Course title	Laboratory techniques and Scientific Communication				
Course code	MCB620				
Course type	Compulsory				
Level	Master's (2nd Cycle)				
Year / Semester	1st Year / 1st Semester				
Teacher's name	TBA				
ECTS	10	**Lectures / week**	1.5 Hours/14 weeks	**Laboratories / week**	1.5 Hours/14 weeks
Course purpose and objectives	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.				
Learning outcomes	Upon completion of the course, students will be able to: • 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. • Deliver reports on results from experiments they performed • 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. • Generate new hypotheses based on the experimental findings of an article and suggest appropriate experimental strategies to address the proposed hypotheses				
Prerequisites	None		**Co-requisites**	None	

Course content	**Description:** **The laboratory techniques will include**: • 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) • Molecular methods for the regulation of gene expression including siRNA-, shRNA-, CRISPR-mediated gene targeting • Polymerase-chain reaction (PCR), RNA isolation, cDNA synthesis and real-time PCR gene expression analysis • Western blotting analysis using SDS-PAGE • Cell and tissue staining techniques (immunofluorescent staining, Hematoxylin & eosin staining, immunohistochemistry) on cells and tissues, respectively. • Flow-cytometry and related data analysis • Small animal handling (mice) and basic principles for conducting in vivo experiments • All laboratory classes will be accompanied with practical assignments where students need to perform their own experiments, measurements, software or statistical analysis and deliver reports **Bi-monthly colloquium series will include:** **Description:** • 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	A Guide to Methods in the Biomedical Sciences (Free access through SpringerLink), Ronald B. Corley, Springer https://link.springer.com/book/10.1007/b99813 When The Scientist Presents: An Audio And Video Guide To Science Talks (ebook), Jean-luc Lebrun, World Scientific https://www.ebooks.com/en-cy/book/1193378/when-the-scientist-presents-an-audio-and-video-guide-to-science-talks-with-dvd-rom/jean-luc-lebrun/

Assessment	Mid-Term Examination	20%
	Final Examination	40%
	Oral presentations/Assignments	30%
	Class participation and attendance	10%
	Total	**100%**
Language	English	