



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: PREFORMULATION **AND FORMULATION STRATEGY**
CODE: **HG4_NM1**

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_NM1	SEMESTER	A'
COURSE TITLE	PREFORMULATION AND FORMULATION STRATEGY		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	CREDITS	
Courses	2	3	
COURSE TYPE	Specialised knowledge (Physical Pharmacy, Pharmaceutical Technology, Pharmaceutics), Skills Development.		
PREREQUISITE COURSES	None		
LANGUAGE of INSTRUCTION and EXAMINATIONS	ENGLISH		
COURSE OFFERED to ERASMUS STUDENTS	THIS IS ALREADY AN EMJMD PROGRAM COURSE		
COURSSE (URL)	https://www.pharmacy.upatras.gr/images/DS/NanoMed/HG4_NM01.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 strategy and logic of formulating a drug product 2. understand the physicochemical properties and other information required in order to formulate a particular drug into a pharmaceutical product s 3. have been introduced to the techniques and methodology for identifying and calculating the required (for formulation) physicochemical properties of a drug 4. have been introduced to the techniques and methodologies underlying the decision about the selection of the optimal type of formulation and optimal route of administration for a specific drug product.

5. They will be able to understand the Basic physicochemical properties of drugs that determine the strategy for formulation development.

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

1. Introduction of "Preformulation" and exercise on ingredients (Essay)
2. Preformulation/ strategical plan for formulation
3. Interfacial and multiphase systems part 1
4. Interfacial and multiphase systems part 2
5. Personal work on ingredients
6. Solubility/dissolution: basis
7. Powders properties
8. Solubility/dissolution: advanced
9. Dispersed systems, particle size analysis
10. Differential scanning calorimetry and thermal analysis/ microcalorimetry
11. personal work on ingredients
12. Rheology
13. Practical work on preformulation (dissolution, LogP, Sterilization, etc)
14. Presentation of pharmaceutical production steps
15. Presentation of work on ingredients

PUBLIC PRESENTATIONS

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	<table> <thead> <tr> <th><i>Activity</i></th> <th><i>Semester Workload</i></th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td>30</td> </tr> <tr> <td>Practicals</td> <td>5</td> </tr> <tr> <td>Preparation/Presentations of Essay on Ingredients</td> <td>20</td> </tr> <tr> <td>non-directed Study</td> <td>20</td> </tr> <tr> <td>Course Total (25 hours of work-load per ECTS credit)</td> <td>75</td> </tr> </tbody> </table>	<i>Activity</i>	<i>Semester Workload</i>	Lectures	30	Practicals	5	Preparation/Presentations of Essay on Ingredients	20	non-directed Study	20	Course Total (25 hours of work-load per ECTS credit)	75
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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 (85% of final grade) <p>Report of Practical's</p> <ul style="list-style-type: none"> • Report (5% of final grade) <p>Public Presentation</p> <ul style="list-style-type: none"> • Presentation of an Essay of Ingredients (English) (10% of final grade) 												

5. RECOMMENDED BIBLIOGRAPHY

Suggested Bibliography:

1. Sinko, P. J. (2023). Martin's Physical Pharmacy and Pharmaceutical Sciences. United States: Wolters Kluwer Health.
2. Attwood, D., Florence, A. T. (2012). Physical Pharmacy. Germany: Pharmaceutical Press.
3. Jain, G., Krishen Khar, R., Ahmad, F. J. (2011). Theory and Practice of Physical Pharmacy - E-Book. India: Elsevier Health Sciences.

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