

**COURSE DESCRIPTIONS**

<b>Faculty</b>	Pharmacy				
<b>Department</b>	Medical laboratory sciences	<b>NQF level</b>	5		
<b>Course Title</b>	Oncology	<b>Code</b>	902464	<b>Prerequisite</b>	902378
<b>Credit Hours</b>	3	<b>Theory</b>	3	<b>Practical</b>	0
<b>Course Leader</b>	Sokiyna Ababneh,M.Sc	<b>email</b>	s.ababneh@jadara.edu.jo		
<b>Lecturers</b>	Sokiyna Ababneh,M.Sc	<b>emails</b>	s.ababneh@jadara.edu.jo		
<b>Lecture time</b>		<b>Classroom</b>			
<b>Semester</b>	First 2021-2022	<b>Production</b>	2019	<b>Updated</b>	2020
<b>Awards</b>		<b>Attendance</b>	Fulltime		

**Short Description**

This course will offer a broad overview of the biology and pathology of cancer. The first part of the course will emphasize on the genetic and molecular basis of cancer. We will explore the role of mutations in cancer cells and how they lead to the deregulation of crucial biological properties such as programmed cell death, cell proliferation, and differentiation. The second half of the course will focus on the interface of cancer and medicine. Conventional chemotherapy and Immunotherapies will be discussed. The ever-expanding role of genomics and bioinformatics in areas such as tumor classification, prognosis, and treatment will also be discussed.

**Course Objectives**

At the end of the course, student should understand:

- What are the common cellular and molecular mechanisms that are deregulated in cancerous cells, and how does their deregulation contribute to the development of cancer?
- What role does gene mutation play in the development of cancer?
- In what ways do environmental factors influence cancer susceptibility and how may we use this information to prevent cancer?
- How does cancer manifest itself in the human body? What features of cancer lead to high mortality rates?
- What is the biological rationale for both traditional chemotherapies and Immunotherapies approaches? What are the benefits and limitations of each option?
- In what ways can genomic technologies provide insight into cancer prevention, diagnosis, and treatment? What are the limitations of these technologies?

<b>Learning Outcomes</b>
<b>A. Knowledge - Theoretical Understanding</b>
<p><b>a1.</b> Outline the six hallmarks of cancer ,the definition of cancer , and cancer etiology and discuss about oncogene and why it is important in cancer development, describe the function of tumor suppressor gene, how cancer cells escape cell death, and describe the various methods of DNA repair, and the defects in DNA repair related to cancer.</p> <p><b>a2.</b> Outline the conventional and current approaches in cancer treatment , and the Genomic and proteomic technologies in cancer treatment and diagnosis.</p>
<b>B. Knowledge - Practical Application</b>
<b>a3.</b> Make use of different mechanism underlying carcinogenesis and their applications in scientific research and cancer analysis.
<b>C. Skills - Generic Problem Solving and Analytical Skills</b>
<b>b1.</b> Analyze the knowledge from this course to solve problems in scientific research or medical analysis.
<b>D. Skills - Communication, ICT, and Numeracy</b>
<b>b2.</b> prove the ability to communicate information and arguments effectively using written and oral skills.
<b>E. Competence: Autonomy, Responsibility, and Context</b>
<b>c1.</b> Adapt the knowledge gained from this course, in some of the specific advances in biomedical technology and how changing the way we think about the underlying causes of cancer and how we treat and diagnose it depending on our understanding of mechanisms at the cellular and molecular level.
<b>Teaching and Learning Methods</b>
<p>Lectures will be given according to the specified time and location as assigned on the academic schedule (see course information above)</p> <p>Lectures will be administrated using power-point presentations and will be provided to the students through JU e-learning website.</p> <p>Textbook is obligatory and required by the students.</p> <p>Any additional readings, including discussion papers, will be announced and posted on the course website.</p> <p><b>Teaching duration:</b> According to the academic calendar provided at Jadara University (JU) website</p>
<b>Assessment Methods</b>
<p><b>Midterm exam (30%)</b></p> <p><b>Presentation/assignment (10%)</b></p> <p><b>Quiz (10%)</b></p> <p><b>Final exam (50%)</b></p>

