

DEREE COLLEGE SYLLABUS FOR: BIO 4350 BIOMEDICAL GENETICS AND GENOMICS			3/1/3						
(Created: Spring 2025)		UK LEVEL: 6 UK CREDITS: 15							
PREREQUISITES:	BI 1000 Introduction to Biology I BI 1101 Introduction to Biology II BMS 4430 Bioinformatics and Health Information Systems								
CATALOG DESCRIPTION:	An integrated exploration of biomedical genetics and genomics for science majors. Focuseson advanced concepts of populations genomics, genetic variation, functional genomics, disease related gene identification, cancer genetics, diagnostic tests and related ethics. It examines genetic diseases, genomics and applications of genetic technologies.								
RATIONALE:	To inform students about human genetic concepts and applications, as an overview of a dynamic subject that is continuously expanding. It is a field that is becoming increasingly important in clinical practice and will certainly have complex effects on the general public, as it contributes to decisions about reproduction and health. Concept questions prompt recall of basic facts, while cases, research questions, and bioethics questions challenge the student to apply key concepts to real situations.								
LEARNING OUTCOMES:	As a result of taking this course, the student should be able to: 1. Understand the basic concepts of Biomedical genetics and genomics. 2. Formulate genetic hypotheses and develop skills in problem solving. 3. Analyse biomedical datasets and critically evaluate the results. 4. Demonstrate advanced knowledge in human molecular genetics, link genetics to disease and understand genetic techniques to treat or diagnose diseases.								
METHOD OF TEACHING AND LEARNING:	In congruence with the teaching and learning strategy of the college, the following tools are used: • Class lectures, interactive learning (class discussions, group work) video presentations, and practical problems solved in class. • Exercises and primary source documents are assigned as homework, the solutions of which are reviewed in class. • Office hours: students are encouraged to make full use of the office hours of their instructor, where they can ask questions, seetheir exam paper, and/or go over lecture/lab material. • Use of a blackboard site, where instructors post lecture notes, assignment instructions, timely announcements, as well as additional resources.								
ASSESSMENTS:	<table><tr><td colspan="2">Summative:</td></tr><tr><td>1st assessment: In-class midterm examination (1-hour) (short answers/essay questions combination/problem solving.</td><td>30%</td></tr><tr><td>2nd assessment: Oral Presentation/Flipped classroom</td><td>20%</td></tr></table>			Summative:		1 st assessment: In-class midterm examination (1-hour) (short answers/essay questions combination/problem solving.	30%	2 nd assessment: Oral Presentation/Flipped classroom	20%
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	Formative:		
	<table><tr><td>Practical hands-on assignments during class and in class online test</td><td>0</td></tr></table>	Practical hands-on assignments during class and in class online test	0
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The formative assessments aim to prepare students for the examinations. Students are expected to submit feedback on their performance. The first assessment covers LOs 1, 2 and 4. The second assessment covers LOs 1, 3 and 4. The final assessment covers all LOs and is comprehensive. <i>The final grade for this module will be determined by averaging all summative assessment grades, based on the predetermined weights for each assessment. If students pass the comprehensive assessment that tests all Learning Outcomes for this module and the average grade for the module is 40 or higher, students are not required to resit any failed assessments.</i>			
INDICATIVE READING:	REQUIRED READING: Required Textbooks: 1. Stachan and Lucassen, Genetics and Genomics in Medicine, Latest edition 2. Strachan and Read, Human Molecular Genetics, 5 th edition, Garland Science RECOMMENDED READING: Other sources, including journal and newspapers' articles, research papers etc. recommended by the instructor throughout the semester.		
INDICATIVE MATERIAL: (e.g. audiovisual, digital material, etc.)	REQUIRED MATERIAL: N/A RECOMMENDED MATERIAL: N/A		
COMMUNICATION REQUIREMENTS:	Verbal and written skills using academic / professional English.		
SOFTWARE REQUIREMENTS:	MS Office and Blackboard CMS MS Teams		
WWW RESOURCES:	www.mhhe.com/lewisgenetics http://www.mhhe.com/lewisgenetics7 http://www.dnalc.org/ www.sciam.com. www.mhhe.com/maderinquiry14 http://www.cellsalive.com/ http://www.dnafb.org/dnafb/ http://www.usd.edu/biol/labs/151/devel51.htm http://www.learner.org/courses/biology/archive/animations.html		

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INDICATIVE CONTENT:	- Population genomics and human genetic variation - Functional genetic variation - Protein polymorphism - Identifying disease genes - Identifying genetic susceptibility - Genetic approaches to treating disease - Cancer genetics and genomics - Genetic and genomic testing - Practical and ethical aspects of genetics in healthcare.