

Semester	6		
Course code	ZOOL 42554		
Course Name:	Molecular Genetics		
Credit Value:	4		
Core/Optional	Optional		
Pre requisites			
Co-requisites	None		
Hourly Breakdown	Theory	Practical	Independent Learning
	45	30	125
Course Aim/Intended Learning Outcomes:			
After completion of the course unit, the student will be able to;			
<ul style="list-style-type: none"> ➤ describe molecular processes in cells relevant to transcription, translation and control of gene expression, ➤ explain the manipulation of biological molecules in bacteria for detection, identification and genome transformation, ➤ discuss the application of molecular genetics techniques in real life situations and ➤ demonstrate practical skills to apply the most suitable molecular biological technique to diagnose genetic disorders. 			
Course Content:			
Introduction to molecular processes in cells relevant to transcription, translation and control of gene expression. Manipulation of biological molecules in bacteria for detection, identification and genome transformation. Molecular biological techniques used to isolate, separate, and probe for specific proteins and nucleic acids and their interactions. Selection of appropriate molecular genetics technique for diagnosis processes and treatment to human genetics disorders. Limitations of molecular biological techniques. Genetically modified organisms; Introduction to bioinformatics.			
Practical sessions on application of molecular genetics techniques; recombinant therapeutic proteins; applications of recombinant DNA technology; applications of molecular biological techniques in selected infectious diseases. Introduction to PCR based molecular diagnostic assays; DNA fingerprinting for human identification; applications of molecular diagnostics in clinical practice; nucleic acid based therapeutics; recombinant protein antigens in diagnostics including ELISA. Monoclonal antibodies.			
Teaching /Learning Methods: A combination of lectures, laboratory sessions, computer based learning, seminars and assignments, self-studies and small group discussions.			
Assessment Strategy: Continuous assessment and end of course examination.			
Continuous Assessment 25%	Final Assessment 75%		
Details: Online/in-class tutorials/Assignments 10% Practical reports 15%	Theory (%) 75%	Practical (%) NA	Other (%) (specify) NA
Recommended reading:			
<ol style="list-style-type: none"> 1. Wilson, K. & J. Walker (2010). Principles and Techniques of Biochemistry and Molecular Biology, 7 edition, Cambridge University Press. 2. Cox, M. M., J. Doudna & M. O'Donnell (2011). Molecular Biology: Principles And Practices. 1st Edition. W. H. Freeman, 3. Freifelder, D. (1998). Molecular Biology. Jones & Bartlett Publishers, Inc. 4. Sambrook, J. Fritsch, F.F. & T. Maniatis (1989). Molecular Cloning- A Laboratory Manual (3 volume set). Cold Spring Harbor Laboratory, USA. 			