UNIVERSITY OF PATRAS
ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ

DEPARTMENT OF PHARMACY

SCHOOL OF HEALTH SCIENCES

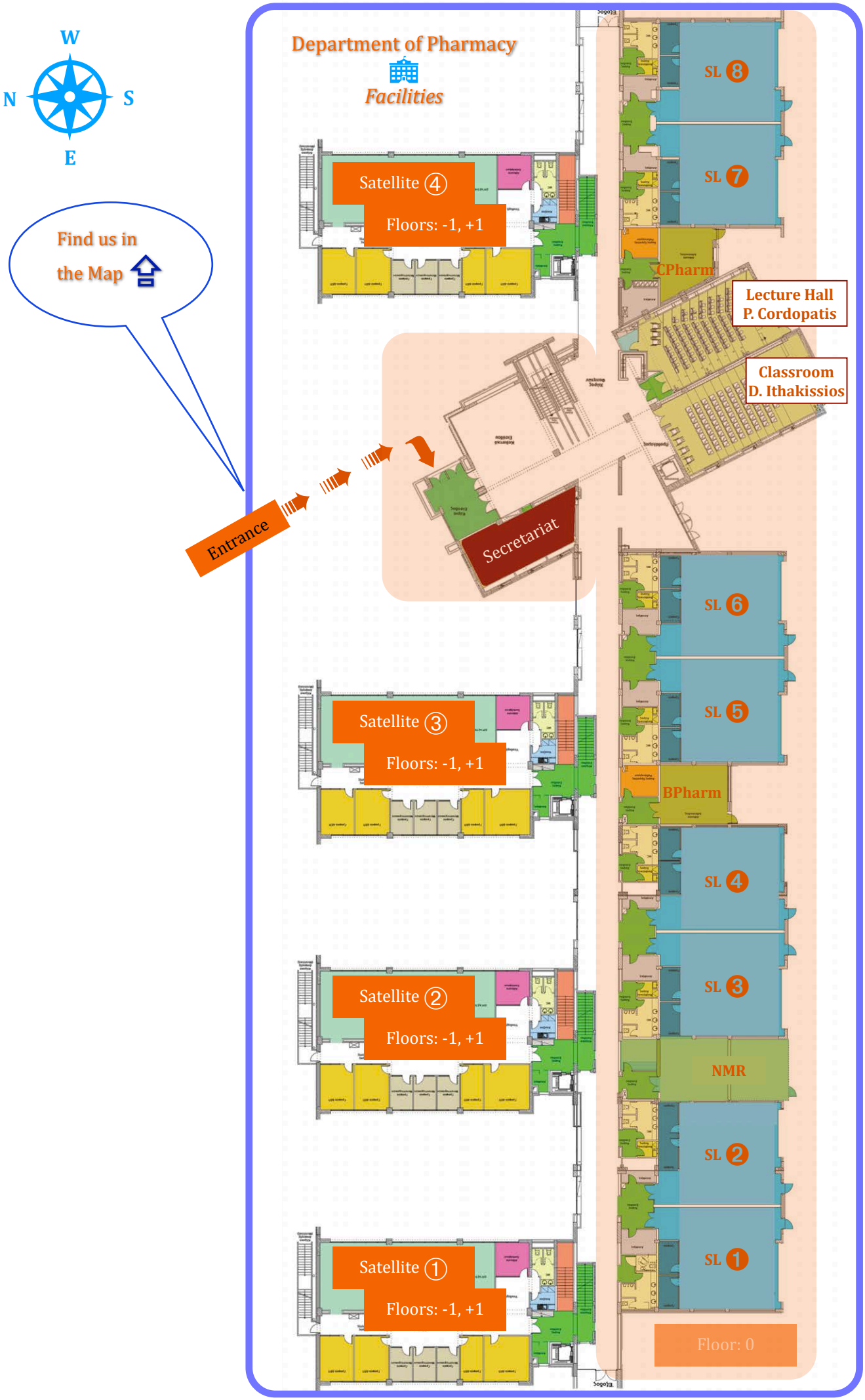
Postgraduate Studies Program

Erasmus Mundus Joint Master Degree: "Nanomedicines for Drug Delivery"

