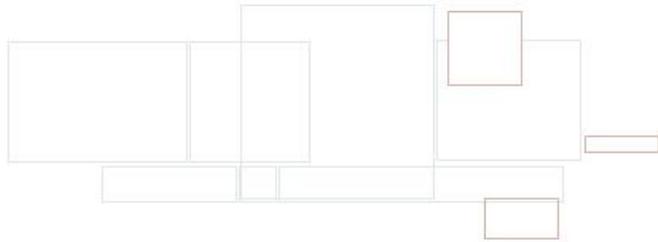




**UNIVERSITY OF PATRAS**  
**SCHOOL OF MEDICINE**  
<http://www.med.upatras.gr>



# **MEDICAL CURRICULUM & STUDY GUIDE**

# **MEDICAL CURRICULUM & STUDY GUIDE**

## ***Under the Chairmanship of Professor Panos Goumas***

**Patras, September 2014**

*Dear student,*

*The English version of the Medical Curriculum and Study Guide of the University of Patras that you are holding has been updated for the academic year 2013-14 and this is its fourth edition. It is addressed to foreign students who often visit our Medical School through exchange programs and to those students whose mother tongue is not Greek. We hope that it will be an important help to your medical education that is about to begin, in a modern and innovative medical school.*

*The authors of the current guide consist of the Rector of University of Patras Professor **Venetsana Kyriazopoulou**, the Head of the School of Medicine Professor **Panos Goumas**, the Deputy President of the University of Patras Council **Prof. Charlambos Gogos**, the Coordinator of the Quality Assurance Committee Professor **Constantinos Stathopoulos** and the School's Secretary **Ourania Bousiou**. The authors were assisted by the postgraduate students **Parthena Konstantinidou**, **Christina Kalogeropoulou**, **Efstratia Xepapadaki**, **Patroula Nathanailidou**, and **Nikoletta Smyrni**.*

**The Study Guide Committee**

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# PART ONE



# ADMINISTRATION

## THE UNIVERSITY

The University of Patras was established in November 11<sup>th</sup>, 1964 as a self-administered academic institution under the supervision of the Greek Government. The opening ceremony took place in November 30<sup>th</sup>, 1966. It is located in the city of Patras and the emblem of the university is St. Andrew.

**ADMINISTRATION** The University Administration bodies according to law 4009/2011 (Structure, Function, Ensuring the quality of studies and Internalization of Higher Education) as this is modified by the laws 4025/2011, 4076/2012 and 4115/2013, as well as the current regulatory practice of the Senate (ΣΥΝ 476/8-3-2012, ΦΕΚ 1141/10-4-2012 Issue B') is a) **the Institution's Management Council**, b) **the Rector** assisted by three **Deputy Rectors**, and c) **the Senate**.

**Management Council** The members of **Management Council** of the University of Patras are:

**Chairman**  
Gavras Haralambos, Professor of Medicine, Boston University, School of Medicine, USA

**Deputy Chairman**  
Gogos Charalambos, Professor of Medicine, School of Health Sciences, University of Patras

**Members**  
Giannakis Georgios, Professor, Department of Electrical and Computer Engineering and Digital Technology Center, University of Minnesota, Minneapolis USA  
Giannis Athanasios, Professor of Chemistry, Institute for Organic Chemistry, University of Leipzig Germany  
Kallitsis John, Professor of Department of Chemistry, University of Patras  
Megas Panagiotis, Professor of Medicine, Department of Medicine, University of Patras  
Pistikopoulos Stratos, Professor, Centre for Process Systems Engineering, Department of Chemical Engineering, Imperial College London, UK  
Platsoucas Chris, Dean, College of Sciences, Professor of Biological Sciences, Old Dominion University USA  
Polychronopoulos Constantine, Professor of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign USA  
Ravanis Konstantinos, Professor, Department of Educational Sciences and Early childhood Education, University of Patras  
Ralli Angeliki, Professor of General Linguistics, Department of Philology, University of Patras, Director of the Laboratory of Modern Greek Dialects  
Tzes Anthony, Professor of Department of Electrical and Computer Engineering, University of Patras  
Triantafillou Athanasios, Professor of Department of Civil Engineering, University of Patras  
Christopoulos Theodore, Professor of Department of Chemistry, University of Patras

**Rectorate Authorities** The Rectorate Authorities of the University of Patras for the period 2010-2014 are:

**Rector**

Venetsana Kyriazopoulou, Professor, Faculty of Medicine

**Vice Rector of Infrastructures and sustainability**

George Angelopoulos, Professor, Department of Chemical Engineering

**Vice Rector of Academic and International Affairs**

Nikolaos Karamanos, Professor, Department of Chemistry

**Vice Rector of Information systems and networks**

Chris Panagiotakopoulos, Associate Professor, Department of Primary Education

**Vice Rector of Research and Development**

Demosthenis Polyzos, Professor, Department of Mechanical Engineering and Aeronautics

**Vice Rector of Economic Affairs**

Demetrios Psaltopoulos, Professor, Department of Economics

**Senate**

According to the current statutory framework the Senate consists of:

- The Rector,
- The Deans of the Schools,
- The Chairperson of the Departments maximum two of each School with a two-year Term non-renewable, with switching of the Schools and for as long as there are Departments left. The representation of the Chairperson is determined by the Rector,
- An undergraduate students' representative,
- A postgraduate students' representative,
- A PhD students' representative,

Who are all elected for an annual term with no possibility of re-election,

- One representative of each category of personnel with no possibility of re-election,

Who are elected within a single ballot by universal suffrage of the members of each category and participate voting, when the discussed issues concern their category of personnel.

The exact composition and the number of the members of the Senate with the right of vote, as well as the conditions and issues concerning the above, are foreseen in the Organization and the Operating Rules of the University.

The Deputy Rectors and the secretary of the Institution may attend the meetings of the Senate with no voting right.

**SCHOOLS**

The University consists of Schools that cover departments and units of related scientific fields. Each School supervises and coordinates the operation of the Departments. The Departments are divided into divisions. The authorities of the School are the Dean, the Deanery and the General Assembly. The authorities of a Department are the Chairman and the General Assembly of the Department. If there are already established divisions, the directors and the general assembly of the division are also included in the authorities of the department.

The Schools of the University of Patras, by order of founding are: the School of Natural Sciences, the School of Engineering, the School of Health Sciences, the School of Humanities and Social Sciences and the School of Business Administration.

Each School is divided into Departments as follows:

**SCHOOL OF NATURAL SCIENCES**

Department of Biology  
Department of Geology  
Department of Mathematics  
Department of Physics  
Department of Chemistry  
Department of Material Science

**SCHOOL OF ENGINEERING**

Department of Environmental and Natural Resources Management  
Department of Electrical and Computer Engineering  
Department of Computer Engineering and informatics  
Department of Mechanical Engineering and Aeronautics  
Department of Civil Engineering  
Department of Chemical Engineering  
Department of Architecture

**SCHOOL OF HEALTH SCIENCES**

Faculty of Medicine (School of Medicine)  
Department of Pharmacy

**SCHOOL OF HUMANITIES AND SOCIAL SCIENCES**

Department of Early Childhood Education  
Department of Primary Education  
Department of Theatre Studies  
Department of Philology  
Department of Philosophy

**SCHOOL OF BUSINESS ADMINISTRATION**

Department of Economics  
Department of Business Administration  
Department of Business Administration of Food and Agricultural Enterprises  
Department of Cultural Heritage Management and New Technologies

**2014-2018 DEANS OF SCHOOLS**

<b>Dean of School of Natural Sciences</b>	<b>Konstantinos Koutsikopoulos</b> Professor, Department of Biology
<b>Dean of School of Engineering</b>	<b>Odysseas Koufopavlou</b> Professor, Department of Electrical and Computer Engineering
<b>Dean of School of Health Sciences</b>	<b>Dimitrios Kardamakis</b> Professor, Department of Medicine
<b>Dean of School of Humanities and Social Sciences</b>	<b>Christos Terezis</b> Professor, Dept. of Philosophy
<b>Dean of School of Business Administration</b>	<b>Dimitrios Skouras</b> Professor, Dept. of Economics
<b>University's Secretary</b>	<b>Marina Korfiati</b> <i>Director of the General Directorate of Administration and Financial Services</i>



## THE SCHOOL OF HEALTH SCIENCES

The Faculty of Medicine was established at the 22th of July in 1977 and was renamed to School of Health Sciences in 1983. The School consists of the Faculty of Medicine and the Department of Pharmacy.

The Authorities of the School are the General Assembly, the Deanery and the Dean.

a) General Assembly of the School consists of the members of the General Assemblies of the Departments of the School.

b) The Deanery consists of the Dean, the Chairperson of the Departments and a student's representative from each Department.

c) The Dean: (i) Convenes the General Assembly of the School and the Deanery, compiles the agenda and presides over the tasks of the Assembly (ii) coordinates the mutual courses of the Departments, (iii) presides over the services of the Deanery, (iv) insures that the decisions of the Assembly are put through, (v) convenes committees for the study and processing of various issues.

## THE FACULTY OF MEDICINE (SCHOOL OF MEDICINE)

The Authorities of the Faculty are the director of the faculty, the General Assembly, the management council and the chairman.

### ***General Assembly***

The General Assembly of the Faculty consists of the Teaching staff, undergraduate students representatives equal to 50% of the teaching staff and postgraduate student's representatives equal to 15% of the teaching staff that are members of the general assemblies.

Representatives of Special Laboratory Technical and Teaching Staff as well as assistant staff and scientific associates or commissary may also participate in the General Assembly, as long as members of the corresponding staff category hold essential positions at the faculty. Each of these staff categories may participate in the meetings with a number of representatives equal to 5% of the teaching staff that are members of the General Assembly. In any case, at least one representative of each category participates in the assembly.

If the teaching staff has up to 30 members, they may all participate in the General Assembly. If less than 5 members of the teaching staff participate in a Department's General Assembly, the General Assembly of the School or the senate fills in with members of the teaching staff from the most relative Departments.

If the teaching staff has more than 40 members, only 30 representatives participate in the assembly. These representatives are distributed at the sectors according to the total number of teaching staff of each sector. The representatives of the teaching staff are elected for an annual term in proportion to the total number of the members of each rank in a secret ballot. All the members of the teaching staff participate in the election.

The Department's Chairman and the Directors of the divisions also participate in the General Assembly regardless of whether they have been elected as representatives of the teaching staff or not. Thus, the total number of teaching staff participating in the meetings may exceed

30.

The participation of these extra members in the assembly does not affect the distribution of the representatives among the teaching ranks and the divisions.

If the members of the teaching staff are between 30 and 40, the General Assembly will agree on the number of the members that will participate. Until this decision is made, all the members of the teaching staff take part in the meetings.

***Chairman of the  
Department***

The Department's chairman is elected by a special group of electors composed of all the members of the teaching staff of the corresponding Department.

The General Assembly has all the responsibilities of the Department provided by law, except those conferred on other authorities.

Four regular meetings are called per year. Special meetings may also be convened by the chairman of the Department for issues of election or promotion and matters that arise. Finally, special meetings for specific reasons can be requested by at least 1/3 of the members of the General Assembly.

**Head of Secretariat** Ourania Bousiou  
2610-969104 bousiou@upatras.gr

**Administration Staff** **SECRETARIAT OF FACULTY OF MEDICINE:**  
secretary@med.upatras.gr

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The Secretariat service is available for students every **Monday, Tuesday and Thursday 10.00 - 12.00 and every Wednesday 12-14**. Written requests for certificates and other documents must be submitted in person or by a legally authorized representative. Since the academic year 2003-04 the secretariat works with a computer system and records the students' data digitally.

The Secretariat of the Faculty is located in the University Campus, in the ground floor of the Preclinical Research Building. The laboratories of the Basic Medical Sciences are also located in the same building. The rest of the clinics and laboratories are located in the building A' of "Clinical Functions" and in the University Hospital in Rio. The Library and Auditoriums (A1, A2, A3 and A4) of the Faculty are located next to the Preclinical Research Building.

BASIC MEDICAL SCIENCES I	
<b>Laboratories</b>	<ol style="list-style-type: none"> <li>1. Biological Chemistry</li> <li>2. General Biology</li> <li>3. Medical Physics</li> </ol>
BASIC MEDICAL SCIENCES II	
<b>Laboratories</b>	<ol style="list-style-type: none"> <li>1. Anatomy</li> <li>2. Physiology</li> <li>3. General Pharmacology</li> </ol>
CLINICAL LABORATORIES	
<b>Laboratories</b>	<ol style="list-style-type: none"> <li>1. Radiology</li> <li>2. Microbiology</li> <li>3. Pathology</li> <li>4. Public Health</li> <li>5. Nuclear Medicine</li> </ol>
INTERNAL MEDICINE I	
<b>Clinics</b>	<ol style="list-style-type: none"> <li>1. Internal Medicine</li> </ol>
INTERNAL MEDICINE II	
<b>Clinics</b>	<ol style="list-style-type: none"> <li>1. Neurology</li> <li>2. Psychiatry</li> <li>3. Dermatology</li> </ol>
SURGERY	
<b>Clinics</b>	<ol style="list-style-type: none"> <li>1. Cardiothoracic Surgery</li> <li>2. Surgery</li> <li>3. Anaesthesiology and Intensive Care</li> <li>4. Ophthalmology</li> <li>5. Urology</li> <li>6. Neurosurgery</li> <li>7. Otorhinolaryngology</li> <li>8. Orthopaedics</li> <li>9. Vascular Surgery</li> </ol>
PAEDIATRICS, OBSTETRICS, GYNAECOLOGY	
<b>Clinics</b>	<ol style="list-style-type: none"> <li>1. Paediatric Surgery</li> <li>2. Paediatrics</li> <li>3. Obstetrics-Gynaecology</li> </ol>

LABORATORIES	TEL.	FAX
Biological Chemistry	969.870	969.167
General Biology	996.170	997.689
Medical Physics	997.620	992.496
Anatomy	992.391	997.886
Physiology	969155	997.215
General Pharmacology	997.638	994.720
Radiology	993.987	993.987
Microbiology	999.453	994.922
Pathology	991.810	991.810
Public Health	997.889	996.101
Nuclear Medicine	999.211	999.212

CLINICS	TEL.	FAX
Internal Medicine	999.583	993.982
Neurology	993.949	993.949
Psychiatry	994.534	994.534
Dermatology	999.574	993.951
Surgery	999.299	993.984
Anaesthesiology and Intensive Care	993.947	993.947
Ophthalmology	999.286	993.994
Urology	999.385	993.981
Neurosurgery	999.752	991.521
Otorhinolaryngology	999.264	993.986
Orthopaedics	999.556	994.579
Paediatrics	993.948	994.533
Obstetrics-Gynaecology	999.563	993.854
Cardiothoracic Surgery	999.779	993.984
Paediatric Surgery	993.948	994.533
Vascular Surgery	999.463	993.984

OTHER SERVICES	TEL.	FAX
Secretariat of the Faculty	969.100 969108	996.103
Library of the Faculty	994.721	997.873
University Hospital	999.111	
Foreign Languages Teaching Unit	997.370	
Library and Information Service	969.620-3	

# REGISTRATIONS

## FIRST YEAR REGISTRATION

The names of the first year students accepted by the Faculty of Medicine are announced in public by the Faculty. The registration time and deadline for the students that were accepted in the Faculty is determined by the Ministry of Education.

Registration applications for entrance within the 3% as well as entrance within the special category of people suffering from Severe Medical Conditions (blind, deaf, people suffering from Thalassaemia etc. ), must also be submitted until the same deadline.

**Registration Documents** The new entrances or a legally authorized representative must submit the following documents to the Secretariat of the Faculty:

- a) Application form
- b) Dismissal Title: High School Diploma or Certificate from the High School he graduated or a legally certified copy of these. If the student submits the original Certificate, he or she may withdraw it when an authorized copy is submitted.
- c) Transcript of Records.
- d) A copy of the candidate's ID (Identity Card) or a Birth Certificate where the male registry is indicated.
- e) A Removal Confirmation Form if the candidate was already registered in a different institution during the past academic year.
- f) An Affirmation Statement in which the candidate states that he/she is not registered in a different institution of Greek Higher Education.
- g) A document signed from the revenue department which indicates the candidate's personal or family income (this is required for the students' Accommodation and Catering Services), if the candidate has the right and wishes to have his/her meals at the Catering Facilities of the University.
- h) Six (6) photographs at the size of those used for Identity Cards.

Particularly, candidates within the special category of those suffering from severe medical conditions must also submit:

A Certificate from a qualified Primary Health Committee that certifies their condition after a free of charge examination by a qualified doctor who is also a member of the teaching staff of any Higher Education Institution.

## TRANSFERS FROM OTHER SCHOOLS

### I. TRANSFERS

All kinds of students' transfers from one institution to another have been abolished since the academic year 2011-2012.

### II. SPECIAL REGISTRATIONS

The Faculty of Medicine of the School of Health sciences announces the percentage rates for the entrance of graduates of the higher education institutes to the Faculty of Medicine through specialized examinations for the academic year 2013-2014:

A. 3% of the total entrance number for the graduates of Dentistry of University Education (semester of entrance E').

B. 4% of the total entrance number for the graduates of the rest Schools or Departments of Greek and foreign Universities, the graduates of productive schools of officers of the Armed Forces and Security Forces (semester of entrance B' and semester of entrance D' for graduates of schools of nursing and Pharmacy) and the graduates of Higher Schools with two-year course of Technical and Vocational Education: a) Medical Laboratories b) Radiology and c) Supervisors of Public Health (semester of entrance A').

C. 5% of the total entrance number for the graduates of Technological Educational Institutions (semester of entrance B').

D. 2% of the total entrance number for the graduates of the following Higher Schools (semester of entrance B'):

#### *HIGHER SCHOOLS WITH OVER TWO-YEAR COURSE*

1. Officers Nurses
2. Higher School of Nurses of the Ministry of Health
3. Higher School of Nurses of the General State Hospital of Athens
4. Higher School of Nurses
5. Medical Laboratories
6. Higher School of Nurses (RED CROSS).
8. Higher School of Physiotherapy of the General People's Hospital of Athens
9. School of Midwives of the Maternity Home «ΑΛΕΞΑΝΔΡΑ»
10. School of Midwives «ΒΙΡΓΙΝΙΑ ΣΚΥΛΙΤΣΗ» of the Maternity Home «ΜΑΡΙΚΑ ΗΛΙΑΔΗ»
11. School of Midwives of the General Hospital «ΑΓΙΑ ΣΟΦΙΑ» of Thessaloniki
12. State School of Nurses of Thessaloniki
13. School of Nurses of the sanatorium «ΕΥΑΓΓΕΛΙΣΜΟΣ»
14. School of Nurses of Children's Hospital «ΑΓΙΑ ΣΟΦΙΑ»
15. School of Nurses of Children's Hospital «ΑΓΛΑΪΑ ΚΥΡΙΑΚΟΥ»
16. School of Nurses «Η ΠΑΜΜΑΚΑΡΙΣΤΟΣ»
17. School of Nurses of the General People's Hospital of Athens
18. School of Nurses «Η ΟΛΥΜΠΙΑΣ» of the Greek Church's Hospital

The registration of the graduates of Dentistry in the Faculty will be determined after examination in the courses of **Biology I, Biochemistry I and Biochemistry II**. The entrance of the rest categories of graduates B, C and D, will be determined after examination in the courses of **Biology I, Anatomy I and Biochemistry I**. The examination material is the one taught to the students of the Faculty of Medicine of Patras. This examination material is determined by the Laboratories of Biology (Biology I), Biological Chemistry (Biochemistry I and II) and Anatomy (Anatomy I). The candidates will have to apply to the Faculty's Secretariat for the context of the examination material.

The success ranking is defined by the total score of the examined courses. Only the candidates that have collected a total score of at least thirty (30) units, provided that they have scored at least ten (10) units in each of the three courses are announced in the success rank. The candidates enter the Faculty sorted in a descending order of total score, until they reach the provided percentage.

All the documents required will be submitted to the Secretariat of the Faculty from **1 to 15 of November 2013**, in person or by legally authorized representatives.

These documents include:

- A) Application form
- B) Certified Copy of the diploma or a certificate that states they have completed their studies. If the diploma degree is not indicated numerically, the candidate will have to submit a transcript of records. If the candidate has graduated from a foreign University, an equivalent certificate from the National Academic Recognition Information Center must also be submitted.
- C) Copy of their Identity Card (ID)

The examinations are conducted during the first 20 days of December 2013, while the schedule will be announced by the General Assembly of the Faculty's at least eight (8) days before the first examination.

## **CURRICULUM GUIDELINES**

### **TEACHING**

The teaching includes lectures, tutorials and exercises, clinical training or laboratory training.

Each semester includes a certain number of "teaching units" (t.u.), as well as ECTS units (European Credit Transfer System Units). One t. u. represents an hour of teaching per week during the semester in the case of an independent course, and one to three weekly teaching hours during the semester for the rest educational work, according to General Assembly of the Faculty. The curriculum includes the minimum number of t. u. required for graduating. The distribution of the courses among the academic semesters is indicative rather than mandatory for the students and responds to conditions of regular attendance, adjusted to the minimum number of semesters required for graduating and to the sequence of prerequisite and connected courses. The required optional courses cover at least the 1/4 of the curriculum.

The General Assembly of the Faculty is responsible for the announcement of the curriculum. The curriculum is revised every year in April. The Chairman of the Faculty convenes a committee that will supervise the curriculum. The committee consists of members of the General Assembly with an annual term and submits recommendations to the General Assembly which follow the recording of the Sectors' suggestions.

### **ATTENDANCE - EXAMINATIONS**

The academic year runs from September 1 to August 31. The teaching project of each academic year is divided into two semesters. Each semester includes at least 13 complete weeks of teaching and a corresponding number of weeks for the examination.

The Examination time is divided into three Examination periods, Examination period of January, June and September. The Examinations of the Fall Semester begin a week after the completion of the semester's courses, the duration is three weeks and there is always a week free of exams and courses before the beginning of the Spring Semester's courses. The Examinations of the Spring Semester begin a week after the completion of the semester's courses; the duration is three weeks and must be completed before the 1<sup>st</sup> of July. The Fall Semester begins during the first fifteen days of September and the Spring Semester ends during the last fifteen days of June. The exact dates are determined by the Senate. The senate may allow the extension of the semester by two weeks maximum if it is requested by the General Assembly of the Faculty.

The students have the right to be examined at courses of both semesters during the Examination Period of September. During the Examination Period of June the students can be examined only at courses of the Spring Semesters' and



during the Examination Period of January they can only be examined on courses of the Fall Semesters'. The score of each course is determined by the teacher who has to organize written or oral examinations, or consider projects and laboratory exercises.

The student graduates from the Faculty when he succeeds in the required courses and has gathered the required amount of teaching units. The maximum duration of studies is equal to the number of years referred to in the indicative curriculum of the faculty, plus two years.

## GRADUATION – CALCULATION OF THE DIPLOMA DEGREE

Graduating the Faculty of Medicine requires attendance of 12 semesters (six academic years) and a passing score in all courses required by the curriculum.

For the calculation of a student's diploma degree, the score of each course must be multiplied by the corresponding weighting factor and the sum of these products must be divided by the sum of all the weighting factors.

In the case of graduates of other Departments or Schools of the higher education that entered the Faculty by special Examinations, the scores achieved in different schools are not counted in the calculation of the diploma degree. In the case where a course is recognized and the student is exempt from attending and being examined on it, this course will not be counted at all in the calculation of the degree. Additionally, the scores in the courses of foreign language are not counted in the calculation of the diploma degree even though the students must attend and be examined on these courses in order to graduate from the Faculty.

## FOREIGN LANGUAGES

The students are free to choose between the following languages that are taught in the University of Patras: English, French, Italian, German and Russian. For any further information the students should apply to the Foreign Languages Teaching Unit.

## GRADUATION

The students who have or are about to complete immediately their liabilities according to the above mentioned and wish to participate in the graduation ceremony, **must submit a written application form to the Secretariat of the Faculty at least a month before the scheduled graduation ceremony.** The date of the graduation ceremony is announced by the Secretariat. In order to participate in the graduation ceremony the **students must also submit the following documents to the Secretariat** in time.

### DOCUMENTS:

- Application form (*Available by the Secretariat*)
- Two statement forms that state they have returned any lent books signed by the Faculty's Library and the University's Library and information Service respectively.
- Affirmation Statement in which the student states that:
  - a. They haven't get a food card for the current academic year
  - b. They have no liabilities pending against the students' Accommodation
  - c. They have abandoned the University's Health Insurance
- Student's Pass Card
- Student's ID

The Graduation Ceremonies take place after the formal Examination periods of

October, April and July.

## DATES OF COURSES AND EXAMINATIONS

The academic year begins on the 1<sup>st</sup> of September and ends on August 31. The Senate determines the initiation and termination dates of the courses and examinations for each academic year.

## HOLIDAYS

- National holiday of October 28<sup>th</sup> (2<sup>nd</sup> World War Memorial)
- Anniversary of the protests against the regime of the colonels in 1973, November 17<sup>th</sup>
- St Andrew's day (Patras' Patron Saint), November 30<sup>th</sup>
- Christmas and New Year's Day, December 24<sup>th</sup> – January 6<sup>th</sup>
- Commemoration of the patron saints of education, January 30<sup>th</sup>
- Shrove Monday (First day of Lent), 41 days before Easter
- National holiday of March 25<sup>th</sup> (Greek Revolution)
- Easter, Saturday of Lazarus – Sunday of Thomas
- Labor Day, May 1<sup>st</sup>
- Students' elections day

The students of the 5<sup>th</sup> and 6<sup>th</sup> academic year attending clinical training follow the clinics' schedule.

## HEALTHCARE AND INSURANCE

### ***Entitled to Healthcare***

Medical Insurance is free of charge for all registered students (both undergraduate and postgraduate) and covers all emergency medical needs and hospital care including physical examination and treatment, hospital examination and treatment, medication, laboratory analyses, house calls, maternity care, emergency dental care, orthopaedic aids and physiotherapy. All types of medical care are provided at the University Hospital. The undergraduate students are entitled to healthcare for a time period equal to the minimum duration of the undergraduate studies provided by the corresponding Department, plus two years. The postgraduate students are entitled to healthcare for a period equal to the minimum duration of their studies plus one half of it. When the students complete their studies this time period is extended beyond the termination of the current academic year until December 31 for those who have not graduated until then. Students who have suspended their studies according to law, the time period is extended after the retrieval of their studying status.

### ***Costs cover***

The healthcare services described above are free of charge under certain conditions and restrictions. Hospitalization of the students is provided at the second class facilities and the healthcare services' cost is estimated based on the standard charges applicable for civil servants. .

**Insurance Carrier Choice** If the student is already insured by a different insurance carrier he/she may choose either of the insurance carriers but must submit a relevant affirmation statement to the Secretariat of the Department. The services' costs will be covered by the chosen carrier. If the chosen carrier does not cover all the healthcare costs, the University covers the rest of the costs.

**Location of Healthcare Services** Healthcare is provided throughout the Greek territory as follows:  
At the city or town where the corresponding University is located. If the students are on an educational excursion or do internships or elaborate on their diploma thesis in a different place, any healthcare needed is provided at that place. If the student needs special healthcare that cannot be provided at the place where the corresponding University is located, a medical opinion form signed by the University's doctor and an approval from the competent authority is required before the University covers any costs of healthcare provided by a properly qualified healthcare center.

In case of an emergency, at the place where the emergency happened. In those cases, the student must inform the Healthcare Service of the Students' Club or the Department within two working days. For the approval of the costs cover the student must submit a public hospital's doctor's affirmation as well as an approval form signed by the administration of the Students' club or the competent authority of the Department.

**Healthcare Services** The Healthcare provided to the students includes

- Medical examination
- Hospital examination
- Medication
- Laboratory analyses
- House calls. Maternity care
- Physiotherapy
- Dental care
- Orthopaedic aids

**Procedure** Students requiring medical care may visit the clinic of the Students' Club or the doctor of the University's Health Service or the Affiliated Physician during working days and hours, submitting their Medical Care Book in order to be examined.

The Medical Care Card is provided to the students at the time of their registration. The Medical Care Card contains the name, registration number, identification card number and a photograph of the student. It also states the class of hospitalization and the complete healthcare regulation. Students must renew their Medical Care Books every year at the Department's Secretariat.

## STUDENT IDENTIFICATION CARD

Since 24/09/2012 undergraduate and all-levels postgraduate students are provided with their Student Identification Card (Student ID) after an online application. The new Student ID is resistant to mechanical stress and uses protection against forgery. The Student's ID expires after the minimum duration of the student's studies provided by the Department. It also provides for a reduction of about 25% in fares and tickets for all means of mass transportation. The Student ID will be delivered at the delivery point chosen by the student at their electronic application, free of charge. The new Student's ID state the exact

validity period. In case the student is not eligible for the provided reduction in fares and tickets, the Students ID serves only as an identity card.

Additionally, the student has the option to state allergies or their wish to become organ donors. These statements on the application form and on the Student ID are only **optional**. After the printing of the Student card, information about allergies and organ donation statements are deleted from the central information system.

The Departments may use the new Student IDs in order to develop new services and applications for the better service of their students.

The Digital Service for Student Identification Card is provided by the Ministry of Education with the support of the National Research and Technology Network (<http://academicid.minedu.gov.gr>).

## ACCOMMODATION

Accommodation support by the University aims to meet the basic living needs of the students, in order for them to complete their studies undistracted. Total Support includes accommodation and meals at a low cost. It also provides the means for the development of educational, spiritual, artistic and sports activities.

Accommodation facilities of the University of Patras are provided only for those who study away from their hometown. The rest of the students are only eligible for the University's Catering Services. Priority is given to students from families of low economic status.

The students that are eligible for accommodation support submit their application every year until June 15. The application form is provided by the Accommodation service at the University Campus.

Information about further documents required is provided with the application. Applications can be made even after the expiry of the deadline but are accepted only if there are vacancies.

20% of the rooms must remain available for the new entries that have to apply for accommodation support within 20 days since the announcement of the examinations' result. The names of those eligible for accommodation are announced right after the selection for the new entries and in August for the rest of the students.

The cost of the accommodation support is determined at the beginning of the academic year by the authorities of the National Institute of Youth. In addition to the charges for accommodation and catering services, the students must also pay the cost of guarantee before their settlement in the accommodation facilities.

The accommodation facilities include 870 single rooms distributed among 8 buildings. The accommodation facilities also include a restaurant with a capacity of 3000 students, snack bars, entertainment rooms, indoor natatorium, theater and libraries.

Small number of students as well as foreign scientists that visit University of Patras through educational exchange programs may be hosted in the accommodation facilities at the suburb (Προάστio) after an application of the invited professor to the service.

## CATERING FACILITIES

Students of low personal or family income are eligible for a free of charge access to the University's catering services. Catering services are provided from September 1 to June 31 and are not available during Christmas and Easter holidays. Unmarried undergraduate students of the University of Patras with no personal income and permanent residence away from the city of Patras are eligible for free of charge access to the University catering service. The annual total income levels required for a free of charge access to the catering service is announced by the administration of the Students' Care. Students are no longer eligible for a free of charge access to the catering services when:

- a) They have completed their studies.
- b) They have passed the maximum time of free access according to law (the minimum time required for the completion of studies plus 2 years).

## UNIVERSITY SPORTS CENTER

Students are given the opportunity to register for the use of the University's Sports Center located in the University Campus. The registrations are held on the beginning of the academic year. The students may choose one or more of the following course groups:

- Classic athletics group
- Team sports group (Volleyball, Basketball, soccer)
- Sharpshooting group
- Table tennis group (ping - pong)
- Chess group
- Tennis group
- Swimming group
- Sky and Climbing groups
- Excursion group
- Bicycling group
- Traditional dance group

All students may participate in the championships that are held occasionally. Sports teams may be composed and take part in the Greek Students' Championships. University will provide with free of charge athletic material to students that constantly participate at any of the above course groups.

## STUDENTS' ASSOCIATION

The students' association of the Faculty of Medicine of the University of Patras was founded in January 1978. The association runs by a council of seven representatives who are elected annually. All students of the Faculty are registered members of the Students' association which runs according to articles of association approved by the court of Patras. Students' representatives participate in the administrative bodies of the University according to law.

## SCHOLARSHIPS – AWARDS – LOANS

### I. STATE SCHOLARSHIPS FOUNDATION

**Foundation**

State Scholarships Foundation (SSF)

**Fields of study**

General education, Fine Arts, Social and Natural sciences

**Conditions**

Greek graduates of University education. With no sufficient personal income.

## Countries

Until 40 years old.

Of Europe. Except U.S.A. and Canada for Natural Sciences.

Awards and scholarships from SSF are provided to undergraduate and postgraduate students every academic year under the following conditions:

- a) Awards are given in the form of written certificates and money prizes provided once for purchasing scientific literature. Additionally, an award is provided for distinguished graduates who have not exceeded the minimum duration of studies.
- b) Scholarships are awarded to undergraduate students according firstly to their personal or family income and secondly to their performance, in absolute order of success in the entrance (in the case of first years) or promotion examinations. Undergraduate students should also score an average of at least 6.51 in a scale of 0-10 in the courses provided by the curriculum of the Department in order to receive a scholarship.
- c) All the details regarding the awards, the number of scholarships to be awarded, the amount of the financial aid, as well as details on the program and other regulations are determined by the authorities of SSF.
- d) The SSF awards scholarships to the distinguished student of each Master's Program after the end of every year of studies.

## II. SCHOLARSHIP ENDOWMENTS, ORGANIZATIONS AND OTHER CARRIERS

Every year, scholarship endowments are awarded to students for undergraduate studies in Greece and postgraduate studies abroad. Additionally, Greek foundations and institutions, foreign cultural institutions, International organizations, foreign governments also award students with scholarships. Information for the awards of these scholarships is announced in the Faculty during the academic year.

## III. INFORMATION ABOUT SCHOLARSHIPS AND OTHER STUDENTS' ISSUES

Students, who wish to have a direct correspondence with foreign universities on matters of scholarships, should contact the corresponding embassies (in order to get the address and other relative information).

Additionally, they may contact the Documentation and Information Unit of ΕΛΚΕΠΑ, (Capodistriou 28, 2<sup>nd</sup> floor, office 11, tel.: 36 00 411, hours: 8:00 - 14:00).

Some endowments are under the management of the prefectural government.

## ERASMUS EXCHANGE PROGRAM

Erasmus, as part of the European program for students' exchanges is managed by the University of Patras.

Erasmus supports two types of students' mobility. Mobility for purposes of **studying (Lifelong Learning Program, LLP)** mobility for **training purposes (Placements)**.

ERASMUS scholarships are funded by SSF. For more information students may contact the International Relations Department of the University or type <http://www.upatras.gr/index/page/id/111> (Erasmus Program).

The ERASMUS committee of the Faculty of Medicine consists of:

- Prof. C. Flordellis, **Chairman**  
2610 997638, flordell@med.upatras.gr,
- Associate Prof. C. Stathopoulos, **Deputy Chairman**  
2610997932, cstath@med.upatras.gr

- Associate Prof. N. Georgopoulos, **Member**
- Assistant Prof. J. Elloul, **Member**
- Assistant Prof. J. Kechagias, **Member**

## MEMORANDUM OF ACADEMIC COLLABORATION WITH JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE

The University of Patras has established a **formal education agreement** with the Johns Hopkins University School of Medicine to collaborate on research and student faculty exchanges. The two institutions had officially begun the collaboration on April 11, 2008, when representatives from the University of Patras, visited Johns Hopkins to sign the agreement. Head of the representatives was the Deputy Dean Professor of Cardiothoracic Surgery in the Faculty of Medicine, D. Dougenis. The official presentation of the cooperation in Greece was held on the 15th of October 2008, when Myron L. Weisfeldt, MD., director of the Department of Medicine at Johns Hopkins, visited the University of Patras and the University's Hospital. The day after, in Athens, the cooperation program was presented to the State's authorities as well as to the whole Greek academic community. *"This is a tremendous opportunity for Hopkins to share new ideas with an outstanding institution abroad"*, said Myron L. Weisfeldt, MD., director of the Department of Medicine at Johns Hopkins, who facilitated and developed the areas of collaboration. *"Were expecting a fruitful relationship for Hopkins as well as the University of Patras."* he added.

This cooperation is an important success for University of Patras that was based on the outstanding and internationally approved image of the University, the research, clinical and teaching skills of the members of the Faculty of Medicine, as well as the scientific quality of the health services provided by the University Hospital of Patras. Additionally, the cooperation agreement serves as an important opportunity for the scientific staff and the students to contact with a top University like Johns Hopkins. The cooperation program covers Medicine and related fields of study, Biotechnology, Biomechanics, and is expected to gradually expand on other scientific fields taught in University of Patras.

These are the **targets** of the Cooperation agreement:

- 1.To pursue exchange of teaching and research staff, students and administrative staff, as well as knowledge and experience acquired in research
- 2.To organize shorts visits of teaching staff and other scientific and research staff, for studies, lectures and research
- 3.To promote the exchange of under-graduate medical students, graduate and postgraduate students for short periods, on special agreements to attend courses or training in laboratories of the respective Universities
- 4.To initiate joint research programs in areas of mutual interest. The cooperative research effort will be based on Departments and Schools currently functioning in the University of Patras and the Johns Hopkins School of Medicine
- 5.To host administrative officials for visits of the respective Institutions in order to evaluate and improve the program/s of this agreement
- 6.To work toward cooperation in other areas of interest to both Institutions

The **main Scientific and Research Fields** included in the cooperation agreement are:

1. Neurosciences and neuroimaging of the Brain
2. Clinical Immunology/Allergology
3. Public Health
4. Biotechnology-Biomechanics
5. Cardiology imaging (noninvasive coronary angiography, study of the heart function by CTA 320, MRI)
6. Biological Indexes and genetic approach of neuropsychiatric diseases

University of Patras feels proud for the achievement of this cooperation agreement, which is an evidence of the possibilities and the quality of the Greek Public University. Furthermore, this cooperation highlights the international approval of the clinical, laboratory and basic health research of our country as well as the responsible and quality education provided by the Public Medical Schools, especially the Faculty of Medicine of the University of Patras, in both undergraduate and postgraduate level.

The Greek Committee of the Hellenic Hopkins Initiative is asking the academic community of the University of Patras to fill the related application form in order to participate in the realization of the this academic collaboration. The applications will be submitted to the protocol of the University.

## LIBRARY AND INFORMATION SERVICE

Library and Information Service (LIS) of the University of Patras is located at the new library building, at the end of Aristotelous street in the campus, at the east side of the Civil Engineer Department's facilities (tel. 2610 969620-23).

LIS houses a variety of collections of printed and digital literature as well as printed scientific journals for the majority of educational and research needs of the University. Additionally, LIS provides access in a variety of online scientific journals. LIS is an open access library and part of the Joint Venture of the Greek Academic Libraries Heal-Link. All members of the academic society of University of Patras are able to borrow books from LIS. LIS can be used by external users as well. All users must have a valid user card which is issued by the Circulation and Readers Services Department upon submission of an application. LIS also provides copy machines that can be used only for the copy of material that belongs to the library and work using counter systems or magnetic cards. Users of LIS have the possibility to order literature material from different Greek or foreign libraries with the corresponding charge (Trans-lending Services).

Visiting Hours:

**January - July**

Monday - Friday: 08:00 - 21:00

**August**

Monday - Friday 08:00 - 14:00

**September - December**

Monday - Friday: 08:00 - 21:00

LIS services are not available during holidays. Visiting hours are reduced the day before holidays. Every modification on the visiting hours is announced at the LIS or on the LIS website. For further information contact LIS on 2610 969620-23 or visit the LIS website <http://www.lis.upatras.gr>.



## LIBRARY OF THE SCHOOL OF MEDICINE

The Library of the Faculty of Medicine provides its users with books and journals of clinical medicine and relative fields of study. It is located in the complex of the auditoriums and the library of the Faculty of Medicine (Next to the Preclinical Research Building, ground floor).

The library is provided with internet for the service of mailing (through MEDLINE database). The users may download full text articles from free on-line journals, and give on-line orders for journals' articles and chapters of books to Greek and foreign libraries. A connection with international data bases of references is also available so that the users may easily request Citations, Instructions, etc.

### **Visiting Hours**

Monday – Friday, 8.30-20.00.

Any changes regarding the visiting hours will be announced by the library

### **Use**

The library provides a reading room (150 seats), a copy machine with charge of use and computers.

Users may also borrow books from the library as long as they have the library card.

### **Journals**

70 titles of Journals (current printed subscriptions)

155 titles (printed suspended subscriptions)

Digital subscriptions are also available

### **Books**

5.816 Titles

6.080 Copies

### **Digital material**

The library provides 43 CDs for a variety of medical specialties and computers for the use of the digital material. The users cannot borrow CDs from the library

### **Telephone**

2610 994721, +30 2610 997873, FAX: +30 2610 997873

### **E-mail**

agianika@upatras.gr, mmaniaki@upatras.gr

### **Employee**

Antonia Giannika, Maria Maniaki, Evgenia Papandreou

## THE EUDOXUS PLATFORM

All students of higher education Institutes of Greece can choose among the literature provided through the online service EUDOXUS ([www.eudoxus.gr](http://www.eudoxus.gr)). The Secretariat provides all the necessary information for the available literature at the beginning of the academic year. Students can visit the website [www.eudoxus.gr](http://www.eudoxus.gr), in order to submit their selection, for the courses of the Fall Semester of the current academic year. Submission of the online application forms by the students requires certified username and password provided by the central online services of the University. This account is obtained by each student during registration in the corresponding Department. This account is used by the student in order to gain access to University Services such as email, e-class, vpn, EUDOXUS etc. Students who have lost their passwords should contact the Networks Department (LIS facilities, 2<sup>nd</sup> floor tel. 2610-969.650, 2610-969.651, 2610-969.654) to obtain a new one.

