

CURRICULUM REVISION FOR LEVEL- 2G

PRINCIPAL SUBJECT: ZOOLOGY

(Effective from the Academic Year 2017/2018)

The last major curriculum revision for Zoology was done in 2014 under the Quality Innovation Grant of the Higher Education for Twenty First Century Project of the Ministry of Higher Education, Biological Science won the award in 2012 (HETC/QIG/W2/JFN Biological Sciences) for three major activities. Revising the curriculum was one of the major activities of the Biological Science study programme.

The Department of Zoology has been revising its curriculum since March 2013 under the Biological Science study programme with the guidance of subject experts. The whole set of revised curriculum for level 1G, 2G, 3G, 3M, 4M and 4X was submitted to the Faculty Board and approved at the 144th meeting held on 31st January 2014 (SFB/144/06(c)) and at the 160th meeting held on 13.06.2017 (SFB/160/06). The Senate has also approved the curriculum of Level 1G, 2G, 3G, 3M and 4M and recommended on its 389th meeting (S/389/10/d) held on 24.06.2014 and 426th meeting held on 18.09.2017 respectively.

With the introduction of the new structure of the Bachelor's Degree programmes in the Faculty of Science, the Department of Zoology has now submitted the Level-2G syllabi for the Bachelor Degree programmes for the Biological Sciences. The staff members of the Department of Zoology namely Professor S.N.Surendran, Dr. Mrs. R. Ganeswaran, Ms. R.Nithyagowry, Dr. T. Eswaramohan, Mr. W. VenkateshLuckshman, Dr. Mrs. A.Sivaruban, Dr. K.Gajapathy, Mrs. P. Sivakumar, Dr. T.W.Shanthakumar, Ms.S.Kokila and Mr.S.Arthiyan were involved in the revising the new curriculum.

This syllabi will be effective from the Academic year 2017/2018. The submitted syllabi was approved in the Faculty Board of Science (SFB/168/5e) on 27th November 2018 and in the Curriculum Evaluation Committee meeting on 26th December 2018 as well. Now this revised syllabus submitted for the recommendation of the Senate.

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Dr. T.Eswaramohan
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Faculty of Science.
18.2.2018

Department of Zoology

Faculty of Science

University of Jaffna

Sri Lanka

2017/2018

Curriculum for

Bachelor of Science in Biological Science

BSc (Biological Sciences)

Level -2G

February 2019

List of Course units offered in Level 2G

Course code	Course Title	No. of Hours		No. of Credits	Independent learning
		Theory	Practical (P) & Field (F)		
ZOL 201 G3	Animal Phylogeny and Biology	27	30 (P) +9(F)	3	84 hrs
ZOL 202 G2	Animal Genetics	30	-	2	70 hrs
ZOL 203 G2	Comparative Anatomy and Physiology	20	24	2	56 hrs
ZOL 204 G3	Animal Ecology and Behaviour	27	24 (P)+18(F)	3	81 hrs
Total credits				10	

**CURRICULUM REVISION
PRINCIPAL SUBJECT – ZOOLOGY**

General Description

Theory: Class room lectures, tutorials, group discussion, Presentation, assignments and Field session

In-course assessment(s): (30%)

Tutorials based written examination / library assignment /take home assignments / presentation/ oral examination/ Quiz/ poster presentation /online submission.

End of course examination: (70%)

Two hours duration.

Practical: Laboratory sessions, field sessions, group discussion and assignment

In-course assessment(s): (30%)

Spot examination/ skill evaluation/ field reports/ oral or poster presentation/ assignment/ practical records/ viva-voce examination.

End of course examination: (70%)

Two hours duration

The respective marks obtained in theory component (MT) and practical component (MP) will be computed into Overall Marks as $(3MT+2MP)/5$.

Obtaining minimum of Grade D⁺ in both practical and theory components is a requisite to qualify a pass in the Overall Marks computed in respective course.

LEVEL 2G

ZOL 201 G3: Animal Phylogeny and Biology
ZOL 202 G2: Animal Genetics
ZOL 203 G2: Comparative Anatomy and Physiology
ZOL 204 G3: Animal Ecology and Behaviour

List of Resource Persons contributed to develop these course units.

