University of Nicosia, Cyprus

Course Code	**Course Title**	**ECTS Credits**
BIOL-414	Special Topics I: Cell Growth and Cancer	4
Department	**Semester**	**Prerequisites**
Life and Health Sciences	Spring/Fall	BIOL-321, -322 Biochemistry I and II or BIOL-323 Molecular Basis to Health and Disease
Type of Course	**Field**	**Language of Instruction**
Life Sciences Elective	Biology	English
Level of Course	**Year of Study**	**Lecturer**
1st Cycle	3rd or 4th	Dr. Evi Farazi
Mode of Delivery	**Work Placement**	**Co-requisites**
Face-to-face	N/A	None

Objectives of the Course:

This course aims to introduce students to current topics in the molecular mechanisms of cancer development and the approaches used in cancer research. The main objectives of the course are to:

- Provide an integrated understanding of the molecular and genetic basis of cancer and review the major types of cancer, including leukaemia, breast, and colorectal cancer.
- Discuss the cellular and molecular mechanisms involved in cell growth control and deregulation, and in cancer metastasis.
- Present an overview of the concepts and research approaches used for cancer prevention and the development of cancer treatments.

Learning Outcomes:

After completion of the course students are expected to be able to:

1. Discuss the major oncogenic pathways and molecules which drive tumorigenesis and differentiate the roles of tumor suppressors and oncogenes.
2. Name the major cancer types and the genes involved in inherited forms of cancer.
3. Identify the variety of methodologies used to dissect oncogenic pathways (transgenic and knockout mouse models, cancer stem cell, genetic and computational/systems biology).
4. Discuss to role of scientific discovery in the development of cancer treatments.
5. Use literature resources and critically discuss and report scientific literature related

to cancer.

Course Contents:

1. Literature and data base searching
2. Genetic pathways in cancer
3. Cell Cycle regulation and chekpoints.
4. Cell growth and apoptosis; Telomeres, Senescence and immortality
5. Radiation Biology and DNA repair
6. Hypoxia and Angiogenesis
7. Genomics, Epigenetics and Cancer
8. WNT pathway and colon cancer
9. Stromal Interactions and metastasis
10. Stem Cells and Cancer
11. Tumor immunology; antibody therapy
12. Cancer Chemotherapy
13. Cancer development, epidemiology and prevention

Learning Activities and Teaching Methods:

The course will alternate between formal lectures and assigned reading with student led discussions and presentations of key research papers in cancer biology.

Assessment Methods:

Written Assignments, oral presentations, final exam.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
R.Weinberg	The Biology of Cancer	Garlant Science.	2006	**ISBN-10** 0815340761
Lauren Pecorino	Molecular Biology of Cancer: Mechanisms, Targets, and Therapeutics	Oxford University Press,	2008, 2nd ed.	**ISBN-10:** 0199211485

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Fredrick G. Drabell	New Topics in Cancer Research (Horizons in Cancer Research)	Nova Science Publishers Inc;	1st ed. 2006	**ISBN-10:** 1600211550
Lee P. Jeffries	Leading Topics in Cancer Research	Nova Science Publishers Inc	1st ed. 2007	**ISBN-10:** 1600213324

	(Horizons in Cancer Research)			**ISBN-13:** 978-1600213328
Edwin Wang	Cancer Systems Biology	CRC Press	1st ed. 2010	**ISBN-10:** 1439811857 **ISBN-13:** 978-1439811856
George F. Vande Woude, George Klein	Advances in Cancer Research: Vol. 99	Academic Press	1st ed. 2007	**ISBN-10:** 0123742242 **ISBN-13:** 978-0123742247