For further information students may contact EUDOXUS Users Assistant Office ([helpdesk@eudoxus.gr](mailto:helpdesk@eudoxus.gr) or 801-11-13600).

## **PART TWO**



# EDUCATIONAL OBJECTIVES

The Faculty aspires to convey to its graduates, the moral values that should accompany the practice of medicine and to impart all the scientific knowledge that will allow the future physicians to recognize and deal effectively with the various medical situations they will be called to face after their graduation. Additionally, the major medical education goal is to implant the academic culture and enable those who wish to, to obtain the knowledge needed for an academic carrier as a teacher or a researcher. These objectives reflect in the following ten points, that describe the skills and characteristics that students should have obtained until their graduation from the Faculty of Medicine of the University of Patras:

1. The perception that practicing of medicine requires both scientific knowledge and humanitarian response to the patient.
2. High moral and academic criteria for the practice of medicine.
3. Deep knowledge of the structure, the function and the development of the human body. Such knowledge includes a large range of levels of analysis both in molecular and in organism behavioral levels.
4. Deep knowledge of the mechanisms of cause and effect and their role in the manifestation of the disease. Concurrently and combined with the above, knowledge of the basis of medication therapy.
5. The skills of sufficiently recording a patient's medical history, performing a complete physical examination and finally prioritizing and solving the problems recognized by the first two procedures. Very good knowledge of the diseases that directly endanger the patient's life as well as the most common diseases. Good knowledge of the rare diseases. Awareness of their own skills and the need of help when needed.
6. Understanding the effects of the environment on human health and the responsibility of the physicians on the prevention of a disease. Knowledge that will enable them to suggest immediate troubleshooting of the so called occupational diseases, behavior diseases and general public health problems of their country.
7. The perception that medical practice requires continuing education, and the skill to teach themselves, using the proper sources and working practice. The wish and the ability to judge their personal performance.
8. The ability to collaborate efficiently within a clinical or research group.
9. The ability to work efficiently in a variety of ways of medical services, from the community's medical center to the University's clinic.
10. Interest in basic and applied research, and basic knowledge that will enable them to deal with research if they choose to.

# STUDIES CONTENT

Studies at the Medical School last six years (twelve semesters) and are divided into two levels: theoretical education and clinical training. Theoretical education is held during the first four years (eight semesters). It is initiated with the teaching of the basic (pre-clinical) branches of the medical science supplemented by laboratory training and continues with the teaching of the clinical branches supplemented with the hospital training. Hospital training of clinical branches is held on the fifth and sixth year of studies, after the completion of all theoretical courses, both preclinical and clinical.

Clinical courses take place based on the knowledge gained by the basic (preclinical) courses, regardless of whether these courses are taught in the hospital or not. Graduates of the Faculty of Medicine are required to serve as general practitioners at rural hospitals (Primary Healthcare) prior to their residency training for obtaining medical specialty. A license provided by the Ministry of Health is required in order to practice medicine. Physicians regardless of whether they have obtained medical specialty or not, but have fulfilled their liabilities may be employed in: In the public sector, in the National Healthcare System, in hospitals, Medical Centers and other services of the ministry of Health.

## THE NEW CURRICULUM

The new curriculum of the Faculty of Medicine was established gradually since the academic year 2003-2004 and was funded by the 2<sup>nd</sup> Community Support Framework, under the chairmanship of Prof. Dionisis Bonikos, professor of pathology, who was the scientific director and the initiator of the new curriculum, with the contribution of the project implementation team from the Professors Apostolos Vagenakis, George Dimitrakopoulos, Fotios Kalfarentzos and Charalambos Gogos. A practical response to the demands of today's and tomorrow's reality in the field of medical practicing is the purpose of the new curriculum. The new curriculum also aims to adapt to the current educational status in Greece and coordinate this adaptation procedure with the rest of the Greek medical schools of Universities.

Therefore, the new curriculum contains a significant number of new courses, but mainly a new educational perception (Basic Program Core, Study Guides, Problem-Based Learning (PBL), Integrative courses, etc.), that focuses on the student as an individual, exactly the way they will have to serve the community. Annual Curriculum is determined by the General Assembly of the Faculty following suggestions of the Curriculum Committee of each academic year. The Curriculum states the names of the courses, the courses' content, the weekly teaching schedule, the type of the course (lecture, laboratory training etc.) and the time sequence or interdependence of the courses/clinical training.

The Curriculum for the current academic year as follows:

**1<sup>st</sup> YEAR - 1<sup>st</sup> SEMESTER**

REQUIRED COURSES	HOURS/WEEK		HOURS/SEMESTER		ECTS Units	T.U.	W.F.	DIVISION
	Lectures	Tutorials – Laboratory training	Lectures	Tutorials – Laboratory training				
BIOLOGY I	3	3	42	42	6	6	2	Basic Medical Sciences I
BIOCHEMISTRY I	3	3	42	42	6	6	2	Basic Medical Sciences I
MEDICAL PHYSICS	3	3	42	42	6	6	2	Basic Medical Sciences I
MEDICAL INFORMATICS	2	2	28	28	4	4	1,5	Basic Medical Sciences I
INTRODUCTION TO CLINICAL MEDICINE	2	-	28	-	4	2	1	Internal Medicine I

**1<sup>st</sup> YEAR – 2<sup>nd</sup> SEMESTER**

REQUIRED COURSES	HOURS/WEEK		HOURS/SEMESTER		ECTS Units	T.U.	W.F.	DIVISION
	Lectures	Tutorials – Laboratory training	Lectures	Tutorials – Laboratory training				
BIOLOGY II	3	3	42	42	6	6	2	Basic Medical Sciences I
BIOCHEMISTRY II	3	3	42	42	6	6	2	Basic Medical Sciences I
ANATOMY I	3	3	42	42	6	6	2	Basic Medical Sciences II
HISTOLOGY- EMBRIOLOGY I	2	2	28	28	4	4	1,5	Basic Medical Sciences II
PHYSIOLOGY I	3	3	42	42	6	6	2	Basic Medical Sciences II
CLINICAL SKILLS- CPR	-	2	-	28	2	2	1	Internal Medicine I

**2<sup>nd</sup> YEAR – 3<sup>rd</sup> SEMESTER**

REQUIRED COURSES	HOURS/WEEK		HOURS/SEMESTER		ECTS Units	T.U.	W.F.	DIVISION
	Lectures	Tutorials – Laboratory training	Lectures	Tutorials – Laboratory training				
ANATOMY II	4	3	56	42	8	7	2	Basic Medical Sciences II
HISTOLOGY- EMBRIOLOGY II	2	2	28	28	5	4	1,5	Basic Medical Sciences II
BIOCHEMISTRY III	3	3	42	42	6	6	2	Basic Medical Sciences I
PHYSIOLOGY II	5	3	70	42	8	8	2	Basic Medical Sciences II
CLINICAL SKILLS I	-	2	-	28	3	2	1	Internal Medicine I - Surgery

**2<sup>nd</sup> YEAR – 4<sup>th</sup> SEMESTER**

REQUIRED COURSES	HOURS/WEEK		HOURS/SEMESTER		ECTS Units	T.U.	W.F.	DIVISION
	Lectures	Tutorials-Laboratory training	Lectures	Tutorials-Laboratory training				
NEUROSCIENCES	4	3	56	42	6	7	2	Basic Medical Sciences II
PUBLIC HEALTH	2	2	28	28	4	4	1,5	Clinical Laboratories
PHARMACOLOGY I	3	2	42	28	6	5	2	Basic Medical Sciences II
MICROBIOLOGY I	3	3	42	42	6	6	2	Clinical Laboratories
PATHOLOGY I	6	1	56	42	6	7	2	Clinical Laboratories
CLINICAL SKILLS II	-	2	-	28	2	2	1	Internal Medicine I - Surgery

**3<sup>rd</sup> YEAR – 5<sup>th</sup> SEMESTER**

REQUIRED COURSES	HOURS/WEEK		HOURS/SEMESTER		ECTS Units	T.U.	W.F.	DIVISION
	Lectures	Tutorials-Laboratory training	Lectures	Tutorials-Laboratory training				
PATHOLOGY II	6	1	56	42	6	7	2	Clinical Laboratories
BIOETHICS	1	2	14	28	3	3	1,5	Clinical Laboratories
PHARMACOLOGY II	3	2	42	28	6	5	2	Basic Medical Sciences II
MICROBIOLOGY II	3	3	42	42	6	6	2	Clinical Laboratories
CLINICAL SKILLS III	-	2	-	28	2	2	1	Internal Medicine I - Surgery
BIOSTATISTICS	2	2	28	28	3	4	1,5	Basic Medical Sciences I

**OPTIONAL COURSES (ELECTION OF ONE IS MANDATORY)**

OPTIONAL COURSES	HOURS/WEEK		HOURS/SEMESTER		ECTS Units	T.U.	W.F.	DIVISION
	Lectures	Tutorials-Laboratory training	Lectures	Tutorials-Laboratory training				
INTRODUCTION TO LABORATORY HAEMATOLOGY	-	2	-	28	4	2	1	Internal Medicine I
CLINICAL NEUROANATOMY – MOLECULAR ANATOMY	-	2	-	28	4	2	1	Basic Medical Sciences II
PHARMACOGENOMICS	-	2	-	28	4	2	1	Basic Medical Sciences II

MEDICAL GENETICS	-	2	-	28	4	2	1	Basic Medical Sciences I
CLINICAL BIOCHEMISTRY		2		28	4	2	1	Basic Medical Sciences I
MOLECULAR AND GENETIC EPIDEMIOLOGY	2	-	-	28	4	2	1	Clinical Laboratories
PHYSIOLOGY AND BIOLOGY OF STEM CELLS-APPLICATION IN REGENERATIVE MEDICINE	-	2	-	28	4	2	1	Basic Medical Sciences II
NEUROBIOLOGY OF MNEMONIC FUNCTIONS	-	-	-	28	4	2	1	Basic Medical Sciences II
PATHOBIOLOGY OF BONE TISSUE DISEASES	-	-	-	28	4	2	1	Basic Medical Sciences II

**3<sup>rd</sup> YEAR – 6<sup>th</sup> SEMESTER (INTEGRATION I)**

SYSTEMS	HOURS/WEEK	WEEKS	TOTAL HOURS	ECTS Units	T.U.	W.F.	DIVISION
INTRODUCTION TO RADIOLOGY	25	1	25	2	1	1	Clinical Laboratories
CARDIOVASCULAR	25	2	50	4	1	1	Internal Medicine, Surgery, Paediatrics and Obstetrics-Gynaecology, Clinical Laboratories, Basic Medical Sciences I, II
RESPIRATORY	25	2	50	4	1	1	Internal Medicine, Surgery, Paediatrics and Obstetrics-Gynaecology, Clinical Laboratories, Basic Medical Sciences I, II
HEMATOPOIETIC	25	2	50	4	1	1	Internal Medicine, Surgery, Paediatrics and Obstetrics-Gynaecology, Clinical Laboratories, Basic Medical Sciences I, II
GASTROINTESTINAL TRACT	25	2	50	4	1	1	Internal Medicine, Surgery, Paediatrics and Obstetrics-Gynaecology, Clinical Laboratories, Basic Medical Sciences I, II
MUSCULOSKELETAL DISORDERS OF THE CONNECTIVE TISSUE	25	2	50	4	1	1	Internal Medicine, Surgery, Paediatrics and Obstetrics-Gynaecology, Clinical Laboratories, Basic Medical Sciences I, II
URINARY	25	1,5	35	4	1	1	Internal Medicine, Surgery, Paediatrics and Obstetrics-Gynaecology, Clinical Laboratories, Basic Medical Sciences I, II
DERMATOLOGY	25	1,5	35	4	1	1	Internal Medicine I

**4<sup>th</sup> YEAR – 7<sup>th</sup> SEMESTER (INTEGRATION II)**

SYSTEMS	HOURS/WEEK	WEEKS	TOTAL HOURS	ECTS Units	T.U.	W.F.	DIVISION
ENDOCRINE GLANDS	25	2	50	4	1	1	Internal Medicine, Surgery, Paediatrics and Obstetrics-Gynaecology, Clinical Laboratories, Basic Medical Sciences I, II
NEUROLOGY	23	1,5	35	4	1	1	Internal Medicine II
PSYCHIATRY	27	1,5	40	4	1	1	Internal Medicine II
OBSTETRICS-GYNAECOLOGY	25	2	50	4	1	1	Paediatrics and Obstetrics-Gynaecology
PAEDIATRICS	25	2	50	4	1	1	Paediatrics and Obstetrics-Gynaecology
NUTRITION / TOXICOLOGY-TRAUMA	25	1	25	4	1	1	Internal Medicine, Surgery, Paediatrics and Obstetrics-Gynaecology, Clinical Laboratories, Basic Medical Sciences I, II
FEVER OF UNKNOWN ORIGIN-TERMINALLY ILL PATIENT-EVIDENCE BASED MEDICINE-ONCOLOGY-INFECTIONS	25	2	50	4	1	1	Internal Medicine, Surgery, Paediatrics and Obstetrics-Gynaecology, Clinical Laboratories, Basic Medical Sciences I, II
HEALTH PROMOTION/DISEASE PREVENTION/COMMUNITY MEDICINE	25	1	25	2	1	1	Internal Medicine I, Clinical Laboratories

**4<sup>th</sup> YEAR – 8<sup>th</sup> SEMESTER**

CLINICAL TRAINING	INTERNSHIP		TOTAL INTERNSHIPS	ECTS Units	T.U.	W.F.	DIVISION
	Hours/Week	Weeks					
OPHTHALMOLOGY	25	2	50	5	6	2	Surgery
OTORHINOLARYNGOLOGY	25	2	50	5	6	2	Surgery
RADIOLOGY	25	2	50	5	6	2	Clinical Laboratories
ORTHOPAEDICS	25	2	50	5	6	2	Surgery
UROLOGY	25	2	50	5	6	2	Surgery

**OPTIONAL COURSES (ELECTION OF ONE IS MANDATORY)**

OPTIONAL COURSES	HOURS/WEEK		HOURS/SEMESTER		ECTS Units	T.U.	W.F.	DIVISION
	Lectures	Tutorials-Laboratory training	Lectures	Tutorials-Laboratory training				
INTRODUCTION TO CARDIOTHORACIC SURGERY	25	-	25	-	5	1	1	Surgery
SOLID ORGAN TRANSPLANTATION	25	-	25	-	5	1	1	Surgery



NUTRITION AND HEALTH	25	-	25	-	5	1	1	Clinical Laboratories
INTRODUCTION TO NUCLEAR MEDICINE	25	-	25	-	5	1	1	Clinical Laboratories
PAEDIATRIC AND REPRODUCTIVE ENDOCRINOLOGY	25	-	25	-	5	1	1	Paediatrics and Obstetrics-Gynaecology
FETAL-MATERNAL MEDICINE	25	-	25	-	5	1	1	Paediatrics and Obstetrics-Gynaecology

**5<sup>th</sup> YEAR – 9<sup>th</sup> AND 10<sup>th</sup> SEMESTER**

CLINICAL TRAINING	INTERNSHIP		TOTAL INTERNSHIPS	ECTS Units	T.U.	W.F.	DIVISION
	Hours/Week	Weeks					
INTERNAL MEDICINE (CARDIOLOGY/NEPHROLOGY/PULMONOLOGY/GASTROENTEROLOGY included)	35	8	280	14	10	2	Internal Medicine
PAEDIATRICS	35	4	140	8	5	2	Paediatrics and Obstetrics-Gynaecology
SURGERY (2 weeks INTENSIVE CARE and 2 weeks ORTHOPAEDICS included)	35	8	280	14	10	2	Surgery
OBSTETRICS AND GYNAECOLOGY	35	4	140	8	5	2	Paediatrics and Obstetrics-Gynaecology
PSYCHIATRY *	35	4	140	8	5	2	Internal Medicine
NEUROLOGY * (1 week NEUROSURGERY included)	35	4	140	8	5	2	Internal Medicine I - Surgery

**6<sup>th</sup> YEAR – 11<sup>th</sup> AND 12<sup>th</sup> SEMESTER**

CLINICAL TRAINING	INTERNSHIP		TOTAL INTERNSHIPS	ECTS Units	T.U.	W.F.	DIVISION
	Hours/Week	Weeks					
INTERNAL MEDICINE *	35	6	210	12	8	2	Internal Medicine
SURGERY *	35	6	210	12	8	2	Surgery
PAEDIATRICS *	35	6	210	12	8	2	Paediatrics and Obstetrics-Gynaecology
OBSTETRICS & GYNAECOLOGY *	35	3	105	4	4	1,5	Paediatrics and Obstetrics-Gynaecology

OPHTHALMOLOGY	35	2	70	4	4	1,5	Surgery
OTORHINOLARYNGOLOGY	35	2	70	4	4	1,5	Surgery
ELECTIVE CLINICAL TRAINING	35	2	70	4	2	1	
ELECTIVE CLINICAL TRAINING	35	2	70	4	2	1	
ELECTIVE CLINICAL TRAINING	35	2	70	4	2	1	

**ELECTIVE CLINICAL TRAINING (ELECTION OF THREE IS MANDATORY)**

CLINICAL TRAINING	INTERNSHIP		TOTAL INTERNSHIPS	ECTS	T.U.	W.F.	DIVISION
	Hours/Week	Weeks					
OTORHINOLARYNGOLOGY	35	2	70	4	2	1	Surgery
UROLOGY	35	2	70	4	2	1	Surgery
OPHTHALMOLOGY	35	2	70	4	2	1	Surgery
CARDIOLOGY	35	2	70	4	2	1	Internal Medicine I
MICROBIOLOGY	35	2	70	4	2	1	Clinical Laboratories
PATHOLOGY	35	2	70	4	2	1	Clinical Laboratories
DERMATOLOGY	35	2	70	4	2	1	Internal Medicine II
ORTHOPAEDICS	35	2	70	4	2	1	Internal Medicine II
INTENSIVE CARE	35	2	70	4	2	1	Surgery
HAEMATOLOGY	35	2	70	4	2	1	Internal Medicine I
ENDOCRINOLOGY	35	2	70	4	2	1	Internal Medicine I
NEPHROLOGY	35	2	70	4	2	1	Internal Medicine I
GASTROENTEROLOGY	35	2	70	4	2	1	Internal Medicine I
REUMATOLOGY	35	2	70	4	2	1	Internal Medicine I
INFECTIOUS DISEASES	35	2	70	4	2	1	Internal Medicine I
PULMONOLOGY	35	2	70	4	2	1	Internal Medicine I
ONCOLOGY	35	2	70	4	2	1	Surgery
CARDIOTHORACIC SURGERY	35	2	70	4	2	1	Surgery
IMMUNOHAEMATOLOGY	35	2	70	4	2	1	Internal Medicine I
NEUROSURGERY	35	2	70	4	2	1	Surgery
RADIOLOGY-RADIOTHERAPY	35	2	70	4	2	1	Clinical Laboratories
ANDROLOGY	35	2	70	4	2	1	Surgery

1. A member of the teaching staff of the corresponding clinical specialty is responsible for each system of integrated education.

Examinations in Clinical Training (courses) of 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup> semester will be held at the ending of the training and the scores will be submitted to the Secretariat during the scheduled examination periods.

2. The following will be applied during the current academic year:

«Introduction to clinical skills – CPR» - 2<sup>nd</sup> semester – Prerequisite course of «Clinical Skills I»

«Clinical Skills I» - 3<sup>rd</sup> semester – Prerequisite course of « Clinical Skills II»

«Clinical Skills II» - 4<sup>th</sup> semester – Prerequisite course of «Clinical Skills III»

3. All students are required to attend two (2) hours per week, the course «Foreign Language» during the first four semesters.

4. The scores they will achieve on the above course will not affect the calculation of their diploma degree or their graduation.

5. **T.U**= Teaching Units, **W.F** = Weighting Factor

# CURRICULUM ADJUSTMENTS

The current curriculum will be applied according to the adjustments determined by the General Assembly during the academic year 2013-2014:

- «Introduction to clinical skills-CPR»-2<sup>nd</sup> semester – Prerequisite course for «Clinical Skills I»
- «Clinical Skills I» - 3<sup>rd</sup> semester – Prerequisite course for «Clinical Skills II»
- «Clinical Skills II»- 4<sup>th</sup> semester – Prerequisite course for «Clinical Skills III»

Regarding the courses and clinical training of the 5<sup>th</sup> and 6<sup>th</sup> year of studies, the following readjustments will be applied:

## **CLINICAL TRAINING IN INTERNAL MEDICINE (6<sup>th</sup> YEAR)**

The following courses of Integration I and II are set as prerequisite courses for Clinical Training on Internal Medicine:

### **6<sup>th</sup> semester**

1. Cardiovascular System
2. Respiratory System
3. Haematopoiesis
4. Gastrointestinal System
5. Musculoskeletal – Disorders of the connective tissue
6. Urinary system

### **7<sup>th</sup> semester**

7. Endocrine glands
8. Fever of unknown origin – Terminally ill patient – Evidence based medicine – Oncology – Infections

Students are required to have attended and been examined on the courses listed above during the scheduled examination periods in order to attend and be examined on Clinical Training on Internal Medicine, course of the 6<sup>th</sup> year of studies.

It is also suggested:

- A. Students of the 3<sup>rd</sup> and 4<sup>th</sup> years of studies who have failed in the informal preliminary examination that is held right after the lectures of each course of Integration I and II, are able to be examined during the formal examination period of the corresponding semester (Fall or Spring), along with the students who have not been examined in the informal preliminary examination. In any case, the scores will be submitted to the Secretariat of the Faculty within the scheduled examination periods (January-February or September, for courses of Fall semester and June or September, for courses of the Spring semester).
- B. Students who have scored an average of at least five (5) in the courses listed above, are able to attend the Clinical Training on Internal Medicine of the 6<sup>th</sup> year of studies. Not participating in the examination is equal to zero score in the course. In any case students are required to achieve a pass score in all courses listed above in order to be examined on the Clinical Training.

The students may begin the clinical training on time even if they fail to achieve a pass score at one or more of the prerequisite courses listed above, in the examinations of June and January-February correspondingly. In this case the students must pass the courses in the following examinations of September; otherwise the training is disrupted right after the announcement of the results and considered not done.

This adjustment is applied for the students of 3<sup>rd</sup> and 4<sup>th</sup> year of studies of the academic year 2007-08 and on.

### **CLINICAL TRAINING ON SURGERY (6<sup>th</sup> YEAR)**

The following four (4) courses of Integration I and II are set as prerequisite courses for Clinical Training on Surgery:

#### **6<sup>th</sup> semester**

1. Cardiovascular
2. Respiratory
3. Gastrointestinal

#### **7<sup>th</sup> semester**

4. Nutrition – Toxicology - Trauma

Students are required to have attended and been examined on the courses listed above during the scheduled examination periods in order to attend and be examined on Clinical Training on Surgery, course of the 6<sup>th</sup> year of studies.

It is also suggested:

- A. Students of the 3<sup>rd</sup> and 4<sup>th</sup> years of studies who have failed in the informal preliminary examination that is held right after the lectures of each course of Integration I and II, are able to be examined during the formal examination period of the corresponding semester (Fall or Spring), along with the students who have not been examined in the informal preliminary examination. In any case, the scores will be submitted to the Secretariat of the Faculty within the scheduled examination periods (January-February or September, for courses of the Fall semester and June or September, for courses of the Spring semester).
- B. Students who have scored an average of at least five (5) in the courses listed above, are able to attend the Clinical Training on Surgery of the 6<sup>th</sup> year of studies. Not participating in the examination is equal to zero score in the course. In any case students are required to achieve a pass score in all courses listed above in order to be examined on the Clinical Training.

The students may begin the clinical training on time even if they fail to achieve a pass score at one or more of the prerequisite courses listed above, in the examinations of June and January-February correspondingly. In this case the students must pass the courses in the following examinations of September; otherwise the training is disrupted right after the announcement of the results and considered not done.

This adjustment is applied for the students of 3<sup>rd</sup> and 4<sup>th</sup> year of studies of the academic year 2007-08 and on.

### **CLINICAL TRAINING ON PAEDIATRICS (6<sup>th</sup> YEAR)**

The following course of Integration II is set as prerequisite course for Clinical Training on Paediatrics:

#### **7<sup>th</sup> semester**

1. Pediatrics

Students are required to have attended and been examined on the above course during the scheduled examination periods in order to attend and be examined on Clinical Training on Paediatrics, course of the 6<sup>th</sup> year of studies.

Students of the 4<sup>th</sup> year of studies, who have failed in the informal preliminary examination that is held right after the lectures of the course of Integration II, will be able to be examined during the formal examination period of the corresponding Fall semester, along with the students who have not been examined in the informal preliminary examination. In any case, the scores will be submitted to the Secretariat of the Faculty within the scheduled examination periods (January-February or September).

This adjustment is applied for the students of 4<sup>th</sup> year of studies of the academic year 2007-08 and on.

### **CLINICAL TRAINING ON OBSTETRICS-GYNAECOLOGY (6<sup>th</sup> YEAR)**

The following course of Integration II is set as prerequisite course for Clinical Training on Obstetrics-Gynaecology:

#### **7<sup>th</sup> semester**

##### **1. Obstetrics-Gynaecology**

Students are required to have attended and been examined on the above course during the scheduled examination periods in order to attend and be examined on Clinical Training on Obstetrics-Gynaecology, course of the 6<sup>th</sup> year of studies.

Students of the 4<sup>th</sup> year of studies, who have failed in the informal preliminary examination that is held right after the lectures of the course of Integration II, will be able to be examined during the formal examination period of the corresponding Fall semester, along with the students who have not been examined in the informal preliminary examination. In any case, the scores will be submitted to the Secretariat of the Faculty within the scheduled examination periods (January-February or September). This adjustment is applied for the students of 4<sup>th</sup> year of studies of the academic year 2007-08 and on.

### **CLINICAL TRAINING ON NEUROLOGY (5<sup>th</sup> YEAR)**

The following course of Integration II is set as prerequisite course for Clinical Training on Neurology:

#### **7<sup>th</sup> semester**

##### **1. Neurology**

Students are required to have attended and been examined on the above course during the scheduled examination periods in order to attend and be examined on Clinical Training on Neurology, course of the 5<sup>th</sup> year of studies.

Students of the 4<sup>th</sup> year of studies, who have failed in the informal preliminary examination that is held right after the lectures of the course of Integration II, will be able to participate in two additional examination procedures:

1. The formal examination period of Fall semester, along with students who have not been examined in the informal preliminary examination, and
2. In an additional examination procedure, which will be held after the above-mentioned examination procedures and before the examinations of September, according to the judgment of the teachers.

In any case, the scores will be submitted to the Secretariat of the Faculty within the scheduled examination periods (January-February or September).

This adjustment is applied for the students of 4<sup>th</sup> year of studies in order to enable them to pass the prerequisite course since this clinical training begins early (in the 5<sup>th</sup> year of studies).

This adjustment is applied for the students of 3<sup>th</sup> year of studies of the academic year 2007-08 and on.

### **CLINICAL TRAINING ON PSYCHIATRY (5<sup>th</sup> YEAR)**

The following course of Integration II is set as prerequisite course for Clinical Training on Psychiatry:

#### **7<sup>th</sup> semester**

##### **1. Psychiatry**

Students are required to have attended and been examined on the above course during the scheduled examination periods in order to attend and be examined on Clinical Training on Psychiatry, course of the 5<sup>th</sup> year of studies.

Students of the 4<sup>th</sup> year of studies, who have failed in the informal preliminary examination that is held right after the lectures of the course of Integration II, will be able to participate in two additional examination procedures:

1. The formal examination period of Fall semester, along with students who have not been examined in the informal preliminary examination, and
2. In an additional examination procedure, this will be held after the above examination procedures and before the examinations of September, according to the judgment of the teachers.

In any case, the scores will be submitted to the Secretariat of the Faculty within the scheduled examination periods (January-February or September).

This adjustment is applied for the students of 4<sup>th</sup> year of studies in order to enable them to pass the prerequisite course since this clinical training begins early (in the 5<sup>th</sup> year of studies).

This adjustment is applied for the students of 3<sup>th</sup> year of studies of the academic year 2007-08 and on.

The scores of the clinical training (courses) of the 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup> semesters will be submitted to the Secretariat during the scheduled examination periods. Any readjustment on the current curriculum is determined by the General Assembly of the Faculty, following suggestions of the Curriculum Committee of the Faculty.





# DIVISION OF BASIC MEDICAL SCIENCES I

## DEPARTMENT OF BIOCHEMISTRY

**Address** Preclinical Research Building  
University Campus (Rio) Patra  
Tel.: 2610-969870, Fax: 2610-969167

### **LABORATORY STAFF**

**Director** Prof. Denis Drainas

**Professors** Dimitrios Kalpaxis, Constantinos Stathopoulos

**Associate Professors** George Dinos

**Assistant Professors** -

**Lecturers** -

**Supporting Teaching** -

**and technical Staff**

**Administrative staff** Katerina Grafanaki, MD

### **\*Part of Integration study module I**

Biochemistry or Biological Chemistry is an interdisciplinary field combining Chemistry and Biology. It is the study of chemical processes within living organisms, as well as the substances included in the so-called "living matter". The biochemistry laws govern all living organisms and life procedures, even after the death of an organism. By controlling the flow of genetic information encoded in the genes, the regulation of gene expression through particular biochemical processes (signal transduction) and management of the chemical energy flow through metabolism, biochemical processes highlight the operations and the complexity of the so-called phenomenon of life. Major part of biochemistry includes the study of the formulation, the structure, the functions and the reactions between the cellular and subcellular components such as proteins, carbohydrates, lipids, nucleic acids and other biomolecules, as well as their equilibrium. Variations in the procedures as well as the concentrations of the molecules included, lead to significant temporary or permanent pathogenesis which are the subject of Pathobiochemistry, namely biochemistry of pathology.

<b>BIOCHEMISTRY I</b>	1 <sup>st</sup> Year, 1 <sup>st</sup> Semester (Mandatory)
<b>Hours</b>	Teaching: 3, Laboratory: 3 (per week)
<b>ECTS units</b>	7
<b>Teachers</b>	D. Kalpaxis, G. Dinos

**Description**

General aim is for the student to consider Biochemistry I as a basis that will help him understand simple chemical transformations and their fundamental principles. The syllabus is divided into eleven sections. Particular effort is made, in order to give examples from the field of biomedical sciences, so the importance of chemical treatment of biological problems, is indicated.

**Solutions**

- Aqueous solutions of molecules and ions.
- Distinction between molecular and colloidal solutions.
- Osmolality of solutions.
- Acids, bases, salts, definitions, properties.
- Water ionization, pH.
- Neutralization acids-bases, equivalence point, neutral solution.
- Buffer solutions, Henderson-Hasselbach equation, and pH meters.
- Solutions of chemical compounds.
- Definition and properties of chemical compounds.
- Stability and instability constant.
- Biological importance of chemical compounds, Bonds – Secondary Bonds

**Bioenergetics**

- Constitutive and simple thermodynamic equations (internal energy, enthalpy, entropy, free energy, Gibbs, work, heat).
- Reversible and Irreversible processes.
- The cell as an open thermodynamic system (Prigogine equation).
- Characteristics of exergonic and endergonic reactions, associated reactions.
- Effects of pH, Temperature and ionic strength on the equilibrium constant.
- Structure and biological role of high energy compounds (ATP, NADH, FADH<sub>2</sub>).
- Transportation potential of high energy groups.

**Redox and membrane dynamic**

- Electrolytic and galvanic elements. Nernst equation.
- Half-cell types (electrode of metal/iodized metal, electrode of hydrogen, Clark electrode, ion-selective electrodes).
- Applications of electrodes in clinical chemistry analysis.
- Types of galvanic elements (chemical galvanic elements-galvanic elements with defined concentration).
- Importance of galvanic elements with defined concentration in nature (Donnan electric potential, biological membranes electric potential).

**Mechanisms of biochemical reactions**

- Ranking of reactions and reagents.
- Mesomerism and resonance structures. Nucleophilic and electrophilic inserts.

- NNucleophilic and electrophilic substitutions.
- Reactions with radicals (lipid oxidation by free radicals).
- Abstractions.

#### **Stereoisomerism and geometrical isomerism**

- Enantiomers and diastereoisomers.
- Physical and chemical properties of stereoisomers.
- Fischer projection, conformations D and L.
- Cis-trans isomerism in molecules with double bonds, interconversion of isomers.

#### **Structure of Monosaccharides and Polysaccharides**

- Simple monosaccharides, D- and L- Glyceraldehyde derivatives.
- Cyclic form of monosaccharides.
- Glycosidic bonds, oligosaccharides.
- Polysaccharides (starch, cellulose, agarose, cell wall polysaccharides, glycogen).

#### **Proteins-Enzymes**

- Composition - structure - properties.
- Importance of the nature of side groups of the amino acids, in the properties of peptides and proteins, finding the sequencing of a protein.
- Levels of organization of protein structure
- Denaturation and denaturants. Importance of denaturation in proteins' biological activity.
- Relationship between structure and biological role of proteins - Examples.
- General characteristics of enzymes.
- Classification of enzymes, coenzymes and prosthetic groups.
- Thermodynamic consideration of enzymatic reaction mechanisms, catalysis.
- Regulatory mechanisms of enzyme activity (proteolytic activation of zymogens, allosteric regulation).
- Introduction to kinetic analysis (speed, kinetic law, specific speed, order and molecularity of the reaction).
- Dependency of specific speed on temperature (Arrhenius equation).
- First class reactions.
- Kinetics of simple enzymatic reactions, inhibition of the enzymatic reaction.

#### **Lipid structure and components of biological membranes**

- Classification of lipids based on their structure and function (vitamins, steroid hormones, plant and animal waxes, fats and ingredients stored in biological membranes).
- Structure of biological membranes (phospholipids, glycolipids, cholesterol, peripheral and integral proteins).
- Factors affecting the membrane fluidity.

#### **Aromatic compounds and steroids**

- Kekule law and examples of aromatic compounds of great biological importance.
- Steroids (cholesterol, lanosterol, bile acids, testosterone, oestradiol, progesterone, aldosterol, cortisol, vitamin D).
- Nucleosides and Nucleotides.

### Structure of nucleic acids

- The primary structure of nucleic acids, sensitivity to acids and bases.
- Forces determining the formation of polynucleotides.
- The double strand of DNA (A-, B- and Z-DNA).
- Factors that stabilize the double helix structure of DNA.
- Denaturation-rearrangement of the double helix. Structure and types of RNA.

### **BIOCHEMISTRY II**

1<sup>st</sup> Year, 2<sup>nd</sup> Semester (Mandatory)

#### **Hours**

Teaching: 3, Laboratory: 3 (per week)

#### **ECTS units**

6

#### **Teachers**

D. Drainas, C. Stathopoulos

#### **Description**

The aim is to understand the basic principles of metabolism. The student is being taught about the carbohydrates, lipids and amino acids metabolism. Particular effort is made, in order to present clinical examples of the content of the teaching subject. The outer goal of this course is the student to develop the required biochemical thinking, to use it in later years, when he will realize that many diseases have been unraveled on biochemical basis.

#### **Signal transduction**

- Signal and its strength.
- The role of receptors.
- Metabolic cascades.

#### **Carbohydrate metabolism**

- Regulation of metabolic processes – signal transduction elements.
- Digestion and absorption of carbohydrates included in food.
- Stages that produce energy through degradation of food.
- Glycolysis under aerobic and anaerobic conditions: mechanisms and regulation.
- Entry of fructose and galactose in glycolysis.
- Metabolic fate of pyruvate.
- Gluconeogenesis from lactic acid, amino acids and glycerol: mechanisms and regulation.
- Pentose phosphate pathway: regulation of reactions, importance of pathway for the red cell.
- Glycogen biosynthesis and degradation: mechanisms and regulation.
- Disorders of glycogen metabolism.
- Regulation of the level of glucose in blood.
- Adaptation of metabolism in prolonged fasting.
- Glycoproteins.

#### **KREBS cycle**

- Conversion of pyruvate to acetyl-coenzyme A.
- Mechanisms and regulation of the reactions in KREBS cycle.
- Input of amino acids in the cycle and participation in anabolic reactions.

- Glyoxylate cycle.

#### **Biological oxidations**

- The oxygen as an oxidizing agent in biological systems.
- Electrons carriers.
- Electron transport through the respiratory chain.
- Mechanisms and regulation of oxidative phosphorylation.
- Transport systems in mitochondria.
- Neutralization of oxygen's toxic derivatives.

#### **Lipid metabolism**

- Mobilization of adipose tissue's fatty acids.
- Oxidation of fatty acids.
- Production and utilization of ketone bodies.
- Biosynthesis of fatty acids: Mechanisms and regulation of reactions.
- Biosynthesis and storage of triglycerides.
- Metabolism of phosphoglycerides and sphingolipids.
- Biosynthesis, regulation and biological role of prostaglandins, prostacyclins and thromboxanes.

#### **Cholesterol-steroid hormones**

- Biosynthesis and metabolic regulation of cholesterol.
- Biosynthesis and role of bile acids.
- Absorption of fat included in food - metabolism and the role of lipoproteins.
- Cholesterol - atherogenesis - coronary heart disease (molecular mechanisms, the role of antioxidants, therapeutic perspectives).
- Steroid hormones biosynthesis.

### **BIOCHEMISTRY III**

2<sup>nd</sup> Year, 3<sup>rd</sup> Semester (Mandatory)

#### **Hours**

Teaching: 3, Laboratory: 3 (per week)

#### **ECTS units**

6

#### **Teachers**

D. Drainas, D. Kalpaxis, G. Dinos, C. Stathopoulos

#### **Description**

The aim of this course is to understand the transmission of the information genes have, the molecular basis of immunological reactions, the biochemical basis of viruses and oncogenes, metabolism of haeme and iron, and the completion and regulation of metabolism. As in previous semesters, specific clinical examples are given in order to achieve the correlation between biochemical knowledge and basic medical questions.

#### **Iron and Haeme metabolism**

##### **Protein and amino acid metabolism**

- Protein degradation.
- Ubiquitin.
- Proteasome.
- Origin and distribution of amino acids.
- Metabolic fate of the amino group of amino acids: deamination, transamination, urea cycle, circle of glutamic acid-purine nucleotide.
- Metabolic fate of amino acids' carboxyl group and carbon skeleton.
- Biosynthesis of essential and non-essential amino acids.

- Biochemical basis of genetic disorders of amino acid metabolism.
- Folic acid and its co-enzymes: Structure and mechanisms of action.
- S-adenosylmethionine and betaine as methylation factors.

#### **Nucleotide metabolism and structure of nucleic acids**

- Biosynthesis and degradation of nucleotides: Mechanisms and regulation.
- Biochemical basis of disorders of the nucleotides metabolism.
- Chemotherapy with nucleotide antimetabolites .
- Mechanism of action of mutagenic and carcinogenic compounds related to the metabolism of nucleic acids.
- Supercoiling of DNA.

#### **Flow of the genetic information**

- DNA replication
  - Replication enzymes-mechanisms
  - Replication inhibitors
- DNA transcription
  - Initiation, elongation and termination.
  - Inhibition of RNA biosynthesis.
  - Post-transcriptional processing of RNA.
  - RNA interference
  - Ribozymes
- Protein biosynthesis
  - Activation of amino acids
  - Transfer RNA
  - Single point mutations, inversion
  - Structure of ribosomes
  - Initiation, elongation and termination of polypeptide chain biosynthesis.
  - Regulation of protein biosynthesis.
  - Post-translational modifications of the polypeptides.
  - Inhibitors of protein biosynthesis.
  - Protein biosynthesis and cancer.

#### **Biochemistry about Viruses**

- Viruses as models for biochemical studies.
- Retroviruses, oncogenes, tumor suppressor genes
- The acquired immunodeficiency syndrome (AIDS) is caused by a retrovirus
- Interferons

#### **Biochemistry about Immune Response**

- Structure and role of immunoglobulins
- Genes encoding the antibodies' polypeptide chain. Redistribution of genes
- Subpopulations of T-lymphocytes. Phagocytes and T-lymphocytes receptors.
- Transplantation or histocompatibility reactions (MHC and HLA)
- Monoclonal antibodies. Antibodies catalyze chemical reactions (catalytic antibodies).

#### **Completion and regulation of metabolism**

- Strategy of metabolism and interaction between major metabolic pathways.

- The metabolic processes of the principal organs.
- The role of hormones in regulation.
- Regulation of induced gene expression in eukaryotes (DNA regulatory sequences, response elements, types of transcription factors).
- Application to the sensory systems of vision and olfaction.