Acronym: NANOMED

2025-2026 Study Guide

PATRAS 2026


W
N
S
E
Find us in
the Map
Department of Pharmacy
Facilities
Satellite ④
Floors: -1, +1
Satellite ③
Floors: -1, +1
Satellite ②
Floors: -1, +1
Satellite ①
Floors: -1, +1
Entrance
Secretariat
SL 8
SL 7
CPharm
Lecture Hall
P. Cordopatis
Classroom
D. Ithakissios
SL 6
SL 5
BPharm
SL 4
SL 3
NMR
SL 2
SL 1
Floor: 0

UNIVERSITY OF PATRAS
SCHOOL OF HEALTH SCIENCES

DEPARTMENT OF PHARMACY
www.pharmacy.upatras.gr

Postgraduate Studies Program

Erasmus Mundus Joint Master Degree: “Nanomedicines for Drug Delivery”

Acronym: NANOMED

Study Guide
Academic Year 2025 - 2026

PATRAS 2026

SYMBOLS [links, bookmarks, files' downloading]

⇨ Internal bookmark or Internet link

⇩ Hyperlink to a file download

Html & email references are active !

TABLE of CONTENTS

Postgraduate Studies

a. Outline

The subject of this Postgraduate Program is the theoretical and practical education and training of young scientists in the design, production (in small and industrial scale) and evaluation (quality control, efficiency, and safety) of Nanomedicines afor Drug Delivery and other related applications, both theoretically and practically.

The aim of the program is:

- to cover research and training needs in the field of Nanomedicinal Drug products
- to develop research in this field and thereby promote new knowledge.

Graduates of the course will have the cognitive background to work inter alia at the related Pharmaceutical/biotech industry and at National and International regulatory bodies.

In addition, it is expected that the research link with the Academic and Industrial Partner Network of the NANOMED consortium will help to create and strengthen well-qualified and specialized human resources and additionally augment the transfer of know-how that will contribute to the promotion of the country's and Europe's development needs, in the area of Nanomedicines.

b. Awarded Title

NANOMED EMJMD students receive titles from all four participating Universities, together with a Document signed by all four Academic Coordinators. The possibility for a joint-Diploma is under consideration.

In University of Patras, the Postgraduate Studies Program "Nanomedicines for Drug Delivery" leads to the award of a Master of Science (MSc) Degree in

"Nanomedicines for Drug Delvery".

c. Learning Outcomes

Upon successful completion of the program, graduates will be able to know and master the following:

- the techniques and methodology for identifying and determining/calculating the required (for formulation) physicochemical properties of a drug, underlying the decision about the selection of the optimal type of formulation and optimal route of administration for a specific drug product

- the differences of drug formulation types according to physical state and administration route and the requirements for quality control of dosage forms; the techniques and methodologies for manufacturing of different types of Pharmaceutical Dosage forms and the basic requirements for ingredients and industrial settings for production of different types of dosage forms according to route of administration
- the concepts of acute releasing and prolonged/sustained release dosage forms and the kinetics regulating the design of controlled release dosage forms; methods to design and formulate such dosage forms
- approaches to evaluate the quality of dosage forms, according to regulatory rules
- advanced and novel methods applied in current days for formulation design and innovative techniques and methodologies applied for development of Pharmaceutical products; the strategy for experiment design and Quality by design
- the strategy and logic of applying Nanotechnology for formation of Nanoparticulate drug delivery systems/carriers, the specific requirements in terms of biocompatibility of Nanomedicines; the techniques and methodology for manufacturing of different types of Nanomedicines
- the differences between nanomedicine types and the requirements depending on the specific therapeutic or theragnostic or diagnostic application as well as the concept and strategies of drug Targeting (passive/active) by using nanomedicines
- methods to prepare nanomedicines, characterize them and evaluate their performance by in vitro methods
- The structure and properties of biological and biotech drugs (peptides, proteins, nucleic acids); structure and properties of antibodies, their production methods and how they are used in Pharmaceutics; basic concepts of immunology and vaccines; basic approaches to consider for preparation of a vaccine and for formulation of biological drugs
- to systematically review the scientific literature for a specific scientific question; critically assess publications
- the techniques of optimizing nanomedicines depending on therapeutic or diagnostic requirements, route of administration etc.; 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
- Finally, they will be able to know the methods of industrial production of pharmaceutical/nanomedicine products and the Good Manufacturing Practice Practices, GMP), as described in the related European Harmonized Standard ISO's , and EMA/FDA guidelines.

