



Jordan University of Science and Technology
Faculty of Science & Arts
Applied Biological Sciences Department

BIO791A Special Topics

Second Semester 2020-2021

Course Catalog

3 Credit Hours. Vast progress has been made in the past few decades in resolving the cellular and molecular mechanisms that underlie the development of cancer. In this course the students will gain insight into the abnormalities in behaviour of cancer cells and the processes that allow cancer cells to grow and metastasize. They will learn about the mechanisms of chemical carcinogenesis, as well as, the roles played by radiation and infectious agents in cancer. The molecular mechanisms that underlie the increased risk of cancer with inherited mutations and how oncogenes and tumor suppressor genes exert their effects will also be discussed. Finally, cancer diagnosis and traditional and emerging treatments and strategies for cancer prevention will also be covered.

Text Book

Title	Principles of cancer biology (2014, Pearson)
Author(s)	Lewis J Kleinsmith
Edition	1st Edition
Short Name	1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
2	Becker's World of the Cell (2017, Pearson)	Jeff Hardin and Gregory Bertoni	9th Edition	

Instructor

Name	Prof. Homa Darmani
Office Location	PH1L1

Office Hours	Sun : 13:00 - 14:00 Mon : 12:00 - 14:00 Wed : 12:00 - 14:00 Thu : 09:00 - 10:00
Email	darmani@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Mon, Wed : 14:30 - 16:00 Room: منصة الكترونية

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1, 2	Signal Transduction Mechanisms	Chapter 23 From 2
Week 3	What Is Cancer?	Chapter 1 From 1
Weeks 4, 5	Profile of a Cancer Cell	Chapter 2 From 1
Week 6	How Cancers Spread	Chapter 3 From 1
Weeks 7, 8	Identifying the Causes of Cancer	Chapter 4 From 1
Week 9	Chemicals and Cancer	Chapter 5 From 1
Week 10	Radiation and Cancer	Chapter 6 From 1
Week 11	Heredity and Cancer	Chapter 7 From 1
Week 12	Infectious Agents and Cancer	Chapter 8 From 1
Weeks 13, 14	Oncogenes	Chapter 9 From 1 , Chapter 26 From 2
Weeks 15, 16	Tumor Suppressor Genes and Cancer Overview	Chapter 10 From 1 , Chapter 26 From 2

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Cellular signal transduction pathways; Abnormal properties of cancer cells and how as a group these traits contribute to the "profile" of a typical cancer cell - features of cancer cell proliferation, growth factors and the cell cycle, apoptosis and cell survival, DNA damage and repair, tumor immunology; Cancer mortality, benign and malignant tumors and their development, invasion and metastasis; major types of cancer-causing agents and mechanisms of chemical carcinogenesis. [1A]	30%	MIDTERM EXAM
Discussion and presentation of recent literature about topics of interest related to the course content. [1D]	20%	Seminar Presentations

Hereditary risk of cancer- Genes involved in restraining cell proliferation and genes affecting DNA repair and genetic stability; inherited mutations and how they increase cancer risk; roles played by infectious agents and ionizing radiation in cancer; How cellular oncogenes arise, the proteins produced by oncogenes and how they cause unregulated activation of signaling pathways that leads to uncontrolled cell proliferation, diminished cell death, or both; tumor suppressor genes and their roles in cell proliferation, cell death, DNA repair and genetic stability. [1A]	50%	Final Exam
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Relationship to Program Student Outcomes (Out of 100%)					
A	B	C	D	E	F
80			20		

Evaluation	
Assessment Tool	Weight
MIDTERM EXAM	30%
Seminar Presentations	20%
Final Exam	50%

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