

# **Programme Outcomes, Programme Specific Outcomes and Course Outcomes For M.Phil Programmes**

**Programme Name: M.Phil. in Zoology**



Department of Zoology  
**University of North Bengal**  
West Bengal, INDIA

## Programme Outcomes

- Fundamentalknowledge on the principle and application of various scientific techniques with an idea on data interpretation.
- Knowledge on the application of different statistical tools and software programs related to research work.
- Development of communication and writing skills in a standard and scientific manner.
- Knowledge on plagiarism associated with work designing and drafting of a manuscript along with ethical issues related with experiments involving higher vertebrates.

## Programme Specific Outcomes

- Basic knowledge on the principle and application of various scientific techniques with an idea on data interpretation.
- Knowledge on the application of different statistical tools and software programs related to research work.
- Development of communication and writing skills in a standard and scientific manner.
- Knowledge on plagiarism associated with work designing and drafting of a manuscript along with ethical issues related with experiments involving higher vertebrates.

## Course Outcomes

SEMESTER—I		
Course Code	Course Name	Course Outcomes
MZCT-101	Advanced course in Zoology	<ul style="list-style-type: none"> <li>• Basic knowledge on the principle of various scientific techniques involved in research related to different fields of biological sciences.</li> <li>• Knowledge on application of scientific instruments on biological researches and the analysis of data/results pertaining to the research findings.</li> <li>• Concept development and conservation of Ramsar sites, Hotspots and Megadiversity countries.</li> </ul>
MZCT-102	<b>Course 1:</b> Review of Literature	<ul style="list-style-type: none"> <li>• A preliminary idea on studies and researches performed worldwide related to a particular topic of interest.</li> <li>• Concept of data/information collection from various authentic sources.</li> <li>• Skill development on drafting a review based on published papers.</li> </ul>
	<b>Course 2:</b> Research Ethics, Biometry, IPR, Bioinformatics, Computer applications and data processing	<ul style="list-style-type: none"> <li>• Knowledge on ethical issues associated with study designs involving higher vertebrates and the importance of Animal Ethical Committee of an institution. A basic understanding of Intellectual Property Rights and Plagiarism.</li> <li>• Information regarding the use and disposal of biohazardous substances in the laboratory pertaining to a researcher's safety and environment safety.</li> <li>• Understanding the application of various statistical software programs in finding out the significance of one's research outcomes.</li> </ul>

SEMESTER—II		
Course Code	Course Name	Course Outcomes
MZET 201	Course 1: Students have to opt any one course (Group A, B, C, D, E,	<p><b>Group A: Cellular and Molecular Immunology</b></p> <ul style="list-style-type: none"> <li>• Our team is engaged in finding out the intricate relationship of gut microbes in relation to disease in animal model.</li> <li>• Role of certain short chain fatty acids and bacterial metabolites are being investigated by his team of researchers.</li> </ul>

	F, G, H)	<p><b>Group B: Biology of Cancer and Genotoxicity</b></p> <ul style="list-style-type: none"> <li>• Cell Biology of cancer, Different techniques like multicolour FISH, spectral karyotyping.</li> <li>• Genetics of Cancer, epigenetic regulation of cancer.</li> <li>• Mutagens, carcinogens, environmental factors in cancer.</li> <li>• Therapeutic approaches in cancer, Tissue culture, genotoxicity assessment for carcinogenesis.</li> <li>• Intensive knowledge of molecular aspects of cancer.</li> <li>• Tools and techniques in cancer researches.</li> <li>• Motivated for researches in relevant field.</li> <li>• Competent to design and develop research ideas in relevant field.</li> </ul> <p><b>Group C: Insect Pest and Vector Biology and their Management</b></p> <ul style="list-style-type: none"> <li>• Knowledge on classification of insects and their pest status along with different types of pesticides that are used against pests.</li> <li>• Concept development on economic levels of pest infestation in agricultural and medical aspects along with the influence of change in climate and environment on insect and mite pests.</li> <li>• Basic idea on Pest forecasting and Pest control strategies.</li> <li>• Knowledge on Integrated Pest Management (IPM) and Integrated Resistance Management (IRM) in insect and mite pests and concept on quarantine and legislative measures for prevention of pest dispersal.</li> <li>• Knowledge on vector biology and vector control strategies of some major vectors of vector-borne diseases.</li> </ul> <p><b>Group D: Fish Biology and Aquaculture Techniques</b></p> <ul style="list-style-type: none"> <li>• Investigation in the field of fish biology, aquaculture, and fisheries.</li> <li>• To search the correlation with the fish population density and different limnological parameters of the major river located in the Northern part of West Bengal.</li> <li>• Study on the advanced techniques used in aquaculture and fisheries to increase the rate of production of the cultured as well as capture species according to the increasing demand of the market.</li> </ul> <p><b>Group E: Molecular Virology</b></p> <ul style="list-style-type: none"> <li>• Inculcate current understanding of viral diseases.</li> <li>• Diversity of DNA and RNA viruses.</li> <li>• Importance of studying viral biology and replication strategies of pathogenic viruses.</li> <li>• Study virus-host interactions both at surface interactions as well as at protein levels.</li> </ul> <p><b>Group F: Mitochondrial Biology and Diseases</b></p> <ul style="list-style-type: none"> <li>• To understand the basic mitochondrial physiology and its associated processes</li> <li>• To inculcate the current understanding of mitochondrial diseases.</li> <li>• To be acquainted with basic techniques for detection of mitochondrial diseases mediated by mitochondrial dysfunction.</li> </ul> <p><b>Group G: Fish Endocrinology and Chronobiology</b></p> <ul style="list-style-type: none"> <li>• To study the chronobiotic characteristics of an endocrine molecule.</li> <li>• At present, the laboratory is engaged to investigate the role of the chronobiotic molecule melatonin in the field of fish physiology and reproductive endocrinology.</li> <li>• Characterized and chronobiotic study of the tiny hormone melatonin from the fish gut.</li> <li>• The hypothesis that melatonin produced by the gut, in the response of external factor(s), has any role in ovarian development is yet to be tested.</li> </ul>
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	Course 2: Study of Research Articles	<ul style="list-style-type: none"> <li>• Idea about unexplored section of a particular research topic.</li> <li>• A preliminary idea on similar work done in different other regions related to a particular topic of interest.</li> <li>• Provides a clear framework of research to be performed in near future.</li> </ul>
	Course 3: Seminar presentation	<ul style="list-style-type: none"> <li>• Skill development on oration and verbal communication.</li> <li>• Fruitful suggestions and advice from critics regarding a scientific topic or a field of interest.</li> </ul>
<b>SEMESTER—III and IV</b>		
Course Code	Course Name	Course Outcomes
MZCC-301	Dissertation	<ul style="list-style-type: none"> <li>• Intensive knowledge particular field and tools and techniques.</li> <li>• Knowledge on sample collection and identification and the use of different scientific instruments in the laboratory.</li> <li>• Designing and executing a small research work.</li> <li>• Equipped to compile scientific resources published in journals motivated for Researches or Higher studies.</li> <li>• Competent to design and develop research ideas in relevant field.</li> <li>• Equipped to pursue researches/ Higher studies in reputed academic institution/ industries.</li> </ul>