**CLINICAL  
BIOCHEMISTRY**

3<sup>rd</sup> Year, 5<sup>th</sup> Semester (Optional)

**Hours**

Teaching: - , Laboratory: 2 (per week)

**ECTS units**

4

**Teachers**

D. Drainas, D. Kalpaxis, G. Dinos, C. Stathopoulos

**Description**

The aim of this course is to introduce to the students the principles of modern analytical methods of clinical biochemistry that help explain metabolic disorders of human organism.

- Introduction to the principles of laboratory analysis.
- Design, development and security of a clinical chemistry laboratory. Selection and development of an analytical method.
- Principles of analytical methods: spectrophotometry, electrochemistry, electrophoresis, clinical enzymology, immunochemistry, mass spectrometry and microarrays. Enzymatic methods of endpoint and kinetic. Coupled reactions and automatic analyzers.
- Evaluation of laboratory results - Quality control and reference values. Quality control programs.
- Disorders of carbohydrates, lipids, proteins, nucleotides and haemoprotein (porphyrins) metabolism.
- Acid-base homeostasis, homeostasis of water, buffers for the blood and their disorders. Electrolytes, determination and their disorders.
- Laboratory tests for renal, hepatic, cardiac and gastrointestinal function.

## DEPARTMENT OF GENERAL BIOLOGY

**Address** Preclinical Research Building  
University Campus (Rio) Patra  
Tel.: 2610-991769, Fax: 2610-997621

### LABORATORY STAFF

**Director** Prof. Nicolaos Moschonas

**Professors** Ioannis Zarkadis, Zoi Lygerou

**Associate Professors** Adamantia Papachatzopoulou

**Assistant Professors** -

**Lecturers** -

**Supporting Teaching and Technical Staff** Panagiotis Karachalios

**\*Participating in Integrated learning program part I**

**BIOLOGY I** 1<sup>st</sup> Year, 1<sup>st</sup> Semester (Mandatory)

**Hours** Teaching: 3 per week, Laboratory: 3 / fortnight / student, Tutorials: 3 / fortnight / student, Teaching in groups (12 students / group): once / semester, 3 / student

**ECTS units** 7

**Teachers** N. Moschonas, I. Zarkadis, Z. Lygerou, A. Papachatzopoulou

### Description

#### Introduction

- Introduction to modern molecular and cellular biology.
- Scientific methodology, ways of bibliographic briefing, historical examination of perceptions on the biological phenomena.
- Cell theory.
- Model organisms.

#### Biological macromolecules

- Atoms - molecules and types of chemical bonds.
- Chemical constitution of cells.
- Emerging attributes of living matter.
- Proteins Principles: from structure to operation. Protein function and regulation. Protein machines. Homologous proteins. Protein Functional complementarity.

#### Cell

- General characteristics. Microscopy.
- Introduction to the morphology of the pre-and eukaryotic cells. Factors that determine the cell size. Similarity and Diversity of the cells. Subcellular ultrastructure, cellular organelles-morphology, composition, functions.
- Cell membrane. Structure, properties and function.
- Cytoskeleton, intra-organization of the cell, proteinic fibrils: structure and function.



- Membrane transfer, the carrier proteins and their function, membrane potential, electrochemical gradient, transport of substances by diffusion, passive and active transport, ion channels, maintaining osmotic balance in animal cells.
- Intracellular transport, compartmentalization of the cell, membrane organelles as part of intramembranous system, sorting proteins - signaling sequences, chaperones, transport vesicles, protein secretion pathways - function of the Golgi apparatus as a sorting centre for exocytosis, the endosome as a sorting center for endocytosis, intracellular trafficking of substances, withdrawal of proteins.

#### **DNA as genetic material : structure and expression**

- Structure of DNA, structural and functional properties, its role as genetic material.
- Structure of prokaryotic and eukaryotic gene, the role of individual structural / functional components of the genes.
- Flow and expression of genetic information.
- Replication, asymmetric replication fork, primosome and RNA primers, establishment and operation of the replicative machine, corrective action of the DNA polymerase.
- Gene Transcription: Prokaryotic operons, eukaryotic genes, mechanisms / factors, changes of the original transcript, splicing and production of mature mRNA.
- Genetic code. Translation of mRNA, structural and functional elements, mechanism.
- Ribosomes.
- Protein degradation.
- Functional properties of RNA and its evolutionary history.

#### **DNA damages, mutagens, repair mechanisms, mutations**

- Primary lesions of the structure of DNA, mutagens, radiation, chemical mutagens, types of damage.
- Mechanisms of repair, interdependence between damage and mechanism, generation of mutations, molecular nature of mutations

#### **The chromosomes and the regulation of gene expression**

- Structure, morphology, condensation and functional independence of eukaryotic chromosomes.
- Meanings chromatin, euchromatin, heterochromatin.
- Telomerase's role.
- Organization of the chromosomes in the nucleus, human chromosomes.
- Chromosomes and regulatory mechanisms of gene expression.
- Molecular model of eukaryotic cell.
- Differential expression of genes.
- Activators/suppressors, regulatory elements. Transcription factors.
- Nucleosomes.
- Modifications of histones, histone code.
- Molecular switches.
- Cellular specialization.
- Epigenetics and regulation.
- Cellular "memory".

### **Cellular communication**

- General principles of cellular signalling.
- Endocrine, paracrine, autocrine and neuronal signalling with their characteristics.
- Types of receptors and signal sequences with their characteristics.
- G-proteins, cAMP pathways, phospholipase C, activation of protein Ras.
- Role of Ca ions in signalling.
- Calmodulin and CaM kinases.

### **Cell division**

- Process and mechanisms of cell division.
- Phases of mitosis, cytokinesis, anaphase promoting complex, cohesins.
- Meiosis: biological importance, differences of mitosis-meiosis. Nondisjunction phenomenon and Aneuploidy.
- Cell cycle and phases.
- The central control system of cell cycle - cyclin-dependent kinases-inhibitors. Points of control. Response in DNA damage - the role of p53.

### **Tutorials**

1. Characteristics of life. Organization, regulation, evolutionary adaptation, response in the environment, growth, reproduction. Evolution: Diversity and common characteristics. Emerging/new attributes: structural/functional relations between individual components concerning the level of complexity of organization of living matter. Studying levels of biological systems. Interaction between organisms and environment. Relationship between biological systems' structure and their function. Cell theory. Structural and functional unit of organisms. Perpetuation of life, homogeneity, diversity and evolution.
2. Chemical bonds and their importance in the molecules and macromolecules of the cell: Covalent bonds, polar, ionic bonds, hydrogen bonds, hydrophobic and van der Waals interactions, carbohydrates, nucleic acids and proteins. Molecules of energy transportation (ATP, GTP, NADH, FADH and Acetyl-CoA). Mitochondria and energy in the cells.
3. Comparison between DNA replication and transcription: The localization of resemblances and differences between the two operations that use the DNA as a template, to produce new molecules, in order to serve the aims of heredity (via cell cycle) the correction of DNA (via corrective replication) and the expression of genetic material (via transcription). The comparison is being made while considering the process and pre-requisite, the part of genotype which is involved and the result of the two functions.
4. Structural and functional characteristics of genes. The role and the development of nucleic acids, the flow and the processing of genetic information and all the checkpoints from the nucleus to the cytoplasm. Regulation of gene expression - molecular mechanisms - factors - regulating elements. Genes and environment. Epigenetic regulation of gene expression.
5. Cell membrane: The presence and operation of the cellular membrane

structures within the eukaryotic cell. Methods of studying the structure and properties. Pathological phenotypes due to dysfunction of cell membrane.

6. Cell signalling: a review of the relevant course syllabus, discussion of signalling mechanisms and their importance in the physiology of the cell and organism.
7. Cell cycle: Aim of the tutorial is the comprehension of the mechanisms that ensures the normal course and regulation of cell cycle and the importance of those mechanisms have for the genomic stability, the survival of cell and organism. The discussion is organized around two clinical examples: the chromosomal instability that cancer cells have and the use of medicine Paclitaxel (Taxol) in the treatment of cancer.

### **Laboratories**

1. Microscope – cell fractionation: Use of photonic microscope. Preparation and observation of samples from plant cells. Preparation and observation of samples of cells from mucosa of the tongue of each student. Nucleus isolation from mouse liver cells, pigmentation and observation in photonic microscope. Observation of ready cell samples.
2. Cell development: Experimental approach to cell development of prokaryotic and eukaryotic cells. Cell development curve, mass spectrophotometric determination of prokaryotic cells' mass, coated plates in sterile conditions and determination of concentration of live cells. Eukaryotic cell culture, media, culture conditions, observation of live cancer cells under the microscope, distinction between mitotic, interphase and dead cells.
3. DNA isolation from epithelial cells. Each student isolates his DNA from dead epithelial cells, by washing out his mouth with sterile saline and observes the DNA after agarose gel electrophoresis.

### **Teaching in groups**

Mutations - Reparative mechanisms of DNA: The meaning of mutation. Discrimination between hereditary and not mutations (germline and somatic mutations). Discrimination between mutations that concern numerical and structural changes of chromosomes and mutations that they concern changes of the genes. Mutations due to damage of the DNA. Which damages occur and which factors are responsible. The frequency of damage. What is induced mutagenicity. The mechanism of action of endogenous and exogenous factors causing mutations. Main reparation mechanisms of DNA and which type of repair each one makes. What are thymine dimers, how are they being caused and how are they being repaired. Important enzymes in DNA repair mechanisms and their targets. Human diseases are connected with DNA damage and DNA repair mechanisms. The importance of these mechanisms for the stability but also the plasticity of DNA and the maintenance of species.

## **BIOLOGY II**

1<sup>st</sup> Year, 2<sup>nd</sup> Semester (Mandatory)

### **Hours**

Teaching: 3 per week, Laboratory: 3 / fortnight / student, Tutorials: 3 / fortnight / student, Teaching in groups (12 students / group): once / semester, 3 / student

**Description**

**Introductory significances**

- Historical background and key achievements of the science of genetics and human genetics.
- Introductory significances of human genetics and reduction in medicine and the genetic diseases.
- Objectives and disciplines of medical genetics.
- Categories of genetic diseases.
- Cell division and reproduction in the light of human genetics.
- Genealogical/family trees.

**Recombinant DNA technology**

- Restrictive enzymes.
- Electrophoresis of nucleic acids and proteins.
- Hybridization of nucleic acids. Determination of DNA, RNA and proteins sequencing. PCR. Chemical DNA synthesis. Cloning (DNA vehicles and hosts). DNA Libraries - isolation of genes.
- Southern, Northern, Western technics, RT-PCR, in situ hybridization with RNA.
- Technologies of expression /production of recombinant proteins.
- Generation of transgenic organisms.

**Models of monogenic disease heredity**

- Mendelian inheritance, factors that influence inheritance patterns. Association between genotype and phenotype.
- Patterns of autosomal dominant and recessive inheritance, determination of alleles' frequency, balancing gene dosage, inactivation of X chromosome, X-linked inheritance, Y-linked inheritance, pseudoautosomal inheritance.
- Genetic diversity, diversity of alleles, of genetic locus. Penetrance and varying expressivity.
- Presentation of representative diseases and transfer from generation to generation.
- Nonclassical way of inheritance: genetic imprinting and related disorders, mitochondrial inheritance, uniparental disomy, mosaicism and representative diseases. Dynamic mutations / disorders due to the expansion of trinucleotide repeats, the phenomenon of acceleration. The fragile X syndrome and Huntington's disease.

**Genetic diversity. Polymorphisms of genomic DNA as disease markers**

- Mutations transposable elements and horizontal movement of the DNA.
- Linkage disequilibrium- Chromosomal crossover.
- Generation of families of genes. Generation of new genes and proteins.
- Polymorphisms of genomic DNA, Mendelian inheritance of polymorphic places.
- Types and nature of polymorphic places, ways of detection RFLP, VNTR, Microsatellites.
- Genetic linkage, phase of genetic linkage.
- The various types of DNA polymorphisms as markers for genetic diseases.

### **Polygenic disorders**

- Genetics of frequent Polygenic disorders, polygenic characters.
- Qualitative and quantitative traits. Genetic analysis of quantitative traits of a disease.
- Polygenic malformations. Complex disorders of adult life.

### **Models of genetic diseases: molecular pathology**

- Selected examples of genetic diseases.
- Molecular base of Haemoglobinopathies, cross-correlation with clinical picture, allelic heterogeneity. Thalassaemias.
- Familial hypercholesterolemia.
- Relationship of structure and function of mutated proteins. Cross-correlation of place and nature of mutation with the phenotype and the clinical severity of disease.

### **Medical Genetics. The contribution of human genome analysis in biomedicine**

- Architecture and organization of human genome.
- Genetic and natural mapping of chromosomes.
- Goals and contemporary achievements of the analysis of the human genome.
- Chromosomal maps and genes density, association with chromosomal diseases.
- Cloning of genes based on their chromosomal location.
- Gene expression patterns, "omics" technologies and molecular diagnosis.
- Genetic diversity and individualised treatment.

### **Clinical cytogenetics: autosomal-sex-determining chromosome odds and methods of analysis**

- Conventional karyotype. Classification criteria of chromosomes. Zones and nomenclature.
- Numerical and structural changes in the chromosomes and how they arise, postnatal chromosomal testing and clinical indications for chromosomal analysis
- Autosomal and sex chromosomes syndromes.
- Molecular methods of chromosome analysis and their applications (FISH, CGH, DNA microarrays, bands CGH, spectral karyotype, flow karyotyping, molecular karyotype).
- Sex-determination, genetic base of sex reversal syndrome, chromosome Y and male low Infertility.
- Cytogenetics of cancer.

### **Regulation of cell proliferation, apoptosis, genetics of cancer**

- Growth factors, pRb and regulation of cell proliferation, molecular brakes of cell proliferation, cell senescence.
- Apoptosis (programmed cell death): role, morphological changes and molecular paths of activation.
- Cancer as a genetic disease. Steps of carcinogenesis. Cancer and genetic instability. Oncogenes and mechanisms of activation, anti-oncogenes.

### **Prenatal diagnosis**

- Clues, methodology of prenatal chromosomal check.
- Amniocentesis, chorionic villus sampling, newer approaches.
- Ultrasonic and biochemical tests.

- Prenatal molecular test.

### **Genetic Evolution**

- Historical overview of the concept of evolution. Lamarck, Darwin.
- Adaptation. Evolution factors.
- Microevolution. Molecular evolution. Natural selection. Balanced polymorphism. Population genetics. Law of Hardy-Weinberg and applications, examples.

### **Tutorials**

1. Basic significances of medical genetics. Mendelian diseases: Relationship between genetic and environmental factors. Categories of genetic diseases, relative frequency. Alleles, inheritance types. Gene relocation, gene pool and genetic diversity. Ovulation, spermatogenesis. Genotype-phenotype, genetic predisposition. Familiarization with the creation of the family tree. Exercises on monogenic inheritance. Principles of probability and exercises.
2. Genetic engineering: Proliferation of sections of DNA / RNA by cloning in plasmid vectors, PCR, RT-PCR and chemical oligonucleotide synthesis. Study of the expression of a gene in the level of mRNA (northern blot, RNA protection assay, in situ hybridization, RT-PCR, microarrays). Study of the expression of a gene in the protein level (western blot, ELISA, immunohistochemistry). Synthesis of new molecules of DNA. In vitro synthesis of RNA. In vitro translation of mRNA. Creating mutations / expression of mutant proteins in vitro. Production of recombinant proteins in heterologous cell systems. Creation of transgenic organisms.
3. Cytogenetics: consolidation of the teaching syllabus concerning the unity of Cytogenetics, with particular emphasis on practical methodology and the problems that accompany the conventional and molecular chromosome analysis in cases of prenatal and postnatal, as well as chromosomal abnormalities.
4. Molecular Diagnosis-Diseases: How to detect mutations in monogenic and polygenic diseases. The contribution of molecular diagnosis in prenatal and postnatal tests.

### **Laboratories**

1. Polymerase Chain Reaction: PCR. Each team prepares and performs a PCR reaction, controls the outcome by agarose gel electrophoresis and determines changes in the sequence of DNA, which was amplified.
2. Genetic Engineering I: (a) Transformation of bacterial cells with plasmids that give resistance to ampicillin. Selection of transformed clones. (B) Fragmentation of human and bacteriophage  $\lambda$  genomic DNA with restriction endonucleases, electrophoretic separation of produced DNA, analysis of results.
3. Genetic Engineering II: Isolation of transformed bacterial cells with plasmid DNA, using the alkali method. Purification of DNA and cleavage with restriction enzymes. Analysis of the results with agarose gel electrophoresis. Calculating the sizes of the portions DNA (plasmid and insert) using standard curves based on DNA segments of known size.
4. Cytogenetics: Experimental preparation of metaphase chromosomes from peripheral blood lymphocyte cultures, observation with microscope and karyotyping of chromosomes by G-banding. Experimental observation of Barr body (X chromosome) in coating oral

epithelial cells.

### Teaching in groups

Genetic diversity. The diversity of the genomes of different forms of life and mechanisms that contribute to the creation of this diversity. After the training process, the student must have understood:

1. Genetic diversity is a constitutive element of the genome of prokaryotic and eukaryotic organisms.
2. Specific mechanisms contribute to the genetic diversity and what are those.
3. Genotypes change even in the same generation.
4. Genotypes evolve.

### **MEDICAL GENETICS**

3<sup>rd</sup> Year, 5<sup>th</sup> Semester (Optional)

#### **Hours**

Teaching: - , Laboratory: 2, Tutorials: - (per week)

#### **ECTS units**

4

#### **Teachers**

I. Zarkadis, Z. Lygerou, A. Papachatzopoulou, N. Moschonas

#### **Description**

##### **1. INTRODUCTION**

Introduction to Molecular Genetics Medicine (2 hours)

##### **2. IDENTIFICATION OF GENETIC BASIS OF DISEASES**

Identification of genes and other genetic elements, e.g., regulatory elements, etc. polymorphisms of DNA involved in diseases and cross-correlation with genotype-phenotype (4 hours)

##### **3. ASSOCIATION OF PROTEIN STRUCTURE AND FUNCTION**

Correlation between structure and function of mutant proteins involved in monogenic diseases. (2hours)

##### **4. MOLECULAR DIAGNOSIS**

Molecular diagnostic technologies for monogenic diseases. Approaches of high throughput analysis (2 Hours)

##### **5. CHROMOSOMAL DEVIATIONS**

Changes in the number or structure of chromosomes associated with genetic diseases, hereditary and not. Impact of those. Modern molecular approaches for their detection (4 hours)

##### **6. HIGH THROUGHPUT APPROACHES**

Functional genomics and proteomics analysis. Applications in Medicine (4 hours)

##### **7. GENETICS OF CANCER**

From the knowledge of molecular pathways in genetic disorders in cancer to the discovery of new diagnostic, prognostic and therapeutic approaches (4 hours)

##### **8. REGENERATING TREATMENTS**

Gene and cell therapy: objectives and technological applications (2 hours)

## DEPARTMENT OF MEDICAL PHYSICS

**Address** Preclinical Research Building  
University Campus (Rio) Patra  
Tel.: 2610-997620, Fax: 2610-992496

### **LABORATORY STAFF**

**Director** Prof. George Nikiforidis

**Professors** Anastasios Bezerianos, Nikolaos Pallikarakis, George Panagiotakis

**Associate Professors** Eleni Costaridou

**Assistant Professors** George Sakellaropoulos, George Kagadis

**Lecturers** -

**Supporting Teaching and Technical Staff** Eleftherios Gortzis

**MEDICAL PHYSICS** 1<sup>st</sup> Year, 1<sup>st</sup> Semester (Mandatory)

**Hours** Teaching: 3, Laboratory: 3, Tutorials: - (per week)

**ECTS units** 7

**Teachers** A. Bezerianos, G. Panagiotakis. E. Costaridou, G. Kagadis

### **Description**

#### **Purpose**

To understand the physical principles of Mechanics, Electricity, Acoustics, Optics, Heat, Atomic and Nuclear Physics and their application to the analysis of the formation and function of the human body and the treatment of many medical problems.

Development of basic applications of physics in Radiodiagnostics, Radiotherapy, Nuclear Medicine and Radioprotection.

#### **Methodology**

The course is being taught through lectures (in Auditorium), tutorials in small groups and laboratories. The lectures are theoretical and the presented concepts are specified through tutorials and laboratories. Five (three-hour) tutorials take place where students deal with cases. Finally, four (two hour) laboratory exercises take place, in which biomedical data experimental setup are being analyzed.

#### **Biomechanics- fluid mechanics**

- Basic Significances and Laws of Statics and Dynamics of Ideal and Real Fluid
- Study of Operation of Respiratory and Cardiovascular System: Breathing - Exchange of Respiratory Gases, Flow of Blood in Vessels

#### **Bioelectricity**

- The nervous System and the Neuron
- Electric potential in Neurons
- Electric Signals from Muscles



- Electric Signals from Heart
- Electric Signals from Brain

#### **Heat**

- Thermal Properties of matter
- Thermodynamics
- Heat Production and Regulation of Temperature in Human Body
- Thermal Detectors

#### **Acoustics**

- Mechanical waves
- Sound Waves
- Physics of Sense of hearing and Operation of Ear
- Acoustics and Acoustics Measurements

#### **Optics**

- Nature and Distribution of Light
- Elements of Geometrical Optics
- Physics of Sight and Operation of Eye
- Refractive Abnormalities of Eye

#### **Atomic and nuclear physics and interaction between radiation-matter**

- Model of Bohr and Wave Mechanics
- Excitation and Ionization of Atoms
- Constitution of Nucleus - Nuclear forces - Nuclear Fission and Nuclear Fusion
- Mechanisms and Time Interrelation of Radioactive Decay and Emission
- Interaction of Charged Particles and Photons of High Energy with Matter

#### **Physics of nuclear medicine**

- Criteria for choosing Radioisotopes in the Differential Diagnosis
- Basic Components of Systems of Detection in the Nuclear Medicine
- Statistics of Nuclear Medicine

#### **Physics of Radiodiagnostics and Radiotherapy**

- Components of radiodiagnostic system
- Projective and Tomographic imaging systems
- Shaping and Quality of Digital Image
- Teletherapy and Brachytherapy
- Planning of Radiotherapy
- Radiotherapy with Charged Particles

#### **Radioprotection**

- Basic Principles of Radioprotection
- Units and Methods of Dosimetry
- Radioprotection of Patient and Personnel
- Legislation for Radioprotection

#### **Laboratories**

1. Oscillograph
2. Electrocardiograph
3. Electronic Clinical Thermometer
4. Decreptitude of Radiation at her Passage Through Matter

**BIostatISTICS**1<sup>st</sup> Year, 1<sup>st</sup> Semester (Mandatory)**Hours**

Teaching: 2, Laboratory: -, Tutorials: 2 (per week)

**ECTS units**

3

**Teachers**

G. Nikiforidis, G. Sakellaropoulos

**Description****Purpose**

Aim of this course is to create the basic statistical sublayer for the comprehension of quantitative estimates and analytic methodologies that are being used in medical science.

**Methodology**

The course is taught via lectures (in Amphitheatre) and tutorials in small teams (with use of PC). The lectures have theoretical character and the presented concepts are specified through Tutorials.

In tutorials are being used:

- software for statistical analysis of medical and biological data (SPSS, Microsoft Excel, Graph Pad Prism),
- web pages with relative data and methodologies from the Internet
- the course in the form of cases STEPS

The successful completion of “Biostatistics” includes:

- the attendance of 2-hour lectures of theoretical character per week
- the obligatory 2-hour per week attendance of the tutorials with practical exercise in PC,
- the obligatory participation in a 10-member team of students in order to prepare a report throughout the course syllabus
- the success in the oral examination at the presentation of the above report
- the success in the written examination of the course

**Introduction to Biostatistics**

The purpose of Biostatistics - Content of descriptive statistics and statistical inference - Basic concepts of statistics.

**Descriptive statistics**

Frequency and cumulative frequency-Qualitative results of statistical tests - Quantitative results of statistical experiments - Random variable - frequency tables - Histograms - Representative values of frequency distribution - Sources of sampling variance and determination of the total standard deviation of the sample - Interpretation of the dispersion of clinical measurements.

**Theory of probabilities**

Definition of probability - Calculation of probabilities - the predictive value of the diagnostic test – Bayes Theorem - Medical applications - Generalization of the Bayes Theorem - Definition of random variable - probabilities distribution of random experimental potential - Characteristic parameters of probability distributions - probabilities distribution in Health Sciences - Binomial distribution - Poisson distribution - Normal distribution (distribution Gauss) – Approach of

the binomial distribution via the normal distribution - Approach of the Poisson distribution via the normal distribution.

### **Statistical sampling**

Distribution of medians - Standard Error of the average sampling data - Central Limit Theorem - sampling error rate - sampling error of the difference between two random variables.

### **Methods of statistical inference**

Point estimation - Determination of the statistical parameters' confidence interval - Testing statistical hypotheses - Statistical test of the mean - Statistical comparison of the mean values of two different samples - Types of errors in statistical inference - The validity of the statistical test and its relationship with the sample size - Statistical analysis of percentages - Inference for a sample rate - Inference for two sampling rates - Contingency tables and statistical tests based on the  $\chi^2$  distribution - Applications of  $\chi^2$  distribution with degrees of freedom more than one - Subdivision of contingency tables - Statistical comparison of two numbers.

### **Statistical dependence and correlation**

Conceptual difference between dependence and correlation - Least squares method - Use of straight lines of statistical dependence in the clinical forecast - Confidence interval of straight line - Linear factor of correlation.

### **Tutorials**

- Tutorial 1: Calculation of frequencies, relative frequencies, cumulative frequencies, creation of histograms, criteria of appropriateness of histograms.
- Tutorial 2: Application of Bayes Theorem, calculations of positive & negative predictive value, transport of data from the Internet in software of statistical analysis, confirmation by calculation of independence of complex possibilities.
- Tutorial 3: Solving binomial experiment for infinite and finite number of tests
- Tutorial 4: Simulation of experiments and confirmation of Central Limit Theorem, use of statistical z tables.
- Tutorial 5 and 6: Solving exercises with use of z test and t test, error analysis type I and II
- Tutorial 7: Contingency tables,  $\chi^2$  test
- Tutorial 8: Solving exercises of linear regression, finding the 95% confidence interval of the regression line
- Tutorial 9: Calculation of the linear correlation coefficient in biological and medical Internet data
- Tutorial 10 and 11: Finding the ROC curve (Receiver's Operating Characteristic curve) and analysis

**MEDICAL INFORMATICS**

**Hours**

1<sup>st</sup> Year, 1<sup>st</sup> Semester (Mandatory)

Teaching: 2, Laboratory: -, Tutorials: 2 (per week)

**ECTS units**

5

**Teachers**

G. Nikiforidis, G. Sakellaropoulos, G. Kagadis

**Description**

**Purpose**

The amount of Medical informatics, in which we have free access nowadays, is huge. This is due to digitizing of the information and the creation of the global network system.

The course aims to train students on managing this information, in order to locate the useful ones and rightly combine them to create knowledge.

**Methodology**

The course is taught via lectures (in Amphitheatre) and tutorials in small teams (with use of PC). The lectures have theoretical character and the presented concepts are specified through Tutorials.

In tutorials are being used:

- software for creating data bases (Microsoft Access)
- software for medical image processing (Analyze, Image Pro)
- software for statistical analysis of medical and biological data (SPSS, GraphPad Prism)
- Decision tree software (DATA 3.0)
- Software for supporting medical decision-making (Iliad)

The successful completion of “Medical Informatics” includes:

- the attendance of 2-hour lectures of theoretical character per week
- the obligatory 2-hour per week attendance of the tutorials with practical exercise in PC
- the obligatory participation in a 10-member team of students in order to prepare a report throughout the course curriculum
- the success in the oral examination at the presentation of the above report
- the success in the written examination of the course.

1. Introduction to Medical Informatics
2. Components and operating principles of Computer
3. Computer Networks: Passive and active network elements - Structured Wiring – Optical Fibers - Repeaters - Switches - Routers - Servers
4. Nature and management of medical information
5. The probability in the estimation of diagnostic tests and medical decision-making
6. Coding medical terms and recording systems of medical information
7. Databases - Medical databases
8. Management and Transfer of Image: DICOM - PACS
9. Processing, analysis and parameterization of medical images
10. Hospital Information System and Integrated Hospital Information System
11. Telemedicine data
12. Systems supporting medical decision-making
13. Bioinformatics data

## **Tutorials**

- Tutorial 1: Components and operating principles of Computer, the Windows operating system, file system, use of applications offered by the network of Faculty of Medicine and University Hospital of Patras.
- Tutorial 2: Search for medical information in the Internet, methodology of investigation, use of Medline database, finding and use of medical digital bibliography, digital services by the Library of University of Patras.
- Tutorial 3 and 4: Design and implementation of medical data bases, formulating questions, designing reports.
- Tutorial 4 and 5: Recovery of digital medical images with use of DICOM protocol, processing and analysis of medical images (CT, MRI and digital microscopy) from the University Hospital of Patras.
- Tutorial 6: Telemedicine Services by the network of Faculty of Medicine and University Hospital of Patras.
- Tutorial 8: Use of software for statistical analysis of biological and medical data.
- Tutorial 9: Medical decision-making problem by using Decision tree software, utility & QALY examples, sensitivity analysis.
- Tutorial 10: Medical decision-making, use of ILIAD software.
- Tutorial 11: Bioinformatics: Use of bioinformatics tools from the Internet (BLAST) and databases (OMIM).

# DIVISION OF BASIC MEDICAL SCIENCES II

## DEPARTMENT OF ANATOMY

**Address** Preclinical Research Building  
University Campus (Rio) Patra  
Tel.: 2610-969195, Fax: 2610-969178

### LABORATORY STAFF

**Director** Prof. Helen Petrou-Papadaki

**Professors** Georgia Sotiropoulou

**Associate Professors** Martha Assimakopoulou, Konstantinos Giftopoulos, Dionysios Papachristou

**Assistant Professors** Vassiliki Bravou

**Lecturers** Spyridon Syggelos

**Supporting Teaching  
and Technical Staff** Konstantinos Perpinias

### \* Participating in Integration II

Under the supervision of the Department of Anatomy, the following courses are being taught. Anatomy I, II, Neuroscience, Histology and Embryology I, II and Clinical Anatomy of Kidney-Molecular Anatomy (optional). In these courses particular emphasis is given on the relevance between the function of the human body and the clinical knowledge that the student acquires.

In the first semester the student is being familiarized with the human anatomy, the construction of the cell and body tissues and the General Embryology. The second semester includes the courses of Systematic Anatomy, Histology and Embryology. The third semester includes, Topographic Anatomy and Histology and Embryology of the organs and body systems. Special effort is being made to ensure that the teaching of Anatomy, Histology and Embryology of various organs is happening simultaneously. Neuroanatomy is being taught separately and a special series of laboratory exercises and tutorials supplement the course. In each semester a number of tutorials of Applied Anatomy, Histology and Embryology supplement the lectures. This is for the student to learn how to apply the anatomical knowledge in clinical practice. In laboratories of Anatomy students study fresh samples of bones, anatomical models, x-rays, slides and films related to the subject of each laboratory hour. In the laboratory of Histology students study collections, each of which includes about 100 microscopic samples from various tissues and organs.

<b>ANATOMY I</b>	1 <sup>st</sup> Year, 2 <sup>nd</sup> Semester (Mandatory)
<b>Hours</b>	Teaching: 3 Laboratory: 3, Tutorials: - (per week)
<b>ECTS units</b>	6
<b>Teachers</b>	E. Petrou-Papadaki, M. Assimakopoulou, K. Giftopoulos, D. Papachristou, V. Bravou, S. Syggelos
<b>Description</b>	<p><b>AIM</b></p> <p><u>Introduction to the basics</u> The student is given all the basic knowledge of Anatomy, which is mandatory for understanding the morphology and the function of the human body</p> <p><u>Musculoskeletal system</u> The student has to study and understand the gross anatomy of the skeletal and muscular system including the vessels and the nerves which are related to these systems. Emphasis to the functional and clinical anatomy is given in order the student to be able to use all the knowledge to clinical praxis, during the following years of the studies.</p> <p><b>METHODOLOGY</b></p> <p>Part 1 of Anatomy is taught:</p> <ol style="list-style-type: none"> <li>1. Through tutorials in amphitheater, where clinical anatomy is thoroughly analyzed using clinical examples and cases</li> <li>2. Through laboratory sessions (the students are organized in working subgroups), where the students can study: a) fresh human anatomy specimens, b) anatomical models, c) Radiological Anatomy (x-rays, ultrasound, CT and MRI scan images) which helps the student to understand the three-dimensional structure of the human body and the explanation of the new radiological imaging techniques d) Surface anatomy and clinical examination e) Virtual anatomy using modern anatomical software</li> </ol> <p><b>Contents</b></p> <p>Introduction to anatomy of the human body</p> <ul style="list-style-type: none"> <li>• Principles of morphology and formation of the Human body, Cells- Extracellular matrix, Cell adhesion, Tissues, Solid and Hollow organs</li> <li>• Anatomical vocabulary, anatomical descriptive terms, Anatomical position of the human body, planes and axes of the body, Body cavities, epithelial tissue and serous membranes.</li> </ul> <p>Introduction to systems of the human body Introduction to the cardio-vascular system Introduction to the Nervous System (Part 1) Introduction to the Nervous System (Part 2)</p> <p>A. Introduction to musculoskeletal system</p> <ul style="list-style-type: none"> <li>• History: From Vesalius up to molecular Anatomy.</li> <li>• Musculoskeletal system and art</li> <li>• General principles of the organization of the musculoskeletal system. Muscular and skeletal function</li> <li>• Structure and function of ligaments, tendons, fascia and aponeurosis.</li> </ul>

### Morphology, types and function of joints

- Histology and molecular biology of cartilage and bony tissue
- Basic principles of radiological imaging of the musculoskeletal system
- Introduction to clinical anatomy - correlation with basic pathology (e.g. arthritis, fractures, osteoporosis)
- Basic principles of molecular mechanisms which are implicated in embryology, development and pathology of common musculoskeletal system disorders

### B. Radiological imaging of the musculoskeletal system

- Plain x-rays
- Computed tomography (CT)
- MRI imaging
- Virtual Anatomy

### C. Clinical Anatomy and topography

- Upper limb, Lower limb, skull, spine, anatomy of the body wall

### D. CLINICAL AND SURFACE ANATOMY

- Buttock region (hip joint, muscles, vessels, nerves)
- Thigh (femoral bone, muscles, vessels, nerves)
- Knee (knee joint, muscles, vessels, nerves)
- Calf region (bones, anatomical compartments, muscles, vessels, nerves).
- Foot and ankle (ankle joint, small joints of the foot, muscles, vessels, nerves).
- Clinical and imaging correlations
- Surface anatomy of lower limb
- Shoulder region (Joints, muscles, vessels, nerves)
- Arm region (humerus, muscles, vessels, nerves)
- Elbow (Joints, muscles, vessels, nerves)
- Forearm (bones, anatomical compartments, muscles, vessels, nerves)
- Hand and wrist (wrist joint, small joints of the hand, muscles, vessels, nerves)
- Clinical and imaging correlations
- Surface anatomy of upper limb

### AXIAL SKELETON

- Skeleton of the skull (Cranial bones-cranium and skeleton of the face, inner and outer surfaces, mandible, articular surfaces for mandible and first cervical vertebra).
- Temporo-Mandibular joint: Articulated bones, articular surfaces, type of joint, ligaments and movements
- Spine: Parts and spinal curves. Anatomy of the vertebra: body, lamina (pedicles, lamina, processes), vertebral foramen. Special characteristics of vertebrae according to their position in spine (cervical, thoracic e.t.c.). Sacrum and coccyx. Joints between vertebrae, skull and pelvis. Joint type, bones and articular surfaces, movements. Ligaments of the spine. Movements of the spine. Intervertebral discs: structure and function. Imaging of the spine.
- Mimic muscles.



- Masseter muscles.
- Muscles of the back.
- Clinical anatomy of the axial skeleton: (Fractures and dislocations, abnormal spinal curves (scoliosis, lordosis), lumbar puncture, disk hernia).

**ANATOMY II**

2<sup>nd</sup> Year, 3<sup>rd</sup> Semester (Mandatory)

**Hours**

Teaching: 3 , Laboratory: 3, Tutorials: - (per week)

**ECTS units**

8

**Teachers**

H. Papadaki -Petrou, G. Sotiropoulou, M. Asimakopoulou, V. Bravou, K. Giftopoulos, S. Syggelos

**Description**

**AIM**

The aim of the course is the understanding of the structure and function of the human body both by system and by region (Systematic and regional/topographic Anatomy). Emphasis is given on functional anatomy and clinical correlations, so that the student can acquire important anatomical principles useful in everyday clinical practice.

**METHODOLOGY**

Anatomy teaching involves:

- Lectures on anatomy topics with emphasis on clinical examples and problem-based learning (PBL).
- Laboratory exercises (smaller groups) that include studying of fresh/ fixed pre-dissected cadaveric specimens, anatomical models, radiological studies (ultrasound/X-rays) and CT and MRI scans in parallel with transverse body sections. Moreover emphasis is given on studying *surface anatomy*, in conjunction with basic principles of physical examination. The course is complemented by Virtual Anatomy modules.

**CLINICAL TOPOGRAPHIC ANATOMY**

**HEAD AND NECK**

- Skull bones and joints. The cranial cavity. Cervical vertebrae.
- Cranial nerves.
- Cervical nerves, the brachial plexus.
- The autonomic system in the head and neck region.
- Muscles, arteries, veins and lymph drainage in the head and neck.
- The scalp (layers, vessels, lymph drainage and innervation).
- The face.
- Parts of the digestive system in the head and neck (oral cavity, tongue, palate, salivary glands, the pharynx, oesophagus).
- Parts of the respiratory system in the head and neck (nose, nasal sinuses, larynx, and trachea).
- Endocrine glands of the head and neck (pituitary gland, thyroid, parathyroids)
- The eye, the ear.
- The temporal fossa, the orbit, the infratemporal fossa, the pterygopalatine fossa, the parotid area, the mandibular joint, the submandibular area.

- Trigonues of the neck.
- Surface anatomy of the head and neck.
- The meninges, venous sinuses. Haemorrhages. The brain.

#### THORAX

- The chest wall, thoracic cavity and diaphragm. Diaphragmatic orifices. The intercostal space (clinical implications on chest drainage). The mediastinum (anatomical structures and organs). Position of the thoracic organs and their relations. Nerve supply and lymphatic's of the thorax. Clinical implications.
- The great vessels (ascending aorta, pulmonary trunk, aortic arch, brachiocephalic and subclavian arteries, superior vena cava, the azygos system).
- The axillary region. The breast. Disposition and relations on the chest wall. The mammary glands. (Blood supply, lymph drainage, clinical importance).
- Surface anatomy of the thorax. Clinical examination of the chest. Surface anatomy landmarks for the lung and heart. Position of heart valves
- Radiological anatomy of the thorax. CT/MRI scans – transverse sections. Virtual anatomy.

#### ABDOMEN

- Anatomical structures of the posterior abdominal wall. The muscles and fascias. The great vessels (aorta, vena cava). Position of the kidneys, course of the ureters. The retroperitoneal space.
- Anatomical structures of the anterior abdominal wall. The muscles and fascias. The rectus sheath. Surface anatomy and regions. Projection of viscera and organs - anatomical landmarks. The inguinal canal. Testicular descent. Inguinal hernias. Clinical diagnosis and principles of surgical corrections.

#### PELVIS & PERINEUM

- The bony pelvis, pelvic girdle (differences between male and female). The pelvic walls and fascia. The sacral plexus. The contents of the pelvis (male-female). The pelvic diaphragm and perineal body.
- Blood vessels of the pelvis (common/internal/external iliac artery-vein). Course of the pudendal neurovascular bundle, clinical implications in regional anaesthesia/trauma).
- Surface anatomy landmarks for pelvic organs –clinical examination. Clinical implications in trauma /inflammation /malignancy /extrauterine pregnancy).
- Functional anatomy (Incontinence - defaecation, urinary continence, organ prolapse, parturition).
- The perineum. The anal canal. The ischiorectal fossa and the pudendal bundle. The urogenital diaphragm. The female and male urethra. Superficial and deep perineal pouches. Surface anatomy of the perineum –anatomical landmarks. Clinical implications –surgical procedures (e.g. Episiotomy).
- Radiological anatomy of the pelvis. CT/MRI scans – transverse sections. Virtual anatomy.

## CLINICAL SYSTEMATIC ANATOMY

### RESPIRATORY SYSTEM

- The nose. The nasal cavity. The nasal sinuses (description, relations, blood & nerve supply, lymph drainage).
- The pharynx and larynx. Cartilages and fascia of the pharynx and larynx (description, relations, blood & nerve supply, lymph drainage). The vocal cords and phonation.
- The trachea, the bronchi and lungs (description, relations, blood & nerve supply, lymph drainage). Lobes and bronchopulmonary segments. The bronchial tree. The pleura and the pleural cavity (description, relations, blood & nerve supply, lymph drainage). Respiratory mechanics.

