

DEREE COLLEGE SYLLABUS FOR: BMS 4546 MOLECULAR BASIS OF CANCER		3/0/3
(Updated: FALL 2025)		UK LEVEL: 6 UK CREDITS: 15
PREREQUISITES:	BI 1000 Introduction to Biology I BI 1101 Introduction to Biology II BI 2222 Cell Biology BI 3336 Molecular Biology CH 2015 General Chemistry	
CATALOG DESCRIPTION:	The course focuses on the biology of cancer and provides a detailed overview of the molecular mechanisms that lead to tumorigenesis.	
RATIONALE:	An in-depth approach to understanding the molecular basis of cancer, focusing on DNA replication and the cell cycle. The course supplements the pool of final-year electives of the BMS program, covering the biology, biochemistry and genetics of cancer. This is a module that builds on the molecular biology course, focusing on how genes induce or prevent cancer and the mechanisms by which the cell cycle is involved in this process. It also provides an overview of the different agents that can cause cancer and the mechanisms that the cell possesses to prevent carcinogenesis.	
LEARNING OUTCOMES:	<i>As a result of taking this course, the student should be able to:</i> 1. Demonstrate understanding of the molecular processes that lead to cancer. 2. Distinguish between oncogenes and tumor suppressor genes. 3. Relate carcinogens to different DNA repair mechanisms. 4. Illustrate how defects in the cell cycle may lead to cancer. 5. Discuss critically current understanding of the molecular basis of tumorigenesis using scientific papers.	
METHOD OF TEACHING AND LEARNING:	In congruence with the teaching and learning strategy of the college, the following tools are used: • Lectures and class discussions. • Homework assignments. • Office hours held by the instructor to provide further assistance to students. • Master lectures by esteemed professors and other experts in the field. • Tutorials of an interactive format to establish understanding of topic areas primarily through case studies and experimentally derived data. • Use of library facilities for further study and preparation for the exams • Use of the Blackboard course management platform to further support communication, by posting lecture notes, assignment instruction, timely announcements, formative quizzes and online submission of assignments.	
ASSESSMENT:	Summative:	

	<table><tr><td>1st assessment: In-class midterm examination with multiple choice questions and/or short answer questions</td><td>30%</td></tr><tr><td>2nd assessment: Oral presentation on a cancer related topic/paper or case study</td><td>20%</td></tr><tr><td>Final assessment: Final examination, with multiple choice and/or short answer, short essay, critical thinking questions, comprehensive</td><td>50%</td></tr></table>	1 st assessment: In-class midterm examination with multiple choice questions and/or short answer questions	30%	2 nd assessment: Oral presentation on a cancer related topic/paper or case study	20%	Final assessment: Final examination, with multiple choice and/or short answer, short essay, critical thinking questions, comprehensive	50%
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	Formative: <table><tr><td>Multiple choice, short answers, essays</td><td>0</td></tr></table>	Multiple choice, short answers, essays	0				
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The formative assessments aim to prepare students for the summative assessments. The 1st assessment tests Learning Outcomes 1-4. The 2nd assessment tests Learning Outcome 5. The final assessment tests all Learning Outcomes 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: Pecorino, Molecular biology of Cancer, Oxford, latest edition RECOMMENDED READING: 1. Mendhelson et al, The molecular basis of cancer, Elsevier, latest edition 2. Other sources, including journal 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						
INDICATIVE CONTENT:	1: Introduction to cancer biology 2: The cancer genome 3: Regulation of gene expression 4: Growth factor signaling and oncogenes 5: The cell cycle 6: Tumor suppressor genes 7: Apoptosis 8: Cancer stem cells and the regulation of self-renewal and differentiation pathways 9: Metastasis 10: Angiogenesis						