Course Code	Course Title	Resource Person(s)
ZOL 201 G3	Animal Phylogeny and Biology	Dr.Mrs.A.Sivaruban Mrs.R.Nithyagowry
ZOL 202 G2	Animal Genetics	Dr. Mrs. T.W. Shanthakumar
ZOL 203 G2	Comparative Anatomy and Physiology	Dr. T. Eswaramohan
ZOL 204 G3	Animal Ecology and Behavior	Mr.W.VenkateshLuckshman Mrs.P.Sivakumar Mrs.R.Nithyagowry

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18.2.2019

Semester	First			
Title of the Course Unit	Animal phylogeny and Biology			
Course Code	ZOL201G3			
Credit Value	3			
Core/Optional	Core			
Hourly Breakdown	Theory	Practical	Field	Independent Learning
	27	30	9	84
Objective/s	<ul style="list-style-type: none"> • Explain the Phylogenetic status and adaptive radiation within each classes of Invertebrates and Vertebrates • Recognize the morphological characters, with respect to the evolutionary life histories of invertebrates and vertebrates 			
Intended Learning Outcomes	<ul style="list-style-type: none"> • Describe various evolutionary life histories • Analyze the phylogenetic and biological relationship among the animals and animal groups • Develop an understanding on the biological relationship between invertebrates and vertebrates • Discuss the economic importance of invertebrates and vertebrates 			
Contents	Morphology, phylogeny, evolutionary relationships, biology, life history, adaptive radiations within the invertebrate phyla (Protozoa, Porifera, Colenterata, Platyhelminthes, Nematoda, Annelida, Arthropoda, Mollusca, Echinodermata and minorphyla) and vertebrate classes (OstrichthesChondrichthyes, amphibia, reptilia, aves and mammalia).			
Teaching learning Methods/Activities	Theory: In-person lectures Practical: Hands on training, learning in laboratory and field, oral presentation - individual / group assignments			

<p>Evaluation/Assessment Strategy</p>	<p>Theory: In-course assessment(s): (30%) Tutorials based written examination / presentation/ oral examination/ Quiz/ online submission. End of course examination: (70%) Final Written Examination for Two hours duration.</p> <p>Practical: In-course assessment(s): (30%) Spot examination/ skill evaluation/ oral presentation/Assignment/ practical records. End of course examination: (70%) Final Written Examination for Two hours duration.</p>
<p>Recommended References</p>	<ol style="list-style-type: none"> 1. Hickman, C.P. Jr.(2015). Animal Diversity. Mc-Graw Hill publishes. ISBN: 978-0-07-35225-2. 2. Kardong, K. V (2002). Vertebrates comparative anatomy, function and evolution... Mc-Graw Hill publishes. ISBN: 0-07-290956-0. 3. Linsey D. W (2012).Vertebrate Biology.. Hopkins University Press. ISBN-13: 978-1421400402. 4. Ruppert, E.E., R. S. Fox and R. D. Barnes. (2004). Invertebrate Zoology: A Functional Evolutionary Approach., ISBN : 0-03-025982-7. 5. Young, J. Z (1994). The life of vertebrates.. Oxford University Press. ISBN: 0-19-442393.

<p>Semester</p>	<p>First</p>
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Title of the Course Unit	Animal Genetics	
Course Code	ZOL202G2	
Credit Value	2	
Core/Optional	Core	
Hourly Breakdown	Theory	Independent Learning
	30	70
Objective/s	<ul style="list-style-type: none"> • Explain the fundamentals and principles of inheritance, hereditary factors, progeny diversity and succession • Distinguish the anomalies in inheritance through basic molecular techniques and recent advances 	
Intended Learning Outcomes	<ul style="list-style-type: none"> • Describe the theories and concepts in Genetics • Describe the Mendelian Genetics and extensions of Mendelian Genetics • Analyze the various inheritance patterns in animals • Explain the fundamentals of Population Genetics and Molecular basis of Genetics 	
Contents	Mendelian genetics and chromosomal inheritance; Chromosome theory of inheritance; Extensions of Mendelian Genetics: Complexities in relating to phenotypes and genotypes; Linkage and mapping; Sex determination; Gene mutation; Genetic disorders; Population Genetics; Basic Molecular Genetics and its application.	
Teaching learning Methods/Activities	Lectures, presentations, home-work assignments and tutorial discussions	
Evaluation/Assessment Strategy	<p>In-course assessment(s): (30%) Tutorials based written examination / presentation/ oral examination/ Quiz/ online submission.</p> <p>End of course examination: (70%) Final Written Examination for Two hours duration</p>	
Recommended References	<ol style="list-style-type: none"> 1. Griffiths, A.J.F., Miller, J.H., Suzuki, D.T., Lewontin, R.C. and Gelbart, W.M; W.H. (1996). An Introduction to Genetic Analysis. Freeman and Company, New York, USA. ISBN:0-7167-2604-1. 2. Hartwell, L., Hood, L., Goldberg, M.L., Reynolds, A. E., Silver, L.M. and Veres, R.C (2000). Genetics: From Genes to Genomes. McGraw Hill Companies. (2000), ISBN: 0-07-540923-2. 	