### CARDIOVASCULAR AND LYMPHATIC SYSTEM

- The pericardium: fibrous and serous pericardium, the pericardial cavity and sinuses (description, relations, blood & nerve supply, lymph drainage).
- The heart: Surfaces and borders, the chambers of the heart, the fibrous skeleton. Atria and ventricles, the ventricular septum. The conducting system – cardiac autonomic innervation. Blood & nerve supply – the coronary arteries. Clinical implications.
- Structure of the vessels (arteries, veins and lymph vessels). The microcirculation.
- Arteries: aortic arch, descending aorta, thoracic-abdominal aorta –branches. Arteries of the upper/lower limb. Arteries of the head and neck.
- Veins: the vena cava, the azygos system, veins of the upper/lower limb, veins of the head and neck. The portal venous system. Portosystemic anastomoses-clinical cases.
- The great lymph vessels. Cisterna chili- thoracic duct. Distribution of lymph nodes throughout the body. Clinical correlations.

### ENDOCRINE SYSTEM

- General principles of the endocrine system. The endocrine glands. The endocrine part of the pancreas/ovary/testis. The placenta. The thymus. Diffuse endocrine system – interrelations between the endocrine and the nervous system.
- Hypothalamus (Description and location, relations, nuclei, the hypothalamic-pituitary system).
- Pituitary gland (anterior – intermediate – posterior lobe: adenohypophysis - neurohypophysis. (Description and location, blood supply, relations, function).
- Pineal gland (epiphysis). (Description and location, blood supply, function).
- Thyroid gland. (Description and location, blood supply, function).
- Parathyroid glands. (Description and location, blood supply, function).

- Adrenal glands (cortex –medulla). (Description and location, blood supply, function).

#### DIGESTIVE SYSTEM

- The upper digestive system (buccal cavity, tongue, salivary glands, middle and lower part of the pharynx. (Description and location, blood & nerve supply, lymph drainage, function).
- The digestive system in the trunk: oesophagus, stomach, small intestine (duodenum, jejunum, ileum), large intestine (ascending /transverse /descending colon, sigmoid, rectum). The anal canal. (Description, blood & nerve supply, lymph drainage, function).
- The great glands of the digestive system (liver, pancreas).
- Clinical examples and clinical problems.

#### URINARY SYSTEM

- The kidneys (size, shape and location). The hilum. Holding of the kidneys in the retroperitoneal space – ptosis. Blood & nerve supply, lymph drainage. The pyelocalyceal system. The ureter (position, course, natural stenotic parts, the ureteropelvic junction, the vesico ureteric junction).
- The bladder. The bladder wall (detrusor), ureteral trigone, antireflux mechanisms. Blood & nerve supply, lymph drainage. Mechanism of urine storage – voiding.
- The urethra (male-female). Urethroscopy - cystoscopy (virtual endoscopy).
- Radiological anatomy (KUB, IVU, ultrasound, CT scan – correlation with transverse sections of the retroperitoneal and pelvic space).
- Clinical examples and clinical problems (trauma, inflammation, neoplasm, lithiasis, voiding dysfunction).

#### GENITAL SYSTEM (male)

- Clinical anatomy of the testis, epididymis, vas deferens. The spermatic cord. Blood & nerve supply, lymph drainage.
- Testicular descend –the undescended testis. Congenital inguinal hernia – hydrocele. The scrotum.
- The prostate gland (morphology, zonal anatomy, clinical correlation with hyperplasia – carcinoma). The seminal vesicles-ejaculatory glands –Cowper glands.
- The penis. The erectile function. Ejaculation. Disorders in erection-ejaculation. Clinical examples and clinical problems.

#### GENITAL SYSTEM (female)

- Internal genital organs: the ovaries, the fallopian tubes, the uterus, the vagina (Description, blood & nerve supply, lymph drainage, function).
- External genital organs: The outer part of the vagina, the vestibule, the vulva (Description, blood & nerve supply, lymph drainage, function). Clinical examples and clinical problems.

## LABORATORY EXERCISES

### HEAD AND NECK

- Cranial nerves (nuclei, structure, function).
- The skull – fossas – foramina.
- The skull –the brain.
- The orbit.
- The infratemporal fossa.
- The pterygopalatine fossa.
- The parotid area. The facial nerve.
- The nasal cavity, the paranasal sinuses, the larynx.
- The pharynx, the buccal cavity, the tongue, the palate.
- The mandible, the mandibular joint, the submandibular area.
- The neck (fascias, trigones).
- The eye.
- The ear.

### SYSTEMATIC AND TOPOGRAPHIC ANATOMY

- The thorax.
- The abdomen.
- The pelvis –perineum.
- The cardiovascular system.
- The respiratory system.
- The digestive system.
- The endocrine system.
- The urinary system.
- The male genital system.
- The female genital system.

### **HISTOLOGY – EMBRYOLOGY I**

#### **Hours**

#### **ECTS units**

#### **Teachers**

1<sup>st</sup> Year, 2<sup>nd</sup> Semester (Mandatory)

Teaching: 1.5 , Laboratory: 3 , Tutorials: - (per week)

4

H. Papadaki-Petrou, G. Sotiropoulou, M. Asimakopoulou, V. Bravou, D. Papachristou, S. Syggelos

#### **Description**

**HISTOLOGY –OBJECTIVES:** To lead the students to understand the microscopic structure of cells, tissue and organs and to correlate structure with function. The Knowledge of histology course is associated and integrated with study areas of Cellular and Molecular Biochemistry, Physiology and Pathology.

The histology course includes:

1. Lectures (1.30 hour/ student/ week) from faculty members with emphasis on correlations.
2. Laboratory exercises (3 hours / student / week) in small groups where students use slides of human tissue/organs stained with haematoxylin - eosin and special stain for light microscopy.

**HUMAN EMBRYOLOGY:** is the field concerned with the changes that cells, tissues, and the human body as a whole undergo from a germ cell of each parent to the resultant

practical value in helping to understand the causes of variation in Human Structure Human Gross and Microscopic Anatomy and contributes to the understanding Defects-Malformations.

The Human Embryology course includes:  
Lectures (1.30 hour / student / week) from faculty members with emphasis in clinical

### **HISTOLOGY I - Contents.**

1. Methods used in Histology.
  - Tissue Preparation.
  - Histochemistry, Immunohistochemistry.
  - Light and Electron Microscopy.
2. The cell.
  - Plasma Membrane.
  - Membranous organelles.
  - Non membranous organelles (cytoskeleton).
  - The cell nucleus.
  - Clinical Correlations.
3. Epithelial Tissue.
  - Overview of epithelial structure and function.
  - Classification of epithelium.
  - Histogenesis of epithelium.
  - Cell polarity. Apical - lateral and basal domains: Morphological and functional sp  
cell - cell and cell - ECM adhesion.
  - Basement Membrane structure and function.
  - Glands.
  - Clinical correlations.
4. Connective Tissue.
  - General structure and function.
  - Connective tissue proper. Loose and dense connective tissue.
  - Connective tissue fibers Extracellular matrix.
  - Connective tissue cells.
  - Clinical Correlations.
5. Cartilage.
  - General structure and function. Cells and extracellular matrix.
  - Hyaline cartilage.
  - Elastic cartilage.
  - Fibrocartilage.
  - Chondrogenesis and cartilage growth.
  - Cartilage repair.
  - Clinical correlations.
6. Bone.
  - Overview of bones and bone tissue.
  - General structure and function.
  - Cells of bone tissue.
  - Bone formation.

- Mineralization.
- Physiologic role in metabolism.
- Bone remodeling.
- Clinical correlations.
- 7. Adipose tissue.**
  - Overview.
  - Adipocytes differentiation, structure and function.
  - White adipose tissue function – regulation.
  - Brown adipose tissue - Structure, function, regulation.
  - Clinical correlations.
- 8. Muscle Tissue.**
  - Overview and classification of muscle.
  - Skeletal muscle - structure, types of fibers.
  - Skeletal muscle. Myofibrils and myofilaments. Sarcomeres and costameres.
  - Skeletal muscle. The contraction cycle.
  - Skeletal muscle. Motor and sensory innervation.
  - Skeletal muscle. Development, repair, healing and renewal.
  - Cardiac muscle. Structure, functional aspects, injury and repair.
  - Smooth muscle. Structure, functional aspects, Differentiation, renewal and repair
  - Clinical correlations.
- 9. Nerve Tissue.**
  - Overview of the nervous system.
  - Composition of the nerve tissue.
  - The neuron. Morphology and structure. Types, Synapses, Neurotransmitters, Axc
  - Supporting cells of the nervous system.
  - Origin of nerve tissue cells.
  - Overview of the Peripheral nervous system.
  - Peripheral nerves.
  - Spinal Cord.
  - Sensory receptors.
  - Autonomic nervous system.
  - Clinical correlations.
- 10. Cardiovascular system.**
  - Overview.
  - General features of vessels.
  - Arteries.
  - Capillaries.
  - Veins.
  - Lymphatics.
  - Arteriovenous shunts.
  - Clinical correlations.
- 11. Blood.**
  - Plasma.
  - Blood cells.

- Haemopoiesis.
- Bone Marrow.
- Clinical correlations.
- 12. Immune system and lymphatic tissue / organs.**
  - Overview - General structure and functions.
  - Immune responses.
  - Cells of the lymphatic system. Lymphocytes (Types, surface markers, development, differentiation, regulation - function), Supporting cells, Antigen - Presenting Cells
  - Lymphatic vessels.
  - Diffuse lymphatic tissue and nodules.
  - Lymph nodes.
  - Thymus.
  - Spleen.
  - Clinical Correlations.

### General Embryology - Embryology I

1. Overview of Human Embryology.
2. Molecular basis of Embryonic Development.
3. Gametogenesis. Conversion of Germ Cells Into Male and Female Gametes.
  - Primordial germ cells.
  - Mitotic divisions increase the number of primordial stem cells (mitosis).
  - Reduction of the number of chromosomes (Meiosis).
  - The biological significance of meiosis.
  - Meiosis in females and males.
  - Structural and functional maturation of gametes.
  - Spermatogenesis.
  - Spermiogenesis.
  - Activation.
  - Oogenesis.
  - Clinical correlations - Clinical problems to solve.
4. First Week of Development, Ovulation to implantation.
  - Ovarian Cycle.
  - Ovulation.
  - Oocyte Transport.
  - Fertilization.
  - Cleavage.
  - Blastocyst Formation.
  - Embryo transport.
  - Implantation.
  - Uterus at Time of Implantation.
  - Clinical correlations - Clinical problems to solve.
5. Second week of development – bilaminar Germ Disk.
  - Trophoblast has differentiated in two layers: cytotrophoblast and syncytiotrophoblast.
  - Embryoblast has differentiated into two layers: hypoblast and epiblast layer.
  - Establishment of the uteroplacental circulation and primary villi.



- Formation of extraembryonic mesoderm, connecting stalk, yolk sac, amniotic cavity.
  - Sites of blastocyst implantation.
  - Abnormal implantation sites.
  - Clinical correlations - Clinical problems to solve.
6. Third week of development: Trilaminar Germ Disk.
- Gastrulation - formation all three germ layers.
  - The formation and the role of the primitive streak and the primitive node.
  - The formation and the role of the notochord.
  - Establishment of the body axes.
  - The prechordal plate, the oropharyngeal and the cloacal membrane.
  - The allantois.
  - The formation of neural plate and the neural tube.
  - The formation of neural crest.
  - The first appearance of somites.
  - The development of intraembryonic coelom.
  - The appearance of vascular system (vasculogenesis).
  - Further development of trophoblast and the newly formed structures are known as primary and tertiary villi.
  - Clinical correlations - Clinical problems to solve.
7. Third to Eighth weeks of human development (the embryonic period organogenesis).
- Phases of embryonic development (growth, morphogenesis, differentiation).
  - Folding of the Embryo in the median plane and in the Horizontal plane.
  - Derivates of the Ectodermal Germ Layer, Derivates of the Mesodermal Germ Layer and the Endodermal Germ layer.
  - Control of embryonic development.
  - Highlights of Fourth to Eight Week.
  - Estimation of embryonic Age.
  - Clinical correlations - Clinical problems to solve.
8. Third month to birth: The fetus.
- Maturation of tissue and organs and rapid growth of the body.
  - During the third month the face becomes more human looking. Primary ossification centers are present in the long bones and skull by the 12<sup>th</sup> week. Also by the 12<sup>th</sup> week, genitalia develop to such a degree that the sex of the fetus can be determined by external genitalia.
  - During the fourth and fifth month the fetus lengthens rapidly and is covered by a fine hair called lanugo.
  - During fifth month movements of the fetus can be felt by the mother.
  - Time of Birth.
  - Premature and Post mature Fetuses.
  - Clinical correlations - Clinical problems to solve.
9. Body Cavities.
- Formation of Intraembryonic Cavity.
  - Serous Membranes.

- Diaphragm and Thoracic Cavity.
  - Formation of the Diaphragm.
  - Clinical Correlations - Clinical problems to solve.
10. Fetal Membranes and placenta.
- The formation of placenta - changes in the Trophoblast.
  - The formation of placenta - changes in the functional layer of the endometrium (decidua basalis, decidua parietalis, decidua capsularis).
  - Structure of the placenta (fetal portion - maternal portion - chorionic plate - decidua - decidua septa).
  - Circulation of the placenta - the placental membrane.
  - Function of the placenta (1. Exchange of metabolic and gaseous products between maternal and fetal bloodstreams 2. Production of hormones).
  - Amnion and umbilical cord.
  - Amniotic fluid.
  - Fetal membranes in twins.
  - Clinical Correlations - Clinical problems to solve.
11. Birth defects - congenital malformations.
- Type of abnormalities.
  - Environmental factors.
  - Genetic factors.
12. Prenatal diagnosis.
- Ultrasound.
  - Maternal serum screening.
  - Amniocentesis.
  - Chorionic villi sampling.

**HISTOLOGY –  
EMBRYOLOGY II**

2<sup>nd</sup> Year, 3<sup>rd</sup> Semester (Mandatory)

**Hours**

Teaching: 3, Laboratory: 3, Tutorials: - (per week)

**ECTS units**

5

**Teachers**

H. Papadaki-Petrou, G. Sotiropoulou, M. Asimakopoulou, V. Bravou, D. Papachristou

**Description**

**HISTOLOGY –OBJECTIVES:** To lead the students to understand the microscopic structure of tissue and organs and to correlate structure with function. The Knowledge obtained by course is associated and integrated with study areas of Cellular and Molecular Biology, Physiology and Pathology.

The histology course includes:

1. Lectures (1.30 hour/student/week) from faculty members with emphasis in clinical correlation
2. Laboratory exercises (3 hours/student/week) in small groups where students study histology of human tissue/organs stained with haematoxylin - eosin and special stains by light microscopy.

**HUMAN EMBRYOLOGY:** is the field concerned with the changes that cells, tissues, or human body as a whole undergo from a germ cell of each parent to the resulting adult. Its value in helping to understand the causes of variation in Human Structure Illuminates

and Microscopic Anatomy and contributes to the understanding of Congenital Defects-Mi

The Human Embryology course includes:

Lectures (1.30 hour/student/week) from faculty members with emphasis in clinical correl.

### HISTOLOGY II-Contents

1. Digestive system - oral cavity.
  - Overview of the digestive system.
  - Oral cavity and associated structures.
  - Tongue.
  - Teeth and supporting tissues.
  - Salivary glands.
2. Digestive system - gastrointestinal tract.
  - Overview of the gastrointestinal tract.
  - Esophagus.
  - Stomach. Gastric mucosa. Gastric glands. Epithelial cell renewal.
  - Small intestine. Structure and function. Epithelial cell renewal.
  - Large intestine. Structure and function. Epithelial cell renewal.
  - Rectum and Anal Canal.
  - Clinical correlations.
3. Digestive system - Liver, Gallbladder, Pancreas.
  - Overview.
  - Liver physiology.
  - Blood supply to the liver.
  - Structural organization of the liver. Liver lobules.
  - Hepatocytes, biliary tree, perisinusoidal space.
  - Gallbladder.
  - Pancreas. Exocrine pancreas. Duct system.
  - Pancreas. Endocrine pancreas. Pancreatic hormones - function and regulation.
  - Clinical correlations.
4. Respiratory System.
  - Overview.
  - Nasal cavities. Respiratory and olfactory epithelium.
  - Paranasal sinuses.
  - Pharynx.
  - Larynx.
  - Trachea. Respiratory epithelium, basement membrane, elastic membrane, trachealis muscle.
  - Bronchi and Bronchioles. Structure and function.
  - Alveoli. Alveolar epithelium. Surfactant. Alveolar septum and air - blood barrier.
  - Blood supply, lymphatics and nerves.
  - Clinical correlations.
5. Urinary system.
  - Overview of the urinary system.
  - General structure of the kidney. Cortex and medulla. Kidney lobes and lobules.
  - Filtration apparatus of the kidney. Renal corpuscle. Glomerular capillaries. Bowman's capsule. Podocytes. Glomerular basement membrane.
  - Mesangium.
  - Juxtaglomerular apparatus.
  - Kidney tubules. Structure and function.
  - Histophysiology of the kidney.

- Blood supply, lymphatics and nerves.
- Ureter, urinary bladder and urethra. Transitional epithelium.
- Clinical correlations.
- 6. Endocrine organs.
  - Overview of the endocrine system.
  - Hormones and their receptors. Regulation of hormone secretion.
  - Pituitary gland (hypophysis). Structure and function. Blood and nerve supply. (adenohypophysis) and posterior lobe (neurohypophysis). Hormones of the pit
  - Hypothalamus.
  - Pineal gland.
  - Thyroid gland. Thyroid follicle and follicular epithelium. Colloid. Thyroid h calcitonin - production, function and regulation.
  - Parathyroid glands. Principal and oxyphil cells. PTH function.
  - Adrenal glands. Adrenal Cortex - zonation, hormones, function and regulat medulla - cells, function and regulation. Blood supply.
- 7. Male reproductive system.
  - Overview.
  - Testis. Development. Structure and function.
  - Testis – Spermatogenesis.
  - Testis - seminiferous tubules. Sertoli cells.
  - Testis - Intratesticular ducts.
  - Excurrent duct system. Epididymid. Ductus deferens.
  - Seminal vesicles.
  - Prostate gland.
  - Penis.
  - Clinical correlations.
- 8. Female reproductive system.
  - Overview.
  - Ovary. Structure. Follicle development and ovulation, Corpus luteum. Bloo lymphatics.
  - Uterine tubes.
  - Uterus. General structure. Endometrium and cyclic changes during the me Implantation. Cervix.
  - Vagina.
  - External genitalia.
  - Mammary glands.
  - Placenta.
  - Clinical correlations.
- 9. Eye.
  - General structure of the eye. Layers, chambers and development of the eye.
  - Microscopic structure of the eye. Corneoscleral coat.
  - Microscopic structure of the eye. Vascular coat (Uvea).
  - Microscopic structure of the eye. Retina - layers, specialized regions, vessels.
  - Microscopic structure of the eye. Crystalline lens.
  - Microscopic structure of the eye. Vitreous body.
  - Microscopic structure of the eye. Accessory structures.
  - Clinical correlations.
- 10. Ear.
  - Overview.
  - External ear.
  - Middle Ear.

- Internal Ear. Bony Labyrinth, Membranous labyrinth. Sensory cells and reception, blood supply and innervation.
- Clinical correlations.

## SYSTEM BASE EMBRYOLOGY –EMBRYOLOGY II

1. Skeletal System.
  - Develops from paraxial, lateral plate mesoderm and from neural crest.
  - Paraxial mesoderm – somites.
  - Somites - sclerotome – dermatomyotome.
  - Bone formation through Intramembranous ossification and endochondral ossification.
  - Cartilage formation.
  - Development of joints (Fibrous Joints, Cartilaginous Joints, Synovial Joints), Development of the Vertebral Column, Development of ribs, Development of the Sternum, Development of the Cranium.
  - Congenital Skeletal System Defects.
  - Clinical Correlations - Clinical problems to solve.
2. Muscular System.
  - Development of Skeletal Muscle, Development of Smooth Muscle Development of Cardiac Muscle.
  - Molecular regulation of Muscle development.
  - Clinical Correlations - Clinical problems to solve.
3. Development of Limbs.
  - Early Stages of Limb development.
  - Final stages of Limb Development.
  - Cutaneous Innervation of Limbs.
  - Blood Supply of Limbs.
  - Congenital Limb Development Defects.
  - Clinical Correlations - Clinical problems to solve.
4. Cardiovascular System.
  - Formation and establishment of the Cardiogenic Field.
  - Formation and position of the Heart Tube.
  - Formation of the cardiac loop.
  - Molecular regulation of cardiac development.
  - Development of the Sinus Venosus.
  - Formation of the cardiac septa (Septum formation of the Common Atrium, Septum formation of the Atrioventricular Canal, Septum formation in the Truncus Arteriosus and Septum formation of the Ventricles).
  - Formation of Atrioventricular and Semilunar Valves.
  - Formation of the Conducting System of the Heart.
  - Vascular Development (Vasculogenesis - Angiogenesis).
  - Arterial System (Aortic Arches, Vitelline and Umbilical Arteries, Coronary Arteries).
  - Venous System (Vitelline Veins, Umbilical Veins, Cardinal Veins).
  - Clinical Correlates - Arterial System Defects.
  - Clinical Correlates - Venous System Defects.
  - Congenital Cardiovascular System Defects.
5. Respiratory System.
  - Tubulogenesis and branching Morphogenesis.
  - Formation of the Respiratory Primordium (Laryngotracheal Groove, Lung Diverticulum, Tracheoesophageal Folds, Tracheoesophageal septum, formation of the Trachea, Bronchi and Lungs).
  - Maturation of the Lungs (Pseudoglandular Period, Canalicular Period, Terminal Sac Period).

- Alveolar Period).
- Congenital Respiratory System Defects.
- Clinical Correlation - Clinical Problems to Solve.
- 6. Endocrine System Development.
  - Pharyngeal Arches and Pharyngeal Pouches.
  - Epithelial Endodermal Lining of the Pouches and their Derivates (Parathyroid Gland, Thyroid Gland).
  - The Formation of Thyroid Gland, Migration of Thyroid bud and Thyroglossal Duct
  - Ultimobranchial Bodies and Parafollicular Cells.
  - The Formation of Thymus Gland.
  - The Formation of Parathyroid Glands.
  - Congenital Endocrine System Defects.
  - Clinical Correlations - Clinical problems to solve.
  - Suprarenal Glands Development (Mesodermal Portion - Cortex and Ectodermal Medulla).
  - Fetal Cortex and Definitive Cortex.
  - Clinical Correlations - Clinical problems to solve.
  - The development of Hypophysis or Pituitary Gland (from two different parts of the Diencephalon extension the Infundibulum. Ectodermal Outpocketing of Primitive Oral Cavity: the Rathke Pouch.
  - Clinical Correlations - Clinical problems to solve.
  - The most caudal part of the Roof Plate of the Diencephalon and the development of the Pineal Gland.
  - Congenital Endocrine System Defects.
  - Clinical Correlations - Clinical problems to solve.
- 7. Digestive System Development.
  - Divisions of the Gut Tube.
  - Foregut: Esophagus, Stomach, Duodenum, Liver and Biliary Apparatus : Development.
  - Clinical Correlations - Clinical problems to solve.
  - Midgut: Derivates (Small Intestine, Cecum, Appendix, Ascending Colon and the middle two Thirds of the Transverse Colon).
  - Primary Intestinal Loop, Physiological Herniation, Rotation of Midgut, Retraction of Intestinal Loops, Mesenteries of the Intestinal Loops.
  - Clinical Correlations - Clinical problems to solve.
  - Hindgut Derivates: the Left One Third to one half of the Transverse Colon, the Right Half of the Transverse Colon, Sigmoid Colon, Rectum and Superior Part of the Anal Canal.
  - Congenital Digestive System Defects.
  - Clinical Correlations - Clinical problems to solve.
- 8. Urogenital System Development.
  - Kidney Systems Development: Pronephros, Mesonephros and Metanephros.
  - Interaction of Ureteric bud with Mesenchyma.
  - Development of Renal Pelvis and the Major and Minor Calyces.
  - The Weigert – Meyer rule - Mechanisms of Vesicoureteral reflux.
  - Bladder and Urethra Development.
  - Congenital Urinary System anomalies.
  - Gonadal Development: Comparative Embryology: Male - Female.
  - Gonadal Maturation.
  - Interaction of Gonads with the Internal Genital Organs.
  - External Genitalia Development - Influence of Hormonal Factors.
  - Congenital Urogenital System Defects.

- Clinical Correlations - Clinical problems to solve.
- 9. Head and Neck Development:
  - Pharyngeal Arches, Pharyngeal Clefts, Pharyngeal Pouches and their Derivates.
  - Facial Development.
  - Congenital Head and Neck Defects.
  - Clinical Correlations - Clinical problems to solve.
- 10. Ear Development.
  - Internal Ear Development.
  - Middle Ear Development.
  - External Ear Development.
  - Congenital Ear Defects.
  - Clinical Correlations - Clinical problems to solve.
- 11. Eye Development:
  - Optic Cup and Lens Vesicle.
  - Retina, Iris and Ciliary Body Development.
  - Lens Development.
  - Choroid, Sclera and Cornea Development.
  - Vitreous Body Development.
  - Congenital Eye Defects.
  - Clinical Correlations - Clinical problems to solve.
- 12. Central Nervous System Development.
  - Ectoderm Induction.
  - Neural Plate, Neural Folds Neural Tube.
  - Brain Development.
  - Spinal cord Development.
  - Congenital Central Nervous System Defects.
  - Clinical Correlations - Clinical problems to solve.

**NEUROANATOMY** – 2<sup>nd</sup> Year, 4<sup>th</sup> Semester (Mandatory)  
**NEUROSCIENCES** **The Neuroanatomy is half of the course of Neuroscience.**

**Hours** Teaching: 2, Laboratory/ Tutorials: 3 (student/week)

**ECTS units** 6

**Teachers** M. Assimakopoulou

**Description** **OBJECTIVES:** To provide the knowledge of functional anatomy of the Nervous System in order to understand the biological basis of Nervous System disorders. The disturbed function is explored using clinical cases ranging from simple motor and sensory dysfunctions to more complexes such as aphasias, amnesia, and agnosias.

**The course includes:**

- Lectures on understanding the neural connections and human **brain** function, with emphasis in clinical correlations.
- Laboratory exercises in small groups of students, which include gross anatomy of human brains in situ as well as study of brain models and myelin stained transverse sections of all parts of human Central Nervous System.
- Problem Based Learning (PBL) from Faculty members and experts in Neurology/Neurosurgery, in small groups of students, which includes presentation and discussion of clinical problems.

## **CONTENTS:**

### *STRUCTURE AND FUNCTION OF THE NERVOUS SYSTEM*

- **Structure of the Neuron, Glia, Organization of Nervous Tissue**
- **Structure and Function of Parts of the Nervous System** (The Spinal Cord, The Brain Stem, The Diencephalon, The Cerebrum, The Cerebellum), **The meninges**
- **Organization of the Nervous System to Longitudinal Systems and Horizontal Levels**
- **Diagnosis of Neurologic Disorders: Anatomical Localization**

### *DEVELOPMENT OF THE NERVOUS SYSTEM*

**Prenatal Development** (Neural Tube, Neural Crest, Mechanisms for establishment of specific connections, The role of microenvironment in development of the Nervous System), **Postnatal Development**

### *LONGITUDINAL SYSTEMS*

- **Sensory Systems**
  - Afferent Impulses, Properties and Classification of Receptors, The Sensory Fibers and the Dorsal Roots
  - Sensory Pathways: Somatosensory Pathways (Pathways for Pain and Temperature, Pathways for Tactile Discrimination and Conscious Proprioception, and other Ascending Somatosensory Pathways), Pathways for Unconscious Proprioception (Spinocerebellar Tracts)
  - Special Somatic Afferent Sensory Systems (The Visual System, The Auditory System, The Sense of Equilibrium), and Special Visceral Afferent Sensory Systems (The Olfactory System, Gustatory System)
- **Motor Systems**
  - Motor Neurons and Muscles, Reflexes, Muscle Tone, Injury of Peripheral Motor Neurons and Regeneration
  - The Pyramidal Tract (The Corticospinal Tract), Indirect Corticospinal Pathways
  - Motor Cortical Areas and Control of Voluntary Movements
  - Symptoms caused by interruption of Central Motor Pathways (Upper Motor Neurons)
  - Basal Ganglia (Structure, Connections, and Functions of the Basal Ganglia, Diseases of the Basal Ganglia)
  - Cerebellum (Subdivisions, Afferent and Efferent Connections, Cerebellar Functions and Symptoms in Disease)
  - Control of Eye Movements (Movements of the Eyes and the Eye Muscles, Brain Stem and Cerebellar Control of Eye Movements, Cortical Control of Eye Movements)
- **The Internal Regulation System**
  - Functional Anatomy
  - Visceral Efferent Neurons: The Sympathetic and Parasympathetic Divisions
  - Sensory Visceral Neurons and Visceral Reflexes
  - Clinical Correlations
- **The Consciousness System**
  - Functional Anatomy
  - Clinical Correlations
- **The Cerebral Ventricles and The Cerebrospinal Fluid**
- **The Blood Supply of the CNS** (Cerebral Microcirculation and the Blood-Brain Barrier, Arterial System, Venous System, Clinical Correlations)



## HORIZONTAL LEVELS

- **The Peripheral Level**
  - Objectives are included in the course of Anatomy I
- **The Spinal Level**
  - Spinal Cord Anatomy, Spinal Cord Functions
  - Spinal Reflexes
  - Clinical Correlations
- **The Posterior Fossa Level**
  - Anatomy and Functions of the Brain Stem
  - Brainstem and Cranial Nerve Nuclei
  - Anatomy and Functions of the Cerebellum
  - Auditory, and Vestibular Systems
  - Clinical Correlations
- **The Supratentorial Level**
  - Thalamus, Hypothalamus
  - Visual System
  - Telencephalon (The Cerebral Cortex: Intrinsic Organization and Connections, Functions of the Neocortex)
  - Limbic Structures and Functions
  - Clinical Correlations

### LABORATORY EXERCISES (mandatory):

1. *The Spinal Level structures:*
  - Spinal Cord: Study of anatomy (macro-microscopic)
  - Nerve roots, spinal nerves, meninges
  - Vascular supply of spinal cord
2. *The Posterior Fossa Level structures:*
  - Brain stem (medulla, pons, midbrain): Study of Anatomy (macro-microscopic)
  - Brain stem and Cranial Nerves: Study of nuclei, emerging, and function
  - Cerebellum: Study of Anatomy (macro-microscopic)
  - Vascular supply of brain stem and cerebellum
3. *The Supratentorial Level structures:*
  - Diencephalon (thalamus, hypothalamus, epithalamus, subthalamus): Study of Anatomy (macro-microscopic)
  - Cerebral hemispheres (basal ganglia, subcortical white matter, cerebral cortex): Study of Anatomy (macro-microscopic)
  - Vascular supply of diencephalon and cerebral hemispheres
4. *Regional Anatomy from a somatosensory perspective* (Spinal, Posterior Fossa, and Supratentorial Levels): Ascending Somatosensory Pathways: Dorsal Column and Spinothalamic Tract
5. *Regional Anatomy from a movement (motor) perspective* (Supratentorial, Posterior Fossa, and Spinal Levels): Descending Pathways for voluntary movement

### PBL (mandatory):

1. *Diagnosis of Neurologic Disorders and Anatomical Localization*
  - Simple Clinical Problems in order students localize the lesion.
2. *The Sensory System*
  - Clinical problems which illustrate aspects of dysfunction in the sensory system in Spinal, Posterior Fossa, and Supratentorial Levels.
3. *The Motor System* (Direct Activation System, Indirect Activation System, Final Common Pathway, and Control Circuits of the Motor System):
  - Clinical problems presenting symptoms and signs resulting from disease of each

division of the Motor System in Spinal, Posterior Fossa, and Supratentorial Levels.

4. *The Vascular System*

- Clinical problems presenting vascular lesions in each level of Organization (Spinal, Posterior Fossa, and Supratentorial Levels).

5. *A. The Vestibular System, Eye Movements, Visual System*

- Clinical problems presenting symptoms and signs indicating dysfunction of these systems, *B. The Consciousness System and Clinical Correlations.*

**PATHOBIOLOGY OF BONE TISSUE DISORDERS**

3<sup>rd</sup> Year, 5<sup>th</sup> Semester (Optional)

**Hours**

Teaching: -, Laboratory: 2, Tutorials: - (per week)

**ECTS units**

4

**Teachers**

D. Papachristou

**Description**

The aims of this Class are: a) to present the current knowledge regarding the basic molecular mechanisms that govern the normal function of bone and cartilage, b) to understand the mechanisms and signaling pathways implicated in the pathogenesis of neoplastic, degenerative, inflammatory and metabolic skeletal diseases, c) to appreciate the importance of the molecular biology and pathology of bone tissue in the modern diagnosis and novel therapeutic strategies of bone and cartilage pathologies.

**METHODOLOGY**

The students should know the structure, architecture and functional organization of bone and cartilage that have been taught during the classes "ANATOMY I" and "HISTOLOGY-EMBRYOLOGY I".

**TOPICS**

Basic principals of anatomy, histology, embryology and molecular biology of bone and cartilage.

Molecular mechanisms of membranous and endochondral ossification.

Histological, histochemical and molecular methods for the study of skeletal diseases.

Signal transduction pathways implicated in skeletal mechanosensing and mechanotransduction.

The role of microRNAs and microRNA machinery in bone and cartilage physiology and pathophysiology.

Molecular basis of fracture healing.

Molecular pathogenesis of osteoporosis and current diagnostic and therapeutic strategies.

Haematopoietic stem cells and bone: friends of foes?

Bone metastases: From cellular and molecular pathways to novel therapies.

Molecular mechanisms implicated in the pathogenesis of bone sarcomas: signaling pathways and novel therapeutic interventions.

Osteoarthritis: Signaling cascades, molecular diagnosis and current treatment.

The connection between fat and bone: Novel concepts and molecular approaches.

**CLINICAL  
NEUROANATOMY-  
MOLECULAR  
ANATOMY**

3<sup>rd</sup> Year, 5<sup>th</sup> Semester (Optional)

**Hours**

Teaching: 2 , Laboratory: - , Tutorials: - (per week)

**ECTS units**

4

**Teachers**

H. Papadaki-Petrou, V. Bravou

**Description**

**Molecular Anatomy: Objectives and goals**

1. The systematic presentation of the normal molecular profile of human cells/tissues and organs during embryogenesis and adult life and the integration of knowledge regarding the structure/composition of the human body in the macroscopic, microscopic, ultrastructural and molecular level.
2. Linking the knowledge of the macroscopic, microscopic and molecular anatomy with physiology and pathology of human diseases leading thus to the better understanding of pathophysiology, pathogenesis, microscopic, ultrastructural and molecular alterations of common and important human diseases.

**Clinical Neuroanatomy: Objectives and goals**

Linking macroscopic anatomy of the Nervous System with the pathophysiology, clinical presentation and molecular pathogenesis of common neurological and psychiatric diseases.

**Course detailed description-Contents**

The two hours weekly course of Molecular Anatomy-Clinical Neuroanatomy includes lectures from faculty members' coordinators and invited speakers and scientific presentations by the students (small projects/small working groups) and practice in methods commonly applied to human tissue material.

**Molecular Anatomy contents**

1. Molecular Developmental Anatomy-Study of the molecular profile of cells and tissues in the human embryo during histogenesis/organogenesis -Correlation with developmental and adult human diseases.
2. Molecular Anatomy of human cells/tissues and organs. Integration of knowledge regarding the structure/composition of the adult human body in the macroscopic, microscopic ultrastructural and molecular level. Association of normal molecular anatomy with pathophysiology, pathogenesis, microscopic, ultrastructural and molecular alterations of common and important human diseases. For example:
  - Molecular anatomy of epithelial tissue-Human disorders of tight junctions, desmosomes, adherence junctions, gap junctions, human disorders of cilia etc
  - Molecular Anatomy of mesenchymal tissue- EMT, fibrosis and cancer
  - Molecular anatomy of muscle tissue-Cardiomyopathies, myopathies etc
  - Molecular Anatomy of adipose tissue-Obesity and metabolic syndrome
  - Molecular Anatomy of bone and cartilage-Osteoporosis-Bone metastasis-osteoarthritis
  - Molecular Anatomy of the urinary system-Glomerulopathies-Polycystic kidney disease

- Molecular anatomy of the Respiratory System-Obstructive pulmonary disease, Lung fibrosis, Lung Cancer
- Molecular Anatomy of the Liver and Pancreas-Cirrhosis, Liver and Pancreatic Cancer
- Molecular Anatomy of the Digestive Tract-Malabsorption, gastritis, colon cancer
- Molecular Anatomy of the cardiovascular system-Hypertension, atherosclerosis, angiogenesis-lymphangiogenesis and cancer

### **Clinical Neuroanatomy Contents**

Neuroanatomical and molecular basis of: psychiatric diseases (depression, schizophrenia), stress, fear, anxiety, addiction, autism, intracranial hypertension and brain edema, brain trauma, brain vascular disease, neurodegenerative diseases (Alzheimer, Parkinson, ALS), demyelinating diseases (Multiple sclerosis), tumors of the CNS

## DEPARTMENT OF PHYSIOLOGY

**Address** Preclinical Research Building  
University Campus (Rio) Patra  
Tel.: 2610- 999155, Fax: 2610-997215

### **LABORATORY STAFF**

**Director** Prof. George Kostopoulos

**Professors** Fevrionia Aggelatou, Adamantia Mitsacou

**Associate Professors** Konstantinos Papatheodoropoulos, Stavros Taraviras

**Assistant Professors** Georgia Voukelatou, Georgios Stathopoulos

**Lecturers** -

**Supporting Teaching** -

**and Technical Staff**

**\*Participating in Integration I**

The courses of Physiology aim to teach the medical students about the physiological functions of the human body and the effects that changes in the external environment have, in these functions.

**PHYSIOLOGY I**1<sup>st</sup> Year, 2<sup>nd</sup> Semester (mandatory)**Hours**

Teaching: 3, Laboratory: 3, Tutorial: - (per week)

**ECTS Units**

6

**Teachers**

G. Voukelatou, F. Aggelatou, G. Stathopoulos, K. Papatheodoropoulos

**Description****General Physiology**

Functional organization of the human body and control of its internal environment. The cell and its function. Transport through the cell membrane. Sodium – Potassium Pump. Transmembrane potential. Distribution and composition of the liquid of the body.

**Blood Physiology**

Erythrocytes, leukocytes and resistance to infection. Immunity, allergy, blood types, blood transfusion and transplantation. Plasma function. Blood haemostasis and coagulation, anticoagulants. Physiology of the circulatory system. Physiology of heart stimulation. Function of the nervous system. Normal and pathological electrocardiogram. Cardiac arrhythmia, occurrence mechanisms. Physiology of the cardiac contractile. Stroke volume and blood volume per minute. Setting of the contraction volume of the heart (action of the autonomic nervous system, Starling's law, effect of ions, drugs, temperature, frequency of injuries etc). Phlebogram. Cardiac sounds. Dynamics of the blood flow. Systemic and pulmonary circulation. Blood flow in arteries. Blood pressure. Blood flow in arterioles and capillaries. Lymphatic system. Edema. Control of the local and tissue blood flow through tissues. Neural and chemical regulation. Short-term control of the mean blood pressure. Neural reflexes and hormonal mechanisms for rapid control of blood pressure. Long-term control of the mean blood pressure. Hypertension. Coronary blood flow, myocardial infarction, heart failure. Blood flow during upright posture. Influence of gravity. Blood flow during exercise. Brain, splanchnic, skin blood flow. Circulatory collapse.

**Physiology of the respiratory system**

Mechanics of the respiratory movements. Pulmonary compliance. Surface tension of the alveoli. Respiratory volumes. Respiratory gases exchange. Respiratory gases transportation. Haemoglobin function. Regulation of the respiratory function. Lung failure.

**Laboratories**

1. Red and white blood cells countdown. Leukocyte type. Erythrocyte sedimentation rate. Blood types and Rhesus. Flow and coagulation time countdown.
2. Accomplishment and interpretation of a normal and pathological electrocardiogram. Calculation of the mean electric axis.
3. Measurement of the respiratory volumes and blood pressure.
4. Tutorial for the pathophysiology of the circulatory collapse.

**PHYSIOLOGY II**2<sup>nd</sup> Year, 3<sup>rd</sup> Semester (mandatory)**Hours**

Teaching: 5, Laboratory: 3, Tutorials: - (per week)

**ECTS Units**

8

**Teachers**

G. Voukelatou, F. Aggelatou, A. Mitsakou, S. Taraviras, K. Papatheodoropoulos

## **Description**

### **Physiology of the urinary system**

Functional anatomy of kidneys. Blood flow through kidneys. Production of initial filtrate. Renal tubules function. Reabsorption and secretion of different substances in different parts of the tubules. Plasma clearance. Mechanism of dilution and concentration in kidneys, mechanism of function of vasopressin. Sodium-Potassium excretion, aldosterone action. Volume of excreted fluids. Glomerular filtration rate and blood flow self-regulation, the role of the renin-angiotensin system. Body fluids and their ingredients regulation through kidneys and the mechanism of thirst. The involvement of the kidneys in acid-base balance regulation. Renal disease - Renal failure. Urination. Diuretics.

