



Course Outline

Programme	BS Zoology	Course Code	ZOOL-418	Credit Hours	1
Course Title	Lab. Evolution				
Course Introduction					
In this hands on course, students will explore the mechanisms and evidences of evolution through experiments, simulations and data analysis. Building on the foundational concept students will delve into scientific methods and techniques used to study evolutionary processes.					
Learning Outcomes					
On the completion of the course, the students will:					
<ol style="list-style-type: none"> 1. Explore the evolution of specific traits 2. Investigate the principles of natural selection, mutation and genetic drift. 3. Design and conduct experiments to test evolutionary hypothesis 4. Analyze and interpret evolutionary data 					
Course Content				Assignments/Readings	
Week 1	Calculation of gene and genotype frequency for generations			Sample question	
Week 2	Calculation of gene and genotype frequency for two or three consecutive generations			Sample question	
Week 3	deviation of genotype from Hardy Weinberg equilibrium after selection			Sample question	
Week 4	Chi square test to assess deviation from Hardy Weinberg equilibrium			Sample question	
Week 5	deviation of genotype from Hardy Weinberg equilibrium after genetic drift			Sample question	
Week 6	deviation of genotype from Hardy Weinberg equilibrium after mutation			Sample question	
Week 7	deviation of genotype from Hardy Weinberg equilibrium after migration			Sample question	
Week 8	Simulation to check the effects of natural selection on the mock population			To make tables and graph	
Week 9	Compilation and discussion on the Simulation of effects of natural selection on population				
Week 10	Simulation to check the effects of genetic drift on the mock population			To make tables and graph	
Week 11	Compilation and discussion on the Simulation of effects of genetic drift on population				
Week 12	To calculate frequency of Haplotypes in the population			Sample question	
Week 13	To calculate frequency of Haplotypes in the population and change in their frequency after selection			Sample question	
Week 14	Simulation of Coevolution			To make tables and graph	
Week 15	Compilation of the result of Coevolution simulation				
Week 16	Discussion on the evidences of evolution (Pros and cones)				

Textbooks and Reading Material

1. Textbooks.

Ridley, M. 2011. *Evolution*. Blackwell Scientific Publications, New York, USA (Third edition)

2. Suggested Readings

Strickberger. M.W. 2012. *Evolution*. Jones & Barrett Publishers. Gower Street, London, England.

Moody, P.A. 1989. *Introduction to Evolution*, Harper and Row, Publishers, New York

Wiley, E. O. and Lieberman, B. S. 2011. *Phylogenetics: Theory and Practical Practice of Phylogenetic systematics*. 2nd Ed. Wiley-Blackwell.

Bell, G. 2009. *Selection, the mechanism of evolution* 2nd edition. Oxford university press

Teaching Learning Strategies

1. Lecture
2. Discussion
3. simulations

Assignments: Types and Number with Calendar

Every week sample questions

Assessment

Sr. No.	Elements	Weightage	Details
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, attitude and behavior, hands-on-activities, practical, etc.
3.	Final Assessment	40%	Written Examination at the end of the semester.