

## COURSE OUTLINE “INDUSTRIAL RESEARCH AND DEVELOPMENT”

### 1. GENERAL

<b>SCHOOL</b>	HEALTH SCIENCES		
<b>DEPARTMENT</b>	MOLECULAR BIOLOGY AND GENETICS		
<b>LEVEL OF STUDIES</b>	ISCED LEVEL 6		
<b>COURSE CODE</b>	<b>MBG700</b>	<b>SEMESTER</b>	7th
<b>COURSE TITLE</b>	INDUSTRIAL RESEARCH AND DEVELOPMENT		
<b>TEACHING ACTIVITIES</b> <i>If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.</i>		<b>HOURS/WEEK</b>	<b>ECTS CREDITS</b>
		2	3
<b>COURSE TYPE</b> <i>Background, General Knowledge, Scientific Area, Skill Development</i>	SKILL DEVELOPMENT		
<b>PREREQUISITES:</b>	NO		
<b>TEACHING &amp; EXAMINATION LANGUAGE:</b>	GREEK		
<b>COURSE OFFERED TO ERASMUS STUDENTS:</b>	NO		
<b>COURSE URL:</b>	Pending (starting at academic year 2025-2026)		

### 2. LEARNING OUTCOMES

<p><b>Learning Outcomes</b> <i>Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.</i></p> <p>The course aims:</p> <p>a) To introduce final-year students to industrial research and development (R&amp;D) in biomedical fields (pharmaceutical and biotechnology industry) relevant to molecular biology and genetics</p> <p>b) To introduce final-year students to innovation and technology transfer strategies, connecting basic with applied research and development, towards the production of commercially sustainable products and services</p> <p>c) To introduce final-year students to the different aspects of biological industry, through case studies.</p> <p>Upon successful completion of the course, participants:</p> <ul style="list-style-type: none"> <li>-will be able to comprehend the biotechnological process (pipeline) enabling the discovery and development of innovative drugs</li> <li>-will be able to comprehend the biotechnological process for designing and developing <i>in vitro</i> diagnostic kits in accordance with a standardized quality management system</li> <li>-will be able to comprehend the scope, structure and content of biotechnology patents</li> <li>-will be able to comprehend different areas of biotechnological activity by studying historic examples</li> <li>-will be able to plan their future career in biotechnological industry and biomedical R&amp;D</li> </ul>												
<p><b>General Skills</b> <i>Name the desirable general skills upon successful completion of the module</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><i>Search, analysis and synthesis of data and information,</i></td> <td style="width: 50%; border: none;"><i>Project design and management</i></td> </tr> <tr> <td style="border: none;"><i>ICT Use</i></td> <td style="border: none;"><i>Equity and Inclusion</i></td> </tr> <tr> <td style="border: none;"><i>Adaptation to new situations</i></td> <td style="border: none;"><i>Respect for the natural environment</i></td> </tr> <tr> <td style="border: none;"><i>Decision making</i></td> <td style="border: none;"><i>Sustainability</i></td> </tr> <tr> <td style="border: none;"><i>Autonomous work</i></td> <td style="border: none;"><i>Demonstration of social, professional and moral responsibility and sensitivity to gender issues</i></td> </tr> <tr> <td style="border: none;"><i>Teamwork</i></td> <td style="border: none;"></td> </tr> </table>	<i>Search, analysis and synthesis of data and information,</i>	<i>Project design and management</i>	<i>ICT Use</i>	<i>Equity and Inclusion</i>	<i>Adaptation to new situations</i>	<i>Respect for the natural environment</i>	<i>Decision making</i>	<i>Sustainability</i>	<i>Autonomous work</i>	<i>Demonstration of social, professional and moral responsibility and sensitivity to gender issues</i>	<i>Teamwork</i>	
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<i>Working in an international environment</i> <i>Working in an interdisciplinary environment</i> <i>Production of new research ideas</i>	<i>Critical thinking</i> <i>Promoting free, creative and inductive reasoning</i>
Search, analysis and synthesis of data and information, ICT Use Decision making Teamwork Working in an international environment Working in an interdisciplinary environment Production of new research ideas Project design and management Demonstration of social, professional and moral responsibility and sensitivity to gender issues Critical thinking Promoting free, creative and inductive reasoning	