### **Physiology of the endocrine and the reproductive systems.**

General principles for the mechanism of action of hormones. Pituitary, anterior and posterior lobe physiology and their connection to the hypothalamus. Growth hormone – Pathophysiology of diseases related to the growth hormone. Physiology of thyroid gland – Pathophysiology. Physiology of the endocrine pancreas. Blood glucose regulation – Diabetes. Adrenocortical physiology and pathophysiology. Calcium hormonal regulation – Parathormone – Calcitonin. Physiology of male and female reproductive system - Contraception. Milk production and secretion.

### **Physiology of the digestive system**

- Gastrointestinal tract organization and movement
- Gastric function
- Nutrients digestion and absorption
- Transport of fluids and electrolytes in the intestine
- Structure and function of pancreatic glands, salivary glands, liver and biliary system related to the function of the gastrointestinal system.

### **Laboratories**

1. Tutorial for the regulation of the acid – base balance in body fluids
2. Tutorial for the autonomous nervous system
3. Tutorial for the pathophysiology of the Nephrotic syndrome (solving clinical problem)
4. Tutorial for the pathophysiology of the Cushing syndrome (solving clinical problem)
5. Diarrhea caused by Vibrio cholera infection (solving clinical problem)

<b>NEUROPHYSIOLOGY - NEUROSCIENCE</b>	2 <sup>nd</sup> Year, 4 <sup>th</sup> Semester (mandatory) <b>The Neurophysiology is half of the course of Neuroscience.</b>
<b>Hours</b>	Teaching: 2, Laboratories/Tutorials: 3 (per week)
<b>ECTS Units</b>	6
<b>Teachers</b>	G. Kostopoulos, C. Papatheodoropoulos (Teaching) G. Kostopoulos, C. Papatheodoropoulos, S. Taraviras (Laboratories/Tutorials)

**Description**

**NEUROPHYSIOLOGY**

Neuronal excitability and action potential conduction. Electrical and chemical synaptic communication between neuronal cells. Properties and stages of the chemical synaptic transmission. Synaptic transmission at the skeletal neuromuscular junction. Toxines and drugs that affect transmission at the neuromuscular junction. Myasthenia gravis. Synaptic transmission at the Central Nervous System (CNS). Properties of the synaptic transmission at the CNS and differences from the transmission at the neuromuscular junction. Direct and indirect synaptic transmission. Neurotransmitter systems of the brain. Aminoacids, Achetylcholine, Biogenic Amines, Neuropeptides. Neurotransmitter receptors. Fast and slow actions of the neurotransmitters in the CNS. Synaptic integration. Presynaptic inhibition. Synaptic plasticity. Classic examples of neuronal cell pathophysiology. Sensation and sensory processing. Properties of the sensory receptors. Sensory transduction. Exteroceptive and interoceptive sensation. Pain, Nociceptors, Hyperalgesia, Sensitization, Mechanisms of pain modulation. Lower motoneuron circuits. Reflexes, Myotatic and other spinal cord reflexes. Superspinal control of reflexes. Upper motor neuron control. Modulation of movement by the pyramidal and extrapyramidal system and the cerebellum. Control of posture. Vestibular system. Vision, the auditory system, the chemical senses. Reticular formation, sleep and wakefulness, dreams. Electroencephalography. Limbic system. Higher brain functions, learning and memory, lateralization. Hypothalamus, pituitary gland. Cerebrospinal fluid. Blood-brain barrier.

**Laboratories/Tutorials (mandatory)**

1. Compound action potential (CAP) in the peripheral nerve: Physiology, Methodology, Pathology.  
Mechanism of generation of CAP. Differences between CAP and action potential recorded from a single neuron. Characteristics and properties of CAP. Clinical methods of peripheral nerve stimulation and recording of CAP. Conduction velocity of CAP. The role of the myelin in conduction velocity. Computation of conduction velocity and neuronal excitability. Pathology of the peripheral nerve. Diagnostic value of the characteristics of CAP.
2. Neural stem cells.  
Physiology of stem cells during embryogenesis and adult life. The role of stem cells in the tissue and organ homeostasis with emphasis to neural stem cells. Therapeutic perspectives of the regenerative medicine with emphasis to the usage of neural stem cells in the neurogenerative diseases.
3. Demonstration of electroencephalography (optional).





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<b>NEUROBIOLOGY OF MNEMONIC FUNCTIONS</b>	3 <sup>rd</sup> Year, 5 <sup>th</sup> Semester (mandatory)
<b>Hours</b>	Teaching: 2, Laboratories/Tutorials: - (per week)
<b>ECTS Units</b>	4
<b>Teachers</b>	C. Papatheodoropoulos

**Description**

Memory is one of the most important brain functions, encountered in almost every aspect of the human behavior. Its implication extends from the every-day life effectiveness to the organization and maintenance of the personality. Memory is a complex function that presumably engages the whole brain. Memory processes can be affected in several pathological conditions of the brain, including Alzheimer disease, anxiety, depression, epilepsy etc. During the last years the amount of experimental data has been grown exponentially. These data includes results on every level of nervous system organization including the molecular, cellular and behavioral level. The discussions during this course aim to help students in constructing a mental framework about memory functions based on categorizations, information on the main memory processes and inter-level relationships.

In the present course the following themes are discussed: Definitions and classifications in learning and memory. Categories of learning and memory. Duration of stages of memory. Working memory. Types of long-term memory. Declarative and non declarative learning and memory. Episodic memory. Memory systems. Short-term and long-term memory and memory consolidation. Cellular and system memory consolidation. Animal models in the study of memory. Fundamental cellular mechanisms underlying the memory function. Synaptic plasticity and memory functions. The paradigm of long-term potentiation. The principles in the short-term and long-term synaptic plasticity. Sleep and memory function. Memory impairment during aging. Neurobiology of aging – general principles. Brain pathology and Alzheimer disease. Stress, emotions and modulation of memory processes. Addiction – principles.

Student evaluation is based on a write essay or an oral presentation, at the end of the semester.

**PHYSIOLOGY AND  
STEM CELLS BIOLOGY-  
APPLICATIONS IN  
REGENERATIVE  
MEDICINE**

3<sup>rd</sup> Year, 5<sup>th</sup> Semester (mandatory)

**Hours**

Teaching: 2, Laboratories:- , Tutorials:- (per week)

**ECTS Units**

4

**Teachers**

S. Taraviras

**Description**

Recent scientific data resulting: from the study of embryonic stem cells, from the identification of embryonic stem cells in tissues and organs from adults and from the discovery of the induced stem cells highlight the important role of stem cells in understanding normal and pathological functions of the humans. In the same time the progress in understanding the function of stem cells leads to the development of new strategies which will be used in disease treatment. This lesson aims to expand the undergraduate student's knowledge and to incorporate the knowledge as for the physiology and the biology of stem cells in the maintenance of homeostasis of the organism, in human pathogenesis and in the development of new therapeutic strategies which are based on cell replacement.

In this course the following topics are developed:

- Stem cells populations in humans
- Biological features of stem cells
- Molecular signaling pathways that contribute to the self-regeneration and differentiation of stem cells
- Cancer stem cells
- Induced stem cells
- Use of stem cells in Regenerative Medicine

## DEPARTMENT OF GENERAL PHARMACOLOGY

**Address** Preclinical Research Building  
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### LABORATORY STAFF

**Director** Prof. Kyriakos Kypreos

**Associate Professors** Nikolaos Tsopanoglou

**Assistant Professors** Georgios Panagiotakopoulos

**Lecturers** -

**Supporting research and  
Technical Staff** -

**\* Part of Bioethics course in the 3<sup>rd</sup> year.**

The Pharmacology course is developed gradually in two semesters: The first one (Pharmacology I) includes the Basic Pharmacology and Clinical Pharmacology data and the second one (Pharmacology II) the Systemic Pharmacology as follows:

### PHARMACOLOGY I

**Hours**

**ECTS Units**

**Teachers**

2<sup>nd</sup> Year, 4<sup>th</sup> Semester (mandatory)

Teaching: 3, Laboratories: 2, Tutorials:- (per week)

6

N. Tsopanoglou, K. Kypreos, G. Panagiotakopoulos

### Description

#### **Pharmacodynamics - Pharmacokinetics**

The way of drug action in the body. Principles of dose and effect relationship of drugs. General principles of the drugs permeability through biological barriers. Mechanism and absorption, distribution, protein binding and drug elimination kinetics. Biotransformation. Time and duration of drug action. Models of Pharmacokinetics.

#### **Clinical pharmacokinetics and clinical pharmacology principles**

Design and optimization of regimens dosage. Variability in drug response (the genetic base of the variability, drugs in extreme ages, the disease as a factor of variability, pregnancy as a factor of variability, drugs interactions).

Therapeutic drug monitoring. Drugs side effects – pharmacovigilance.

Pharmacoeconomics. Introduction of new drugs and clinical trials. Recipes indication. Addiction and drug abuse. Drug resistance.

#### **Peripheral chemical mediation**

The peripheral chemical mediation like a target for pharmacological interventions. (Eicosanoids/ non steroid anti-inflammatory drugs, renin-angiotensin system. Kininogens and kinines. Peptidergic mechanisms. Mechanisms that are related to NO. Histaminergic mechanisms. Purinergic mechanisms, serotonergic mechanisms). Endocannabinoid system.

### **Autonomous nervous system drugs**

General principles. Parasympathomimetics. Parasympatholytics. Sympathomimetics. Inhibitors against  $\alpha$ - and  $\beta$ -adrenergic receptors. Sympatholytics. Sympatholytics acting at presynaptic sites. Ganglion injuries. Inhibitors of neuromuscular synapse.

#### **PHARMACOLOGY II**

3<sup>rd</sup> Year, 5<sup>th</sup> Semester (mandatory)

#### **Hours**

Teaching: 3, Laboratories: 2, Tutorial:- (per week)

#### **ECTS Units**

6

#### **Teachers**

N. Tsopanoglou, K. Kypreos

#### **Description**

The purpose of this course is to understand the way in which drug action in individual positions is completed in organs and organic systems. Specifically, it is tried to be demonstrated that the final drug action in organs is component of direct pharmacological actions and compensatory mechanisms (neural and hormonal) which are motivated to restore the pharmacologically disturbed homeostasis. Moreover, it is tried to be demonstrated that the convergence of different positions of drug action in the same organ or functional system implies the ability to bring off a specific therapeutic effect either with the use of alternative pharmacological intervention or with the activation of cumulative/synergistic action between different drugs. Also, it is tried to be understood, based on the above, that therapeutic drug groups consist of drugs with different ways of action. Finally, it is tried to be highlighted that the deviant distribution of the same position of action of the drug in different organs results in adverse actions during the drug application.

- Pharmacology of the central nervous system: Neurotransmitter systems in the CNS as pharmacological intervention targets. Neurotransmitter systems interactions – Pharmacology of neurodegenerative diseases (Parkinson disease, Huntington disease, Alzheimer disease, amyotrophic lateral sclerosis). Anxiolytics and hypnotics. Antidepressants. Anticonvulsants and centrally acting muscle relaxants. CNS stimulants and antipsychosis drugs. Opioid analgesics. Addiction, dependence and drugs abuse. General anesthetics. Local anesthetics.
- Cardiovascular system drugs: Antihypertensive drugs. Pharmacological treatment of heart failure. Antiarrhythmics. Drugs against myocardial ischemia. Anticoagulants. Diuretics and drugs that alter the pH of the urine. Antihyperlipidemics.
- Respiratory system drugs: Bronchodilators. Anti-cough drugs. Expectorants.
- Gastrointestinal system drugs: Drugs that inhibit gastric secretion. Cytoprotective of the gastric mucosa. Drugs that modulate gastrointestinal motility (antidiarrheals, laxatives etc). Emetics-antiemetics. Medications for inflammatory bowel disease.
- Drugs that affect the metabolism and function of the endocrine glands: Hormones as medicines. Pharmacology of the hypothalamus, anterior and posterior pituitary. Medications for thyroid disease (anti-thyroid, thyroid hormones). Antidiabetic. Drugs that affect the calcification of bone and calcium homeostasis (calcitonin,

parathyroid hormone, vitamin D, bisphosphonates). Adrenocortical steroids as drugs. Sex hormones (replacement therapies, birth control drugs, abortion, anti-androgens and anti-oestrogens as antitumor). Haematopoietic growth factors and vitamins as medicines. Medicines for hyperuricemia.

- Chemotherapeutic drugs: Molecular basis of chemotherapy.
- Antibacterials: Folic acid antagonists (sulfonamides, trimethoprim). Beta-lactams (penicillins, cephalosporins, carbapenem and monobactam). Inhibitors of protein synthesis (aminoglycosides, macrolides, tetracyclines, chloramphenicol, etc). Antibacterials that affect topoisomerase II (fluoroquinolones). Various antibacterial. Chemotherapy for specific infections (tubercle bacillus medication, Antifungals. Antimalarial, anthelmintics. Antiviral chemotherapeutic. Anticancer chemotherapy (alkylating agents, antimetabolites, cytotoxic antibiotics, plant derivatives, hormonal anticancer). Immunomodulators. Toxicology and common poison treatment.

**PHARMACOGENOMICS** 3<sup>rd</sup> Year, 5<sup>th</sup> Semester (elective)

**Hours** Teaching:-, Laboratories: 2, Tutorial:- (per week )

**ECTS Units** 4

**Teachers** K. Kypreos

**Description** The purpose of this course is to study the way in which the genotype determines the response to drugs, how drugs alter gene expression and also how they can be used for individualization of drug therapy and innovative product development.

More specific topics are:

- Phenotype, genotype, haplotype
- Genetic polymorphisms
- Frequency of alleles - Law of Hardy & Weinberg
- Genetic polymorphisms and pharmacological response
- Studies of genotype / phenotype correlation
- Whole genome strategies
- Candidate gene approaches
- SNPs mapping as a base for the study of correlation and as a tool for individualizing therapy
- Toxicogenomics
- Implications of pharmacogenomics to the development of new drugs

**BIOETHICS** 3<sup>rd</sup> Year, 5<sup>th</sup> Semester (mandatory)

**Hours** Teaching: 1 , Laboratories:- , Tutorial: 2 (per week)

**ECTS Units** 3

**Teachers** M. Anthrakopoulos, G. Antonakis, D. Goumenos, F. Gourzis, C. Gogos, C. Lampropoulou-Karatza, C. Kalofonos, M. Maragkos, F. Paliogianni, H. Panagiotopoulos, P. Perimenis, M. Stauroopoulos

**Description** The course of Bioethics includes a general and a specific section. In the general section the concepts and principles of bioethics are described and the context

of bioethical considerations is analyzed as plot of legal, ethical, philosophical and biomedical components. Also the historical development of ethical consideration in comparison with contemporary bioethics problematic is considered. In the specific section the application of the principles of bioethics is analyzed and topics as follows:

- Assisted reproduction
  - *In vitro* fertilization and other reproductive technologies.
  - Banks for storage and use of gametes and embryos.
  - Pre-implantation genetic diagnosis. Sex selection. Surrogate motherhood.
- Check on fertility and reproduction
  - Contraception, sterilization, abortion. The rights of fetus.
- The management of the dead body and organ donation
  - Autopsy, consent and postmortem examination.
  - Posthumous DNA Testing.
  - Consent for donation of organs and tissues for education and research.
  - Brain death, organ donation and transplantation.
- Provision of medical devices and pharmaceutical therapy
  - Medicalization, lifestyle drugs.
  - Conflict of interest and medical treatment.
  - Overlapping (shared) prescribing.
  - Distant prescribing.
  - New costly drugs, treatment costs, pharmacogenetics.
- Bioethical problems in Intensive Care Units
  - Euthanasia and physician-assisted suicide.
  - The problem of medical prosthesis as for near-death medical decisions.
  - Withdrawal versus retention of the treatment, treatment refusal.
- Care of the terminally ill patients
  - Quality of life. Philosophy and principles of palliative care.
  - The role of the will of the patient.
  - Patients competent for decisions.
  - Adults incompetent for decisions / children.
- Medical records
  - Registration, transfer, storage and access to medical data. Patient consent.
  - Confidentiality and responsibility.
- Doctor –patient relationship
  - Patient –physician contact.
  - The therapeutic importance of the relationship between the patient and the physician and the medical team.
  - Balancing patient autonomy with that of the physician.
  - Doctor selection.
  - Informing the patients and relatives for unfavorable diagnosis.
- Bioethics of medical research
  - Special research fields. Research in fetal tissues or materials (embryos, embryonic stem cells).
  - Research in autopsy material.
  - Clinical trials, confidentiality and archive-based research, publishing results.
- Emergency care
  - The question of saving a patient that attempts to suicide.

- Stated refusal for treatment by the patient in emergency medicine.
- Genetic engineering
  - Specificity of bioethical questions arising from the application of genetic (familial character, ability of irreversible modification of genetic makeup). Predisposition testing.
  - Problems of implementation of Genetic Engineering in diagnosis and treatment. Predictive testing.
  - Pre-symptomatic testing.
  - Controversial uses of genetic information:
    - Genetics and Insurance
    - Genetics and Professional Experience
    - Paternity testing
  - Gene therapy in somatic and germline cells – Cloning.



# DIVISION OF CLINICAL LABORATORIES

## DEPARTMENT OF RADIOLOGY

**Address** University Hospital of Patras, 2<sup>nd</sup> floor  
Tel: 2610-993987, 2610-999216, 2610-993988 Fax: 2610-993987

### LABORATORY STAFF

**Director** Professor Theodoros Petsas

**Professors** Dimitrios Kardamakis

**Associate Professors** A. Solomou, D. Karnabatidis

**Assistant Professors** X. Kalogeropoulou, P. Zabakis

**Lecturers** -

**Supporting research and Technical Staff** Ourania Nikolopoulou, Dimitra Stamatopoulou

**\*Part of Integration I**

**INTRODUCTION TO RADIOLOGY** 3<sup>rd</sup> Year, 6<sup>th</sup> Semester – Integration I (mandatory).

**Hours** Teaching: 25, Laboratories: -, Tutorials: -, Clinical training: -.

**ECTS Units** 2

**RADIOLOGY** 4<sup>th</sup> Year, 8<sup>th</sup> Semester (mandatory).

**Hours** Teaching: 75, Laboratories: -, Tutorials: -, Clinical training: 75(15/student).

**ECTS Units** 5

**Teachers** D. Kardamakis, T. Petsas, A. Solomou, C. Kalogeropoulou, D. Karnabatidis, P. Zabakis

**Description** The aim of this training module is the knowledge of basic principles and the understanding of the applications of radiology in the diagnostic and therapeutic management of patients both in the hospital, and within the primary care.

The teaching modules include:

- Principles of Nuclear and Radiation Physics.
- Operation of radiographers.
- Principles of radiology with emphasis on the mechanisms of cell death, apoptosis and on the ways to protect the cell.
- Principles of radiation protection in radiology and radiotherapy – current legislation.
- Organs and systems Radioanatomy.
- Hierarchy of imaging examinations per organ and system.

- Teaching of pathological findings in radiological examinations system: Chest – Digestive system – Cardiovascular – Skeleton and soft tissue – Urinary – Reproductive system.
- Differential diagnosis of major diseases.
- Understanding of the relationship between history, physical examination findings and radiological examinations.
- Frequent malignant disease radiotherapy. Side effects.

Upon completion of the section of Radiology, the student should have acquired knowledge and skills that will ensure fluency in the following:

- How to perform radiographic examinations.
- Prioritizing radiological examinations per organ and disease.
- The main pathological findings for each disease.
- The dangers of reckless referral for radiological examinations.
- The indications, the way to perform and side effects of radiotherapy.

**RADIOBIOLOGY -  
RADIOTHERAPY**

**Hours**

**ECTS Units**

**Teachers**

6<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (elective).

Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 25.

4

D. Kardamakis

**Description**

The aim of this course is to present the main mechanisms of action of ionizing radiation in cells and organisms, and methods of protection against the use of ionizing radiation in medicine.

The course includes:

- The action of ionizing radiation on cell.
- Repair of radiation injury.
- Radiosensitivity of normal tissues and tumors.
- Radiosensitising and Radioprotective substances.
- Applications of radiobiology in radiotherapy.
- Radiation protection.

## DEPARTMENT OF MICROBIOLOGY

- Address**
- Preclinical Research Building – University of Patras campus (Rion)  
Tel. 2610-997632, 2610-996111
  - University Hospital of Patras, 2<sup>nd</sup> floor  
Tel. 2610-999660, 2610-999661, 2610-993978, Fax: 994.922

### LABORATORY STAFF

**Director** Professor Evaggelos Anastasiou

**Professors** Iris Spiliopoulou – Sdougou, Fotini Paliogianni

**Associate Professors** Mirto Christofidou

**Assistant Professors** Fevronia Kolonitsiou

**Lecturers** -

**Supporting research and Technical Staff** A. Xatzioglou, M. Antoniou

**Administrative Staff** K. Ioannou

**\*Part of «Bioethics» course in the 3<sup>rd</sup> year**

**MICROBIOLOGY I** 2<sup>nd</sup> Year, 4<sup>th</sup> Semester (mandatory)

**Hours** Teaching: 5, Laboratories: 3, Tutorial: -, Clinical training: - (per week).

**ECTS Units** 6

**Teachers** E. Anastasiou, I. Spiliopoulou – Sdougou, F. Paliogianni, M. Xristofidou, F. Kolonitsiou.

**Laboratories** E. Anastasiou, I. Spiliopoulou – Sdougou, F. Paliogianni, M. Xristofidou, F. Kolonitsiou.

### **Elements of General Microbiology**

The following chapters are developed: General properties of microorganisms, cytology of prokaryotic cells, nomenclature and classification of bacteria, bacterial growth, and metabolism of bacteria. Genetics of Bacteria: plasmids, phages, transposons, gene transfer in bacteria. General properties of fungi, parasites and viruses, environmental influences on bacteria, chemotherapeutic against infections.

During laboratory exercises microbiological techniques are developed: Gram stain, Ziehl-Neelsen. Identification of bacteria through biochemical tests, sensitivity tests for chemotherapeutics.

### **Elements of Immunology**

The following chapters are developed: Antigens - Immunogens - Haptens. Antibodies - Immunoglobulins, structure and biological properties. Genetic of immunoglobulins. Supplement chemical composition and biological properties. Phagocytosis - disorder of phagocytes system. Cytokines. Monocytokines, Lymphocytokines. Anatomical organization of the immune system: cells - tissues. Cellular basis of the immune response. Major cell populations: B-lymphocytes, B-lymphocytes functions. Principles of humoral immunity: Role of T-lymphocytes in the humoral immunity - Mechanisms of positive and negative regulation - B-lymphocyte memory. Major histocompatibility system: Genes - molecules - functions. T-lymphocytes. Subpopulations of CD4 + / CD8 +, Th1, Th2 - functions.

Mechanisms of cytolysis: cytotoxic lymphocytes, NK-cells. Macrophages - ontogeny - receptors - functions in preimmune and immune phase. Experimental models – hypersensitivity clinical entities. I, II, III, IV. Congenital and acquired immunodeficiencies. Primary deficits in function B and T lymphocytes. Combined immunodeficiencies. Cell abnormalities in nonspecific immunity. Acquired immunodeficiencies. Immunization. Active - Passive immunization. Clinical applications. Contamination and infection. Microbes as causes of disease, methods of transmission.

**Developed during the laboratory exercises:** *In vitro* interaction of antigen - antibody within the diagnosis of infectious / autoimmune diseases - Principles and applications of techniques: Agglutination, Immunoprecipitation, Immunoelectrophoresis, Nephelometry, Immunofluorescence - ELISA.

**MICROBIOLOGY II**

3<sup>rd</sup> Year, 5<sup>th</sup> Semester (mandatory).

**Hours**

Teaching: 6, Laboratories: 3, Tutorial: -, Clinical training: - (per week).

**ECTS Units**

6

**Teachers**

E. Anastasiou, I. Spiliopoulou – Sdougou, F. Paliogianni, M. Xristofidou, F. Kolonitsiou.

**Laboratories**

E. Anastasiou, I. Spiliopoulou – Sdougou, F. Paliogianni, M. Xristofidou, F. Kolonitsiou.

**Clinical Bacteriology-  
Clinical Virology-Clinical  
Mycology- Clinical  
Parasitology**

During the course of Clinical Bacteriology are developed infections from: Gram (+) cocci: staphylococci, streptococci. Gram (+) bacteria: Corynebacteria, Listeria, bacilli, clostridia. Gram (-) cocci: meningococcus, gonococcus. Gram (-) bacteria: pseudomonas, brucella, bornteteles, Enterobacteriaceae, vibrios, haemophilia. Spirochetes: Treponema pale, Borrelia, leptospire. Spiral: Campylobacter. Mycobacteria: Mycobacterium tuberculosis, Mycobacterium leprae. Actinomycetes. Nocardies. Rickettsiae. Chlamydia. Mycoplasma.

During the courses of Clinical Virology are developed infections caused by RNA and DNA viruses, namely: RNA viruses: picornavirus: Enteroviruses (polioviruses, viruses Coxsackie A & B, viruses ECHO, enteroviruses 68-71) and rhinoviruses. Reovirus: Reo-viruses, Rota-viruses. Toga-viruses: rubella virus. Orthomyxoviruses: influenza viruses. Paramyxoviruses: mumps virus, measles virus, paramyxoviruses 1, 2, 3 and 4, respiratory syncytial virus. Baculoviruses: Rabies virus. Retroviruses: HTLV I & II, HIV. DNA viruses: Papovavirus: human papilloma viruses. Adenoviruses, Herpes: Types 1-8. Varicella-zoster. Cytomegalovirus (CMV). Virus Epstein-Barr (EBV). Specific groups of viruses: Arboviruses. Hepatitis viruses: HAV, HBV, HCV, HDV, HEV, GBV-G or HGV. Slow viruses.

Developed during the course of Clinical Mycology: Introduction to Clinical Mycology - characteristic properties of fungi, pathogenic for humans' fungi, human mycosis pathogenesis, clinical and laboratory diagnosis of mycosis. Superficial fungal infections (infections pathogenesis, clinical manifestations, laboratory diagnosis) - Dermatophytes: microspores, trichophyta, epidermophyta - Superficial fungal infections caused by other fungi: Malassezia furfur, Candida, Aspergillus. Subcutaneous tissue mycosis (causes and pathogenesis). Systemic fungal infections (causes and pathogenesis). Opportunistic fungal infections: Genus Candida - C. albicans, Genus Cryptococcus - C. neoformans.

In the laboratory, techniques directed to the isolation and identification of microorganisms from blood, urine, cerebrospinal fluid, upper and lower

respiratory tract and feces cultures, are developed.

**MICROBIOLOGY- CLINICAL** 6<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (elective).

**TRAINING**

**Hours** Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35 (The clinical training takes place with 3-4 students groups, in the morning on working days in the hospital laboratoty for 3 weeks).

**ECTS Units** 4

**Description** Basic methods used in a clinical laboratory are analyzed to the students and they are given the chance to perform on their own the most common methods in the laboratory of the hospital that are useful for any physician regardless of the specialty that he/she will exersice, and they have also the opportunity to evaluate the results.

## DEPARTMENT OF PATHOLOGY

**Address** University Hospital of Patras, 2<sup>nd</sup> floor.  
Tel. 2610-999653, 2610-999645, 2610-991810 Fax: 2610-991810

### **LABORATORY STAFF**

**Director** Professor Chrysoula Scopa

**Professors** -

**Associate Professors** Maria Melaxrinou, Vassiliki Zolota

**Assistant Professors** Athanasios Tsamandas, Eleni Kourea

**Lecturers** -

**Teacher 407/80** -

**Supporting research and Technical Staff** Katerina Zografaki, Vasiliki Poludorou, Aikaterini Vourda

### **\*Part of Integration I and II**

### **Description**

Pathology is the link between basic science and clinical medicine. It deals with the pathogenesis and the nature of various diseases, and with the study of the anatomical and functional changes observed in these diseases. With the information received from the macroscopic or microscopic examination of the material from sufferer and normal tissues, the Pathology contributes to diagnosis, treatment, observation and understanding of the development of a disease. The Pathology divides into General and Systematic Pathology. The General Pathology examines the fundamental principles of a disease and is rightly considered as the main trunk of the tree of knowledge of medicine, roots of which are the basic biomedical sciences, main sector the pathology of the organs (systemic), and branches, leaves and flowers are various clinical sciences. The General Pathology teaches the mechanisms by which lesions are caused and provides morphological and functional descriptions and interpretations of the effects of diseases in various tissues and organs.

### **Teaching**

#### **Educational material**

The Pathology is taught in the 4<sup>th</sup> (Pathology I) and 5<sup>th</sup> (Pathology II) semester. The teaching is based on the scientific writing of <<Basic Pathology >>from V. Kumar, R.S. Cotran and S.L. Robbins, 7th ed. which is the main source of knowledge, complemented by important references of recent literature. Particular emphasis is placed on General Pathology (cell damage, inflammation, tissue repair, fluid disorders, haemodynamic disorders, immunopathology, cancer) and the major diseases of systems, by studying standard clinical problems. The aim of this learning process is the initiation of the student in the clinicopathologic correlation, the good correlation of clinical and laboratory findings in order to understand the etiology, pathogenesis and clinical manifestations of the disease.

For additional information / knowledge is recommended to search in specific educational web site addresses.

#### **Educational objectives**

- Understanding the pathogenesis of the disease from the molecular to the macroscopic level.
- Understanding the importance of the clinicopathological correlation.
- Understanding the role of the clinical laboratory.
- The understanding and use of medical terms.
- The conformation of the scientific behavior.

- The transmission of factual knowledge.
- To strengthen cognitive skills necessary in the exercise of medicine (observing, analyzing, solving clinical problems).

***PATHOLOGY I***

***Hours***

***ECTS Units***

***Teachers***

2<sup>nd</sup> Year, 4<sup>th</sup> Semester (mandatory).

Teaching: 4, Laboratories: -, Tutorial: 3, Clinical training: - (per week).

6

X. Scopa, M. Melaxrinou, V. Zolota, A. Tsamandas, E. Kourea.

***Description***

**Pathology I**

Pathology forms the link between basic sciences and clinical disciplines of medicine. It is a discipline devoted to the study of the cause, the pathogenesis, the morphological changes and the functional derangements in cells, tissues and organs that underlie disease. With the information obtained by the macroscopic and microscopic examination of normal or diseased tissues. Pathology attributes in the diagnosis, therapy, observation and understanding of the evolution of a disease process.

Pathology is divided into General Pathology and Systemic Pathology. General Pathology examines the fundamental principles of disease and is, therefore, considered as the trunk of the tree of medical knowledge, its roots being the basic biomedical sciences and its main branches the anatomic pathology of the organ systems (systemic pathology). The tree's further branching system leaves and flowers are represented by the various clinical sciences. General Pathology teaches the mechanisms involved in the development of the alterations of the disease and provides morphologic and functional descriptions, as well as the explanation of the effect of various diseases in tissues and organs.

**Teaching / Educational goals / Educational material**

Teaching is based on the scientific book "Robbins Basic Pathology" by V. Kumar, A. K. Abbas, N. Fausto και R. Mitchell, 8th ed., Saunders, Philadelphia, 2007 (Editing of Greek translation by C. D. Scopa), which comprises the main source of information and is complemented by important references of more recent literature. Special emphasis is given to General - Pathology topics (cell injury, inflammation, tissue repair, haemodynamic disorders, diseases of immunity, neoplasia) and to the most important diseases of organ systems, through the study of representative clinical problems.

The goal of this educational process is to introduce the students into the clinicopathological correlation and the correlation of clinical and laboratory findings, in order to comprehend the etiology and pathogenesis of the disease as well as its clinical manifestations.

Search in special educational sites is recommended, for further information/knowledge.

**General educational goals:**

- Understanding the pathogenetic mechanisms of the disease, from the molecular to the macroscopic level
- Understanding the importance of the clinicopathologic correlation
- Understanding the role of the clinical laboratory
- Understanding and use of medical terminology
- Understanding fundamental ethical principles which dictate standards of professional behavior

- Communication of documented knowledge
- Improvement of cognitive skills indispensable to the practice of medicine (observation, analysis and clinical problem solving)

### **Contents – Pathology I**

#### **General Pathology**

- Cell injury, cell death and adaptation
- Acute and chronic inflammation
- Tissue repair: Regeneration, healing and fibrosis
- Haemodynamic disorders, thrombosis and shock
- Diseases of the immune system
- Neoplasia
- Genetic and pediatric diseases
- Environmental and nutritional diseases
- General pathology of infectious diseases

#### **Systemic Pathology**

- The blood vessels
- The heart

### **Tutorials – Laboratory Exercises**

1. Cell injury – Acute inflammation
2. Chronic inflammation – Tissue repair
3. Diseases of the immune system
4. Neoplasia
5. Haemodynamic disorders – Thrombosis – Disease of blood vessels and heart

### ***PATHOLOGY II***

#### ***Hours***

#### ***ECTS Units***

#### ***Teachers***

3<sup>rd</sup> Year, 5<sup>th</sup> Semester (mandatory).

Teaching: 4, Laboratories: 3, Tutorial: -, Clinical training: - (per week).

6

X. Scopa, M. Melaxrinou, B. Zolota, A. Tsamandas, E. Kourea.

### ***Description***

#### **Pathology II**

Pathology forms the link between basic sciences and clinical disciplines of medicine. It is a discipline devoted to the study of the cause, the pathogenesis, the morphological changes and the functional derangements in cells, tissues and organs that underlie disease. With the information obtained by the macroscopic and microscopic examination of normal or diseased tissues, Pathology attributes in the diagnosis, therapy, observation and understanding of the evolution of a disease process.

Pathology is divided into General Pathology and Systemic Pathology. Systemic Pathology studies the pathogenesis, the macroscopic and microscopic morphologic alterations and the prognosis of diseases affecting the various tissues and organs of the human body.

#### **Teaching / Educational goals / Educational material:**

Teaching is based on the scientific book “Robbins Basic Anatomic Pathology” by V. Kumar, A. K. Abbas, N. Fausto και R. Mitchell, 8th ed, Saunders, Philadelphia,



2007 (Editing of Greek translation by C. D. Scopa), which comprises the main source of information and is complemented by important references of more recent literature. In Systemic Pathology special emphasis is given to the most important diseases of organ systems, through the study of representative clinical problems.

The goal of this educational process is to introduce the students in the clinicopathological correlation and the correlation of clinical and laboratory findings, in order to comprehend the etiology and pathogenesis of the disease as well as its clinical manifestations.

Search in special educational sites is recommended, for further information/knowledge.

### **General Educational Goals**

- Understanding the pathogenetic mechanisms of the disease, from the molecular to the macroscopic level
- Understanding the importance of the clinicopathologic correlation
- Understanding the role of the clinical laboratory
- Understanding and use of medical terminology
- Understanding fundamental ethical principles which dictate standards of professional behavior
- Communication of documented knowledge
- Improvement of cognitive skills indispensable to the practice of medicine (observation, analysis and clinical problem solving)

### **Contents – Pathology II**

#### **Systemic Pathology (Pathology of the Organ Systems)**

- Hematopoietic and lymphoid systems
- Lung
- Kidney and Lower Urinary Tract
- Oral Cavity and Gastrointestinal Tract
- Liver, Gallbladder and the Biliary Tract
- Pancreas
- Male Genital System
- Female Genital Tract and the Breast
- Endocrine System
- Myoskeletal System
- Skin
- Central Nervous System

#### **Tutorials – Laboratory Exercises**

1. Hematopoietic and lymphoid systems
2. Lung
3. Gastrointestinal Tract, Liver, Gallbladder and the Biliary Tract
4. Kidney and the Male Genital System
5. Female Genital Tract and the Breast

<b><i>PATHOLOGY - CLINICAL TRAINING</i></b>	6 <sup>th</sup> Year, 11 <sup>th</sup> and 12 <sup>th</sup> Semester (elective).
<b><i>Hours</i></b>	Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 50 hours. The clinical training takes place in the morning on working days in the hospital for 3 weeks.
<b><i>ECTS Units</i></b>	4
<b><i>Teachers</i></b>	C. Scopa, M. Melaxrinou, B. Zolota, A. Tsamandas, E. Kourea.

## DEPARTMENT OF HYGIENE

**Address** Preclinical research Building – University of Patras campus (Rion)  
Tel. 2610-997889, Fax: 2610-996101

### **LABORATORY STAFF**

**Director** Professor Michael Leotsidis

**Professors** -

**Associate professors** Eleni Gelastopulu, Apostolos Vantarakis

**Assistant professors** -

**Lecturers** -

**Supporting research** Ioannis Detorakis

**and Technical Staff** Zoe Lykourgioti

**\*Part of Integration II and the course «Introduction in Clinical Medicine» in the 1<sup>st</sup> year**

**PUBLIC HEALTH**

2<sup>nd</sup> Year, 4<sup>th</sup> Semester (mandatory).

**Hours**

Teaching: 28, Laboratories and Tutorial: 28, Clinical training: -.

**ECTS Units**

4

**Teachers**

M. Leotsidis, E. Jelastopulu, A. Vantarakis.

**Laboratories**

M. Leotsidis, E. Jelastopulu, A. Vantarakis

**Description**

Introduction to concepts of Public Health, Prevention and Health Promotion. Environmental health. Introduction to environmental toxicology. Water Hygiene. Food hygiene. Pollution. Climate. Medical demography data (demographics collection, mortality, fertility, population structure). Introduction to Epidemiology (descriptive epidemiology, measurement of morbidity, general epidemiology of infectious diseases, epidemiological models, analytical epidemiology, types of epidemiological studies, molecular and genetic epidemiology). Human Diet and Dietetics principles. Nutrition and Health. Epidemiology of infectious diseases. Types of epidemics. Epidemiology of chronic diseases. Special epidemiology of heart disease and cancers. Modern lifestyle and health. Major risk factors for chronic disease (smoking, obesity, other factors). Epidemiology and prevention of accidents. Basics of Occupational Medicine. Introduction to Health Systems and Health Policy. Vulnerable Social Groups and Public Health.

**NUTRITION AND HEALTH**

4<sup>th</sup> Year, 8<sup>th</sup> Semester (elective).

**Hours**

Teaching: 25, Laboratories: -, Tutorial: -, Clinical training: -.

**ECTS Units**

5

**Teachers**

M. Leotsidis, A. Vantarakis

**Description**

Optional course of 8<sup>th</sup> semester that replaced "Occupational Medicine, Public Health and Preventive Medicine". The course includes: Review of Nutrition and Public Health, Nutritional Epidemiology, Assessment of nutritional status of individuals and populations, Assessment of physical activity, Nutritional strategies of public health by focusing on action, Overfed and malnutrition in public health, Vitamin deficiency, Obesity, Nutrition and chronic diseases, Nutrition and disease prevention.

## DEPARTMENT OF NUCLEAR MEDICINE

**Address** University Hospital of Parts, 2<sup>nd</sup> floor  
Tel. 2610-999211, Fax: 2610-999212.

### **LABORATORY STAFF**

**Director** Paulos Vasilakos

### **Professors**

**Associate Professors** Dimitrios Apostolopoulos

**Assistant Professors** -

**Lecturers** -

**INTRODUCTION TO NUCLEAR MEDICINE** 4<sup>th</sup> Year, 8<sup>th</sup> Semester (optional).

### **Hours**

Teaching: -, Laboratories: 2, Tutorial: 8 (5 students groups), Clinical training: - (per week).

### **ECTS Units**

5

### **Teachers**

P.Vasilakos, D. Apostolopoulos.

### **Description**

The purpose of this course is the student to understand the principles of diagnostic and therapeutic use of radioisotopes in medicine. To be aware of the main indications of radioisotope methods, the possibilities they offer their differences from other similar diagnostic techniques, their therapeutic potential, current applications, and the dynamic that they hold in the anticipated broadening of molecular imaging and molecular targeted treatment. Lessons from the auditorium set the initial cognitive framework. In remedial courses the student is guided through the laboratory, the principles of operation of the main organs and imaging systems are explained, the conduct of daily tests is monitored and the student is inserted in the differential diagnosis of cases.

### **CLINICAL APPLICATIONS OF NUCLEAR MEDICINE**

Lectures as part of the curriculum of other specialties (paediatrics, orthopaedics, internal medicine, endocrinology, etc.) to students and interns for the applications of Nuclear Medicine in daily diagnostic practice.

