



UNIVERSITY OF
PATRAS
ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ

DEPARTMENT OF PHARMACY

SCHOOL OF HEALTH SCIENCES

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DEPARTMENT OF PHARMACY
POSTGRADUATE PROGRAM: **NANOMEDICINES FOR DRUG DELIVERY- NANOMED (EMJMD)**

COURSE TITLE: **3-MONTH INTERNSHIP**
CODE: **HG4_NM8**

NANOMEDICINES FOR DRUG DELIVERY- NANOMED (EMJMD)
COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF PHARMACY		
PARTICIPATING INSTITUTIONS	-		
TITLE of POSTGRADUATE PROGRAM	NANOMEDICINES FOR DRUG DELIVERY- NANOMED (EMJMD)		
LEVEL	POSTGRADUATE		
COURSE CODE	HG4_NM8	SEMESTER	B'
COURSE TITLE	3-MONTH INTERNSHIP		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	CREDITS	
Practical, Lab work, One-by-one teaching	10	12	
COURSE TYPE	Specialised general knowledge (Laboratory Techniques in Pharmaceutical Technology, practical issues, Laboratory Skills), Skills Development.		
PREREQUISITE COURSES	None		
LANGUAGE of INSTRUCTION and EXAMINATIONS	ENGLISH		
COURSE OFFERED to ERASMUS STUDENTS	THIS IS ALREADY AN EMJMD PROGRAM COURSE		
COURSE (URL)	https://www.pharmacy.upatras.gr/images/DS/NanoMed/HG4_NM08.pdf		

2. LEARNING OUTCOMES

Learning Outcomes

Upon successful course completion, students will acquire knowledge, skills and abilities related to level 7 of the European Qualifications Framework for Lifelong Learning.

In particular, students will:

1. understand the strategy and logic of implementation of a research project
2. Understand how to systematically review the scientific literature for a specific scientific question.
3. Understand how to critically assess publications.
4. Learn how to use basic equipment for preparation of pharmaceutical forms, processing of samples, analysis and physicochemical evaluation of samples
5. Learn how to write a scientific report
6. Learn how to prepare a scientific poster of their work
7. Learn how to present orally a scientific project

General Competences

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Team Work
- Decision-making
- Working in an international environment
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking
- Adapting to new situations

3. SYLLABUS

LECTURES

Description of course: This course is a guided laboratory project that aims to develop and teach to the student's practical laboratory skills that they need for their thesis, especially when the thesis will include execution of wet-lab experiments.

The course is carried out in the laboratories of four partner Universities and or Associated partners.

Students are initially introduced into the scope of the project and scientific questions that need to be answered.

Then they carry out a systematic literature search on the project and find the most relevant reports.

They complete a number of practical experiments and learn the use of basic laboratory equipment (pipettes, chromatography columns, UV and Fluorescence spectrophotometers, zeta-sizer, emulsifiers, mixing devices, filtration/extrusion devices etc.).

They also learn how to analyse data, prepare graphs, prepare a poster to present their results, as well how to write a report and search into bibliographic databases.

PUBLIC PRESENTATIONS

Report presentation

Oral presentation of Poster (during the Yearly Summer School)

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face to face												
USE of INFORMATION and COMMUNICATIONS TECHNOLOGY	<ul style="list-style-type: none"> • Use of ICT - e-class platform • Communication with students 												
TEACHING METHODS	<table> <thead> <tr> <th><i>Activity</i></th> <th><i>Semester Workload</i></th> </tr> </thead> <tbody> <tr> <td>Literature searching and analysis</td> <td>30</td> </tr> <tr> <td>Experimental guided work –analysis of results</td> <td>200</td> </tr> <tr> <td>writing report and poster preparation</td> <td>50</td> </tr> <tr> <td>Presentations</td> <td>20</td> </tr> <tr> <td>Course Total (25 hours of work-load per ECTS credit)</td> <td>300</td> </tr> </tbody> </table>	<i>Activity</i>	<i>Semester Workload</i>	Literature searching and analysis	30	Experimental guided work –analysis of results	200	writing report and poster preparation	50	Presentations	20	Course Total (25 hours of work-load per ECTS credit)	300
<i>Activity</i>	<i>Semester Workload</i>												
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Experimental guided work –analysis of results	200												
writing report and poster preparation	50												
Presentations	20												
Course Total (25 hours of work-load per ECTS credit)	300												
STUDENT PERFORMANCE EVALUATION	<p>Language of Evaluation: English</p> <p>Student evaluation is based on the degree of student participation to the project and ability to learn and execute specific laboratory techniques, ability to analyze data;</p> <ul style="list-style-type: none"> • 45 percent of final mark <p>Quality of report and poster</p> <ul style="list-style-type: none"> • 35 percent of final mark <p>Oral examination on poster presentation during the Summer School is also evaluated.</p> <ul style="list-style-type: none"> • 35 percent of final mark 												

5. RECOMMENDED BIBLIOGRAPHY

Suggested Bibliography:

1. PHARMACEUTICAL LAB MANUAL. (2019). (n.p.): KY Publications.
2. In Vitro Methods in Pharmaceutical Research. (1997). Ηνωμένο Βασίλειο: Elsevier Science.
3. Methods for Stability Testing of Pharmaceuticals. (2019). Ηνωμένες Πολιτείες: Springer New York.
4. Chidambaram, S. B., Essa, M. M., Qoronfleh, M. W. (2022). Introduction to Toxicological Screening Methods and Good Laboratory Practice. Σιγκαπούρη: Springer Nature Singapore.
5. RNA Nanotechnology and Therapeutics: Methods and Protocols. (2016). Ηνωμένες Πολιτείες: Springer New York.
6. Cancer Nanotechnology: Methods and Protocols. (2017). Ηνωμένες Πολιτείες: Springer New York.
7. Liposomes: Methods and Protocols. (2018). Ηνωμένες Πολιτείες: Springer New York.
8. Liposomes: Methods and Protocols. (2023). Germany: SPRINGER-VERLAG NEW YORK.

Related Academic Journals:

Nature Nanotechnology
 J, Controlled Release
 ACS Nano
 Inter. J. Pharmaceutics
 J. Pharm. Sciences
 J. Liposome Research
 Nanomedicine
 Int. J. Nanomedicines
 Pharmaceutics