	<p>3. Krebs, J.E., Goldstein, E.S. and Kilpatrick, S.T (2014). Lewin's Genes XI. Jones and Bartlett Publishers.</p> <p>4. Sanders, M. F and Bowman, J. L (2014). Pearson Education; (2014). Genetic Analysis: An Integrated approach. ISBN: 9780321948908.</p>
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Semester	Second		
Title of the Course Unit	Comparative Anatomy and Physiology		
Course Code	ZOL 203 G2		
Credit Value	2		
Core/Optional	Core		
Hourly Breakdown	Theory	Practical	Independent Learning
	20	24	56
Objective/s	<ul style="list-style-type: none"> • Compare the anatomy of different animal taxa • Distinguish different physiological mechanisms of animals 		
Intended Learning Outcomes	<ul style="list-style-type: none"> • Compare the diverse anatomical features of various animals groups • Distinguish the anatomical similarities and differences in the evolutionary point of view • Describe the major physiological mechanisms of various system in invertebrates and in Vertebrates • Compare the adaptive variations of physiological patterns with respect to different life styles 		
Contents	<p>A comparative study of anatomical features of animals such as body cavities, integument, muscular, vascular, skeletal, respiratory, excretory, nervous, and reproductive systems of invertebrates and chordates.</p> <p>A comparative study of physiological phenomena or mechanism in the animals with respect to life styles (terrestrial, aquatic and aerial) such as feeding, digestion and assimilation, senses and nerves, defense, respiration, excretion, reproduction, hormonal action, circulation, immune system, muscular and skeletons.</p>		

<p>Teaching learning Methods/Activities</p>	<p>Theory: In-person lectures Class room assignment, oral presentation, tutorials, group discussion, home-work assignments.</p> <p>Practical: Laboratory sessions, group discussion, oral presentation and assignment.</p>
<p>Evaluation/Assessment Strategy</p>	<p>Theory: In-course assessment(s): (30%) Tutorials based written examination / presentation/ oral examination/ Quiz/ online submission. End of course examination: (70%) Final Written Examination for Two hours duration.</p> <p>Practical: In-course assessment(s): (30%) Spot examination/ skill evaluation/ oral presentation/Assignment/ practical records. End of course examination: (70%) Final Written Examination for Two hours duration.</p>
<p>Recommended References</p>	<ol style="list-style-type: none"> 1. Kenneth Kardong (2018).Vertebrates: Comparative anatomy, Function, Evolution. McGraw-Hill Education; ISBN-13: 978-1260398564. 2. Knut Schmidt-Nielsen (2014). Animal Physiology: Adaptation and Environment. Cambridge University Press; ISBN-10: 0511801823. 3. Richard Owen (2015). Lectures on the Comparative Anatomy and Physiology of the Invertebrate Animals. Andesite Press; ISBN-10: 1297669622.

Semester	Second		
Title of the Course unit	Animal Ecology & Behaviour		
Course code	ZOL 204 G3		
Credit Value	3		
Core/ optional	Core		
Hourly Breakdown	Theory	Practical (P) and / Field (F)	Independent Learning
	27	24 (P)+18(F)	81
Objective/s	<ul style="list-style-type: none"> • Recognize animal groups in nature • Evaluate the number and types of animals in any ecosystem • Describe types of animal behaviour • Distinguish the characteristics patterns of behaviour among animal groups 		
Intended Learning Outcomes	<ul style="list-style-type: none"> • Explain difference in ecology, life in different habitats and respective niches • Discuss the principal interactions between different species • Analyze the major biological forces structuring population dynamics and communities • Distinguish different animal behaviours' • Describe the significances of animal behaviours in the ecology 		
Contents	<p>Principles of ecology, habitat, ecological niche, faunal community structure and organization at the population level. Age structure, distribution, natality and mortality in the population. Survivorships, life table, growth curve- S and J shaped. Spacing and limiting factors, positive and negative interactions territoriality and home range, social hierarchies and societies.</p> <p>Principles of animal behavior, innate, instincts, conditioning, learning, migration and foraging, social organization, altruistic behavior, sexual conflicts & selection, co-evolution, communication and cognition, reproductive behaviour, etc.;</p> <p>Selected experimental studies of the above.</p>		
Teaching learning Methods/Activities	<p>Theory: In-person lectures</p> <p>Practical: Hands on training, learning in laboratory and field, oral presentation - individual / group assignments</p>		
Evaluation/Assessment Strategy	<p>Theory: In-course assessment(s): (30%)</p>		

	<p>Tutorials based written examination / presentation/ oral examination/ Quiz/ online submission. End of course examination: (70%) Final Written Examination for Two hours duration.</p> <p>Practical: In-course assessment(s): (30%) Spot examination/ skill evaluation/ oral presentation/Assignment/ practical records. End of course examination: (70%) Final Written Examination for Two hours duration.</p>
<p>Recommended References</p>	<p>Chapman, J.L. & Reiss, M.J (1992). Ecology: Principles and applications. Cambridge University Press.</p> <p>Lee Alan Dugatkin (2013). Principles of Animal Behavior. W. W. Norton & Company.</p> <p>Odum, E.P (1959).Ecology. Wb saunders Company, USA.</p>