# DIVISION OF INTERNAL MEDICINE I

## DEPARTMENT OF INTERNAL MEDICINE

<b>Address</b>	University Hospital of Patras, 5 <sup>th</sup> floor Tel. 2610-999582, 2610-999583, Fax: 2610-993982.
<b>LABORATORY STAFF</b>	
<b>Director</b>	<b>Professor Charalampos Gogos</b>
<b>Professors</b>	Andreas Andonopoulos, Theodore Aleksandrides, Dimitrios Alexopoulos, Charalampos Gogos, Charalampos Kalofonos, Venetsana Kyriazopoulou, Vasiliki Nikolopoulou, Konstantinos Spiropoulos, Dimitrios Goumenos, Chrisoula Lampropoulou–Karatza, Athanasia Mouzaki, Konstantinos Chrysanthakopoulos, Agathoklis Psirogiannis
<b>Associate Professors</b>	Marina Karakatza, Markos Maragos, Konstantinos Markou, Stamatios-Nikolaos Liossis, John Starakis, Anargiros Simeonidis, John Cheiladakis, Konstantinos Fourtounas, Alexandros Spiridonidis, Konstantinos Thomopoulos, George Chachalis, Periklis Davlouros, Ioannis Habeos.
<b>Assistant Professors</b>	Thomas Makatsoris, Elena Solomou–Liosi, Dimitrios Daousis, Kiriakos Karkoulis, George Panos, Periklis Davlouros
<b>Lecturers</b>	-
<b>Supporting research and Technical Staff</b>	Ioanna Rougala, Polixeni Papapostolou, Chrisoula Bpgdanopoulou
<b>Teacher 407/80</b>	-
<b>Administrative Staff</b>	Maria Krigou, Maria Euthimiou, Maria Koukiou, Anastasios Georgakopoulos <b>* Part of Integration I and II and part of the course «Bioethics» in the 3<sup>rd</sup> year</b>

**INTRODUCTION TO  
CLINICAL MEDICINE**

**Hours**

**ECTS Units**

**Teachers**

1<sup>st</sup> Year, 1<sup>st</sup> Semester (mandatory).

Teaching: 2, Laboratories: -, Tutorial: -, Clinical training: - (per week).

4

C. Gogos, X. Lampropoulou-Karatza, S. Liosis, M. Anthrakopoulos, N. Georgopoulos, A. Symeonidis, E. Gelastopoulou, M. Maragos, X. Kalofonos, X. Flordellis.

**Educational objectives  
and content**

The course "Introduction to Clinical Medicine" is the first lesson to introduce the student to issues related to Clinical Medicine and aims its original familiarization and understanding of matters of general interest in relation to the clinical practice of medicine. The courses are conducted by clinicians from the auditorium and they refer to the organization of medical education, problems in the practice of clinical medicine and the principles underlying it, the modern version of the Hippocratic Oath, the differences between the treatment of patients with acute or chronic diseases, the differences that characterize the woman-patient and the child-patient.

Also refers to modern health systems and health system in Greece, the importance of prevention in medicine, the issue of blood transfusions, indications and problems in transfusion problems and how to tackle the terminally ill and, finally, the ethical principles and ethics that govern medicine. The course is examined by written examination at the end of the first semester and includes:

- Hospitalization.
- Principles of exercise of Medical Science / Physician characteristics.
- Principles of medical history / physical examination.
- Characteristics of patients with acute disease.
- Characteristics of patients with chronic disease.
- Characteristics of the pediatric patient.
- Features of female - patient.
- Health system.
- Preventative Medicine.
- Principles of transfusion.
- Terminally ill patient.
- Principles of ethics – ethics.

**INTRODUCTION TO  
CLINICAL SKILLS- FIRST  
AID**

**Hours**

**Teachers**

1<sup>st</sup> Year, 2<sup>nd</sup> Semester (mandatory)

Teaching: 2, Laboratories: -, Tutorial: -, Clinical training: - (per week).

All the faculty members of the Internal Medicine Department and :  
M. Anthrakopoulos, D. Koukouras, K. Panagopoulos, G. Skroubis, P. Gourzis, K. Filos, V. Greka-Spilioti, A. Varvarigou, D. Xrisis, A. Katrivanou.

**ECTS Units**

2

**CLINICAL ABILITIES I**

**Hours**

**ECTS Units**

2<sup>nd</sup> Year, 3<sup>rd</sup> Semester (mandatory)

Teaching: 2, Laboratories: -, Tutorial: -, Clinical training: - (per week).

3

**Teachers** All the faculty members of the Internal Medicine Department.

**CLINICAL ABILITIES II** 2<sup>nd</sup> Year, 4<sup>th</sup> Semester (mandatory).

**Hours** Teaching: 2, Laboratories: -, Tutorial: -, Clinical training: - (per week).

**ECTS Units** 2

**Teachers** All the faculty members of the Internal Medicine Department.

**CLINICAL ABILITIES III** 3<sup>rd</sup> Year, 5<sup>th</sup> Semester (mandatory).

**Hours** Teaching: 2, Laboratories: -, Tutorial: -, Clinical training: - (per week).

**ECTS Units** 2

**Teachers** All the faculty members of the Internal Medicine Department.

**Educational objectives and content** The aim of this training module, lasting four semesters, from the 2<sup>nd</sup> to the 5<sup>th</sup> semester, is to understand the concept of patient-centered medical care, development of knowledge, skills and attitudes for effective communication with the patient, physical examination, humanitarian and ethical treatment of patient, problem solving, simple medical procedures and first aid. More specifically, the educational objectives are:

- 1.Acquisition of knowledge – comfort in the professional approach of the patient. Technique of obtaining medical history / physical examination.
  - 2.Recording / Oral presentation of medical history
  - 3.Pediatric / Psychiatric medical history.
  - 4.Understanding the basic core of the commonly used laboratory and other paraclinical tests used in routine clinical practice.
  - 5.Read / evaluation of medical records – medical history / medical records.
  - 6.Knowledge / routine medical operations execution.
  - 7.Medical emergency / first aid.
- Understanding of social-economic issues related to health care through the acquisition of knowledge and skills in epidemiology, health providing and community medicine.
  - Understanding the ways in which the cognitive experience is integrated through the interaction of basic sciences, social medicine and clinical medicine.

#### **MEDICAL HISTORY OBTAINING – PHYSICAL EXAMINATION**

At the end of this training module the student should:

- Be able to recognize the essential information needed for recording and be able to obtain them from the patients in the form of questions.
- Be able to evaluate the elements of the medical history that are not normal and put them in a hierarchy.
- Be able to record an organized medical history of a patient based on a proposed model.
- Be able to record a hierarchical list of problems based on the medical history.
- Be able to understand the differences between the written and verbal / analytical and brief presentation of a medical history.



- Be able to understand and be practiced in accessing sensitive issues related to the patient's history (medical history of sex, drug use etc.) and to exam patients with peculiarities.
- Be able to practice communication techniques / behaviors in relation to medical history taking, presentation of the medical history, informing the environment, confidentiality etc.
- Become familiar with taking a pediatric medical history understanding its peculiarities in relation to the medical history of an adult.
- Acquire the skills necessary for taking the medical history from a psychiatric patient.
- Be able to fully examine the patient systemically.
- Record the pathological findings during the examination of the patient and be able to evaluate the differences from normal.
- Understand the meaning and the importance of the presence of the medical history and medical record (access history, studies, and legal problems).
- And finally, be able to provide first aid in emergency medical situations (Cardiopulmonary resuscitation).

**INTERNAL MEDICINE -** 5<sup>th</sup> Year, 9<sup>th</sup> and 10<sup>th</sup> Semester (mandatory).

**CLINICAL TRAINING**

*(including cardiology and nephrology)*

**Hours**

Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35 ( 2 weeks of cardiological clinical training and 2 weeks of nephrological clinical training are included)

**ECTS Units**

14

**Teachers**

All the faculty members of the Internal Medicine Division I.

**Educational objectives and content**

The aim of the course is to educate the students of the 5<sup>th</sup> year in the conduct of clinical practice and acquire the necessary knowledge, skills and attitudes needed in postgraduate medical practice.

Students are distributed to the pathological sections according to the program of the Secretariat of the Internal Medicine Department under the responsibility of faculty members who have been determined. The main objective is to train the student of the 5<sup>th</sup> year to take a medical history and be able to make proper physical examination. The student must be familiar with the concept of hospitalization cause, of the disease and medical history and of the conduct of a detailed clinical examination. As has become clear from the previous years, a lot of practice is needed in the approach of the patients and their problems but also in the physical examination. The techniques and skills needed for a proper clinical examination can only be obtained with clinical practice. Therefore, the students are given the opportunity for the above, as they may be repeated even in the same patient on a daily basis. Most health problems can be solved by careful medical history taking and physical examination. If there is any problem, the student can request the help of the doctors of the clinic. Students are, also exposed to the way to approach diseases (and differential treatment). The simultaneous study of books on physical examination and Internal Medicine given, will lead to better understanding of the pathophysiology of diseases.

The student is trained to present clearly, briefly and comprehensively the patient to the group. Efforts should be made to expose the student to as many patients and diseases as possible. At the same time the student is given the

opportunity to develop the ability to work with all the members of the medical team.

During the visit the students gain theoretical training on cases hospitalized in the clinic. The trainers make references to the condition of the patient examined and questions that link theory with clinical practice in order to cause concern and better assimilation of knowledge.

Under the guidance of the medical personnel, students learn how to make some therapeutic and diagnostic operations such as blood tests, electrocardiogram and blood sugar measurement.

Clean medical coat and decorous behavior is necessary at the Hospital. Students should avoid informing patients, that they attend, on the progress of the clinical, laboratory examinations and to refer them to the relevant doctors. Clinical notes contain confidential information and it is important to protect the confidentiality of the patient.

***Tutorials***

The students know the topics of the course in advance. The topics are presented by faculty members and students are adequately prepared to participate actively in the discussion. The presence of all the students is compulsory. Students should also attend all the training events in the clinic obligingly (grand rounds, conferences).

***Call***

Students will be on call in the external call of the clinic until 10 pm. The call is determined by the educational team in which the student belongs. On call trainee doctors and the students are given the opportunity to examine upfront patients admitted to the Hospital. The student participates in the activities of the call group actively.

***Attendance***

During the exercise the presence of the student is required (two absences for serious reasons are allowed). During clinical practice the student remains at the clinic.

**INTERNAL MEDICINE -  
CLINICAL TRAINING**

6<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (mandatory).

**Hours**

Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35 (6 weeks).

**ECTS Units**

12

**Teachers**

All the faculty members of the Internal Medicine Division I.

**Educational objectives  
and content**

The purpose of this course is to train the students of the 6<sup>th</sup> year in the exercise of clinical practice and in the acquisition of the necessary knowledge, skills and attitudes needed for the postgraduate medical practice. During the six weeks of exercise, the students are incorporated in the nursing-education units of the Internal Medicine Clinic for 4 weeks and then in the Hematology Unit of Internal Medicine Clinic for 2 weeks.

Students are acting as assistants. They take over patients that are hospitalized and are responsible for writing the medical history of the patients. Students have to monitor the daily progress of their patients and actively participate with their group members in the diagnostic and therapeutic access of these patients.

After consultation and with the guidance of doctors in the team, the responsible for the patient student conduct therapeutic and diagnostic procedures. These include blood sampling, taking arterial blood, chest puncture, puncture of ascites fluid, placing nasogastric catheter, bladder catheterization, etc.

Students must have full and daily updates on the progress of their patients and they should be able to accurately report the status of patients to the attending physician of the team when requested.

Students are on call at the external call of the nursing unit to which they belong.

The working hours are 3pm-10pm on weekdays and 8am-10pm on holidays.

From the start of the call they are presented to the team members that are in charge and they assign them appropriate tasks. During the call the students are in constant contact with the responsible doctors on call, and they refer to them as for the settlement of the delegated tasks. They must also be constantly accessible by doctors on call, who must know where their students are and what they deal with. Students should also be on duty on 1-2 internal calls.

Students attend and actively participate in the educational process, as scheduled by the clinic in which they incumbent.

**Call**

**INTRODUCTION TO  
CLINICAL HAEMATOLOGY**

3<sup>rd</sup> Year, 5<sup>th</sup> Semester (optional).

**Hours**

Teaching: -, Laboratories: 2, Tutorial: -, Clinical training: - (per week).

**ECTS Units**

4

**Teachers**

A. Mouzaki (Office A<sub>22</sub>, 1<sup>st</sup> floor, Preclinical Research Building)

**Educational objectives**

**A. INTERPRETATION OF FULL BLOOD COUNT PARAMETERS**

Knowledge of the parameters contained in the complete blood count and interpretation. Diagnosis of anaemia based on complete blood count and classification based on the parameters of complete blood count.

Knowledge of laboratory approach to distinguish between anaemia caused by aberrations of the red blood cells membrane, metabolism disorders or structure of haemoglobin.

Characterization of leukocyte subpopulations using antibodies. New technologies in the characterization of leukocyte subpopulations.

**B. ANTIGENIC SYSTEMS OF ERYTHROCYTES**

Knowledge of the antigenic systems of erythrocytes. Methods of laboratory detection of antigenic systems and their interpretation.

#### C. IDENTIFICATION OF ANTIBODIES AGAINST ERYTHROCYTE ANTIGENS

Basic knowledge of the producing mechanisms of natural and acquired alloantibodies. Basic knowledge of laboratory procedures for checking the compatibility of erythrocytes intended for transfusion. These principles form the basis of any process of compatibility between donor and recipient tissue.

Teaching is in the form of tutorials and laboratory exercises. At the end of each module, students deliver a homework based on the results of laboratory exercises that have been done and focus on the interpretation of the results.

**INFECTIOUS DISEASES –** 6<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (optional).

#### **CLINICAL TRAINING**

**Hours**

Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35.

**ECTS Units**

4

**Teachers**

C. Gogos, M. Maragos, G. Panos.

#### **Description**

The aim of this exercise is to train students in diagnosis, differential diagnosis and treatment of ordinary inpatient and outpatient infections, as well as the major specific infections (AIDS, hepatitis, tuberculosis, etc.). During the clinical practice students attending the outpatient clinic of Infectious Diseases and the advisory visit of Infectious Diseases specialists in various clinics of the Hospital. They also attend educational events (Courses and literature informing) of the Department of Infectious Diseases of Internal Medicine Clinic.

**PNEUMONOLOGY -** 6<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (optional).

#### **CLINICAL TRAINING**

**Hours**

Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35.

**ECTS Units**

4

**Teachers**

K. Spiropoulos, K. Karkoulas

The course takes place in the context of clinical exercises of the 6<sup>th</sup> year, in small groups, with patients from the Clinic of Pneumontology.

**IMMUNO-** 6<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (optional).

#### **HAEMATOLOGY**

**Hours**

Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35.

**ECTS Units**

4

**Teachers**

Athanasia Mouzaki

#### **Description**

INTRODUCTORY COURSE: The immune system of humans.

LESSONS 1-4: The cells of immune system – Types, functions, interaction, immunological tolerance.

LESSON 5: Antibodies – Types, functions.

LESSON 6: The HLA system.

LESSON 7: Hypersensitivity tests.

LESSONS 8, 9: Dysfunction of the immune system – Autoimmune diseases, cancers.

LESSON 10: Immunology of transfusions.

LESSON 11: The immune system & HIV/AIDS.

LESSONS 12-14: Immunomodulation – interventions in molecular and cellular

level, antibody therapy, artificial antigens (peptides), bone marrow and haematopoietic cells.

At the end of each session students receive bibliography. At the end of the course the students deliver a homework that focuses on a topic chosen from a specific list proposed by the instructor.

**CARDIOLOGY - CLINICAL TRAINING** 6<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (optional).

**Hours**

Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35.

**ECTS Units**

4

**Teachers**

D. Alexopoulos, I. Cheiladakis, G. Chachalis, P. Davlouros.

**Description**

The training in the Cardiology Department has as primary aim the teaching of basic knowledge and the application of therapeutics in direct collaboration with the medical staff, so that the students in relatively limited time to get basic experience in treating cardiac patient. In today's barrage of information, with the application of new diagnostic and therapeutic interventions, physicians of Cardiology are trying for the complete presentation of the wide range of heart diseases and conformation of opinion in accordance with the guidelines of international companies of Cardiology based on proven scientific basis. For the success of this effort theoretical training on the part of the learner is required but also their active participation in various activities of the clinic.

The clinical training program includes:

1. Daily presence as early as 8.15 a.m. when report and discussion of the cases of the Cardiology Unit and Stroke Units are taking place.
2. Attendance at all programmed morning training courses.
3. Integration in the Clinic's program, participation in the various routine obligations and in the daily visits under the supervision of the hospital curators.
4. Electrocardiogram and arrhythmias lessons on Tuesday and Thursday and coronary disease lessons on Wednesday. These courses are available in the form of power point.
5. Medical history taking and physical examination courses next to the patient to understand the symptoms and signs of the cardiovascular system.
6. Theoretical and written tests every Friday.

Finally, the parallel visit of the trainee in the Haematodynamic and Echocardiography lab, in order to obtain more detailed information, is permitted.

**RHEUMATOLOGY - CLINICAL TRAINING** 6<sup>th</sup> Year, 12<sup>th</sup> Semester (optional).

**Hours**

Teaching: -, Laboratories: -, tutorial: -, Clinical training: 35 (per week).

**ECTS Units**

4

**Teachers**

A. Andonopoulos, S. N. Lioassis, D. Daousis

**Description**

The elective course of Rheumatology is taught in small groups of students (1-5 members) during the 5<sup>th</sup> year and lasts two weeks. Its aim is to familiarize the student with the clinical picture and the treatment of patients with diseases of the skeletal system. Emphasis is placed on medical

history taking and physical examination of the skeletal system, as embodied in full physical examination of the patient. Students participate in the discussion of treatment decisions.

The course takes place at the outpatient Rheumatology Clinic and concerns scheduled appointments of patients (Monday - Thursday) and participation in training courses of the Department (Friday). After the daily outpatient clinic, an educational visit to patients of the University Hospital follows on a daily basis. For these patients has been asked Rheumatology assessment by therapists.

**GASTRENTEROLOGY -  
CLINICAL TRAINING**

6<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (optional).

Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35 (per week).

**Hours**

4

**ECTS Units**

V. Nikolopoulou, K. Thomopoulos.

**Teachers**

**Description**

Students during their attendance for 2weeks in the Gastroenterology Clinic are trained as follows:

- Medical history taking.
- Clinical examination of the hospitalized patients.
- Teaching in and out of the Hospital on the main problems related to Gastroenterology.
- Rotating attendance to the regular clinics of the Gastroenterology Department.
- Rotating attendance to the Endoscope Program.

**NEPHROLOGY - CLINICAL  
TRAINING**

6<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (optional).

Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 25 (per week).

**Hours**

4

**ECTS Units**

**Teachers**

D. Goumenos, K. Fourtounas, E. Papachristou

**Description**

Active participation of students in the daily schedule of the Nephrology Clinic (medical history taking, physical examination, daily visits with physicians in clinics).

Training next to the hospitalized patients. In the clinic are hospitalized patients suffering from:

- Water and electrolytes disorders
- Acid-base balance disorders.
- Arterial hypertension.
- Acute renal failure.
- Diseases of the glomerulus (glomerulonephritis).
- Diabetes mellitus and kidney damage.
- Systemic diseases with renal involvement.
- Kidney transplantation.
- Vascular problems in Haemodialysis.
- Problems in peritoneal dialysis.

Students are also trained in the basic principles of methods of renal function replacement (haemodialysis and peritoneal dialysis)

Students attend clinical training classes in the Renal Centre and at the end of

their training they write a paper on a subject assigned.

**ONCOLOGY - CLINICAL TRAINING**

**Hours**

**ECTS Units**

**Teachers**

6<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (optional).

Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35 (per week).

4 units

C. Kalofonos, T. Makatsoris, A. Koutras

**Description**

Regarding the elective clinical training of the Oncology Department, students are actively involved in the clinical activities of the Oncology Department. Specifically, they are involved in medical history taking and clinical examination of outpatient. In addition, they participate in the visit in the Day Care and monitor, under supervision, oncology patients hospitalized in other clinics of the University Hospital. Students also participate actively in the differential diagnosis of patients, in the educational activities of the Department and participate in the literature update. Finally, the evaluation is done by an oral examination by the faculty members of the oncology department.

**ENDOCRINOLOGY - CLINICAL TRAINING**

**Hours**

**ECTS Units**

**Teachers**

6<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (optional).

Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35 (per week).

4

T. Alexandrides, V. Kyriazopoulou, A. Psirogiannis, K. Markou, I. Habeos.

The contribution of doctors of the Greek Health System (A. Theodoropoulou and M. Michalaki) and trainee doctors is important.

**Description**

The students are practiced in small groups in endocrinology, metabolism and diabetes. The exercise is done daily during all working hours at the outpatient clinic of the Endocrine Unit. Emphasis is placed on history taking, physical examination and diagnosis in collaboration with the students. Also the treatment is determined and the therapeutic decisions are justified. After the end of the outpatient clinic students' visit with the doctors of the Department, who are responsible for the estimates of hospitalized patients, patients in the clinic of the University Hospital of Patras with problems of the endocrine system. In parallel students attend classes of the Endocrine Unit, which are taking place on a regular basis to educate and inform physicians of the Department, as well as the patients' clinicopathologic discussion in the auditorium of the University Hospital of Patras organized by the Department of Internal Medicine.

**HAEMATOLOGY - CLINICAL TRAINING**

**Hours**

**ECTS Units**

**Teachers**

**Description**

6<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (optional).

Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35 (per week).

4

All the members of the Teaching Staff from the Haematology unit in the Pathology Clinic.

The aim of clinical practice in Haematology is to familiarize students with the diagnosis and treatment of routine hematological diseases.

Students attend clinical activities of the Haematology clinic, the

transplantation, and the clinical evaluation of haematological patients. Also, they are involved in the operation of the external haematology clinic and attend regular blood tests (estimate peripheral blood, myelogram, etc). During their training they participate in educational activities of the Haematology clinic and they are trained based on clinical cases in small groups. Finally, they participate in the literature update of doctors - members of the Haematology Clinic.



# DIVISION OF INTERNAL MEDICINE II

## DEPARTMENT OF NEUROLOGY

**Address** University Hospital of Patras, 4<sup>th</sup> floor.  
Tel. 2610-993949, 2610-999570-1, Fax: 2610-993949.

### CLINIC STAFF

**Director** **Professor Panagiotis Papathanasopoulos**

**Professors** Elisabeth Chroni

**Associate Professors** P. Polyxronopoulos, John Elloul

**Assistant Professors** -

**Lecturers** -

**Supporting research and** -

**Technical Staff**

**\*Part of Integration II**

**NEUROLOGY - CLINICAL TRAINING** 5<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (mandatory).

### TRAINING

**Hours** Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35 (per week).

**ECTS Units** 8

**Teachers** P. Papathanasopoulos, E. Chroni, P. Polyxronopoulos, J. Elloul, D. Konstantinou, C. Constantoyiannis.

### Description

- a) Complete physical examination of the Nervous System and evaluation of pathological findings.
- b) Familiarization of the students with regular neurological diseases (vascular stroke, Parkinson's, epilepsy, muscular diseases, multiple sclerosis, etc.) and with special "neurological" tests and Neurology emergencies.

On the last day of the second month students are orally examined to determine whether they are able to examine a patient with neurological problems and evaluate any neurological finding. At failure they repeat one, two or three weeks of the clinical training and they are examined again.

- Neurosurgery curriculum**
- A. Patients with hemiparesis
    1. Convincing spinal cord damage
  - B. Patients with consciousness disorder
    1. Introduction – waking consciousness disorders
    2. Intracranial hypertension – intracranial tumours
    3. Subarachnoid bleeding ( Aneurysm – vasculature)
  - Γ. Patients with motor disorders
    1. Surgical treatment of extrapyramidal diseases.

### Trauma lessons

1. Head trauma
2. Intracranial hypertension – Traumatic Brain Injury

## DEPARTMENT OF PSYCHIATRY

**Address** University Hospital of Patras, 1<sup>st</sup> building, ground floor, Tel. 2610-994534, 2610-992996, 2610-999245, Fax: 2610-994534, e-mail: psychdpt@med.upatras.gr.

**Director** Associate Professor Philippos Gourzis

**Professors** -

**Associate Professors** -

**Assistant Professors** Konstantinos Assimakopoulos, Aggeliki Katrivanou

**Lecturers**

**Supporting research and** Eleni Vouga

**Technical Staff**

**\*Part of Integration I and II and of the course «Bioethics» in the 3<sup>rd</sup> year**

**PSYCHOLOGY - CLINICAL** 5<sup>th</sup> Year, 9<sup>th</sup> and 10<sup>th</sup> Semester (mandatory)

**TRAINING**

**Hours** Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35 (per week).

**ECTS Units** 8

**Teachers** P. Gourzis, A. Katrivanou, K. Assimakopoulos.

**Description**

Students are trained in the full psychiatric interview and evaluation of the findings. Additionally they are getting familiar with the most common psychiatric disorders such as schizophrenia, mood disorders, personality disorders associated with abuse / dependence of alcohol and psychoactive substances etc.

Students often attend external adults and children / adolescents' psychiatric clinic, interviews during the course of liaison / counseling, group therapy sessions and diagnostic and therapeutic approaches to medical emergency.

Every student monitors a patient with the attending physician and is able at the end of the training to understand and describe the basic symptoms, differential diagnosis, the course and prognosis and the therapeutic treatments of the disease.

In the same time students attend courses, tailored to their level of education, as for the most common manifestations of psychiatric disorders (schizophrenia, bipolar disorder, anxiety disorders, emergency psychiatry, child psychiatry elements, and physician – patient relationship).

At the end of each workshop, students are orally examined in the historical and theoretical background of the disease of the patient they attended.

## DEPARTMENT OF DERMATOLOGY

**Address** University Hospital of Patras, 4<sup>th</sup> floor, Tel. 2610-994670, Fax: 2610-993951.

### **CLINIC STAFF**

**Director**

**Professor Dionysios Tsambaos**

**Associate Professor**

Sofia Georgiou, Alexandra Monastirli, Efstathia Pasmatzis

**Assistant Professor**

-

**Lecturers**

**\*Part of Integration I**

### **DERMATOLOGY- CLINICAL TRAINING**

6<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (optional).

**Hours**

Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35.

**ECTSUnits**

4

**Teachers**

D. Tsambaos, S. Georgiou, A. Monastirli, E. Pasmatzis.

### **Description**

- 1) Learning how to take dermatological history and how to do physical examination of the skin and its components.
  - 2) Recognition of elementary skin lesions and understanding of their pathogenetic mechanisms.
  - 3) Familiarity with the clinical picture of dermatologically and sexually transmitted diseases and their treatment.
  - 4) Update on the basic principles of modern diagnostic techniques in immunohistopathology, molecular biology, immunology, biomechanics, photobiology and allergology of the skin.
- On the last day of the exercise the students take exams, which will include practical (at bedside) and theoretical part.

# DIVISION OF SURGERY

## DEPARTMENT OF SURGERY

<b>Address</b>	University Hospital of Patras, 2 <sup>nd</sup> floor Tel 2610-999299, 2610999323, Fax: 2610-993984
<b>CLINIC STAFF</b>	
<b>Director</b>	<b>Professor Kalfarentzos Fotis</b>
<b>Professors</b>	Eyaggelos Tzorakoleutherakis, Dionysios Karavias, Dimitrios Koukouras, Stavropoulos Michail
<b>Associate Professors</b>	-
<b>Assistant Professors</b>	Konstantinos Panagopoulos, George Skroubis, John Kechagias, Ioannis Maroulis
<b>Lecturers</b>	-
<b>Supporting research and Technical Staff</b>	-
	<b>*Part of Integration I και II and of the course «Bioethics» in the 3<sup>rd</sup> year</b>
<b>SURGERY -CLINICAL TRAINING</b>	5 <sup>th</sup> Year, 9 <sup>th</sup> and 10 <sup>th</sup> Semester (mandatory).
<b>Hours</b>	Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35 (per week-8 weeks).
<b>ECTS Units</b>	
<b>Teachers</b>	14 F. Kalfarentzos, E. Tzorakoleutherakis, D. Karavias, M. Stavropoulos, D. Koukouras, J. Tsolakis, K. Panagopoulos, S. Kakkos, G. Skroubis, I. Maroulis, J. Kechagias, I. Panagiotopoulos, M. Tillianakis, P. Megas, K. Filos, F. Fligkou.
<b>Description</b>	<p>The clinical training of students in Surgery is taking place both in the 5<sup>th</sup> and 6<sup>th</sup> year and lasts 8 weeks in the 5<sup>th</sup> year (including the clinical training in anesthesiology - intensive monitoring and Orthopaedics) and 6 weeks in the 6<sup>th</sup> year.</p> <p>The main objective of the clinical training of students of the 5<sup>th</sup> year, is at the end of the training to feel that they are able to undertake the access and identification procedure of the surgical problem of a patient.</p> <p>The practical application of achieving this goal which will also be the culmination of undergraduate surgical education of the student, will be in the responsibility of an assistant that the student will take during the clinical training in the 6<sup>th</sup> year.</p> <p>Achieving this goal is a bidirectional concept and it is based on the effort of both the trainer and the trainee.</p> <p>The instructor is academically obliged to help the student in order to be able to handle scientifically well and responsibly the problem of the patient. This procedure is performed on one hand with lessons-</p>

discussions in small groups referred to the most common surgical problems (diagnostic approach, differential diagnosis and therapeutic approach are taught) and on the other hand by applying the above to clinical practice, namely to the patients hospitalized in the clinic, with various surgical problems.

The process of this interactive educational effort, in order to achieve the above objective, is based on a specific training program, which has theoretical and practical parts.

#### **A. Theoretical part**

Courses focused on the clinical problems of hospitalized patients in the Surgery Clinic:

1. Upper – lower digestive system bleeding
2. Fluids - electrolytes
3. Ileum
4. Colon cancer
5. Liver- biliary – pancreatic cancer
6. Investigation of thyroid nodule
7. Surgical treatment of the clinically severe obesity
8. Jaundice
9. Acute surgical abdomen
10. Breast lumps investigation
11. Hypovolaemic shock
12. Embolism – limbs thrombosis
13. Acute pancreatitis
14. Surgical treatment of type II diabetes and metabolic syndrome
15. Solid organ transplantations
16. Acute thorax

#### **B. Practical part, that aims to:**

1. Physical examination, proper learning and execution.
2. The collection of reliable information and data from patients with skillful efficient and effective manner.
3. The writing of a form of a medical history with diagnostic plan, choice of laboratory tests and choice of therapeutic methods.

#### **Clinical training curriculum for the students of the 5<sup>th</sup> year.**

The clinical training is mandatory and in accordance with the decision of the Department, only two justified absences are allowed.

- Students' arrival time is 8:00 p.m. From 8:00 p.m. to 8:30 p.m. they watch both of the departments of their clinic. Students of the 6<sup>th</sup> year and the interns are collecting blood samples; scheduling examinations on patients and preparing the medical history of the patient for the morning round.
- 9.00-10.30: Watch and participate in the clinical visit in both of the departments of the clinic with the department head, the interns and the students of the 6<sup>th</sup> year. In this clinical visit the students of the 5<sup>th</sup> year will be taught physical examination in specific surgical diseases and the preoperative preparation and postoperative monitoring.

- 11-13.00: The students with the students of the 6<sup>th</sup> year and with the interns participate in medical history taking and in the clinical examination of new patients.
- 13.00-14.00: Lesson.
- Then, the students watch in both of the departments of the clinic the interns and the students of the 6<sup>th</sup> year preparing patients to be operated the following day.

At the end of the course only the students on call stay in the clinic.

Student participation in the call of the clinic is considered to be mandatory. Specifically there are 2 students of the 5<sup>th</sup> year in the general call and 2 of them in the internal call, according to a program drawn up at the beginning of the two months period. The call is mandatory and students on duty must remain in the hospital until 11p.m. in the general call and by 9 in the internal call.

The students' presence is mandatory in the advanced courses of the clinic that are taking place once a month, in the Auditorium of the Hospital.

### ***Educational objectives***

#### **Educational objectives in clinical training of the students of the 5<sup>th</sup> year in Orthopaedics.**

The student must be able to:

1. Recognize the clinical presentation of emergency orthopaedic cases and managed them appropriate.
2. Apply casts, dressings and splints and to know their usage and complications.
3. Recognize the clinical signs of orthopaedic soft tissues, joints and bone infections. He/she must be able to start immediate therapy and order the appropriate laboratory and imagine tests.
4. Interpret and understood the radiological signs of fractures and degenerative diseases in orthopaedics.
5. Perform a thorough clinical examination and comprehensive history taking for orthopaedic diseases in the past. To explain the problem to the patient and his or her relatives. To cooperate with the rest medical and nursery stuff of the clinic.
6. Attend basic surgical procedures in the OR and discuss the approach and management with the consultants.
7. Actively participate in the on call rota at the A & E Department under the supervision of specialist registrars and consultants.
8. Participate in the regular outpatient office of the clinic where he/she will be able to examine the patients, interpret the x-rays and to follow up the patients who have been operated.

#### **Educational objectives of the clinical training in Intensive Care of the students of the 5<sup>th</sup> year**

During the practice in the Intensive Care Unit the students will acquire basic knowledge in the following subjects:

- 1.Support of the airway in critically ill patients and practice in advanced cardiopulmonary resuscitation.
- 2.Forms of oxygen- therapies.

3. Assessment of priorities for therapeutic interventions in patients with multiple problems.
4. Monitoring (namely continuous monitoring and recording of vital functions): respiratory, circulatory, CNS, renal function etc.
5. Assessment of critically ill patients and treatment planning per system:
  - Respiratory
  - Cardio - circulatory
  - CNS (Traumatic brain injury treatment, Glasgow Comma Scale(GCS), ICP monitoring , Analgesia, Sedation)
  - kidney (and acid-base balance disorders)
  - Liver, biochemical disorders
  - Infection, Sepsis, Antibiotic treatment
  - Gastrointestinal (includes diet and gastroprotection)
6. Systems of assessment of critically ill patients (scoring systems, such as APACHE-II, SOFA, SAPS, TISS etc)
7. Triage and criteria for introduction to the ICU.
8. Ventilation mechanism (invasive and noninvasive)
  - Indications – Contra-indications
  - Methods
  - Respirators
  - Weaning
9. Metabolic and electrolyte disorders
10. Addressing the multiple trauma patient in the ICU with or without concomitant traumatic brain injury
11. Systemic inflammatory response and sepsis
12. Disinfection, prevention and treatment of infection
13. Patient with brain death in the ICU – organ donors and recipient
14. Technological issues: Respirators, Electrical safety, Ultrasounds etc.

**Exercise evaluation**

At the end of the clinical training the students of the 5<sup>th</sup> year are graded by the trainers.

**SURGERY- CLINICAL TRAINING** 6<sup>th</sup> Year, 11<sup>th</sup> and 12<sup>th</sup> Semester (mandatory).

**Hours**

Teaching: -, Laboratories: -, Tutorial: -, Clinical training: 35 (per week- 6 weeks).

**ECTS Units**

12

**Teachers**

F. Kalfarentzos, E. Tzorakoleutherakis, D. Karavias, M. Stavropoulos, D. Koukouras, J. Tsolakis, K. Panagopoulos, S. Kakkos, G. Skroubis, I. Maroulis, J. Kechagias.

**Description**

Basic principle in the education of the students of the 6<sup>th</sup> year during their clinical practice in surgery is the assignment of full clinical responsibility to students. They participate in all clinical and educational concentrations of the Clinic and are encouraged to express opinions and questions. Each student is responsible for two to three patients, and processes under supervision full preoperative and postoperative monitoring, while there is an effort for regular participation in surgery. In this way, together with the discussions of the cases that are taking place in the Department and in the Clinic, it

is believed that the student during clinical training obtains a complete picture of the treatment of the most common surgical diseases.

The participation of the students in the Clinic call is considered mandatory. Specifically, 2 students of the 6<sup>th</sup> year are in the general call and 2 of them in the internal call, according to the program drawn up at the beginning of the two months period. Mandatory is the eve of the students in the general call until 23.00 and until 21.00 in the internal call. During the call the training is related to the overall treatment of surgical emergency incident.

Two absences are allowed during the clinical practice. Beyond these the clinical training is repeated.

At the end of the clinical training the students of the 6<sup>th</sup> year are assessed by their instructors.

Mandatory is the presence of students in advanced courses of the clinic that are taking place once a month, in the auditorium of the Hospital.

***Indicative Daily Schedule of  
the Clinic for the students  
training***

08.00- 08.30	Blood sampling
08.30- 09.00	Patients examination, preparation for visit
08.00-14.00	Surgery (except from Wednesday)
09.00-10.30	Nursing visit
10.30- 11.30	Department backlog processing
11.30- 12. 30	Patient hospitalization, medical history taking
12.30- 13.00	Break
13.00- 14.00	5 <sup>th</sup> year lessons Surgery cases preparation for the following day
17.30- 19.30	Afternoon educational visit (doctors on call)  Discussion for the complications of the week (Wednesday)



## DEPARTMENT OF ANAESTHESIOLOGY AND INTENSIVE CARE

**Address** University Hospital of Patras, 3<sup>rd</sup> floor  
Tel. 2610-993947, 2610-999341, Fax: 2610-993947

### **CLINIC STAFF**

**Director** Professor Kriton Filos

**Professors** -

**Associate Professor** Foteini Fligkou

**Assistant Professor** -

**Lecturers** -

**Supporting research and  
Technical Staff**

**\* Part of the Surgery – Clinical Training in the 5<sup>th</sup> year and of the course «Bioethics» in the 3<sup>rd</sup> year**

### **ANAESTHESIOLOGY / INTENSIVE CARE**

6<sup>th</sup> Year, Semesters 11<sup>th</sup> & 12<sup>th</sup> (optional)

#### **Hours**

Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 25 hours per week (2 weeks)

#### **ECTS Units**

4

#### **Teachers**

K. Filos, F. Fligkou supported by the National Health Service doctors of the Intensive Care Unit

#### **Description**

The goal of this course is to familiarize students with the therapeutic approach of critically ill patients in the Intensive Care Unit. Students participate in the medical morning report, ward rounds and the therapeutic management following small groups of doctors, approaching systematically patients who invariably suffer from multiple organ failure.

Particular emphasis is placed on the comprehension of the following pathophysiological disorders and problems, which are expected to be treated in the Intensive Care Unit, such as:

- Acute respiratory failure
- Chronic respiratory failure
- Cardiovascular shock
- Systemic Inflammatory Response Syndrome and sepsis
- Multiple Organ Dysfunction Syndrome
- Multiple-trauma management
- Head and brain injury
- Diagnostic approach to the febrile patient in the Intensive Care Unit

## DEPARTMENT OF OPHTHALMOLOGY

**Address** University Hospital of Patras, 1<sup>st</sup> floor  
Tel.: 2610-999286

### **CLINICAL STAFF**

**Medical Director of the Clinic** Prof. Nikolaos Farmakakis

**Professors** -

**Associate Professors** -

**Assistant Professors** Konstantinos Georgakopoulos

**Lecturers** -

**Supporting Teaching and Technical Staff** Christina Apostolopoulou

**OPHTHALMOLOGY****Hours**4<sup>th</sup> Year, 8<sup>th</sup> Semester (mandatory)

Teaching: - ,Laboratory: - ,Tutorial: - , Clinical Training: 25 hours per week (2 weeks)

**ECTS Units**

5

**Teachers**

N. Farmakakis, K. Georgakopoulos

**Description****The ocular examination**

Presentation of ophthalmic equipment and instruments

Medical History Taking

Examination of eyelids, nasolacrimal duct, conjunctiva, cornea, anterior camera oculi, lens, Ophthalmoscopy

Visual field testing, performed one eye at a time with the contralateral eye completely covered

Measurement of intraocular pressure - Tonometry

**Eyelids**

Abnormal development

Ptosis, Entropion, Ectropion, Blepharospasm

Inflammations

Benign / Malignant tumors

**Lacrimal system**

Disorders of the inferior lacrimal system

Dacryocystitis

Lacrimal sac tumors

Lacrimal system dysfunction

Keratoconjunctivitis sicca, Lacrimation

Lacrimal gland disorders, Lacrimal gland tumors

**Conjunctiva**

Conjunctival degeneration and age-related changes

Conjunctivitis, Conjunctival tumors

**Cornea**

Developmental / Ectatic disorders

Corneal Defence Mechanisms

Bacterial keratitis, Viral keratitis

Non-infectious keratitis and keratopathy

Contact lens related problems

Corneal pigmentation, degeneration and dystrophy

Corneal Surgery

Refractive corneal surgery

**Sclera**

Trauma and Inflammations

Episcleritis

Scleritis

**Lens**

Abnormal lens development

Cataract, Treatment of cataract

Secondary cataracts

Ectopia lentis

**Uvea**

Acquired abnormalities

Inflammation (Acute iritis and iridocyclitis, Chronic iritis and iridocyclitis, choroiditis)

Sympathetic ophthalmia  
Neovascularization of the iris (rubeosis iridis)  
Tumors (Malignant tumors, Benign choroidal tumors)

### **Pupil**

The pupillary light reflex  
Assessing the accommodation reflex  
Pharmacological influences on the pupil  
Pupillary motility disorders

### **Glaucoma**

Primary glaucomas  
Secondary glaucomas  
Pediatric glaucoma

### **Vitreous body (vitreous humour)**

Posterior vitreous detachment  
Pathologic changes of the vitreous body  
Vitreous Haemorrhage, Vitreitis and intraocular inflammation  
Retinal Neovascularization  
Surgical treatment, vitrectomy

### **Retina**

Retinal vascular disorders  
Degenerative retinal lesions  
Retinal detachment  
Central serous chorioretinopathy  
Age-related macular degeneration  
Retinal dystrophies  
Toxic retinopathy  
Retinal vasculitis  
Inflammations  
Retinal tumors and hamartomas

### **Optic nerve**

Disorders affecting the boundaries of the optic disc  
Congenital disorders affecting the boundaries of the optic disc  
Acquired disorders affecting the boundaries of the optic disc  
Disorders with clearly defined boundaries of the optic disc  
Tumors  
Intraocular optic nerve tumors  
Postocular optic nerve tumors

### **Visual pathway**

Visual pathway disorders  
Pre-chiasmatic lesions  
Chiasmatic lesions  
Post-chiasmatic lesions

### **Orbit**

Developmental anomalies  
Autoimmune disorders affecting the orbit: Graves' Disease  
Orbital inflammation  
Vascular disorders  
Orbital tumors  
Orbital surgery

### **Visual optics and refractive anomalies**

Refraction in the eye: Emmetropia and ametropia  
Refractive anomalies, Correction of refractive anomalies  
Eyeglasses, Contact lenses, Prisms

Magnifying vision aids  
**Oculomotility and strabismus**  
 Manifest strabismus, Types  
 Esotropia, Exotropia  
 Vertical deviations  
 Assessment of binocular vision  
 Treatment of manifest strabismus  
 Treatment and prevention of strabismic amblyopia  
 Operation  
 Ophthalmoplegia and Paralytic strabismus  
 Nystagmus

**Ocular trauma**  
 Mechanical trauma  
 Open globe injuries  
 Penetrating orbital trauma  
 Chemical burns  
 Trauma due to physical factors  
 Thermal injuries  
 Radiation injuries (ionizing radiation)  
 Indirect ocular trauma: Purtscher's retinopathy

**PRACTICAL TRAINING IN OPHTHALMOLOGY**

Ophthalmic equipment  
 Ocular examination techniques  
 Physical examination of the anterior part-Biomicrosopy  
 Case presentation  
 Ophthalmoscopy  
 Normal fundus oculi-Retinopathies  
 Imaging techniques in ophthalmology  
 Case presentation  
 Ocular surgery – Video presentation

**CLINICAL TRAINING IN  
 OPHTHALMOLOGY**

**Hours**

6<sup>th</sup> Year, Semesters 11<sup>th</sup> & 12<sup>th</sup> (mandatory)

Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 35 hours per week (2 weeks)

**ECTS Units**

4

**Teachers**

N. Farmakakis, K. Georgakopoulos

**Description**

Mandatory clinical training during the 6<sup>th</sup> Year of studies for 2 weeks.

