.327[9].

Date:- 08-05-2013.

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[Signature]
Director,
Board of College and
University Development.

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S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

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Copy forwarded with compliments to :-

- 1] **The Principals, affiliated concerned Colleges,
Dr. Babasaheb Ambedkar Marathwada University.**
- 2] The Director, University Network & Information Centre, UNIC, with
a request to upload the above all syllabi on University Website
[www.bamu.net].

Copy to :-

- 1] The Controller of Examinations,
- 2] The Superintendent, [B.Sc. Unit],
- 3] The Superintendent, [B.A. Unit],
- 4] The Superintendent, [Eligibility Unit],
- 5] The Programmer [Computer Unit-1] Examinations,
- 6] The Programmer [Computer Unit-2] Examinations,
- 7] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,
- 8] The Public Relation Officer,
- 9] The Record Keeper,
Dr. Babasaheb Ambedkar Marathwada University.

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**Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad.**



Revised Syllabus

B.Sc. Zoology

First Year

First Semester and Second Semester

Effective from the Academic Year 2013-2014 & onwards.

S-[F] NPW-02 June-2013-14 All Syllabus B.Sc. [Zoology] Ist Year Semester-I & II

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**Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad.**



Revised Syllabus

B.Sc. Zoology

First Year

First Semester and Second Semester

Dr. S. S. Shinde
Chairman B.Sc.

Effective from the Academic Year 2013-2014 & onwards.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.**B.Sc. Zoology Pattern in Semester System****B. Sc. I Year Zoology**

Semester	Course Code	Paper No.	Title of Paper	Marks
I	ZOL-101	Paper – I	Protozoa to Annelida	50
	ZOL-102	Paper – II	Cell Biology	50
	ZOL-103	Paper – III	Practical based upon Paper I & II	50
II	ZOL-201	Paper – IV	Arthropoda to Echinodermata And Protochordata	50
	ZOL-202	Paper – V	Genetics - I	50
	ZOL-203	Paper – VI	Practical based upon Paper IV & V	50

B. Sc. II Year Zoology

III	ZOL-301	Paper – VII	Vertebrate Zoology	50
	ZOL-302	Paper – VIII	Genetics- II	50
	ZOL-303	Paper – IX	Practical based upon Paper VII	50
	ZOL-304	Paper – X	Practical based upon Paper VIII	50
IV	ZOL-401	Paper – XI	Animal Physiology (Special Emphasis On animals)	50
	ZOL-402	Paper – XII	Biochemistry & Endocrinology	50
	ZOL-403	Paper – XIII	Practical based upon Paper XI	50
	ZOL-404	Paper – XIV	Practical based upon Paper XII	50

B. Sc. III Year Zoology

V	ZOL-501	Paper –XV	Ecology		50
	ZOL-502	Pape XVI (Elective)	A	Fishery sciences –I	50
			B	Animal culture –I	
			C	Entomology-I	
			D	Parasitic protozoa & helminthes-I	
			E	Computer Application & Laboratory Technology-I	
			F	Biotechnology-I	
			G	Dairy sciences -I	
			H	Poultry Sciences -I	
	ZOL-503	Paper XVII	Practical based upon Paper XV		50
ZOL-504	Paper XVIII	Practical based upon Paper XVI		50	
VI	ZOL-601	Paper XIX	Evolution		
	ZOL-602	Paper XX	A	Fishery sciences –II	50
			B	Animal culture –II	
			C	Entomology-II	
			D	Parasitic protozoa & helminthes-II	
			E	Computer Application & Laboratory Technology-II	
			F	Biotechnology-II	
			G	Dairy sciences -II	
			H	Poultry Sciences -II	
	ZOL-603	Paper XXI	Practical based upon Paper XIX		50
ZOL-604	Paper XXII	Practical based upon Paper XX		50	

