

<b>Course</b>	<b>Discipline Specific Elective</b>
Semester	VI
Paper Number	MBTDS6031T
Paper Title	PLANT AND ANIMAL DIVERSITY
No. of Credits	6
Theory/Composite	Theory
No. of periods assigned	5 Theory + 1Tutorial
Course description/objective	<p>The course aims to</p> <ol style="list-style-type: none"> <li>1. introduce students to plant groups and their overall morphological and anatomical structures.</li> <li>2. provide knowledge about complexity of plant groups and their evolutionary relationship.</li> <li>3. provide an overview of angiosperm morphology and embryology in plants.</li> <li>4. provide an overview of animal diversity and comparative anatomy of vertebrate phyla.</li> <li>5. compare and contrast the life processes in different animal phyla and learn how the different systems evolved in their complexity.</li> <li>6. familiarize the students with diverse aspects of animal biology and enable them to develop an understanding of the animal kingdom.</li> </ol>
Syllabus	<p><b>Module A: (40 Marks)</b></p> <p><b>UNIT I: Plant Kingdom:</b> Cyanobacteria general account, Life cycle patterns of algae with reference to: Chlorophyta, Rhodophyta, Cryptophyta, Chrysophyceae, Xanthophyceae, Phaeophyceae, Bacillariophyceae; algal biotechnology. Life cycle patterns of fungi, with reference to Mastigomycotina, Zygomycotina, Ascomycotina, Basidiomycotina, Deutromycotina; fungal biotechnology. Bryophytes, Pteridophytes and Gymnosperms - General characters, classification, life cycle patterns and economic importance.</p> <p><b>UNIT II: Angiosperm Morphology</b> - root system – modifications; bud and shoot system - branching, modifications - aerial, sub-aerial and underground; leaf - simple and compound, phyllotaxy, modifications of leaf, stipules, inflorescences - types: racemose, cymose, mixed and special types; flower as a modified shoot, forms of corolla, types of stamen and carpel, placentation, pollination types, fruits: simple, aggregate and multiple, dispersal mechanism.</p> <p><b>UNIT III: Embryology</b> - Microsporangium, Microsporogenesis, Development of male gametophyte; Megasporangium- Different types, Megasporogenesis, Development of female gametophyte; Gametic fusion; Triple fusion; Development of dicot embryo- Capsella, Development of monocot embryo – Luzula; Endosperm - Definition, different types - free nuclear, cellular, helobial endosperm; haustoria, Apomixis - Definition and types.</p> <p><b>No. of Classes:</b> 3 Classes per week including tutorial</p> <p><b>Module B: (40 Marks)</b></p> <p><b>UNIT IV: Animal Diversity:</b> Polymorphism in Cnidaria; Torsion in</p>

	<p>Gastropoda; Snake Venom, venom apparatus, types of venom and therapeutic uses; Volant adaptations and the principles of flight, migration and mechanisms of navigation in Aves; Animal Electricity; Thermoregulation; Zoogeographical realms, animal distribution, island biogeography; Territoriality: territorial defense and contests, costs and benefits of territoriality.</p> <p><b>UNIT V: Comparative Anatomy:</b> Comparative anatomy and structural organization of the</p> <p>(a) digestive system: dentition, the vertebrate stomach, digestion in ruminants</p> <p>(b) circulatory system: types of hearts, circulation in vertebrates</p> <p>(c) respiratory system: respiratory organs, accessory respiratory organs and modes of respiration in vertebrates</p> <p>(d) excretory system: modes of excretion in vertebrates, osmoregulation</p> <p>(e) nervous system: comparison of brain in vertebrate groups, EQ, structure of mammalian eye and ear.</p> <p><b>UNIT VI:</b> Field Trip for study of animal diversity.</p> <p><b>No. of Classes:</b> 3 Classes per week including tutorial</p>
Readings	<p>Module A:</p> <ol style="list-style-type: none"> <li>1) R. E. Lee Phycology.</li> <li>2) Bhattacharya, Hait and Ghosh. A Text Book of Botany. Vol I &amp; II.</li> <li>3) Ganguly and Kar, College Botany. Vol I, II and III.</li> <li>4) Mitra, Mitra, Chowdhuri. Studies in Botany. Vol I. and II.</li> <li>5) Review papers</li> </ol> <p>Module B:</p> <ol style="list-style-type: none"> <li>6) J.Z. Young. The Life of Vertebrates.</li> <li>7) E.E. Ruppert, R.S. Fox, R.B. Barnes. Invertebrate Zoology.</li> <li>8) K.V. Kardong. Vertebrates – Comparative Anatomy, Function, Evolution.</li> <li>9) K. Schmidt-Nielsen. Animal Physiology: Adaptation and Environment.</li> <li>10) B.B. Ganguly, A.K. Sinha, S. Adhikari. Biology of Animals Vol.1</li> <li>11) B.B. Ganguly, A.K. Sinha, S. Adhikari, B.C.B. Goswami. Biology of Animals Vol. 2.</li> <li>12) S. Adhikari, A.K. Sinha. Fundamentals of Biology of Animals.</li> </ol>
Evaluation	<p>Continuous Internal Assessment (including field trip report): 20 marks</p> <p>End-Semester Theory Examination: 80 marks</p>
Paper Structure for End Sem Theory	<p>Module A (40 marks)</p> <p>Compulsory objective questions: 10 marks</p> <p>Any 3 from 5 subjective questions with subparts: = 10 x 3 = 30 marks</p> <p>Module B (40 Marks)</p> <p>Compulsory objective questions: 1x 10 = 10 marks</p> <p>Any three from five subjective questions with subparts: = 10 x 3 = 30 marks.</p> <p>(No sub-part will be less than 1 mark or more than 5 marks).</p>