### 3. COURSE CONTENT

<p>1) Introduction to industrial Research and Development (lecture, 2 hours)</p> <p>2) The researcher's role in the industry vs. the academia (lecture and discussion, 2 hours)</p> <p>3-4) Study of historic patents (interactive learning, 4 hours)</p> <p>5-6) Case studies (interactive learning, 4 hours)</p> <p>7) From Research to Development and Bioentrepreneurship (lecture, 2 hours)</p> <p>8-9) Understanding the pharmaceutical pipeline (interactive learning, 4 hours)</p> <p>10-11) Understanding the development of <i>in vitro</i> diagnostic devices and the requirements of quality management systems (interactive learning, 4 hours)</p> <p>12-13) Preparing for a career in the biotechnology industry (interactive learning, 4 hours)</p>
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### 4. LEARNING & TEACHING METHODS - EVALUATION

<p><b>TEACHING METHOD</b> <i>Face to face, Distance learning, etc.</i></p>	Face to face			
<p><b>USE OF INFORMATION &amp; COMMUNICATIONS TECHNOLOGY (ICT)</b> <i>Use of ICT in Teaching, in Laboratory Education, in Communication with students</i></p>	Use of ICT in Teaching Use of ICT in Communication with students  (examples of ICT: eClass, MS Teams)			
<p><b>TEACHING ORGANIZATION</b> <i>The ways and methods of teaching are described in detail.</i> <i>Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research &amp; analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.</i></p> <p><i>The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.</i></p>	<b>Activity</b>	<b>Workload/semester</b>		
	Lectures	26		
	Study of lecture material and projects	64		
	<b>Course Total</b>	<b>90</b>		
<p><b>STUDENT EVALUATION</b> <i>Description of the evaluation process</i></p> <p><i>Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others</i></p>	<p><b>Student evaluation languages:</b> Greek</p> <p><b>Method (Formative or Concluding):</b> Summative</p> <table border="1" style="width: 100%; margin-top: 10px;"> <tr> <td style="text-align: center;"><b>Student evaluation methods</b></td> <td style="text-align: center;"><b>Rate</b></td> </tr> </table>		<b>Student evaluation methods</b>	<b>Rate</b>
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<i>Please indicate all relevant information about the course assessment and how students are informed</i>	Attendance and participation in class	40
	Projects	40
	Oral end-of-semester exam	20

### SUGGESTED BIBLIOGRAPHY

Title	Authors	Publisher
A Biotech Manager's Handbook: A Practical Guide (Pharma, Biotechnology and Bioscience: Science, Technology and Business)	Dr. Michael O'Neill (Editor), Dr. Michael Hopkins (Editor)	Biohealthcare Publishing (Oxford) Limited
Career Opportunities in Biotechnology and Drug Development	Toby Freedman (Author)	Cold Spring Harbor Laboratory Press
Commercializing Successful Biomedical Technologies: Basic Principles for the Development of Drugs, Diagnostics and Devices	Shreefal S. Mehta (Author)	Cambridge University Press
Καινοτομία & επιχειρηματικότητα: Θεωρία - πράξη	Καραγιάννης, Ηλίας Γ.	σοφία Α.Ε.
Η στρατηγική διαχείριση της τεχνολογίας και της καινοτομίας	White, Margaret A.	Κριτική
Genentech: The Beginnings of Biotech	Sally Smith Hughes (Author)	University of Chicago Press
Intellectual Property and Biotechnology: Biological Inventions	Matthew Rimmer (Author)	Edward Elgar Publishing Ltd
The Role of Intellectual Property Rights in Biotechnology Innovation	David Castle (Author, Editor)	Edward Elgar Publishing Ltd
Επιχειρηματικότητα και καινοτομία: Από την ίδρυση στη διοίκηση και την επιβίωση της νέας επιχείρησης	Χατζηκωνσταντίνου, Γεώργιος Θ.	Gutenberg - Γιώργος & Κώστας Δαρδανός
Επιχειρηματικότητα και καινοτομίες: Το management της επιχειρηματικής καινοτομίας	Γεωργαντά, Ζωή	Ανικούλα
Handbook of Bioentrepreneurship (International Handbook Series on Entrepreneurship)	Holger Patzelt (Editor), Thomas Brenner (Editor)	Springer
Innovation and Commercialisation in the Biopharmaceutical Industry: Creating and Capturing Value	Bruce Rasmussen (Author)	Edward Elgar Publishing Ltd
The Business of Biotechnology	Yali Friedman (Author)	Logos Press
Academia to Biotechnology: Career Changes at any Stage	Jeffrey M Gimble (Author)	Academic Press
Building the Case for Biotechnology: Management Case Studies in Science, Laws, Regulations, Politics, and Business	Mark J Ahn (Author), Michael A Alvarez (Author), Arlen D Meyers (Author)	Logos Press