B. Sc. First Semester**Course Code - ZOL- 101
Zoology Paper: I****PROTOZOA TO ANNELIDA**

1. Introduction to animal kingdom	03
Definition of Zoology, Outline classification Protozoa, Parazoa, Metazoa and Major Phyla.	
2. Protozoa : - General characters	09
<i>Plasmodium vivax</i> : - Structure of sporozoite, Life cycle; pathogenecity, Control, Prevention and Treatment of Malaria. <i>Entamoeba histolytica</i> : Structure, Life cycle and Control. <i>Euglena</i> : Morphology and Reproduction. <i>Paramecium</i> : Morphology and Reproduction	
3. Porifera : - General characters	08
Sycon (Scypha): - Morphology, Different types of cells in sycon, canal system in Porifera.	
4. Coelenterata: - General characters	06
Obelia: - Morphology of Obelia colony, Development of Hydra, Polymorphism in coelenterates.	
5. Helminths : - General characters	12
<i>Fasciola hepatica</i> : - Structure, Life cycle, Pathogenecity & Control Measures <i>Taenia solium</i> : - Structure of scolex, Mature and gravid proglottids, Life cycle, pathogenecity, and control measures. <i>Ascaris lumbricoides</i> : - Structure of male & female, Life cycle, Pathogenecity & control measures.	
6. Annelida: - General characters	07
Leech: - Morphology, Digestive, Excretory & Reproductive systems.	
Total Periods	45

B. Sc. First Semester**Course Code - ZOL- 102
Zoology Paper: II****CELL BIOLOGY**

- | | |
|---|-----------|
| 1. General structure of cell. | 12 |
| ➤ Structure of prokaryotic cell. | |
| ➤ Ultra structure of eukaryotic cell. | |
| ➤ Cell Cycle, Mitosis, Meiosis | |
| 2. Organization of cell | 20 |
| ➤ A) Study of Various cell organelles | |
| Plasma Membrane: - Structure and function. | |
| Endoplasmic reticulum: - Structure and function. | |
| Golgi Bodies: - Structure and function | |
| Mitochondria: - Morphology, Ultra-Structure, function and biogenesis. | |
| Nucleus: - Structure and function. | |
| DNA Structure. | |
| Types of RNA | |
| Lysosome: - Structure, function and polymorphism | |
| Ribosome: - Structure and function | |
| ➤ B) Cytology of Cancer, Types of Cancer. | |
| 3. Methods in Cell Biology (in brief) | 13 |
| A) Light Microscope | |
| Phase contrast microscope | |
| Electron microscope | |
| B) Micro techniques, (Microtomy) Fixation & Staining. | |

Total Periods 45

Recommended books
Protozoa to Annelida

- Kotpal, R.L. Modern Text Book of Zoology Invertebrates, Rastogi Publication, Meerut.
- Parker & Hashwell, Textbook of Zoology Vol. I (Invertebrates) A.Z.T.B.S. Publishers & Distributors. New Delhi.
- E.L. JORDEN & P.S. VERMA, Invertebrate Zoology, S. Chand & Co. Ltd. New Delhi.
- Hickman C. P. Jr., Hickman & L.S. Roberts. Integrated principles of zoology, Mosby college publication. St. Louis.
- Ayur, E.K., And T.N. Ananthakrishnan, Manual of zoology Vol. I, Invertebrata, Part I and II S.Viswanathan (Printers and Publishers) Pvt. Ltd. Madras.
- Balinsky, an Introduction to Embryology (CBS College Publishers).
- Grant- Biology of Development Systems (Holt. Reihart, Winston).
- Dr. S.S. Lal Practical Zoology Invertebrates 9th edition Rastogi Publications Meerut.

Cell biology

- Albert B. et.al - Molecular Biology of the cell (Sinauer)
- Lodish. H. et al – Molecular Cell Biology.
- Gupta P.K. Cell and Molecular Biology Rastogi Publication Meerut.
- Dr. S.P. Singh, Dr. B.S. Tomar, Cell Biology 9th revised edition Rastogi Publication Meerut.
- Gerald Karp Cell and Molecular biology- Concepts and Experiments. John Wiley, 2007.

