

# Mizoram University

## UG/Bachelor's Degree Programme with Multiple Entry and Exit Options

### Under the New Education Policy 2020

in

### Zoology

### First Semester

Semester	Course Code	Course Name	Components with Credits		Total credits
			Theory	Practical	
I	ZOO/MJ/100	Physiology	3	1	4
	ZOO/MJ/101	Biosystematics and Non-chordate Biology	4	-	4
	ZOO/MN/102	<i>[To be chosen from an MJ course offered by other disciplines]</i>	4	-	4
		Introductory Course (Interdisciplinary)	3	-	3
	AEC/103	MIL/English I	3	-	3
	VAC/104	Understanding India	2	-	2
					<b>20</b>

# Physiology

ZOO/MJ/100

Credits: 3 (Theory) + 1 (Practical)

## Theory

- Unit 1 Extracellular and intracellular digestions. Digestion of carbohydrates, proteins and fats. Respiration: mechanism in gills and lungs. Types of respiration – external, internal, and cutaneous.
- Unit 2 Open and closed circulation. Structure of mammalian heart: myogenic and neurogenic; pacemaker; cardiac cycle. Kidney: structure and function. Micturition.
- Unit 3 Osmoregulation in marine and terrestrial vertebrates. Types and ultrastructures of muscles; muscle proteins. Mechanism of muscle contraction – sliding filament theory; cross-bridge model.
- Unit 4 Types and structures of neurones. Resting and action potentials – propagation of nerve impulse. Major neurotransmitters. Structure of synapse. Synaptic transmission.

## Practical

1. Study of histological slides of stomach, intestine, lung, kidney and gonads of mammals.
2. Preparation of haemin crystals.
3. Stained preparations of smooth and skeletal muscles.
4. Demonstration of salivary amylase activity, with effect of pH and temperature.
5. Dissection/model description of heart and circulatory system of chicken/rat/mouse.

### Mark distribution of practical for end semester examination

1. Experiment 1	5
2. Experiment 2	5
3. Minor experiment/spotting	3
4. Laboratory record	3
5. Viva voce	4
TOTAL	20

### Suggested readings

1. Hill, R. W., Wyse, G. A., and Anderson, M. (2019). *Animal Physiology* (5<sup>th</sup> edition). Sinauer Associates, Inc.
2. Kardong, K. (2018). *Vertebrates: Comparative Anatomy, Function, Evolution* (8<sup>th</sup> edition). McGraw-Hill.
3. Moyes, C. D., and Schulte, P. M. (2015). *Principles of Animal Physiology* (3<sup>rd</sup> edition). Benjamin Cummings.
4. Yancy, P. H., Sherwood L., and Klandorf, H. (2014). *Animal Physiology: From Genes to Organisms* (2<sup>nd</sup> edition). Cengage Learning, Inc.

# Biosystematics and Non-chordate Biology

ZOO/MJ/101

Credits: 4

- Unit 1 Principles of classification: binominal nomenclature; taxonomic hierarchy; concepts of kingdom classification; concepts of domains. Species concepts.
- Unit 2 Protozoa: locomotion (amoeboid, cell crawling, ciliary and flagellar); types of reproduction. Structure of *Euglena*. Diseases from protozoans: Amoebiasis and trichomoniasis.
- Unit 3 Classification of non-chordates up to classes with their salient features. Metamerism. Symmetry in animals. Corals: types and importance.
- Unit 4 Canal system in poriferans. Reproduction and regeneration in *Hydra*. Polymorphism in Hydrozoa. Social organisation in honey bee. Life cycle of silkworm.

## Suggested readings

1. Kotpal, R. L. (2019). *Modern Textbook of Zoology: Invertebrates* (12<sup>th</sup> edition). Rastogi Publications.
2. Mayr, E., and Ashlock, P. D. (1991). *Principles of Systematic Zoology* (2<sup>nd</sup> edition). McGraw-Hill.
3. Pechenik, J. (2014). *Biology of the Invertebrates* (7<sup>th</sup> Edition). McGraw-Hill Education.
4. Wisner, M. F. (2011). *Protozoa and Human Disease*. Garland Science Taylor and Francis Group.