

Course Title	Laboratory techniques and Scientific Communication				
Course Code	MCB620				
Course Type	Compulsory				
Level	Master's (2 nd cycle)				
Year / Semester	1 st Year / 1 st Semester				
Teacher's Name	TBA				
ECTS	10	Lectures / week	1.5	Laboratories / week	1.5 Hours
Course Purpose and Objectives	<p>This course has two main objectives: a) the acquisition of knowledge and experimental hands-on skills to independently perform basic laboratory techniques on laboratory techniques which have direct applications in cancer-related sciences and b) the development of critical thinking, public presentation skills and comprehension of cutting-edge articles in the field of cancer, through the active participation in bi-monthly colloquium series, which are necessary to effectively communicate scientific ideas.</p>				
Learning Outcomes	<p>Upon completion of the course, students will be able to:</p> <ul style="list-style-type: none"> • Identify potential biological hazards and be able to work safely in a biomedical lab • Recall basic terminology and experimental procedures related to biomedical laboratory techniques. • Practice hands-on skills to perform experimental assays commonly used in cancer biosciences. • Develop abilities to efficiently work both independently as well as in a team • Design experimental procedures and protocols to answer specific biological and cancer-related questions. • Develop critical thinking skills to interpret and discuss experimental data. • Diagnose potential technical issues during experimental procedures and develop abilities to troubleshoot • Study and comprehend cutting-edge research articles in the field of cancer biology and therapy • Prepare slide presentations and orally present research papers with the focus on proper communication skills as well as scientific content. • Critically evaluate and actively discuss the presented scientific results while highlighting major strengths and weaknesses in the research methodologies used. 				

	<ul style="list-style-type: none"> • Generate new hypotheses based on the experimental findings of an article and suggest appropriate experimental strategies to address the proposed hypotheses 		
Prerequisites	None	Required	None
Course Content	<p>Description:</p> <p>The laboratory techniques will include:</p> <ul style="list-style-type: none"> • Theoretical background on major laboratory techniques used in cancer biosciences. • Recombinant DNA technology techniques (bacterial transformation, plasmid isolation and digestion, agarose gel electrophoresis of nucleic acid) • Polymerase-chain reaction (PCR), RNA isolation, cDNA synthesis and real-time PCR gene expression analysis • Western blotting analysis using SDS-PAGE • Enzyme-linked immunosorbent assay (ELISA) • Cell and tissue staining techniques (immunofluorescent staining, Hematoxylin & eosin staining, immunohistochemistry) on cells and tissues, respectively. • Fluorescence-activated cell sorting (FACS) analysis • Small animal handling (mice) and basic principles for conducting in vivo experiments <p>Bi-monthly colloquium series will include:</p> <p>Description:</p> <ul style="list-style-type: none"> • Reading and critical evaluation of research articles in the field of cancer biology and therapy: Strengths, weaknesses of research methodologies and data interpretation • Proposal of future hypotheses and experimental design to address them • Development of oral presentation skills. Delivering in front of audience: moving, standing, talking, pointing, observing, listening. This includes facing the questions: preparing the Q&A session, listening to, evaluating the relevance, and answering common kinds of scientific questions. • Public presentations of research articles from the students which will be accompanied by peer-assessment of presentations and discussion regarding the scientific content 		
Teaching Methodology	Face to face		

Bibliography	<p>A Guide to Methods in the Biomedical Sciences, by Ronald B. Corley, Springer, Latest edition, ISBN: 978-0-387-22845-7</p> <p>When the Scientist Presents: An Audio and Video Guide to Science Talks, by Jean-luc Lebrun, World Scientific, Latest edition</p> <p>Selected scientific articles in pdf format that will be provided in advance by the lecturer</p>										
Assessment	<table border="0"> <tr> <td>Mid-Term Examination</td> <td>20%</td> </tr> <tr> <td>Final Examination</td> <td>40%</td> </tr> <tr> <td>Oral presentations</td> <td>30%</td> </tr> <tr> <td>Class participation</td> <td>10%</td> </tr> <tr> <td>Total</td> <td>100%</td> </tr> </table>	Mid-Term Examination	20%	Final Examination	40%	Oral presentations	30%	Class participation	10%	Total	100%
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