d. Quality Assurance and Evaluation Process

The quality assurance of the NANOMED joint Master Degree is based on both internal and external evaluations. According to the special Cooperation Agreement of the consortium (Consortium Agreement), the establishment of an Executive Committee (Executive Committee) and a Strategic Board (Strategic Board) , as well as their specific responsibilities are detailed below.

External evaluation/quality assurance is ensured by the organization of periodic overall evaluations, under the responsibility of the Strategic Boards. This evaluation takes place at the end of each NANOMED EMJMD intake (i.e. when the students of each student intake graduate). The Strategic Council also includes the participation of external members who do not belong to the Executive Committee, such as current or future Affiliated Partners. In addition, the program is periodically evaluated by the competent committee of ECAEA (European Education and Culture Executive Agency), which is responsible for Erasmus Mundus programs, both for quality assurance and for the management of funding.

Internal Quality Assurance procedures:
Each individual course is evaluated after the exam in the form of questionnaires to be completed. A common evaluation form has been developed for the courses of NANOMED EMJMD, per semester and/or place of teaching of the courses. There are five forms in total. The results of the internal evaluation (evaluation forms) are analyzed at the end of each semester.
The Strategic Council then discusses the results of these different assessments and makes recommendations to improve the curriculum that it submits to the Executive Committee.

From 2017 and on, changes have been made to the courses materials based on student recommendations regarding material overlaps and other issues (e.g. topics have been added to some course material to make it easier for students from other backgrounds), while we have also made any changes possible regarding the organization of mobility and the assistance provided to students in relation to matters concerning the granting of visas and residence permits, the opening of a bank accounts in European Union, and others.

Regarding the constitution and Responsibilities of the Committees:

• **The Executive Committee consists of** at least one representative from each member of the Consortium and is responsible for all decisions regarding the organization of NANOMED EMJMD (curriculum, assessments, student progress, quality assurance) and ensures that the program of courses within the Consortium is consistent with the curriculum objectives.

The activities of the Executive Committee are included in the following annual program:

I. March – May: Selection of students (scholarships and self-financed). Scholarship holders will be selected before April 15th. Self-funded students will be selected before May 31
II. Sept. – Oct.: subjects and destinations of the 3-month laboratory work and Diploma.
III. July: final validation to agree which of the students passed the NANOMED EMJMD in terms of their scores and results.

The Executive Committee conducts these activities through physical meetings or teleconferences. Whenever possible, the Executive Committee tries to reach a consensus. If this is not possible, the decision is taken by the majority vote of each member of the Consortium.

- **The Strategic Board consists of**: The members of the Executive Committee, four elected students from the same intake (each student has a different mobility path), and at least one member of Affiliated Partners (as provided by the Agreement).

  I. The goal of the Strategic Board is to make recommendations for adaptation and improvement in pedagogical and organizational aspects of NANOMED EMJMD. These recommendations are advisory only. The executive committee is responsible for approving or rejecting the recommendations.

  II. The Strategic Board meets once a year in July, after the annual Summer school and Workshop for students.

e. Program & Courses Description

Upon successful completion of the program, graduates will be able to know and master the following:

This 2-year, 120 ECTS Master's Course in English offers a high quality and multidisciplinary education in the emerging field of Nanomedicine. The consortium is composed of four Universities: Paris (Fr, coordinator), Patras (Gr), Pavia (It) and Angers (Fr). Nanomedicine is a revolutionary interdisciplinary science, combining knowledge from Physics, Biology, Chemistry and Medicine to treat diseases of the human body. The NANOMED consortium has brought together the expertise of four Universities in their respective domains of Nanomedicine. Renowned experts in the field from academia and industry are involved in the pedagogical staff. The final goal is to achieve the qualification of young scientists with appropriate credentials to lead the related field, either in Industry or in Academia.

