(EXISTING)

Name of Program: Cancer Biology
(MASTER OF SCIENCE)

Degree: Master of Science

The main objective of the program is to provide specialization in the field of Cancer Biology in relation to the molecular basis of the disease as well as current therapeutic approaches

GENERAL OBJECTIVES:

- To provide education leading to an academic degree, namely a Master of Science in Cancer Biology.
- To develop the student's capacity in critical thinking, scientific writing and expression.
- To develop the student's analytical design and decision-making competences to perform advanced Cancer Biology Studies and Research.
- To obtain a good grounding on the principles of Cancer Biology through the core subjects and attain specialization in advanced related topics through the elective courses.
- To provide the necessary requirements and sufficient specialization for academic and/or career advancement in the field of Cancer Biology

SPECIFIC OBJECTIVES:

- To intensify and deepen knowledge gained at the undergraduate level in Biomedical Science-related programmes in order to further elaborate into the mechanisms governing the etiology and complex pathobiology of cancer as a major human disease.
- To recognize the importance of applying fundamental concepts of biomedical sciences to improve health and quality of life of cancer patients.
- To prepare students for a lifetime career in the field of cancer-related sciences by establishing a foundation for life-long learning and development.
- To develop the student's abilities to design, implement and critically evaluate cancer-related studies.
- To develop the abilities to design and conduct experiments for problem solving and to interpret obtained experimental data.
- To develop the student's abilities to read and comprehend international literature in the field of Cancer Biology.
- To provide the written and oral communication skills in order to report and present scientific results in public events, such as international scientific conferences.
- To develop practical laboratory skills in modern molecular and cellular biology techniques and independently conduct research in the field of Cancer.
- To prepare students for careers in the private sector, government and various research and educational institutions by providing them with all the necessary skills to be competitive for employment in the fields of Cancer Biology, Translational Oncology and Molecular Biosciences, in general.

LEARNING OUTCOMES:

Upon successful completion of this program, the students should be able to:

- Identify and describe the clinical presentation and molecular etiology of human cancer.

- Demonstrate expertise regarding the principles and applications of advanced research methodology.
- Develop oral public presentation skills in topics related to cancer biology and therapy.
- Critically discuss the biomedical literature and apply concepts of biostatistics in the interpretation of scientific results.
- Design appropriate experimental and problem-solving strategies to address important biological questions.
- Define the major hallmarks of cancer and describe the multistep process that leads to cancer metastasis.
- Describe the major intracellular signaling cascades that mediate cell-cell communication and evaluate the role of their deregulation in cancer progression.
- Describe and apply various molecular tests as well as imaging methodologies for the diagnosis of human cancer.
- Evaluate the appropriate usage of major therapeutic approaches against cancer as well as the limitations of each method.
- Recognize the role of immune system components in cancer progression and the latest development of immunotherapeutic strategies.
- Develop practical laboratory skills in modern biomedical sciences techniques with applications in cancer research.
- Describe various omics methodologies and evaluate their usefulness in understanding complex etiology of cancer and drug discovery.
- Creatively apply bioinformatic methods used in data mining and meta-analysis from omics datasets to model cancer-related mechanisms at the level of networks and pathways.

EMPLOYMENT OPPORTUNITIES:

Students receiving a Master's degree in Cancer Biology will acquire a deeper understanding in fundamental areas of Cancer as well as more specialized scientific knowledge in cutting-edge fields such as systems biology of cancer, tumor immunotherapy and personalized cancer medicine. They will also have mastered scientific writing, presentation skills, develop critical thinking skills as well as be able to design and implement research projects. Therefore, graduates will have to choose from a variety of employment and career opportunities.

DEGREE REQUIREMENTS	**ECTS**
All students pursuing the Master degree in "Cancer Biology" must complete the following requirements:	
Compulsory Courses	**40**
Elective Courses	**20**
Master Thesis	**30**
Total ECTS	**90**

Compulsory courses (40 ECTS)		**40**
MCB600	Research Methodology	10
MCB610	Molecular and Cellular Biology of Cancer	10
MCB620	Laboratory Techniques and Scientific Communication	10
MCB630	Cancer Diagnostics and Therapeutics	10
Elective courses (20 ECTS) (Students choose any two from the following list of courses)		**20**
MCB640	Tumor Immunology and Immunotherapy	10
MCB650	Bioinformatics	10
MCB660	Cancer Systems Biology	10
MCB670	Precision and Personalized Medicine	10
Master Thesis (30 ECTS)		**30**
MCB690	Master Thesis	30