**CLINICAL TRAINING IN  
 OPHTHALMOLOGY**

**Hours**

6<sup>th</sup> Year, Semesters 11<sup>th</sup> & 12<sup>th</sup> (optional)

Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 25 hours per week (2 weeks)

**ECTS**

4 Units

**Teachers**

N. Farmakakis, K. Georgakopoulos

**Description**

Clinical training for 2 weeks, as an optional course during the 6<sup>th</sup> Year of studies.

## DEPARTMENT OF UROLOGY

**Address:** University Hospital of Patras, 4<sup>th</sup> floor  
Tel.:2610-999385 , Fax: 2610-993981

### **CLINICAL STAFF**

**Director** **Prof. Petros Perimenis**

**Professors** -

**Associate Professors** Anastasios Athanasopoulos, Evaggelos Liatsikos

**Assistant Professors** -

**Lecturers** Konstantinos Giannitsas

**Supporting Teaching and** Kassiani Kostourou

**Technical Staff**

**\*Participation in the course in Bioethics during the 3<sup>rd</sup> Year**

<b>UROLOGY</b>	4 <sup>th</sup> Year, 8 <sup>th</sup> Semester (mandatory)
<b>Hours</b>	Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 25 hours per week (2 weeks)
<b>ECTS Units</b>	5
<b>Teachers</b>	P. Perimenis, A. Athanasopoulos, E. Liatsikos, K. Giannitsas
<b>Description</b>	<p>The specialty of Urology is a fast evolving surgical one with sub-specialties that complete, but also broaden, its main trunk. Significant developments during the past few years include changes in the management of urological cancer, both by minimally invasive procedures and pharmaceutical interventions complementing established methods of surgical treatment, and in fields such as the treatment of lower urinary tract dysfunction, the diagnosis and treatment of male sexual dysfunction and infertility and techniques of endoscopic, percutaneous and laparoscopic surgery of the urinary tract.</p> <p>The aim of Urology is to establish the background of basic urologic knowledge that is indispensable for every medical practitioner regardless of their specialty, but also to stimulate scientific interest in developing subspecialties. These are achieved through class teaching using up-to-date presentations and involvement of students in every-day clinical practice during rotation in the various units of Urology department.</p> <p>Teaching of urology is organized in 6 major axis: 1) anatomy and physiology of the genitourinary system and pathophysiology of relevant symptoms, 2) oncology of the genitourinary system, 3) urinary tract infections 4) dysfunction of the lower urinary tract (benign prostatic hyperplasia/ bladder outlet obstruction, overactive bladder, incontinence), 5) male sexual dysfunction and infertility and 6) Stone disease of the urinary tract.</p>
<b>CLINICAL TRAINING IN UROLOGY</b>	6 <sup>th</sup> Year, Semesters 11 <sup>th</sup> & 12 <sup>th</sup> (optional)
<b>Hours</b>	Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 25 hours per week (2 weeks)
<b>ECTS Units</b>	4
<b>Teachers</b>	P. Perimenis, A. Athanasopoulos, E. Liatsikos, K. Giannitsas
<b>Description</b>	<p>During the clinical training of students on the responsibility of the Teaching Staff and all the members of the Urological Clinic, a particular learning process is carried through concerning both practical and theoretical aspects of the specialty.</p> <p>Theoretical courses concerning urologic emergencies, urologic oncology, diagnostic approach to the urologic patient and imaging techniques are held. Students are practically trained and get familiarized with endourologic procedures (catheterization – cystoscopy – endoscopic surgery) and post-operative care and assessment of patients.</p> <p>Trainees accept the responsibility to assist with the care of patients, participate in the whole diagnostic and therapeutic procedure and present cases during daily ward rounds. They attend the ambulatory, participate in operations, get trained at particular units and laboratories, and have the opportunity to participate in research protocols. During the two-week training each trainee has to go on-call twice from 2:00 pm till 8:00 pm. Groups of eight</p>

students are constituted during the trimesters of the 6<sup>th</sup> Year.

**ANDROLOGY**

**Hours**

6<sup>th</sup> Year, Semesters 11<sup>th</sup> & 12<sup>th</sup> (optional)

Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 25 hours per week (2 weeks)

**ECTS Units**

4

**Teachers**

P. Perimenis, A. Athanasopoulos, K. Giannitsas

**Description**

The significant evolution of Urologic subspecialties and the accumulation of knowledge through the contemporary scientific progress led to the edition of the textbook of Andrology. The daily requirement of teaching at the School of Medicine of the University of Patras, concerning undergraduate students, resident physicians and students attending the postgraduate studies programme of the Urologic clinic necessitated the publishing of ANDROLOGY.

At the first part of male sexual dysfunction knowledge arranged in logical sequence is presented, systematically approaching the condition of erectile dysfunction from the anatomical structure of the area concerning embryology and neurophysiology to the medical and surgical treatment. In particular chapters the condition of priapism, Peyronie's disease, and endocrinopathy are presented. In a separate chapter the clinical and laboratory investigation of sexual dysfunction is also presented in detail.

At the second part of subfertility curriculum includes elements of embryology, normal spermiogram, elements of immunobiology, endocrinopathies related to subfertility, cryptorchidism, testicular torsion, genital tract infections, obstructive azoospermia, normal biopsy and biopsies typical of subfertility syndromes and surgical techniques for rehabilitation. Finally, the up to date evolution and different techniques concerning in vitro fertilization and assisted natural conception are presented. Allowing that sexual dysfunction is a condition concerning the couple and not just the male, the last part of the course is on female sexual dysfunction.

Male sexual dysfunction:

- 1) Anatomy of genital tract
- 2) Embryology
- 3) Male erectile dysfunction-Sexual dysfunction
- 4) The normal sexual function
- 5) Prerequisites for normal erectile function
- 6) Physical examination-medication
- 7) Particular diagnostic tests concerning sexual dysfunction
- 8) Categories of erectile dysfunction
- 9) Peyronie's disease
- 10) Priapism
- 11) Treatment of sexual dysfunction

Male subfertility:

- 1) Elements of embryology
- 2) The normal spermiogram
- 3) Elements of immunobiology for the comprehension of possible parameters concerning male subfertility
- 4) Causes of male subfertility
- 5) Cryptorchidism



- 6) Testicular torsion
  - 7) Genital tract infections
  - 8) Obstructive azoospermia
  - 9) Testicular biopsy
  - 10) Cirsocele
  - 11) Microsurgery
  - 12) Endocrine assessment of the subfertile male
  - 13) Classification of male subfertility based on the spermiogram
  - 14) Obstruction of the deferent ducts of the testis
  - 15) Toxic causes or factors affecting spermatogenesis
  - 16) Assisted - reproduction techniques
- Female sexual dysfunction

## DEPARTMENT OF NEUROSURGERY

**Address:** University Hospital of Patras, 2nd floor  
Tel.: 2610-999752, 2610-991521 , Fax: 2610-991521

### **CLINICAL STAFF**

**Director** **Prof. Dimitrios Konstantinou**

**Professors** -

**Associate Professors** Constantine Constantoyiannis, George Gatzounis

**Assistant Professors** V. Panagiotopoulos

**Lecturers** -

**Supporting Teaching and  
Technical Staff** Sofia Bitsi

**\* Participation in the Clinical Training in Neurology during the 5<sup>th</sup> Year and the optional course in Clinical Neuroanatomy-Molecular Anatomy during the 3<sup>rd</sup> Year**

**CLINICAL TRAINING IN  
NEUROSURGERY**

6<sup>th</sup> Year, Semesters 11<sup>th</sup> & 12<sup>th</sup> (optional)

**Hours**

Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 25 hours per week (2 weeks)

**ECTS Units**

4

**Teachers**

D. Konstantinou, C. Constantoyiannis, G. Gatzounis, V. Panagiotopoulos

**Description**

Physical examination of surgical patients with central and peripheral nervous system diseases

Imaging

Medical case discussion

## DEPARTMENT OF OTORHINOLARYNGOLOGY

**Address:** University Hospital of Patras, 1<sup>st</sup> floor  
Tel.: 2610-999264, 2610-999265 , Fax: 2610-993986

### **CLINICAL STAFF**

**Director** Prof. Panagiotis Goumas

**Professors** Theodoros Papadas

**Associate Professors**

**Assistant Professors** Stefanos Naksakis, Nikolaos Mastronikolis

**Lecturers** -

**Supporting Teaching and** -

**Technical Staff**

**Administrative Staff:** Antigoni Vakrou

**OTORINOLARYNGOLOGY** 4<sup>th</sup> Year, 8<sup>th</sup> Semester (mandatory)

**Hours** Teaching: 25 hours per week, Laboratory: - , Tutorial: - ,Clinical Training: - (2 weeks)

**ECTS Units** 5

**Teachers** P. Goumas, S. Naksakis, T. Papadas, N. Mastronikolis

**Description****METHODOLOGY**

This course is taught through lecturing (held at lecture theatre) and practical training at the Otorhinolaryngology (ENT) Clinic.

**OBJECTIVES**

- **Otology:** Anatomy and Physiology of the ear. Diseases of external ear (foreign bodies – impacted ear wax – external otitis, otomycosis – traumatic perforations of the tympanum – acute otitis media). Secretory otitis – Chronic otitis media – Complications of purulent otitis media. Tumors of the middle ear (paraganglioma - cancer). Otology - hearing loss (hypacusia) - causes of different types of hearing loss - acoustic trauma. Temporal bone fractures - pediatric hearing loss - tinnitus - acoustic trauma. Temporal bone fractures - pediatric hearing loss - tinnitus, vertigo - nystagmus - Meniere's disease -acoustic neuroma.
- **Rhinology:** Anatomy of nose and paranasal sinuses. Epistaxis, nasal injuries – nasal deformities causing respiratory distress – choanal atresia. Rhinitis (acute - chronic - allergic - vasomotor – drug-induced). Nasal polyps. Paranasal sinusitis. Treatment of paranasal sinusitis. Complications of paranasal sinusitis. Malignant tumors of the nose and paranasal sinuses, prosopalgias.
- **Pharyngology:** Anatomy and physiology of the pharynx. Adenoids and tonsils related diseases. Pharyngeal abscess. Malignant tumors of the oral cavity and pharynx. Neck lumps.
- **Laryngology:** Anatomy and physiology of the larynx. Acute laryngitis. Acute epiglottitis. Acute laryngotracheobronchitis. Foreign bodies in the larynx, trachea, oesophagus. Laryngeal cancer. Paralysis of the laryngeal muscles. Tracheotomy. Complications of tracheotomy.
- **Elements of anatomy and neck surgery:** Muscles of neck, fascias, neck triangles, lymphatic system, allocation of neck lymph nodes, benign diseases of the neck, metastatic neck lymphadenopathy, surgical lymph node clearance of the neck.

**CLINICAL TRAINING IN** 6<sup>th</sup> Year, Semesters 11<sup>th</sup> & 12<sup>th</sup> (mandatory)  
**OTORINOLARYNGOLOGY**

**Hours** Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 35 hours per week (2 weeks)

**ECTS Units** 4

**Teachers** P. Goumas, T. Papadas, S. Naksakis, N. Mastronikolis

**Description**

Sixth year students attend the Otorhinolaryngology Clinic for 2 weeks (compulsorily). It is the responsibility of the Teaching Staff of

Otorhinolaryngology Clinic to train the students and goal of the practical training is to allow students to become more experienced concerning both practical and theoretical issues regarding the specialty. Courses in Otorhinolaryngology emergencies, Head and Neck oncology and the diagnostic approach to patients are held. Students compulsorily attend the ward round performed by the doctors of the ENT Clinic on a daily basis and participate in the whole diagnostic and therapeutic procedure. Students attend the ambulatory, participate in operations, are trained at the Units and the Laboratories of the Clinic (Neuro-otology – Nystagmography, Audiometer – Tympanometer, Logotherapy, Endoscopic ENT). During the clinical training students are allowed two absences maximum. Goal of the training is to familiarize students with examination and diagnostic techniques concerning the specialty of Otorhinolaryngology. Curriculum includes:

- Otoscopy
- Laryngoscopy
- Rhinoscopy
- Flexible endoscopy
- Audiometry
- Tympanometry
- Nystagmography
- Evoked Potentials

**CLINICAL TRAINING IN  
OTORINOLARYNGOLOGY**

6<sup>th</sup> Year, Semesters 11<sup>th</sup> & 12<sup>th</sup> (optional)

**Hours**

Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 25 hours per week (2 weeks)

**ECTS Units**

4

**Teachers**

P. Goumas, T. Papadas, S. Naksakis, N. Mastronikolis

**Description**

Sixth year students choose to attend the Otorhinolaryngology Clinic for 2 weeks. It is the responsibility of the Teaching Staff of Otorhinolaryngology Clinic to train the students and goal of the practical training is to allow students to become more experienced concerning both practical and theoretical issues regarding the specialty. Courses in Otorhinolaryngology emergencies, Head and Neck oncology and the diagnostic approach to patients are held. Students compulsorily attend the ward round performed by the doctors of the ENT Clinic on a daily basis and participate in the whole diagnostic and therapeutic procedure. Some hard-to-diagnose medical cases are chosen to be approached by students. Later these medical cases are discussed. Students attend the ambulatory, participate in operations, are trained at the Units and the Laboratories of the Clinic (Neuro-otology – Nystagmography, Audiometer – Tympanometer, Logotherapy, Endoscopic ENT). During the clinical training students are allowed two absences maximum. Upon completion of the clinical training students are assessed by the instructors.

## DEPARTMENT OF ORTHOPAEDICS

**Address:** University Hospital of Patras, 2<sup>nd</sup> floor  
Tel.: 2610-999555, 2610-999556, Fax: 2610-994579

### **CLINICAL STAFF**

**Director** **Prof. Ilias Panagiotopoulos**

**Professors** Minos Tillianakis, Panagiotis Megas

**Associate Professors** -

**Assistant Professors** Ioannis Gliatis

**Lecturers** Andreas Panagopoulos

**Supporting Teaching and** -

**Technical Staff**

**Administrative Staff:** Athina Lioli

**\*Participation in the Clinical Training in Surgery during the 5<sup>th</sup> Year and the course in Bioethics during the 3<sup>rd</sup> Year**

**ORTHOPAEDICS****Hours****ECTS Units****Teachers****Description****Educational objectives**

4<sup>th</sup> Year, 8<sup>th</sup> Semester (mandatory)

Teaching: 50 , Laboratory: - , Tutorial: - , Clinical Training: 25 hours per week (2 weeks)

5

I. Panayiotopoulos, M. Tyllianakis, P. Megas, I. Gliatis, A. Panagopoulos

**General academic targets**

The student during these lessons should be able to:

1. Recognize the clinical presentation of life-threatening orthopaedic injuries and apply first-aid measures for patient stabilization and transfer (pelvic fractures)
2. Recognize and initially manage the urgent orthopaedic cases (open fractures, amputations, neurological disorders)
3. Recognize the acute (not urgent) orthopaedic injuries which need to be referred in a specialist Orthopaedic Center (fractures, dislocations)
4. Recognize and evaluate the patient with orthopaedic disorders, to perform the initial radiological and laboratory testing and to refer the patient to a specialist.
5. Understand the potential complications in patients with orthopaedic problems and to know the way to treat them successfully.
6. Write down an informative letter of referral and to be able to communicate with other colleagues.

**Lectures**

- Bone metabolism, micro-anatomy and physiology
- Osteoporosis and bone metabolic disorders
- Pelvic and acetabulum injuries
- Bone and Joint infections
- Disorders and injuries of the shoulder
- Disorders and injuries of the elbow
- Disorders and injuries of wrist and hand
- Arthropathy (degenerative and inflammatory)
- Disorders and injuries of the hip
- Disorders and injuries of the knee
- Disorders and injuries of the foot and ankle
- Disorders and injuries of the spine
- Soft tissue tumors
- Bone tumors
- Pediatric orthopaedics (orthopaedic disorders and injuries in children)

**CLINICAL TRAINING IN  
ORTHOPAEDICS****Hours****ECTS Units****Teachers**

6<sup>th</sup> Year, Semesters 11<sup>th</sup> & 12<sup>th</sup> (optional)

Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 25 hours per week (2 weeks)

4

I. Panayiotopoulos, M. Tyllianakis, P. Megas, I. Gliatis, A. Panagopoulos



## **Description**

### **Academic targets**

The student during this class should be able to:

1. Recognize the clinical presentation of emergency orthopaedic cases and managed them appropriate.
2. Apply casts, dressings and splints and to know their usage and complications.
3. Recognize the clinical signs of orthopaedic soft tissues, joints and bone infections. He/she must be able to start immediate therapy and order the appropriate laboratory and imagine tests.
4. Interpret and understood the radiological signs of fractures and degenerative diseases in orthopaedics. .
5. Perform a thorough clinical examination and comprehensive history taking for orthopaedic diseases in the past. To explain the problem to the patient and his or her relatives. To cooperate with the rest medical and nursery stuff of the clinic.
6. Attend basic surgical procedures in the OR and discuss the approach and management with the consultants.
7. Actively participate in the on call rota at the A & E Department under the supervision of specialist registrars and consultants.
8. Participate in the regular outpatient office of the clinic where he/she will be able to examine the patients, interpret the x-rays and to follow up the patients who have been operated.
9. Attend the clinical exercise courses dealing with the clinical examination of the orthopaedic patient and the management of commonest orthopaedic injuries and diseases.

### **Weekly program of the clinical exercise class**

#### **1<sup>st</sup> WEEK**

##### **MONDAY**

1. Ankle joint and foot disorders
2. Radiological exercise I: **Orthopaedic Traumatology**

##### **TUESDAY**

1. Neurological examination of upper limb and cervical spine
2. Radiological exercise II: **Orthopaedic diseases**

##### **WEDNESDAY**

1. Pelvis and hip
2. Emergency situations in Orthopaedics

##### **THURSDAY**

1. Anatomy & pathophysiology of muscles, tendons and ligaments: Overuse Syndromes
2. Rehabilitation of patients with motor deficits (Spine centrum – Rehab Unit)

##### **FRIDAY**

1. Shoulder and Elbow
2. Bone defects – distractive osteogenesis (Ilizarov)

#### **2<sup>nd</sup> WEEK**

MONDAY

1. Knee
2. Compression neuropathies of peripheral nerves

TUESDAY

1. Neurological examination of lower limb and Lumbar Spine
2. Conservative fracture treatment (splints, casts, taping)

WEDNESDAY

1. Wrist and hand
2. Cartilage injuries

THURSDAY

1. Management of the multiple-injured patient (Damage Control Orthopaedics)
2. Rehabilitation of patients with spine injuries (Spine Centrum – Rehab Unit)

FRIDAY

1. Walking-motion analysis
2. Evaluation – oral exams

## DEPARTMENT OF CARDIOTHORACIC SURGERY

**Address:** University Hospital of Patras, 2<sup>nd</sup> floor  
Tel.: 2610-999847, Fax: 2610-994535

### **CLINICAL STAFF**

**Director** Prof. Dimitrios Dougenis

**Professors** -

**Associate Professors** -

**Assistant Professors** Efstratios Nikolaos Koletsis

**Lecturers** -

**Supporting Teaching and  
Technical Staff** Maria Livieratou

**\*Participation in the course in Bioethics during the 3<sup>rd</sup> Year**

**INTRODUCTION TO  
CARDIOTHORACIC  
SURGERY**

**Hours**

**ECTS Units**

**Teachers**

4<sup>th</sup> Year, 8<sup>th</sup> Semester (optional)

Teaching: -, Laboratory: 25 hours per week, Tutorial: - , Clinical Training: -  
5

D. Dougenis, E.N. Koletsis

**Description**

**Subject:** Surgical diseases of thoracic organs and heart

**Gravity and particularity of the course:**

- The prevalence of lung and heart diseases in our country has particularly increased and it is estimated that surgeries of these organs have doubled during the last 10 years.
- Coronary disease and lung cancer keep presenting elevation in our country, particularly within the wider area of our Campus.
- Respiratory and cardiovascular systems support the organism on the whole and therefore the approach of these diseases, as far as surgical pathology is concerned, is of great importance.

**Teaching**

- The goal of this course is to put across the main messages and direction rather than details concerning the surgical techniques of treatment.
- During the courses of the integrated learning program brief speeches-presentations are given concerning related topics and therefore the subject is gradually integrated through the educational process. Moreover, the opportunity to completely approach and integrate the subject is provided through the optional 3-week long clinical training in Cardiothoracic Surgery.
- The Teaching Staff of the Cardiothoracic Surgery Clinic is responsible for the tuition. The contribution of doctors of the National Health Service is also encouraged.
- The total teaching hours include 10 hours concerning heart, 8 hours concerning thorax including lung, diaphragm, mediastinum, thoracic wall and 2 hours concerning oesophagus.
- Teaching includes lectures with slide show, film projections and scheduled visit at the surgery in order to attend lung and heart operations. Also, students are encouraged to participate in experimental surgeries provided that experiments take place in parallel with the courses.

**Educational objectives**

Upon completion of the course the student is expected to be able to comprehend the **pathophysiology of several diseases of thorax** and heart, to describe the **diagnostic approach** and to be able to discuss the **treatment**, either conservative or surgical.

Every year following the completion of the course a **Postgraduate seminar** is organized after the academic year with the initiative of students and coordination of the Teaching Staff, including typically two round-tables with third year students as rapporteurs.

The instructors are willing to appoint clinical – research **essays** provided that students wish so.

Curriculum includes:

1. Introduction to Cardiothoracic Surgery. Lung cancer I
2. Lung cancer II. Pulmonary Cystic Echinococcosis
3. Acute pneumothorax. Mediastinal diseases, tracheal diseases and disorders, Superior vena cava syndrome
4. Chest wall disorders, diaphragm disorders. Severe thoracic injuries
5. Introduction to Cardiac Surgery. Extracorporeal Circulation – Coronary disease I
6. Coronary disease II and complications. Vulvar disorders I
7. Vulvar disorders II. Congenital cardiopathies of children and adults
8. Surgical diseases of the thoracic aorta. Revision of surgical heart diseases
9. Cardiopulmonary transplantations
10. Surgical diseases of oesophagus

The courses are followed by a Postgraduate seminar including 2 round-tables

## DEPARTMENT OF VASCULAR SURGERY

**Address** University Hospital of Patras, 2<sup>nd</sup> floor  
Tel.: 2613-603360, Fax: 2613603360

### **CLINICAL STAFF**

**Director** Prof. J. Tsolakis

**Professors:**

**Associate Professors:** -

**Assistant Professors:** S. Kakkos

**Lecturers:** -

**Supporting Teaching and**

**Technical Staff:** -

**\*Part of Integration I and II**

**OPTIONAL COURSE** 4<sup>th</sup> Year, 8<sup>th</sup> (mandatory)

**Hours** 25

Teaching: 13 hours , Clinical training: 2 hours per week (6 weeks)

**ECTS Units**

**Teaching staff** Prof. J. Tsolakis

Assistant Prof. S. Kakkos

### **Description**

The clinical training of students in Surgery is carried out during the 5<sup>th</sup> and the 6<sup>th</sup> year of studies and includes

1. Lectures
2. Participation in outpatient clinic
3. Participation in medical history taking and physical examination in the clinic, discussion of the treatment plan
4. Observation of surgeries
5. Observation of estimation of the patients in Emergency Department

# DIVISION OF PAEDIATRICS, OBSTETRICS - GYNAECOLOGY

## DEPARTMENT OF PEDIATRICS

**Address:** University Hospital of Patras, 1<sup>st</sup> floor  
Tel.:2610-999544, 2610-993948 , Fax: 2610-994533

### **CLINICAL STAFF**

**Director** **Prof. Gabriel Dimitriou**

**Professors** Anastasia Varvarigou, Vassiliki Greka-Spilioti, Michael Anthrakopoulos

**Associate Professors:** Dionisios Chrisis

**Assistant Professors:** Aggeliki Karatza

**Lecturers:** Xenofon Sinopidis

**Supporting Teaching and** Olga Sfiri

**Technical Staff :**

**Administrative Staff:** Loukianh Masaouti, Christina Adamopoulou

\* Participation in the Integrated learning program-Part II, in the optional course in Pediatric and Reproductive Endocrinology during the 4<sup>th</sup> Year, in the course in Bioethics during the 3<sup>rd</sup> Year and the course «Introduction to Internal Medicine» during the 1<sup>st</sup> Year.

**PAEDIATRICS****Hours**

5<sup>th</sup> Year, Semesters 9<sup>th</sup> & 10<sup>th</sup> (mandatory)

Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 35 hours per week (4 weeks)

**ECTS Units**

8

**Teachers**

A. Varvarigou, V. Greka - Spilioti, G. Dimitriou, M. Anthrakopoulos, D. Chrisis, A. Karatza, X. Sinopidis

**Description**

Fifth year students, as well as sixth year students, are trained in Clinical Paediatrics for six weeks per academic year at the Paediatric Clinic of the University of Patras.

**Prerequisite knowledge**

Students attend the clinical training on the supposition that they have achieved passing score on the exams of the curriculum taught concerning Paediatrics during the Integrated Learning Program.

**Goals of clinical training**

- 1) The acquisition of knowledge concerning Paediatrics that is essential for every doctor regardless of his/her future medical speciality.
- 2) The accumulation, organizing and listing of the information concerning normal psychosomatic development and disease in children of any age group (neonates, toddlers, school-age children and adolescents). This training goal includes the following skills and knowledge:

- Ability to obtain a detailed pediatric history
- Ability to perform a detailed physical examination and assess the developmental stage of children
- Ability to document the information mentioned above in the form of a typical history or a problem oriented history
- Ability to combine and analyze information in order to perform the differential diagnosis
- Ability to draw up a plan for treating cases, based on the factual administration of diagnostic techniques
- Ability to concisely present the clinical information during the presentation of medical cases
- Acquisition of knowledge concerning the basics (not focusing on details) about treating several cases, mainly the most common of them
- Review of the pathophysiology of several diseases and the impact of disease on child development

**Students' obligations for the achievement of learning goals**

During the first day of clinical training students get separated into groups and the schedule concerning the training of each group at several Units of the Paediatric Clinic is announced. The daily presence of students at the Clinic is obligatory.

Students obtain detailed history, perform plenary physical examination, assess the psychomotor development, perform differential diagnosis and draw up a plan for the diagnosis and treatment of the cases of which they are in charge within the wards, the ordinary postnatal ward, the neonatal intensive care unit for premature newborn infants and the ambulatory services- either on call or on a regular basis- of the Paediatric Clinic (ambulatory service for premature newborn infants, Paediatric Allergology, Paediatric Endocrinology, Paediatric Pulmonology). Students follow up the disease course of patients they are responsible for, if that is possible. The students' obligations concerning the clinical training are staged depending on the year of studies (5<sup>th</sup> or 6<sup>th</sup>) and their



interests.

The process of teaching, supervision and assessment of students is the responsibility of the Teaching Staff of the Paediatric Clinic but it is also estimated by all the specialists of the Clinic. Students should collaborate closely with the resident doctors who also participate in their training.

During the clinical training, students are separated into groups - each one supervised by a member of the Teaching Staff of the Clinic (tutor). The members of each group meet regularly, at least once a week.

Trainees daily attend specialized, adapted to their level of education, lectures concerning common problems of Paediatric Practice. They also attend the scientific programme of the Clinic (lectures by invited speakers, medical case presentations, literature reviews) and participate in the whole procedure. The attendance of the educational programme of the Clinic is obligatory.

Upon completion of the clinical training students take a written test and their performance is assessed.

**CLINICAL TRAINING IN  
PAEDIATRICS**

6<sup>th</sup> Year, Semesters 11<sup>th</sup> & 12<sup>th</sup> (mandatory)

**Hours**

Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 35 hours per week (6 weeks)

**ECTS Units**

12

**Teachers**

A. Varvarigou, V. Greka - Spilioti, G. Dimitriou, M. Anthrakopoulos, D. Chrisis, A. Karatza, X. Sinopidis

**Description**

Fifth year students, as well as sixth year students, are trained in Clinical Paediatrics for six weeks per academic year at the Paediatric Clinic of the University of Patras.

**Prerequisite knowledge**

Students attend the clinical training on the supposition that they have achieved passing score on the exams of the curriculum taught concerning Paediatrics during the Integrated Learning Program.

**Goals of clinical training**

- 1) The acquisition of knowledge concerning Paediatrics that is essential for every doctor regardless of his/her future medical specialty.
- 2) The accumulation, organizing and listing of the information concerning normal psychosomatic development and disease in children of any age group (neonates, toddlers, school-age children and adolescents). This training goal includes the following skills and knowledge:
  - Ability to obtain a detailed pediatric history
  - Ability to perform a detailed physical examination and assess the developmental stage of children
  - Ability to document the information mentioned above in the form of a typical history or a problem oriented history
  - Ability to combine and analyze information in order to perform the differential diagnosis
  - Ability to draw up a plan for treating cases, based on the factual administration of diagnostic techniques
  - Ability to concisely present the clinical information during the presentation of medical cases
  - Acquisition of knowledge concerning the basics (not focusing on details)

about treating several cases, mainly the most common of them

- Review the pathophysiology of several diseases and the impact of disease on child development

### **Students' obligations for the achievement of learning goals**

During the first day of clinical training students get separated into groups and the schedule concerning the training of each group at several Units of the Paediatric Clinic is announced. The daily presence of students at the Clinic is obligatory.

Students obtain detailed history, perform plenary physical examination, assess the psychomotor development, perform differential diagnosis and draw up a plan for the diagnosis and treatment of the cases of which they are in charge within the wards, the ordinary postnatal ward, the neonatal intensive care unit for premature newborn infants and the ambulatory services - either on call or on a regular basis- of the Paediatric Clinic (ambulatory service for premature newborn infants, Paediatric Allergology, Paediatric Endocrinology, Paediatric Pulmonology). Students follow up the disease course of patients they are responsible for, if that is possible. The students' obligations concerning the clinical training are staged depending on the year of studies (5<sup>th</sup> or 6<sup>th</sup>) and their interests.

The process of teaching, supervision and assessment of students is the responsibility of the Teaching Staff of the Paediatric Clinic but it is also estimated by all the specialists of the Clinic. Students should collaborate closely with the resident doctors who also participate in their training.

During the clinical training, students are separated into groups – each one supervised by a member of the Teaching Staff of the Clinic (tutor). The members of each group meet regularly, at least once a week.

Trainees daily attend specialized, adapted to their level of education, lectures concerning common problems of Paediatric Practice. They also attend the scientific programme of the Clinic (lectures by invited speakers, medical case presentations, literature reviews) and participate in the whole procedure. The attendance of the educational programme of the Clinic is obligatory.

Upon completion of the clinical training students take a written test and their performance is assessed.

## DEPARTMENT OF OBSTETRICS - GYNAECOLOGY

**Address** University Hospital of Patras, 3<sup>rd</sup> floor  
Tel.: 2610-999563, 2610-999854 , Fax: 2610-993854

### **CLINICAL STAFF**

**Director** Prof. George Dekavalas

**Professors** Vasileios Tsapanos

**Associate Professors** George Adonakis, Neoklis Georgopoulos

**Assistant Professors** Apostolos Kaponis, Georgios Androutsopoulos

**Lecturers** -

**Supporting Teaching and** Polixeni Psilla

**Technical Staff**

**\* Participation in the Integrated learning program-Part II, in the course in Bioethics during the 3<sup>rd</sup> Year and the course «Introduction to Internal Medicine» during the 1<sup>st</sup> Year**

**OBSTETRICS &  
GYNAECOLOGY**

**Hours**

**ECTS Units**

**Teachers**

**Description**

5<sup>th</sup> Year, Semesters 9<sup>th</sup> & 10<sup>th</sup> (mandatory)

Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 35 hours per week (4 weeks)

8 Units

G. Dekavalas, V. Tsapanos, G. Adonakis, N. Georgopoulos, A. Kaponis, G. Androutsopoulos

Students' labour starts at 08:30 am and ends at 03:00 pm. Students' practice is aimed at acquiring experience concerning obstetrics and gynaecology patients of all ages and familiarizing with a wide spectrum of obstetric and gynaecologic diseases, focusing on the most frequently met. Students are distributed at the units of the Clinic, where under the instruction of the managing doctors obtain a history and examine inpatients and patients visiting the ambulatory, discuss about the differential diagnosis and follow up the laboratory tests and management of patients. Students obligingly attend the ward round performed daily by the supervisors of the units and the ward round performed by the Clinic Director/Professor every Thursday. During the ward round, students present the cases and they should be aware of the disease course, the results of paraclinical tests and the administered medication.

They also obligingly attend the rest educational activities of the Clinic:

- Tuesday 14:00-15:00: Lectures by prominent speakers
- Wednesday 12:00-13:00: Oncology Council
- Thursday 14:00-15:00: Literature review

The assessment of students concerning Obstetrics – Gynaecology is accomplished with a multiple choice test during the 7<sup>th</sup> semester. On degree students are examined orally by the Teaching Staff of the Clinic.

**CLINICAL TRAINING IN  
OBSTETRICS -  
GYNAECOLOGY**

**Hours**

**ECTS Units**

**Teachers**

**Description**

6<sup>th</sup> Year, Semesters 11<sup>th</sup> & 12<sup>th</sup> (mandatory)

Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 35 hours per week (3 weeks)

4

G. Dekavalas, V. Tsapanos, G. Adonakis, N. Georgopoulos, A. Kaponis, G. Androutsopoulos

Students' labour starts at 08:30 am and ends at 03:00 pm. Students' practice is aimed at acquiring experience concerning obstetrics and gynaecology patients of all ages and familiarizing with a wide spectrum of obstetric and gynaecologic diseases, focusing on the most frequently met. Students are distributed at the units of the Clinic, where under the instruction of the managing doctors obtain a history and examine inpatients and patients visiting the ambulatory, discuss about the differential diagnosis and follow up the laboratory tests and management of patients. Students obligingly attend the ward round performed daily by the supervisors of the units and the ward round performed by the Clinic Director/Professor every Thursday. During the ward round, students present the cases and they should be aware of the disease course, the results of paraclinical tests and the administered medication.

They also obligingly attend the rest educational activities of the Clinic:

- Tuesday 14:00-15:00: Lectures by prominent speakers
- Wednesday 12:00-13:00: Oncology Council
- Thursday 14:00-15:00: Literature review

The assessment of students concerning Obstetrics – Gynaecology during the 11<sup>th</sup> and 12<sup>th</sup> semester is accomplished with a multiple choice test. On degree students are examined orally by the Teaching Staff of the Clinic.

**PAEDIATRIC &  
REPRODUCTIVE  
ENDOCRINOLOGY**

**Hours**

**ECTS Units**

**Teachers**

**Description**

4<sup>th</sup> Year, 8<sup>th</sup> Semester (optional)

Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 25 hours per week  
5

V. Greka - Spilioti, D. Chrisis, G. Adonakis, N. Georgopoulos

- The development of reproductive function throughout life is analyzed.
- Sexual diversity and complementarity as well as disorders concerning sex differentiation and their implications are elaborated.
- Disorders of reproductive function during childhood and puberty and their relation to disorders during adulthood and subfertility are expounded.
- Genotypic disorders underlying phenotypic disorders of sex differentiation are presented through examples.
- During the laboratory, basic molecular techniques for the detection of gene mutations are amplified and their application is analyzed.
- The physiology of sexuality and the significance of its disorders are expounded.
- Development of Reproduction in living creatures (1 hour)
- Sexual differentiation (4 hours)

Diagnostic and therapeutic approach

*Physiology-physiopathology*

Cases concerning children

Surgical management

Cases concerning adults

The sexual component of personality

Paraphilias

- Syndromes of resistance to hormones (1 hour)
- Congenital adrenal hyperplasia (1 hour)
- Puberty disorders (3 hours)
  - Premature adrenarche
  - Precocious puberty
  - Delayed puberty

Hypothalamic amenorrhea (1 hour)

Hyperandrogenism (2 hours)

PCOS: Pathogenesis

PCOS: Clinical and therapeutic approach

- Subfertility (2 hours)
- Cytogenetics (1 hour)
- Molecular Endocrinology and clinical applications (4 hours)
- Laboratory of Paediatric Endocrinology (4 hours)

Methods and techniques:  
 DNA extraction and sequencing,  
 PCR, RT-PCR,  
 Western Immunoblotting,  
 Tissue cultures,  
 BrDu incorporation,  
 Cell growth curves,  
 Growth hormone deficiency and Laron syndrome,  
 Childhood obesity

- Sexuality (3 hours)
  - Male sexual function
  - Female sexual function
  - Anatomic anomalies and sexual dysfunction in adolescence
- Transsexuals (2 hours)
  - Sex and the Human Brain
  - Clinical and Therapeutic approach

**MATERNAL FETAL  
 MEDICINE**

**Hours**

4<sup>th</sup> Year, 8<sup>th</sup> Semester (optional)

Teaching: - , Laboratory: - , Tutorial: - , Clinical Training: 25 hours per week

**ECTS Units**

**Teachers**

5

G. Dekavalas, V. Tsapanos

**Description**

Students are taught the fundamental principles of ultrasonography and get familiar with the use of ultrasound machines. They observe the fetus and its environment. They assess the stage of pregnancy, fetal weight and health status. They study the integrity of fetal tissues and vital organs and infer possible genetic anomalies and congenital abnormalities. They check the appearance and function of placenta and umbilical cord and calculate the perfusion and oxygenation of fetus during both pregnancy and labor.

Fetal genetic disorders (chromosomal, metabolic, multifactorial), methods of personal testing and screening and prenatal diagnosis as well as prenatal invasive diagnostic methods are taught. Students will be able to give simple genetic advice and instructions.

The effect of several factors which can harmfully affect the fetus during pregnancy such as medicines, serums and vaccines, radiations, addictive substances and several other harmful factors is taught. Students learn their appropriation and precautions for the fetus.

The pathology of pregnancy is taught. The most common and serious diseases of pregnant women affecting directly fetal health are thoroughly analyzed. Students learn to observe and treat mother and fetus simultaneously, to promote their health and preserve their life.

Finally, students are informed of the latest progress on the potentials for therapeutic intervention on fetus during pregnancy and familiarize with the most specialized methods and techniques concerning fetal intrauterine therapy.