B. Sc. First Semester**Course Code - ZOL- 103****Zoology Paper: III****PROTOZOA TO ANNELIDA & CELL BIOLOGY (PRACTICAL)**

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|--|-----------|
| 1. Study of slides from Ciliates, Opalirates, and Flagellates(any five) | 01 |
| 2. Study of museum specimen and slides from Porifera to Annelida.
(Three from each phyla) | 02 |
| [Note, Identification, Classification, Sketch & any 3 to 4 points related to
(One point) habitat (one or two point) structure & (one point from)
Biological importance.] | |
| 3. Dissection: | |
| ➤ Dissection of Leech for Digestive, Excretory & Reproductive systems. | 05 |
| ➤ Dissection of Earthworm for Nervous System & Reproductive system | |
| 4. Mounting of any five of the following. | 01 |
| ➤ Sponge spicules, Gemmule, Obelia colony, Jaws of Leech. | |
| ➤ Spermatica, testes nerve ring of Earthworm, Parapodia of Nereis. | |
| 5. Study of cell organelles by using Models, Charts, Slides &
Electron micrographs. | 01 |
| 6. Squash preparation of Onion root tip to study Mitosis. | 01 |
| 7. Preparation of polytene chromosome in chironomous larva/fruit flies. | 01 |
| 8. Microtechnique: - Fixation, dehydration, Block preparation,
Microtomy and Staining of Rat tissue. | 02 |
| 9. Study of Microscopy: - Simple, Compound, & Phase Contrast Microscope | 01 |
| Total Practical Periods | 15 |

B. Sc. Second Semester**Course Code – ZOL- 201
Zoology Paper: IV****ARTHROPODA TO ECHINODERMATA AND PROTOCHORDATA**

1. Arthropoda: - General characters	15
Prawn: - Structure, Digestive, Nervous, & Reproductive systems.	
Cockroach: External Characters, Digestive, Respiratory and Reproductive systems.	
2. Mollusca: - General characters	06
Pila: - External Characters, Respiratory, Circulatory, Nervous and Reproductive systems	
3. Echinodermata : - General characters	10
Asterias (Sea Star): - Morphology of oral & aboral view, Water vascular system, Reproductive system including development.	
4. General characters and Classification of Protochordata	14
Amphioxus: - External features, Digestive, Circulatory, Reproductive systems including development.	
Hemichordata: - General characters and affinities	
Herdmania: - General characters and morphology	
Total Periods	45

B. Sc. Second Semester**Course Code – ZOL- 202****Zoology Paper: V****GENETICS – I**

1.	Elements of heredity & variation	04
	Definition of genetics and variation	
	Mendel's laws of heredity in short	
2.	Gene interaction	05
	Definition- modifications in Mendelian phenotypic ratio like,	
	Epitasis	
	Supplementary gene	
	Complementary gene	
3.	Multiple Alleles	05
	Coat Colour in rabbit.	
	ABO Blood group in man, Rh factor	
4.	Cytoplasmic inheritance.	08
	Definition of maternal effect. Coiling shell in snail (<i>Limnea peregra</i>)	
	Male sterility.	
	CO ₂ sensitivity in <i>Drosophila</i> .	
	Kappa particles in <i>Paramecia</i> .	
5.	Sex Determination	08
	Chromosome theory in sex determination	
	Genic balance theory of sex determination	
	Triploid intersexes and Gynandromorphs in <i>Drosophila</i> .	
	Sex linked inheritance: X linked and Y linked	
6.	Mutation	15
	Brief introduction	
	Gene mutation: - Definition and classification	
	Chromosomal aberration (structural & numerical)	
	Spontaneous & induced mutation	
	Total Periods	45

Recommended Books.