Upon graduation, each student will receive four Master's degree diplomas corresponding to the National diplomas of the founding Universities.

Regarding the course content, the first semester (S1) taking place in Paris or Patras is dedicated to the "Introduction to pharmaceutical formulation" (Biopharmacy, formulation, production, controls). This first level provides the essential knowledge necessary to work in Pharmaceutical domains and to introduce innovative drug delivery system. Specific courses on chemistry or biology will be proposed to students with a scientific background who are non-pharmacist. At the end of S1, all students will follow practical courses in Paris.

The second semester will be dedicated to "Basic Nanomedicine and Biomolecules". A 3-months traineeship carried out in selected laboratories will conclude S2.

The Advanced Nanomedicine part of the curriculum (S3) corresponds to the specialization of students by choosing a training option according to their professional project. In Pavia, S3 will be dedicated to the "Production and Specific Applications of Nanoparticles" providing students with in-depth knowledge on different applications of nanoparticles and production, regulations and quality by design. In Angers, "Strategy of Pharmaceutical Development and Non-Clinical Development of Nanomedicines" is training professionals to manage innovative research projects with skills in Nanomedicine transfer from research to pre-clinical applications. During the final traineeship period (S4, 6 months), students apply this new knowledge to the successful achievement of research and development projects on Nanomedicine carried out in academic or industrial laboratories. The curriculum will also allow NANOMED participants to attend one summer school and two workshops organized by the consortium.Application requirements will include the completion of a Bachelor's degree in Pharmacy, or (under special provisions) in Chemistry, Biology, Biochemistry, Material Sciences or other adequate discipline. English language proficiency is also required.

Application requirements will include the completion of a Bachelor's degree in Pharmacy, or (under special provisions) in Medicine, Chemistry, Biology, Biotechnology, Chemical Engineering, Biochemistry, Material Sciences or other adequate discipline.

English language Proficiency is a main requirement.

The number of admissions to the program per year is up to twenty (20).

The tuition fee of the program is 4,500€ (1,125€ per semester).

f. Curriculum Courses Outlines in web links
(No) = ECTS

S1 Université Paris Cité (FR)

- HG4_NM0 Introduction in Pharmaceutical Sciences (3) ⇨
- HG4_NM1 Preformulation and formulation strategy (3) ⇨
- HG4_NM2 Classical and Controlled Release dosage forms (9) ⇨
- HG4_NM3 Practical Applications of Formulations (9) ⇨
- HG4_NM4 Innovative Dosage forms (6) ⇨

S2 University of Patras (GR) and 3-month internship in Consortium University

- HG4_NM5 Innovations in Pharmaceutical Technology (3) ⇨
- HG4_NM6 Basic Nanomedicines (6) ⇨
- HG4_NM7 Biomolecules (6) ⇨
- HG4_NM8 3-month Internship (12) ⇨
- HG4_NM9 Summer School and Workshop (3) ⇨

S3 Cycle of Specialized knowledge courses for Specialization semester

Selection 1.
Université d'Angers (FR)

- HG4_NM10 ⇨
  - CMC Regulatory and QbD Approach (5)
  - Innovation and Application (5)
  - Drug Product Design (5)
  - Characterization strategy (5)
  - Non Clinical Strategy (5)
  - Innovation Project (5)

Selection 2.
Università degli studi di Pavia (IT)

- HG4_NM11 ⇨
  - Nanotechnology and biologic/biotech. Drugs (5)
  - Regulatory and analytical aspects (7)
  - Industrialization (4)
  - Drug targeting and vaccination (7)
  - Specific applications of Nanomedicines (5)
  - Personal Development Seminars (2)

S4 (in any of the 4 Partner Universities or Participating Institutions)

- HG4_NM12 ⇨ 6-Month Diploma Thesis Project (30)