Course Contents					
Week	Hours	CLOs	Topics	Teaching & Learning Methods	Assessment Methods
1.	3	a1	<ul style="list-style-type: none"> <li>Introduction to the course</li> <li>Cancer Defined</li> <li>Etiology of Cancer</li> </ul>	Power point presentation	Mid term exam
2.	3	a1	<ul style="list-style-type: none"> <li>Overview of the hallmarks of cancer</li> <li>Hallmarks of Cancer I: immortality</li> </ul>	Power point presentation	Mid term exam
3.	3	a1,a1	<ul style="list-style-type: none"> <li>Hallmarks of Cancer II: Produce 'go' signals or 'growth' signals (growth factors from oncogenes)</li> </ul>	Power point presentation	Mid term exam
4.	3	a1,a3	<ul style="list-style-type: none"> <li>Hallmarks of Cancer IV: Override stop signals or anti-growth signals (tumor suppressor genes)</li> <li>Hallmarks of Cancer III: Avoidance of cell death (apoptosis).</li> </ul>	Power point presentation	Mid term exam
5.	3	a3,b2	<ul style="list-style-type: none"> <li>Hallmarks of Cancer V: Angiogenesis.</li> <li>Hallmarks of Cancer VI: Metastasis</li> </ul>	Power point presentation	Mid term exam
6.	3	a3,b2,	<ul style="list-style-type: none"> <li>Hallmarks of Cancer VI: Metastasis (cont.)</li> <li>Epigenetics and cancer</li> </ul>	Power point presentation	Mid term exam
7.	3	a1,a3	<ul style="list-style-type: none"> <li>Epigenetics and cancer (cont.)</li> <li>The basis of Tumorigenesis</li> <li><b>Midterm exam</b></li> </ul>	Power point presentation	Final exam & quiz
8.	3	a1,a3, b2	<ul style="list-style-type: none"> <li>DNA repair and predispositions to cancer</li> </ul>	Power point presentation	Final exam
9.	3	a1,a3, b1,b2	<ul style="list-style-type: none"> <li>telomeres and telomerases</li> <li>oxidative stress and predispositions to cancer</li> </ul>	Power point presentation	Final exam
10.	3	a1,a3, b1,b2, c1	<ul style="list-style-type: none"> <li>Oxidative stress and predispositions to cancer (cont.)</li> <li>The immune system and cancer</li> </ul>	Power point presentation	Final exam
11.	3	a2, c1	<ul style="list-style-type: none"> <li>New Genomic and proteomic technologies: Microarrays and gene expression profiling</li> <li>New Genomic and proteomic technologies: 2-diminsion gel electrophoresis</li> </ul>	Power point presentation	Final exam
12.	3	c1,b1,	<ul style="list-style-type: none"> <li>New Genomic and proteomic technologies:</li> </ul>	Power point	Final exam

		b2	MTT assay	presentation	
13.	3	a2, c1	<ul style="list-style-type: none"> <li>New Genomic and proteomic technologies: AMES test</li> </ul>	Power point presentation	Final exam
14.	3	a2,c1, b1,b2	<ul style="list-style-type: none"> <li>Treatment- traditional chemotherapeutics</li> </ul>	Power point presentation	Final exam
15.	3	a2,c1, b1,b2	<ul style="list-style-type: none"> <li>Treatment- immunotherapies</li> </ul>	Power point presentation	Final exam
16.	3	a1,a2, a3,b1, b2,c1	<ul style="list-style-type: none"> <li>Revision</li> <li><b>Final exam</b></li> </ul>		

<b>Infrastructure</b>	
<b>Textbook</b>	The Biology of Cancer. Weinberg, Robert A. New York: Garland Science.2013, second edition
<b>References</b>	<ul style="list-style-type: none"> <li>NCBI Database (<a href="https://www.ncbi.nlm.nih.gov/">https://www.ncbi.nlm.nih.gov/</a>): includes many updated textbooks that are available online FREE.</li> <li>Internet: there are many websites that provide valuable updated data related to oncology including research paper, books, animation, etc. you can find more of these websites by searching in the internet using a suitable searching key. Many websites will be posted on E-learning during the semester.</li> </ul>
<b>Required reading</b>	
<b>Electronic materials</b>	Provided to the students through JU e-learning website.
<b>Other</b>	<p>Any additional readings, including updated discussion papers, will be announced and posted on the course website.</p> <p>In addition to the above, the students will be provided with handouts by the lecturer.</p>

Course Assessment Plan								
Assessment Method	Grade	CILOs						
		a1	a2	a3	b1	b2	c1	
First (Midterm)	30%	20		5		5		
Second (if applicable)								
Final Exam	50%	10	10	5	8	5	12	
Coursework								
Coursework assessment methods	Assignments							
	Case study							
	Discussion and interaction							
	Group work activities							
	Lab tests and assignments							
	Presentations	10%			5		5	
	Quizzes	10%						10
<b>Total</b>	100%	30	10	15	8	15	22	

Plagiarism
<p>Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code).</p> <p>Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.</p>