ARTHROPODA TO ECHINODERMATA &PROTOCHORDATA

- Kotpal, R.L. Modern Text Book of Zoology Invertebrates, Rastogi Publication, Meerut.
- Parker & Hashwell, Textbook of Zoology Vol. I (Invertebrates) A.Z.T.B.S. Publishers & Distributors. New Delhi.
- E.L. JORDEN & P.S. VERMA, Invertebrate Zoology, S. Chand & Co. Ltd. New Delhi.
- Hickman C. P. Jr., Hickman & L.S. Roberts. Integrated principles of zoology, Mosby college publication. St. Louis.
- Ayur, E.K., And T.N. Ananthakrishnan, Manual of zoology Vol. I, Invertebrata, Part I and II S.Viswanathan (Printers and Publishers) Pvt. Ltd. Madras.
- Balinsky, An Introduction to Embryology (CBS College Publishers).
- Grant- Biology of Development Systems (Holt. Reihart, Winston).
- Dr. S.S. Lal Practical Zoology Invertebrates 9th edition Rastogi Publications Meerut.

GENETICS - I

- P.K. Gupta, Genetics- Rastogi Publications Meerut.
- P.K. Gupta, Genetics Classical to Modern- Rastogi Publications Merrut.
- Verma P.S. and V.K. Agarwal, Genetics, S.Chand and Publication.
- Levin O.D. and Lewin R. Biology of Gene McGraw Hill Troppan Co.Ltd.
- Gunther S. Stent. Molecular Genetics McMillan Publication Co.Inc.
- Goodenough V. Genetics New York, Holt Rinchart and Winston.
- Winchester, Genetics Oxford HBH Publication.
- Strikberger, Genetics McMillan Publication
- Sinnott Dunn and Dobzansky- Principles of Genetics

B. Sc. Second Semester**Course Code – ZOL- 203****Zoology Paper: VI****ARTHROPODA TO ECHINODERMATA AND PROTOCHORDATA & CELL BIOLOGY
(PRACTICAL)**

- | | |
|--|-----------|
| 1. Study of museum specimen & slides of relevant Invertebrates & Protochordata. (At least 3 from each phylum). | 03 |
| 2. Dissections: | 05 |
| ➤ Dissection of Prawn for Nervous system | |
| ➤ Dissection of Cockroach for Digestive and Nervous Systems. | |
| ➤ Dissection of Pila for Nervous system. | |
| ➤ Dissection of Sea Star for Water Vascular System. | |
| 3. Mounting of any five of the following. | 01 |
| ➤ Mouthparts of Cockroach, Mosquito, House fly, Bed bug and Honeybee. | |
| ➤ Salivary glands of cockroach. | |
| ➤ Redula of Pila, Pedicellaria of Star fish. | |
| 4. Culture of Drosophila- experimental organism in genetics Observation of common mutants of drosophila | 01 |
| 5. Determination of human blood groups A, B, AB, and O, Rh factor. | 01 |
| 6. Major and minor problems in genetics | 04 |

Practical Periods 15

Skeleton of question paper
B. Sc. I & II semester
Course Code - ZOL- 103 & 203
Zoology Paper: III + VI

PROTOZOA TO ECHINODERMATA
AND PROTOCHORDATA, CELL BIOLOGY AND GENETICS - I (PRACTICAL)

1. Time: - 4:00 hrs

Total marks:-100

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- | | | |
|------|--|-----------|
| Q.1` | Dissect the.....so as to expose it'ssystem | 20 |
| Q.2 | Mounting of squash preparation of Onion root tip, identify the stage and give the reasons | 10 |
| | OR | |
| | Mounting of Salivary glands from Chironomus larva / Fruit fly. | |
| Q3. | Mounting of the given material | 05 |
| Q.4 | Genetics – Major problem | 15 |
| Q.5 | Identify the given spots and comments on it
(Protozoa to Echinodermata & Protochordata, cell organelles and common mutants) | 30 |
| Q.6 | Submission of permanent slides | 05 |
| Q.7 | Record book | 10 |
| Q.8 | Vivo-vice | 05 |