

COURSE OUTLINE

(1) GENERAL

SCHOOL	Health Sciences		
ACADEMIC UNIT	Medicine		
LEVEL OF STUDIES	Post-graduate		
COURSE CODE	MKBB201	SEMESTER	B (2 nd)
COURSE TITLE	Experimental Research		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
Laboratory courses in Research Host Laboratory		12	15
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Special background, skills development (post-graduate laboratory training in Research Host Lab)		
PREREQUISITE COURSES:	MKBB101, MKBB102, MKBB103, MKBB104, MKBB105 (success in at least 3 of the above 5 courses)		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek and English		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	http://msc-mcbb.ac.uoi.gr/Courses.Semester Bn		

(2) LEARNING OUTCOMES

Learning outcomes <i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i> Consult Appendix A <ul style="list-style-type: none">• <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i>• <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i>• <i>Guidelines for writing Learning Outcomes</i>												
<p>Students are affiliated with a Research Host Lab for education and training relevant to the preparation of their MSc research project. They are expected to become qualified in the theoretical understanding and experimental practice of basic molecular and cellular biological techniques related to their research project, to become familiarized with the relevant research literature, and to be able to communicate related scientific knowledge to the research community with clarity, scientific coherence, and comprehensiveness.</p>												
General Competences <i>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?</i> <table><tr><td><i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i></td><td><i>Project planning and management</i></td></tr><tr><td><i>Adapting to new situations</i></td><td><i>Respect for difference and multiculturalism</i></td></tr><tr><td><i>Decision-making</i></td><td><i>Respect for the natural environment</i></td></tr><tr><td><i>Working independently</i></td><td><i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i></td></tr><tr><td><i>Team work</i></td><td><i>Criticism and self-criticism</i></td></tr><tr><td><i>Working in an international environment</i></td><td><i>Production of free, creative and inductive thinking</i></td></tr></table>	<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>	<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>	<i>Decision-making</i>	<i>Respect for the natural environment</i>	<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>	<i>Team work</i>	<i>Criticism and self-criticism</i>	<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
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<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>											

Working in an interdisciplinary environment Production of new research ideas Others...
<ul style="list-style-type: none"> • Search for, analysis and synthesis of data and information, with the use of the necessary technology • Adaptation to new situations (in the context of the hosting research team) • Decision-making • Working independently • Team work • Working in an interdisciplinary environment • Exposure/working in an international environment (due to involvement in the program of researchers and research teams from countries outside Greece) • Respect for difference and multiculturalism • Criticism and self-criticism • Production of free, creative and inductive thinking • Design, development and delivery of original lectures on the analysis of a new research project with respect to the objectives, background, state-of-the-art, aims, rationale and methodological approach followed (in the context of an open-audience presentation of their research project work in the hosting research laboratory) 	

(3) SYLLABUS

Students are actively engaged in research study in a Research Host Lab for preparation of their MSc research work and acquire systematic laboratory education and training in basic molecular and cellular biological techniques relevant to their research project.

Objectives

Development of research knowledge and experience on theoretical understanding and experimental practice of basic molecular and cellular biological techniques related to an original MSc research project, familiarization with the relevant research literature, and development of the ability to communicate related scientific knowledge to the research community with clarity, scientific coherence, and comprehensiveness.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Students are actively engaged in research study in a Research Host Lab and participate in face-to-face research team meetings, are trained in laboratory techniques of molecular cellular biology relevant to their research project and study the related research literature, conceptual framework, and experimental rationale of the project.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Powerpoint slides and videos are used in the project presentations by the students and in the research team meetings. The research project presentations are given by the students in an open-audience mode, through the zoom platform, and are scheduled as a two-day or single-day workshop accessible to all members of the PPS program and the research community of the University of Ioannina, FORTH, or other collaborating Institutions in Greece or abroad. Various bioinformatic tools are applied and used by the students in the context of their MSc laboratory education. Complementary teaching material is also

	<p>accessible to students through the e-course system of University of Ioannina and appropriate databases (pubmed, scopus, pdb, etc.).</p> <p>E-mail addresses of the teaching staff are freely used as a means of communication with the students.</p>	
<p>TEACHING METHODS</p> <p><i>The manner and methods of teaching are described in detail.</i></p> <p><i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i></p> <p><i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i></p>	Activity	Semester workload
	Research team meetings	40
	Laboratory practice in basic molecular and cellular biology techniques relevant to the MSc research project	80
	Preparation for presentation of the MSc research project (scientific background, aim, objective, rationale, approach, expected results-contribution to the research field)	40
	Course total	160
<p>STUDENT PERFORMANCE EVALUATION</p> <p><i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>Language of evaluation: Greek and English</p> <p>Methods:</p> <p>(a) The students keep an everyday record of their laboratory work in the Host Lab in a lab notebook. The clarity, accuracy, and consistency of these data are evaluated on a regular basis by the supervisor-team leader of the research team.</p> <p>(b) Intermediate evaluation of the research work progress based on the student presentations in the research team meetings (group meetings). Student presentations are evaluated by the research team leader for understanding of concepts, objectives, background, state-of-the-art, aims, methodology of the project, and preliminary experimental results derived in the context of the relevant research.</p> <p>(c) Open-audience oral presentation of the student MSc project; the student is expected to present the background, aims, objective, rationale, methodology, and expected contribution of their MSc project to the relevant field of research. The student presentation is evaluated by both the supervisor-team leader (the supervisor grade contributes to the final grade by 50%) and the other teaching staff of the program who attend the presentation and act as co-examiners (the average grade of all co-examiners contributes to the final grade by another 50%).</p> <p>Evaluation criteria:</p> <p>Grades are given by both the supervisor-team leader (50% of the final grade) and other teaching staff of</p>	

	<p>the program (their average gives another 50% of the final grade). The rating given by the supervisor-team leader is based not only on the final presentation but also on the student's overall performance in the lab and their intermediate work progress presentations in the research team meetings. The ratings given by other teaching staff are based on the open-audience presentations. Students are evaluated for the clarity, scientific coherence, comprehensive analysis of the bibliography, rationale and aims of the project, and their general understanding of the research project concepts and rationales. Student grades are based on a decimal scale and given with accuracy of ± 0.5 (grades from +0.25 and above or +0.75 and above are approximated by +0.5 or +1.0, respectively; grades below +0.25 or +0.75 are approximated by +0.0 or +0.5 respectively). All exam procedures and evaluation criteria are included in the program rules and regulations, which are accessible at the website http://msc-mcbb.ac.uoi.gr.</p>
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(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Peer-reviewed articles from the literature related to the student's MSc research project and the research field interests and work in the Host Lab.

- Related academic journals:

Indicatively: *Nature, Cell, Science, Nat Chem Biol, Nat Protocols, Nat Rev Genet, Cell Rep, Sci Rep, Mol Cell, Dev Biol, Dev Cell, Dev Growth Differ, Stem Cell Res, J Cell Sci, J Mol Biol, J Biol Chem, Current Biology, Nat Rev Cancer, Trends Cell Biol, Cancer Res, Epigenetics, Proteomics, Nucleic Acids Res, Nat Biotechnol, Mol Biotechnol, Enzyme Microb. Technol*, etc., depending on the particular research interests and work related to the Host Lab.