CONTACTS [Patras]: Phones & Emails

SECRETARIAT	**SECRETARIAT** *pharminf*	Tel: +30 2610 962**300** pharminf@upatras.gr
S. Antimissiaris	Professor	Tel: +30 2610 962**332** santimis@upatras.gr
A. Argyriou	Assist. Professor	Tel: +30 2610 962**347** argyriou@upatras.gr
K. Avgoustakis	**Professor** **CHAIRMAN**	Tel: +30 2610 962**317** avgoust@upatras.gr
X. Grigoropoulos	Special Training Laboratory Staff	Tel: +30 2610 962**771** cgri@upatras.gr
Ch. Foteinopoulou	Special Training Laboratory Staff	Tel: +30 2610 962**381** fotchrt@upatras.gr
M. Fousteris	Assoc. Professor	Tel: +30 2610 962**391**, 962**392** manolisf@upatras.gr
S. Hatziantoniou	Assoc. Professor	Tel: +30 2610 962**319** sohatzi@upatras.gr
Z. Kanellopoulou	**SECRETARIAT** ***Secretary***	Tel: +30 2610 962**300** zkanello@upatras.gr
E. Kateli	**SECRETARIAT** ***Post-Graduates***	Tel: +30 2610 962**330** kateli@upatras.gr
Ch. Kontoyannis	**Professor** **DEPUTY CHAIRMAN**	Tel: +30 2610 962**328** kontoyan@upatras.gr cgk@iceht.forth.gr
K. Kotsokolou	**SECRETARIAT** ***Protocol***	Tel: +30 2610 962**310** nkotsokolou@upatras.gr
G. Lagoumintzis	Assist. Professor	Tel: +30 2610 962**321** glagoum@upatras.gr
F. Lamari	Professor	Tel: +30 2610 962**335**, 962**337** flam@upatras.gr
V. Magafa	Assist. Professor	Tel: +30 2610 962**343**, 962**344** magafa@upatras.gr
C. Mikelis	Professor	Tel: +30 2610 962**362** kmikelis@upatras.gr

Table of Contents ⇨

S. Nikolaropoulos	Professor	Tel: +30 2610 962**326**, 962**325** snikolar@upatras.gr
M. Orkoula	Assoc. Professor	Tel: +30 2610 962**342** malbie@upatras.gr
G. Pairas	Professor	Tel: +30 2610 962**327**, 962**360** gpairas@upatras.gr
E. Pantazaka	Assist. Professor	Tel: +30 2610 962**314** evapantazaka@upatras.gr
E. Papadimitriou	Professor	Tel: +30 2610 962**336** epapad@upatras.gr
M. Papanikolaou	Special Training Laboratory Staff	Tel: +30 2610 962**340** mpapanikol@upatras.gr
G. Patrinos	Professor	Tel: +30 2610 962**339**, 962**368** gpatrinos@upatras.gr
K. Poulas	Assoc. Professor	Tel: +30 2610 962**353** kpoulas@upatras.gr
A. Pyrioxou	Laboratory Teaching Staff	Tel: +30 2610 962**380** apyriohou@upatras.gr
E. Simoni	**SECRETARIAT** ***Graduates***	Tel: +30 2610 962**320** irenesim@upatras.gr
G. Sivolapenko	Professor	Tel: +30 2610 962**323**, 962**324** gsivolap@upatras.gr
A. Skouras	Assoc. Professor	Tel: +30 2610 962**353** nasosskouras@upatras.gr
G. Spyroulias	Professor	Tel: +30 2610 962**350**, 962**351**, 962**352** G.A.Spyroulias@upatras.gr
G. Sotiropoulou	*ret.* Professor	Tel: +30 2610 962**315**, 962**316** gdsotiro@upatras.gr
S. Topouzis	Professor	Tel: +30 2610 962**364**, 962**365** stto@upatras.gr
K. Vasileiou	Assist. Professor	Tel: +30 2610 962**322** konvasil@upatras.gr
G. Zissi	Laboratory Teaching Staff	Tel: +30 2610 962**383** gdzissi@upatras.gr