



UNIVERSITY OF
PATRAS
ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ

DEPARTMENT OF PHARMACY

SCHOOL OF HEALTH SCIENCES

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

COURSE TITLE: **INNOVATIVE DOSAGE FORMS**
CODE: **HG4_NM4**

**DESIGN AND DISCOVERY OF BIOACTIVE COMPOUNDS
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_NM4	SEMESTER	A'
COURSE TITLE	INNOVATIVE DOSAGE FORMS		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	CREDITS	
Courses	4	6	
COURSE TYPE	Specialised knowledge (Pharmaceutical Technology, Pharmaceuticals), 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/Nano-Med/HG4_NM04.pdf		

2. LEARNING OUTCOMES

Learning Outcomes
<p>Upon successful course completion, students will acquire knowledge, skills and abilities related to level 7 of the European Qualifications Framework for Lifelong Learning.</p> <p>In particular, students will:</p> <ol style="list-style-type: none"> 1. understand the requirements, strategy and medical needs for design of innovative dosage forms 2. understand the differences of different innovative dosage forms, depending on therapeutic need and route of administration 3. have been introduced to the techniques and methodology underlying the design of innovative dosage forms 4. have understood the basic approaches to propose and design innovative dosage forms

5. have familiarized themselves with the techniques of optimizing innovative dosage forms

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

Concept and Approach for development of Innovative formulations for enhanced bioavailability depending on route of administration, drug properties, and therapeutic needs.

1. Introduction of "Formulation of innovative forms" (course)
2. Introduction of publication exercise
3. Personal work on publications
4. Biomolecules and Biomedicines
5. Formulation of proteins
6. Cyclodextrins: applications and NPs
7. Physicochemistry of lipids
8. Improvement of bioavailability of drugs by lipidic formulations (1)
9. Innovative forms for pulmonary route
10. Improvement of bioavailability of drugs by lipidic formulations (2)
11. Personal work on publications
12. Liposomes Introduction
13. Conception of innovative ocular dosage forms
14. Personal work on publications
15. Polymeric nanoparticles : preparation- Nanoparticles for cancer therapy
16. Choosing the optimal oral dosage form
17. Microencapsulation and drying
18. in situ forming gels (theory and applications in drug delivery)

PUBLIC PRESENTATIONS

Oral Presentation of Essay on Publication

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> <tr> <td>Activity</td> <td>Semester Workload</td> </tr> <tr> <td>Lectures</td> <td>85</td> </tr> <tr> <td>Preparation & Presentation of Essay</td> <td>25</td> </tr> <tr> <td>non-directed Study</td> <td>40</td> </tr> <tr> <td>Course Total (25 hours of work-load per ECTS credit)</td> <td>150</td> </tr> </table>	Activity	Semester Workload	Lectures	85	Preparation & Presentation of Essay	25	non-directed Study	40	Course Total (25 hours of work-load per ECTS credit)	150
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Lectures	85										
Preparation & Presentation of Essay	25										
non-directed Study	40										
Course Total (25 hours of work-load per ECTS credit)	150										
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 (80% of final grade) <p>Public Presentation</p> <ul style="list-style-type: none"> • Presentation of Essay English (20% of final grade) 										

5. RECOMMENDED BIBLIOGRAPHY

Suggested Bibliography:

1. Attwood, D., Florence, A. T. (2012). Physical Pharmacy. Germany: Pharmaceutical Press.
2. Aulton's Pharmaceutics: The Design and Manufacture of Medicines. (2013). United Kingdom: Churchill Livingstone/Elsevier.
3. Perrie, Y., Rades, T. (2012). Pharmaceutics: Drug Delivery and Targeting. United Kingdom: Pharmaceutical Press.
4. Jones, D. S. (2016). Pharmaceutics: Dosage Form and Design. United Kingdom: Pharmaceutical Press.
5. Siegel, R. A., Rathbone, M. J. (2011). Fundamentals and Applications of Controlled Release Drug Delivery. Germany: Springer US.
6. Oral Controlled Release Formulation Design and Drug Delivery: Theory to Practice. (2011). Germany: Wiley.
7. Innovative Dosage Forms: Design and Development at Early Stage. (2019). Germany: Wiley.
8. Novel Drug Delivery Technologies: Innovative Strategies for Drug Re-positioning. (2020). Germany: Springer Nature Singapore.
9. Gassmann, O., Reepmeyer, G., von Zedtwitz, M. (2013). Leading Pharmaceutical Innovation: Trends and Drivers for Growth in the Pharmaceutical Industry. Germany: Springer Berlin Heidelberg.
10. Dermal Drug Delivery: From Innovation to Production. (2020). United States: CRC Press.

Related Academic Journals:

- J. Colloid and Interphase Sciences
- Colloids and Surfaces A and B
- International J. Pharmaceutics
- Journal of Pharmaceutical Sciences
- European Journal of Pharmaceutical Sciences
- Eur. J. Pharmaceutics and Biopharmaceutics
- Pharmaceutics
- Int. J. Nanomedicines
- Nanoscale,
- ASC Nano
- Nature Nanotechnology