



UNIVERSITY OF
PATRAS
ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ

DEPARTMENT OF PHARMACY

SCHOOL OF HEALTH SCIENCES

UNIVERSITY OF PATRAS
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POSTGRADUATE PROGRAM: **NANOMEDICINES FOR DRUG DELIVERY- NANOMED (EMJMD)**

COURSE TITLE: **3RD SEMESTER II (PAVIA COURSES)**
CODE: **HG4_NM11**

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_NM11	SEMESTER	C'
COURSE TITLE	3 RD SEMESTER II (PAVIA COURSES)		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	CREDITS	
Courses (6 courses)	20	30	
COURSE TYPE	Cycle of Specialized knowledge courses for Specialization semester [selection 2] (Nanotechnology and biologic/biotech. Drugs, Regulatory and analytical aspects, Industrialization, Drug targeting and vaccination, Specific applications of Nanomedicines, Personal Development Seminars), 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_NM11.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 strategies available for different application of nanomedicines for drug delivery
2. have been familiarized to the applications of nanomedicines for therapeutic and/or diagnostic applications .
3. Have understood the basic approaches for design and development of nanomedicines depending on the specific application.
4. Have familiarized themselves with the techniques of optimizing nanomedicines depending on therapeutic or diagnostic requirements, route of administration etc.
5. Learn how a nanomedicine can go from the lab to the clinic and finally to the market, what to consider and how to organize each step.
6. learn about personal development methods that will help them in their future carriers

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

This semester consists of 6 courses (that are carried of @ Universita Degli Study di Pavia), the following:

Nanotechnology and biologic/biotech drugs:

Formulation aspects of nanodrug delivery systems for different administration routes,

ATMPs

Regulatory and analytical aspects:

Regulatory aspects of biotech drugs and nanodrug delivery systems

Statistics and Chemometrics,

Analytical methods for biotech drugs.

Industrialization:

GMP,

Manufacturing techniques for nanodrug delivery systems.

Drug targeting and vaccination:

Drug targeting,

stimula responsive polymers,

vaccination,

Advanced methodologies in pharmacology and biotechnology.

Specific applications of nanomedicines:

Inorganic nanomedicines,

Diagnostics,

Medical Devices based on nanopharmaceuticals,

ocular,

cutaneous and transdermal applications of nanomedicines.

Personal Development Seminars:

Literacy,

CV development,

Italian language course,

Introduction of traineeship projects by students.

PUBLIC PRESENTATIONS

Selected case studies in modern Nanomedicine subjects

Individual Assignment & Presentation

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	Activity	Semester Workload
	Lectures	280
	Practical Courses	50
	Presentations of Case Studies	100
	Seminars	60
	Case Studies' Preparation & non-directed Study	260
	Course Total	

	(25 hours of work-load per ECTS credit)	750
STUDENT PERFORMANCE EVALUATION	<p>Language of Evaluation: English</p> <p>Written exams</p> <ul style="list-style-type: none"> • Multiple choice questionnaires, Short answer questions, Open ended questions (60% of final grade) <p>Public Presentation</p> <ul style="list-style-type: none"> • Presentation of a Case study (English) (25% of final grade) • Presentation of Practicals courses results • (15% of final grade) 	

5. RECOMMENDED BIBLIOGRAPHY

Suggested Bibliography:

1. Nanomedicine for the Treatment of Disease: From Concept to Application. (2019). United States: Apple Academic Press.
2. Advances and Challenges in Nanomedicine. (2019). (n.p.): Frontiers Media SA.
3. Nanomedicine for Bioactives: Healthcare Applications. (2020). Singapore: Springer Nature Singapore.
4. Igarashi, E. (2018). Nanomedicines and Nanoproducts: Applications, Disposition, and Toxicology in the Human Body. United States: CRC Press.
5. Gregoriadis, G. (2018). Liposome Technology: Volume III: Targeted Drug Delivery and Biological Interaction. United Kingdom: CRC Press.
6. Liposomes: Methods and Protocols. (2023). Germany: SPRINGER-VERLAG NEW YORK.
7. Liposomes in Drug Delivery: What, Where, How and When to Deliver. (2024). United Kingdom: Elsevier Science.
8. Grumezescu, A. M. (2019). Nanomaterials for Drug Delivery and Therapy. Netherlands: Elsevier Science.

Related Academic Journals:

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