Curriculum includes the following unities:

**ULTRASONOGRAPHY IN OBSTETRICS (10 hours)**

- Ultrasound Imaging in Obstetrics
- Physics of ultrasound-Machinery-Sections

- Fetal Biometry
- Systematic ultrasound imaging
- Basic principles of Doppler
- Supervision of fetus during labor
- Acid-base homeostasis, FHR (NST, OCT), Biophysical profile

#### HIGH-RISK PREGNANCY – PATHOLOGY OF PREGNANCY (8 hours)

- Twin – Multiple pregnancy
- Hypertensive disease of pregnancy
- Intrauterine growth restriction
- Diabetes Mellitus
- Rhesus Sensitization
- Premature rupture of membranes-Preterm labor
- Infections during pregnancy

#### PRENATAL EXAMINATION AND DIAGNOSIS (3 hours)

- Epidemiology
- Screening of genetic diseases
- Cystic fibrosis, Sickle-cell anaemia, Tay-Sachs disease, Thalassaemia
- Chromosomal disorders
- Trisomy 21 (Down's syndrome), Trisomy 18 (Edward's syndrome), Trisomy 13 (Patau's syndrome), Sex Chromosome Abnormalities (Turner's, Klinefelter's)
- Congenital anomalies of fetus
- Neural tube defects, Heart defects, Potter's syndrome
- Prenatal Diagnostic Interventions
- Amnioparacentesis
- Trophoblast biopsy
- Percutaneous umbilical cord blood sampling
- Obstetric Ultrasound
- First and second trimester screening
- Jugular foramen ultrasound
- A-test and Integrated A-Test
- Biochemical indices
- Ultrasonic indices

#### PRENATAL CARE (2 hours)

- Teratology
- Medicines
- Serums and Vaccines
- Addictive substances
- Radiations
- Harmful factors concerning domestic and working environment

#### FETAL THERAPIES (2 hours)

- Medications administered to mother, targeting fetus
- Fetal interventions (Transfusions, Injections, Therapeutic abortion, Multifetal pregnancy reduction, Shunts, Fetal surgery)
- Transplantations of embryonic cells, tissues and organs
- Cloning- Gene Therapy
- Eugenics: Negative (reduction) Eugenics, Positive (addition) Eugenics

## DEPARTMENT OF PAEDIATRIC SURGERY

**Address:** University Hospital of Patras, 1<sup>st</sup> floor  
Tel.:2610-999847 , Fax: 2610-994535

### **CLINICAL STAFF**

**Director** Prof. Varvarigou Anastasia (acting)

**Professor** -

**Associate Professors** -

**Assistant Professors**

**Lecturers** Xenofon Sinopidis

**Supporting Teaching and** -

**Technical Staff**



# INTEGRATED STUDY MODULES - PART I

## COURSES

### **INTRODUCTION TO RADIOLOGY**

#### **Hours**

#### **ECTS Units**

#### **Teachers**

#### **Description**

3<sup>rd</sup> Year, 6<sup>th</sup> Semester (mandatory)

Teaching: 25 hours per week, Laboratory: - , Tutorial: - , Clinical Training: - (1 week)

2 Units

D. Kardamakis, T. Petsas, A. Solomou, C. Kalogeropoulou, P. Zabakis, D. Karnabatidis

Goal of this particular educational unit of 3 semesters duration (6<sup>th</sup> to 8<sup>th</sup>) is the cognizance of the basic principles and the comprehension of the applications of radiology concerning the diagnostic and therapeutic management of patients within the Hospital and in the frame of primary care services as well.

The educational units that are taught include:

- Principles of nuclear physics and radiation
- Function of the radiologic equipment
- Principles of radiobiology, with emphasis on the mechanisms of cell death and apoptosis and the protective mechanisms of the cell as well
- Principles of radioprotection in radiology and radiotherapy – valid legislation
- Radioanatomy of organs and systems
- Prioritization of imaging tests per organ and system
- Teaching the findings of pathologic imaging radiology tests per system: Thorax – Digestive System – Cardiovascular – Skeleton and soft structures – Urinary – Genital tract
- Radiology of emergency cases
- Differential diagnosis of the most common diseases
- Comprehension of the relation between history, physical examination and findings of imaging radiology tests
- Radiotherapy of common malignant diseases
- Side-effects.

Upon completion of the unit of Radiology, the student should have gained knowledge and skills insuring him/her faculty concerning the following:

- The procedure of performing imaging radiology tests
- The prioritization of imaging tests per organ and disease
- The main pathological findings in each disease
- The risk due to needless referrals of patients for imaging radiology tests
- The indications, procedure and side-effects of radiotherapy.

**RESPIRATORY****Hours**3<sup>rd</sup> Year, 6<sup>th</sup> Semester (mandatory)

Teaching: 25 hours per week, Laboratory: - , Tutorial: - , Clinical Training: - (2 weeks)

**ECTS Units**

4

**Teachers**

K. Spiropoulos, K. Karkoulas

**Description**

The goal of this course is to sensitize the student to the fact that lung is the organ eminently charged of the oxygen transition which is the most essential constituent for life.

Students should be able to: accurately describe and simply and plainly define the mechanisms concerning the generation of respiratory symptoms and clinical signs. Also, they should be able to determine the severity of symptoms and signs and correlate it with disease severity. To perform differential diagnosis of obstructive pulmonary diseases versus other diseases generating similar clinical presentation (acute pulmonary oedema, foreign body aspiration, pulmonary embolism, pneumothorax). To apply appropriate diagnostic tests:

- Spirometry.
- Flow-Volume loop.
- Body plethysmography.
- Diffusing capacity.
- Ergospirometry.
- Sleep-study laboratory.
- Bronchial provocation test.
- Arterial Blood Gases (ABG).

To interpret :

- Chest X-ray.
- CT, HRCT, CT angiography.

To define the severity of disease (ERS and ATS criteria) and determine whether the disease is on the rise or in calm.

In more detail, the course in Pulmonology includes the following subjects:

- Basic knowledge of bronchial tree anatomy, law of flow (Bernoulli), respiratory physiology, pathophysiology of respiratory diseases.
- Clinical presentation and pathogeny of the main respiratory diseases such as: Bronchial Asthma, Chronic Obstructive Pulmonary Disease, Interstitial Lung Disease, Pulmonary Embolism, Pulmonary Hypertension, Tuberculosis, Sleep Apnea Syndrome.
- Treatment depending on the severity and phase of respiratory disease (on the rise-in calm) based on the consensus principles of European Respiratory Society and American Thoracic Society.

Obtaining a Patient History. Students should be able to obtain and present a definite medical history depending on the disease.

Physical examination

Inspection: Symmetric thoracic expansion, retraction of intercostal spaces and supraclavicular fossae, use of accessory muscles of respiration. Percussion. Identification of resonance, hyper-resonance and dull sound. Auscultation. Identification of sibilant and sonorous wheezes. Knowledge of the mechanism of their generation. Students should be able to determine with reliability the severity of disease based on the findings mentioned above.

Interpretation of laboratory tests Spirometry. The significance of FEV-1 and the ratio FEV-1/FVC concerning the classification of severity of COPD and asthma.

Body plethysmography. Which additive information provides concerning the

assessment of disease severity. Calculation of diffusing capacity (DLCO). In which case we use it and why. Ergospirometry. Contribution to the diagnosis of exercise-induced asthma. Sleep-study laboratory. In which case it should be done and to what extent it contributes to the best possible application of nocturnal oxygen therapy mainly concerning patients with chronic obstructive pulmonary disease and Respiratory Failure. Calculation of IgE in blood. Dermatological Prink-tests. Arterial Blood Gases (ABG). In which case patients need intensive care, in which case they should be intubated.

Skills

- Performance of standard spirometry-flowmetry.
- ABG sampling technique.
- Administration of beta2-agonists with a face mask.
- Pulse palpation and recognition of paradoxical pulse.
- Application of oximeter.

**HAEMOPOETIC**

**Hours**

3<sup>rd</sup> Year, 6<sup>th</sup> Semester (mandatory)

Teaching: 25 hours per week, Laboratory: - , Tutorial: - , Clinical Training: - (2 weeks)

**ECTS Units**

4

**Teachers**

A. Symeonidis, A. Spyridonidis, E. Solomou - Liosi

**Description**

The course consists of five units which are introduced with patient cases. These are:

1. Anaemia
2. Bleeding tendency
3. Pancytopenia
4. Lymphadenopathy
5. Leukocytosis and splenomegaly.

The comprehension of pathophysiologic aberration, symptomatology, differential diagnosis of common diseases of the haemopoetic system and the familiarization with the basic principles of therapeutic approach of diseases is goals of the course. Within the frame of the unit of «anaemia» the hereditary and acquired anaemias are taught, within the frame of «bleeding tendency» the acquired and hereditary disorders of coagulation mechanism and platelets are taught, within the frame of «pancytopenia» bone marrow failure syndromes are taught, within the frame of «lymphadenopathy» lymphomas and multiple myeloma are taught and within the frame of «leukocytosis and splenomegaly» acute and chronic leukemias as well as myelofibrotic syndromes are taught.

Within the framework of the course the principles of Blood Donation as well as the therapeutic application and complications of transfusion of red blood cells and blood products are also taught.

**CARDIOVASCULAR**

**Hours**

3<sup>rd</sup> Year, 6<sup>th</sup> Semester (mandatory)

Teaching: 25 hours per week, Laboratory: - , Tutorial: - , Clinical Training: - (2 weeks)

**ECTS Units**

4

**Teachers**

D. Alexopoulos, J. Cheiladakis, G. Chachalis, P. Davlouros

**Description**

The goal of the course “Cardiovascular” is to train students so that they are able to:

- a. diagnose, perform differential diagnosis and treat patients with symptoms

underlying suspected heart disease such as: dyspnea, syncope and precordial pain.

b. comprehend the pathophysiological mechanisms, pathoanatomical background, significance of the clinical case, diagnostic criteria, therapeutic approach and prognostic criteria concerning the following disease entities:

### **1. Coronary disease**

a. Assessment of the significance of predisposing cardiovascular risk factors and primary prevention in the general population.

b. Pathologic anatomy of atheroma and pathophysiology of coronary artery constriction.

c. Clinical manifestations and up to date therapeutic approach of coronary disease.

d. Risk stratification in patients with coronary disease.

e. Knowledge of the required aggressive secondary prevention in patients with coronary disease or equivalent diseases.

### **2. Arrhythmias – Electrocardiogram**

a. Basic principles of electrocardiogram – therapeutic approach of arrhythmias in conjunction with its prognostic significance.

b. The place of implantable devices in treatment of malignant bradyarrhythmias (pacemakers) or ventricular tachyarrhythmias (defibrillators).

### **3. Heart failure as well as diseases of pericardium and myocardium**

a. The growing incidence and aggravated prognosis of heart failure.

b. Neurochemical excitation in patients with heart failure.

c. Classification of patients with heart failure and either systolic dysfunction or normal left ventricular systolic function.

d. Clinical manifestations and up to date treatment of heart failure including biventricular pacing.

e. Acute (myocarditis-pericarditis) and chronic diseases of myocardium-pericardium (pericardial effusion and constrictive pericarditis - dilated, hypertrophic and restrictive cardiomyopathy).

### **4. Valvulopathies**

a. Causes and pathophysiology/pathologic anatomy of acute (with emphasis on infectious endocarditis) and chronic valvulopathies.

b. Significance of additive diagnostic tools (ultrasonography – cardiac catheterization) in diagnosis, treatment (medical, surgical and percutaneous balloon valvuloplasty) and

c. Prognosis of valvulopathies.

**GASTROINTESTINAL****Hours**

3<sup>rd</sup> Year, 6<sup>th</sup> Semester (mandatory)

Teaching: 25 hours per week, Laboratory: - , Tutorial: - , Clinical Training: - (2 weeks)

**ECTS Units**

4

**Teachers**

C. Lampropoulou - Karatza, V. Nikolopoulou, M. Stavropoulos, K. Thomopoulos

**Description**

The educational goal of the course in Gastroenterology is to train students in obtaining an appropriate history, etiopathogenesis, differential diagnosis, clinical presentation, diagnostic approach, complications and therapeutic approach of diseases of digestive system.

**Curriculum**

The curriculum of integrated teaching in Gastroenterology is about the main and most common diseases of digestive system. The units that are taught are the following.

**APPROACH TO THE PATIENT WITH :**

- Dysphagia
- Dyspepsia and epigastric pain
- Haematemesis – melenas – loss of blood from rectum
- Haemorrhagic stools – loss of weight
- Diarrhea – Malabsorption syndrome

Abdominal pain

**MUSCULOSKELETAL SYSTEM – CONNECTIVE TISSUE DISEASES****Hours**

3<sup>rd</sup> Year, 6<sup>th</sup> Semester (mandatory)

Teaching: 25 hours per week, Laboratory: - , Tutorial: - , Clinical Training: - (2 weeks)

**ECTS Units**

4

**Teachers**

A. Andonopoulos, S.N. Liossis, I. Panagiotopoulos, N. Farmakakis

**Description****Description**

The presentation of common disorders of the musculoskeletal system and the understanding of underlying pathogenetic mechanisms with special attention to the immunology system.

**Lectures**

The course is based on the discussion of 8 original case presentations. More specific, there is a comprehensive analysis of the following items in these specific cases: diagnostic workout, focused history taking, differential diagnosis, clinical presentation and therapeutic management.

1. Female, 58 years-old with morning stiffness and polyarthritis
2. Young female, 25 years-old with fever, rash and poly-synovitis
3. Female, 46 years-old with dysphagia and sclerodactyly.
4. Male, 52 years-old with fever, high ECR and droop foot.
5. Male, 45 years-old with acute mono-arthritis and fever.
6. Young male, 31 years-old with low back pain and morning stiffness.
7. Child, 5 years-old with fever, limb and oligo-arthritis.
8. Female, 70 years-old with knee swelling and pain worsening during motion

<b>URINARY TRACT SYSTEM</b>	3 <sup>rd</sup> Year, 6 <sup>th</sup> Semester (mandatory)
<b>Hours</b>	Teaching: 25 hours per week, Laboratory: - , Tutorial: - , Clinical Training: - (1,5 weeks)
<b>ECTS Units</b>	4
<b>Teachers</b>	D. Goumenos, K. Fourtounas, E. Papachristou

<b>Description</b>	<p>The educational goals of the course in Nephrology within the frame of integrated teaching, include training of students concerning the following units:</p> <ol style="list-style-type: none"> <li>1. Anatomy of the kidney</li> <li>2. Physiology of renal function</li> <li>3. Water and electrolyte disorders</li> <li>4. Acid-base balance</li> <li>5. Arterial hypertension</li> <li>6. Diagnostic approach to renal diseases</li> <li>7. Acute renal failure</li> <li>8. Primary causes of glomerular attack (glomerulonephritides)</li> <li>9. Diabetes mellitus and kidney</li> <li>10. Systemic diseases and kidney</li> <li>11. Hereditary renal diseases</li> <li>12. Chronic renal disease</li> <li>13. Methods of substituting for renal function</li> <li>14. Renal transplantation</li> <li>15. Nephrolithiasis</li> <li>16. Urinary tract infections</li> <li>17. Medicines and kidney</li> </ol>
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<b>DERMATOLOGY</b>	3 <sup>rd</sup> Year, 6 <sup>th</sup> Semester (mandatory)
<b>Hours</b>	Teaching: 25 hours per week, Laboratory: - , Tutorial: - , Clinical Training: - (1,5 weeks)
<b>ECTS Units</b>	4
<b>Teachers</b>	D. Tsambaos, S. Georgiou, A. Monastirli, E. Pasmatzis

<b>Description</b>	<p>Undergraduate dermatological teaching deals with the disorders of skin and its appendages and those of the visible mucosa that are included in the following sections :</p> <ol style="list-style-type: none"> <li>1. Introduction to embryology, anatomy, histology, physiology, and immunobiology of the skin</li> <li>2. Keratinization and melanogenesis disorders</li> <li>3. Cutaneous hypersensitivity reactions</li> <li>4. Infectious diseases of the skin</li> <li>5. Sexually transmitted diseases</li> <li>6. Autoimmune dermatoses</li> <li>7. Disorders of hair and nails</li> <li>8. Benign and malignant cutaneous neoplasms</li> </ol>
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The main goal of teaching is to assist the students with the learning and understanding the most important aspects of epidemiology, etiopathogenesis, clinical and histopathological picture, prognosis and treatment of diseases of the skin, its appendages, the visible mucosa and of the sexually transmitted diseases.

# INTEGRATION STUDY MODULES - PART II

## COURSES

<b>NUTRITION POISONINGS TRAUMA (ATLS)</b>	4 <sup>th</sup> Year, 7 <sup>th</sup> Semester (mandatory)
<b>Hours</b>	Teaching: 25, Laboratory -, Tutorial -, Clinical Training - (per week)
<b>ECTS Units</b>	4
<b>Teachers</b>	F. Kalfarentzos, E. Tzorakoleytherakis, D. Karavias, M. Stavropoulos, D. Koukouras, J. Tsolakis, K. Panagopoulos, G. Skroubis, S. Kakkos, I. Panagiotopoulos, M. Tillianakis, K. Filos, P. Megas, D. Konstantinou, J. Kechagias, I. Maroulis
<b>Description</b>	<p>EDUCATIONAL OBJECTIVES CONCERNING MALNUTRITION</p> <p>Malnutrition is a common problem among hospitalized patients. In spite of the confirmation, decades ago, that malnutrition increases morbidity and mortality, the problem is often underestimated and its confrontation is delayed. The progress on artificial nutritional support led to the simplification and the restriction of complications of the application of the method. A fact that should be understandable in any case is that artificial nutrition is one out of many therapeutic interventions that can be applied to a patient and it is not possible to independently achieve spectacular results.</p> <p><b>General Educational Objectives</b></p> <p>Upon completion of this educational unit the student should know:</p> <p>How to recognize patients with malnutrition and estimate its severity.</p> <p>How to therapeutically manage patients with malnutrition.</p> <p><b>Specific Educational Objectives</b></p> <p>Knowledge – Skills – Attitudes</p> <p>Generally concerning malnutrition</p> <ul style="list-style-type: none"><li>• Epidemiology: Description of epidemiologic data concerning malnutrition in hospitalized patients (worldwide and in Greece) in relation to age, socioeconomic status and mainly in relation to the subjacent disease.</li><li>• Pathogenesis – Definitions: Description of what is defined as malnutrition, the way its severity is estimated, with which mechanisms it is developed. Special reference to differences between malnutrition due to starvation-semistarvation and malnutrition related to systemic inflammatory response.</li></ul> <p><b>Approach to the malnourished patient (diagnosis)</b></p> <ul style="list-style-type: none"><li>• Obtaining a medical history, physical examination: Reference to the method of subjective nutritional assessment, based on obtaining a medical and nutritional history (nature of subjacent disease, functionality of gastrointestinal system, nutritional habits, socioeconomic status) and coming to a conclusion also taking into account physical examination findings. Reference to parameters of nutritional assessment based on the physical examination of patient (loss of body weight, thickness of skin puckers, existing muscular atrophy etc)</li><li>• Laboratory investigation: Reference to laboratory parameters of assessing the existence and severity of malnutrition (nitrogen balance, prealbumin, transferrin etc)</li></ul> <p><b>Principles of artificial nutritional support</b></p>

- In general: Reference to macronutrients (proteins, carbohydrates, fats) and micronutrients (vitamins, microminerals) that add up to nutrition. Description of existing macronutrients and micronutrients that can be administered with artificial nutrition supplements.
- Indications and clinical applications of artificial nutrition – Results: Reference to proven efficient indications of artificial nutrition administration. Reference to clinical applications of the method concerning particular diseases and conditions.
- Assessing daily requirements: Description of the methods assessing basic energy requirements (e.g. Harris-Benedict equation) and calculation of the energy requirements of basic physical activity (sedentary) depending on the subjacent disease, age and related health problems. Reference to the technique of indirect calorimetry. Assessment of the required amount of protein, carbohydrate and fat and micronutrients to be administered, depending on the subjacent disease of patient supported with artificial nutrition.
- Development of a therapeutic scheme: Principles of developing schemes of artificial nutrition.
- Routes of administration of artificial nutrition: Description of principles of parenteral and enteral artificial nutrition. Reference to techniques of administration of parenteral (into a peripheral or central vein) and enteral artificial nutrition (through nasogastric, nasojejunal tube, gastrostomy, jejunostomy). Reference to the categories of artificial nutrition supplements for parenteral or enteral administration.
- Estimation of efficacy: Reference to the parameters in estimating the efficacy of administered artificial nutrition (nitrogen balance, prealbumin, transferrin etc). Suggested follow-up protocol for patients receiving artificial nutrition.
- Complications of artificial nutrition: Specific complications of parenteral (pneumothorax, central catheter-related sepsis etc) and enteral artificial nutrition (pulmonary aspiration, diarrhea). Common complications of artificial nutrition (serum glucose disorders, electrolyte disorders, disorders of hepatic biochemistry, fat and acid-base disorders, overfeeding and refeeding syndrome).

#### **Latest data – Future objectives concerning artificial nutrition**

- Immunonutrition: Reference to the principles of immunonutrition, the existing supplements and the results of its administration to special patient groups.
- Early enteral nutrition: Reference to the specific technique of early enteral nutrition and the encouraging results of its administration to special patient groups (e.g. patients with traumatic brain injury).
- Special diets: Reference to experimental and clinical studies concerning special diets for specific disease entities, even for infections caused by specific microorganisms.

#### **LECTURE SUBJECTS**

- Epidemiology – Pathogenesis – Definitions concerning malnutrition
- Approach to patients with malnutrition
- Principles of artificial nutrition support
- Indications and clinical applications of artificial nutrition – Results
- Assessment of daily requirements
- Development of a therapeutic scheme
- Routes of administration of artificial nutrition
- Estimation of efficacy



- Complications of artificial nutrition
- Latest data – Future objectives concerning artificial nutrition

#### EDUCATIONAL OBJECTIVES CONCERNING OBESITY

Obesity is a chronic disease related to genetic and environmental factors but mainly related to modern lifestyle as well. It is considered to be the disease of affluence and its incidence is increasing rapidly over the last decades. It is related to increased incidence of many and severe related problems and represents one of the leading causes of death in the developed world. Its treatment is divided into conservative and surgical, with the first being applied in case of common obesity and the second having very good results concerning clinically severe obesity.

#### General Educational Objectives

Upon completion of this educational unit the student should know:

1. How to estimate the degree of obesity and recognize its comorbidities.
2. How to therapeutically manage patients with obesity.

#### Specific Educational Objectives

##### Knowledge – Skills – Attitudes

##### Generally concerning obesity

- Definition-Pathophysiology: Definition and classification of obesity based on body mass index (BMI), into common obesity and clinically severe obesity. Reference to causes and proven mechanisms as well as mechanisms under investigation involved in developing obesity.
- Epidemiology: Description of epidemiologic data concerning obesity (worldwide and in Greece) in relation to age, sex and socioeconomic status.

##### Approach to the obese patient

- Obtaining a medical and nutritional history, physical examination: History of initiation of obesity, reference to previous attempts to lose body weight, nutritional habits (consuming sweets or not), history of existing comorbidities related to obesity (metabolic-type 2 diabetes mellitus, hypercholesterolemia, hypertriglyceridemia, hyperuricemia, sleep apnea, obesity hypoventilation syndrome etc). Estimation of the type of obesity based on the calculation of waist circumference.
- Laboratory investigation: Reference to clinical and paraclinical tests for the assessment of comorbidities related to obesity (cardiological, pulmonary, endocrine, psychiatric assessment etc)
- Problems - Diseases related to obesity: Endocrine / metabolic, cardiovascular, pulmonary, myoskeletal, gastrointestinal, malignancies, hernias, cephalgia, exercise-induced uracrasia, psychological disorders. Reference to social and economic consequences.

##### Principles of treatment

- Therapeutic objective: Obesity is a chronic disease and requires long lasting treatment for a successful long lasting therapeutic result. Reference to the improvement of comorbidities even with slight loss of body weight (5-10% of the initial body weight). Reference to the requirement of changing attitude and lifestyle.
- Selection of treatment: Reference to decision-making algorithm concerning therapeutic intervention based on body mass index and existence of comorbidities. Reference to unsuccessful long range results of conservative treatment of obesity.

##### Treatment

- Conservative treatment

- Diets (hypocaloric, very low calorie, other)
- Change of dietary habits
- Increase of physical activity
- Combination of the above interventions
- Pharmacotherapy
- Sibutramine
- Orlistat
- Surgical treatment
- Criteria for surgical treatment of obesity
- Selection criteria for the type of surgery
- Types of surgical treatment for clinically severe obesity
- Restrictive procedures (vertical banded gastroplasty, adjustable gastric banding)
- Gastric bypass Roux-en-Y
- Nonabsorbent procedures (distal gastric bypass, cholo-pancreatic diversions)
- Complications of surgeries (mortality, early and late morbidity)
- Observation of patients after surgical treatment of clinically severe obesity

#### **Treatment results in obesity**

- Criteria for successful treatment
- Results of conservative treatment
- Results of surgical treatment
- Control concomitant obesity diseases after therapeutic intervention

#### **LECTURE TOPICS**

- Definition – Pathophysiology – Epidemiology of Obesity
- Approach to obese patient
- Treatment principles
  - Conservative Treatment
  - Pharmaceutical
  - Surgical
- Criteria for surgical treatment of obesity
- Selection criteria for the type of surgery
- Types of surgical treatment for clinically severe obesity
- Complications of surgeries (mortality, early and late morbidity)
- Observation of patients after surgical treatment of clinically severe obesity
- Treatment results in obesity

#### **TRAUMA – TREATMENT MULTIPLE TRAUMA PATIENT**

##### **Training Goals**

The heavy trauma is the leading cause of death for the first four decades of life (ages 1-44 years) and is the third cause of death for all ages, after cardiovascular disease and cancer. It has been estimated that in a death from trauma correspond three permanently disable, while a significant proportion of these deaths and disabilities could have been avoid by early and appropriate intervention. Because trauma affects mainly young, productive people, the social and economic impacts are enormous.

The knowledge and the application of the principles of resuscitation and treatment of multiple trauma patient, especially in the first hour after injury, minimize the complications and reduce the rates of preventable deaths and disabilities.

##### **General Training Goals**

After the end of the courses the student should be able to know:

- How to make the initial evaluation and treatment of a multiple trauma patient "Primary assessment and Revitalization", applying the correct order of priorities based on the ABCBE, in order to treat injuries and situations that directly threaten life. Next the student should be able to make the "Secondary assessment", in order to diagnose potentially fatal, and all the simple injuries that has the patient and know how to treat them.
- Finally the student should know how to treat a multiple trauma patient in a center that does not have the equipment and personnel for the definitive treatment of injuries (Revitalization and safe transportation).

### **Special Training Goals**

#### **Theoretical Knowledge-Skills-Behavior**

##### **I. Theoretical Knowledge:**

After the end of the courses the student should know:

##### 1. Trauma in general.

Description of epidemiological data on "Trauma" in Greece, Europe and all around the world. Περιγραφή επιδημιολογικών δεδομένων για το "Τραύμα" στην Ελλάδα, στην Ευρώπη και σ' όλο τον κόσμο. Impacts on social and economic life of any country. Ways to prevent trauma globally and in Greece.

##### 2. Treatment of Trauma

- a. How the assessment of the ABC's is made and how the patient is identified (knowledge of symptoms and signs) with acute airway problem, breathing, circulation in imminent danger of dying.
- b. Which are the right actions for rejuvenation. Particular should know:

- How is made the incision and ensuring an open airway (temporarily or permanently) with simultaneous immobilization of the cervical spine.
- How to address the urgent problems of breathing and ensuring this.
- How to control the external bleeding and support the patient that shows hypovolaemic shock and the Dx of the possible causes of the shock in a specific injured.
- How to assess the neurological status of the injured person (GCSscore) and how after reassessment, is controlled the improvement or the worsening of neurological status. To know the way of the immediate treatment, as well as the further actions.
  - The acute problem of hypothermia in multiple trauma patient, the principles of prevention and how to treat this if needed.
- a. To know how to do the complete physical examination from head to toe "Secondary assessment" and which is its purpose (diagnosis of injuries and situations that are potentially fatal and all simple injuries and know how to treat them).
- b. Finally must know, how to decide of whom injured, when, how and where should transport, if the type and the severity of injuries cannot be treated in the center that is located.
- c. To know the way of immunization for tetanus and relief patient from pain.

##### **II. Skills:**

The student, except the knowledge, should acquire the ability of specific skills when treats multiple trauma patient, such as:

##### **1. Medical History Taking**

The student should be able to get it, to report and present the history of a multiple trauma patient, including:

- Mechanism of injury
- pre-existing pathology
- medicines
- allergies
- tetanus immunization status.

## 2. Physical Examination

The student should be able to do a complete physical examination of a multiple trauma patient (using the overview, the oral hearing, the percussion and the palpation) and be able to distinguish or suspect the existence of:

- Airway obstruction
- Dysfunction / failure of breathing, due to pneumothorax (under tension, open or plain), plain or massive haemothorax, unstable thorax with bruised lung. Also the presence of other thoracic injuries potentially fatal (tracheobronchial rupture, traumatic rupture of aorta, diaphragm or esophageal) or other simple injuries (traumatic asphyxia, subcutaneous emphysema, rib fractures, sternum, clavicle, scapula).
- Hypovolaemic shock or other type of shock namely: cardiogenic, due to cardiac tamponade, myocardial rupture or fracture, air embolism, or myocardial infarction. Neurogenic due to a spinal cord injury, or rarely septic shock, in late tackle injured with penetrating wounds of the abdomen with bowel rupture.
- Traumatic brain injury (TBI) and its severity based on the assessment of GlasgowComaScale, and the findings from the examination of the pupils (size, similarity, reaction to light). At the end of the physical examination the student should be able to classify TBI by combining gravity, morphology and the mechanism of injury and can distinguish the diffuse from focal intracranial injuries and be able to apply emergency procedures for each. Also should be able to make assessment of the functioning of the cranial nerves, well as mobility and sensation of injured and can interpret the results in case of focal findings.
- Intraventricular injury (rupture of solid-bleeding or hollow entrails-peritonitis), by evaluating the findings of the physical examination (the existence of pain, tenderness to palpation, resistance or contraction of the abdominal wall) and data from digital rectal examination of the vagina and the rectum.
- Myoskeletal injury by evaluating the findings of the physical examination of the upper and lower extremities (deformity, tenderness, crepitation, abnormal movement, sensation, disorder of peripheral pulses).

Fractures of the pelvis with associated bleeding, and injuries of the thoraco-lumbar spine.

## 3. Ordering/executing and Interpreting Laboratory Tests

The student should be able to choose the necessary laboratory and diagnostic tests needed to substantiate the existence of injuries that has suspected from physical examination and the mechanism of multi-trauma injury, and can interpret the results of these tests, both before, and after the start of treatment and during follow-up (blood chemistry tests, radiological assessment, blood gases).

## 4. Basic and specialized invasive skills

The student should be able to assess overall an injured starting from the control of vital functions based on ABC's while to be able to support and restore problem areas. In particular, should be able to do:

- Immobilization of the cervical spine and cervical collar placement.
- Opening the airway by pulling or pushing the lower jaw (jawthrust, chinlift), perform oropharyngeal suction and removal foreign bodies, if any. Installing orally or Reno-pharyngeal airway (temporary securing airway).
- Definite airway management (oro or naso-tracheal intubation, surgically performed cricothyrotomy).
- Ventilating the patient using an ambu-valve mask.
- Emergency treatment of tension pneumothorax (Thoracic drainage by needle aspiration or placement of a chest tube).
- Emergency treatment of traumatic pneumothorax.
- Controlling external bleeding by applying pressure. Placement of intravenous catheters and administering colloids and blood.
- Immobilization of the patient on board.
- Reduction and immobilization of fractures.
- Placement of nasogastral tube, urethral catheter, while knowing the contraindications or differentiations to their placement.
- Monitoring the patient's cardiac rhythm and oxygen saturation through specialized monitoring equipment.  
(Η επίδειξη και εκμάθηση των δεξιοτήτων αυτών απαιτεί την ύπαρξη εργαστηρίου με προπλάσματα).

#### 5. Communication skills

The student should be able to explain the problem to the patient, while reassuring and encouraging him/her psychologically, since, out of nowhere the patient is in a strange environment, potentially without any friends or family close, where apart from pain he/she feels all kinds of insecurities about what is going to happen and the results of the procedures.

#### III. Behavioral issues

The student should be able to understand the unfavorable situation the patient is in and be tolerant towards any strange or aggressive behavior.

Also, the student must be aware of the fact that treating a patient with trauma in the hospital ER requires team spirit, since it requires contribution from doctors of several specialties. All these professionals should cooperate peacefully with each other as well as other team members (paramedical staff, nurses) and obey directions from the team leader, in order to achieve the desired results.

#### THORACIC TRAUMA

Treatment of Thoracic Trauma (TT) is a generally simple process, provided that the right diagnosis has been made. However, (TT) that remains undiagnosed or untreated can lead to elevated patient mortality rates. In general less than 10% of Blunt Trauma and about 15-30% of Penetrating Trauma need invasive treatment (thoracotomy). Most patients with TT are generally in need of simple intervention (e.g. thoracic drainage), which are within the capabilities of a general practitioner. The total mortality rate of Thoracic Trauma (TT) is approximately 10%.

#### General Training Goals

After the courses' end, the student should be in a position to acknowledge:

- How to initially evaluate and treat a patient presenting with TT (First Degree Evaluation And Resuscitation – Primary Survey), by applying priorities based on the ABCDE protocols in the right turn, thus treating life-threatening Thoracic Injuries.
- Secondly, to be able to make a “Second Degree Evaluation – Secondary Survey” in order to diagnose potentially lethal thoracic injuries as well as

all other simple injuries on the patient, and know how to effectively treat them.

- Finally, to be able to manage a patient presenting with multiple injuries in a health center lacking the equipment and personnel necessary for definite treatment of these injuries.

### **Special Training Goals**

#### **Theoretical Knowledge-Skills-Behavior**

##### **I. Theoretical Knowledge:**

After the courses' end, the student should be in a position to:

- a. Know how ABCs are evaluated, to be able to distinguish which patient (knowledge of symptoms and signs) has an acute, directly life-threatening airway, breathing, circulation problem as well as knowing which are the right resuscitation actions:
  - To know how to incise and ensure an open airway (temporarily or permanently, while simultaneously immobilizing the cervical spine).
  - To know how to treat emergency breathing problems and ensure their solution (tension pneumothorax, traumatic/open pneumothorax, haemothorax, unstable thorax with underlying pneumonic contusion).
  - To know how to treat Hypovolaemic Shock and differentially diagnose causes of shock in the specific patient with trauma (tension pneumothorax, traumatic/open pneumothorax, haemothorax, cardiac tamponade).
  - To know how to make a full neurological evaluation of the patient presenting with trauma (GCSscore) , to be able to distinguish a neurological improvement or deterioration after re-evaluating the patient and consequently know the treatment and further actions required.
  - To distinguish the acute problem of hypothermia in the patient presenting with trauma, and the basic principles of its prevention and treatment.
- b. To know how a full thoracic physical examination is performed (Secondary Survey) and all the clinical symptoms and signs, in order to diagnose or suspect potentially life-threatening injuries (pneumothorax, haemothorax, pulmonary contusion, tracheobronchial rupture, myocardial contusion, rupture of the aorta, the diaphragm or the esophagus), as well as simpler injuries (subcutaneous emphysema, asphyxia, fractures of the scapula, ribs or the sternum) and know how to effectively treat them.
- c. Finally to know which patient how when and where should be evacuated, in case the injuries presented cannot be definitely treated in the institution the patient is originally located.
- d. To know tetanus-immunization and pain management protocols.

##### **II. Skills**

When treating a patient with Thoracic Trauma, apart from theoretic knowledge, several skills should be acquired and performed by the student, such as:

###### **1. Medical History Taking**

The student should be capable of taking, recording and presenting the patient's Medical History including:

- Mechanism of injury
- Pre-existing medical conditions
- Prescription Drugs
- Allergies
- Tetanus immunization status.

###### **2. Physical examination**

The student should be able to perform a full thoracic physical examination (using inspection, palpation, percussion and auscultation) and be in a position to diagnose

or suspect:

- Airway Obstruction
- Breathing deficiency/dysfunction, due to: tension, traumatic or primary pneumothorax, simple or mass haemothorax, and/or unstable thorax with underlying pulmonary contusion. Also, the presence of other potentially life threatening thoracic injuries (pulmonary contusion, tracheobronchial rupture, traumatic aorta/diaphragm/esophagus rupture) or other simple injuries (traumatic asphyxia, subcutaneous emphysema, fractured ribs/clavicle/sternum/scapula).
- Hypovolaemic shock, or shock of any other kind, more importantly: cardiogenic shock due to cardiac tamponade, contusion or myocardial rupture, aerial embolism or myocardial infarction.

### **3. Ordering/executing and Interpreting Laboratory Tests**

The student should be able to choose the necessary diagnostic and Laboratory tests in order to validate the presence of injuries suspected from physical examination and the mechanism of injury in the patient presenting with Thoracic Trauma (e.g. Aortography when suspecting rupture of thoracic aorta, instillation of iv contrast through naso-gastric tube when suspecting rupture of diaphragm), as well as interpreting these tests' results before and after treatment and during patient monitoring (blood analysis tests, blood gas tests, imaging tests).

### **4. Basic and specialized invasive skills**

The student should be able to wholly evaluate a patient presenting with trauma beginning with checking vital functions based on the ABC protocols and supporting or restoring any emerging problems.

Specifically the student should be able to perform:

- Cervical spine immobilization and cervical collar placement.
- Ensuring an open airway by jaw-thrusting or chin-lifting, performing suction in the stomato-pharynx and remove foreign objects if needed. Placing an oro- or naso-pharyngeal airway (temporary airway management).
- Definite airway management (oro or naso-tracheal intubation, surgically performed cricothyrotomy).
- Ventilating the patient using an ambu-valve mask.
- Emergency treatment of tension pneumothorax (Thoracic drainage by needle aspiration or placement of a chest tube).
- Emergency treatment of traumatic pneumothorax.
- Emergency pericardiocentesis.
- Controlling external bleeding by applying pressure. Placement of intravenous catheters and administering colloids and blood.
- Placement of nasogastral tube, urethral catheter, while knowing the contraindications or differentiations to their placement.
- Monitoring the patient's cardiac rhythm and oxygen saturation through specialized monitoring equipment.

### **5. Communication skills**

The student should be able to explain the problem to the patient, while reassuring and encouraging him/her psychologically, since, out of nowhere the patient is in a strange environment, potentially without any friends or family close, where apart from pain he/she feels all kinds of insecurities about what is going to happen and the results of the procedures.

## **III. Behavioral issues**

The student should be able to understand the unfavorable situation the patient is in

and be tolerant towards any strange or aggressive behavior. Also, the student must be aware of the fact that treating a patient with trauma in the hospital ER requires team spirit, since it requires contribution from doctors of several specialties. All these professionals should cooperate peacefully with each other as well as other team members (paramedical staff, nurses) and obey directions from the team leader, in order to achieve the desired results.

## **ABDOMINAL TRAUMA**

### **Training Goals**

Abdominal trauma, depending on the mechanism of injury is classified in blunt trauma (consequence of an immediate blow, abrupt deceleration or dissection force) or penetrating trauma due to e.g. a knife or a bullet.

Abdomen evaluation of a patient presenting with trauma is one of the most important elements of the principal survey, and here blunt trauma is more problematic in comparison to penetrating trauma, as far as diagnosis is concerned. The goal is not to discern which organ is injured, but rather to diagnose an internal abdominal injury that needs surgical intervention.

Undiagnosed abdominal injury is one of the main causes of mortality in trauma.

### **General Training Goals**

After the courses' end, the student should be able to:

- Describe the importance of abdominal anatomic regions.
- To discern between blunt and penetrating trauma.
- To detect the clinical signs that indicate intraperitoneal, retroperitoneal or pelvic injury and know how to diagnose and treat them.
- Finally how to manage a patient in an institution that doesn't afford the personnel or the equipment for definite treatment of abdominal trauma.

### **Special Training Goals**

#### **Theoretical Knowledge-Skills-Behavior**

##### **I. Theoretical Knowledge**

After the courses' end the student should be able to:

- Know the external and internal anatomy of the abdomen (intraperitoneal, retroperitoneal and pelvic abdomen), the organs residing in each area, as well as the importance of these areas while evaluating a patient presenting with abdominal trauma.
- Know the categories of abdominal trauma (blunt and penetrating), the difference between them and the role they play in the severity and the extent of trauma pathophysiology.
- Know how to perform an abdominal physical examination, as well as detecting clinical signs suggestive of intraperitoneal or retroperitoneal injury
- Know how to evaluate a penetrating abdominal injury.
- Know how to evaluate a pelvic injury and pelvis stability.
- Know how to access diagnostically blunt and penetrating abdominal injuries, as well as interpreting laboratory tests.
- Know the indications for invasive surgical treatment.

##### **II. Skills**

Apart from theoretic knowledge, the student should acquire a set of specific skills when dealing with a patient presenting with abdominal trauma, such as:



### **1. Medical History Taking**

The student should be capable of taking, recording and presenting the abdominal injury patient's Medical History including:

- Mechanism of injury
- Pre-existing medical conditions
- Prescription Drugs
- Allergies
- Tetanus immunization status.

### **2. Physical Examination**

The student should be able to perform a full physical examination of the abdomen and the perineum (using inspection, auscultation, percussion and palpation) and be in a position to diagnose or suspect an intraperitoneal or retroperitoneal injury. In case of a hypotensive patient, to be able to quickly detect if abdominal injury exists and if it is responsible for the hypotension. The student also should be able to check the stability of the pelvis ring, perform a rectal or vaginal digital examination and evaluate relative findings.

### **3. Conduct and evaluate laboratory tests**

The student should be able to choose the necessary diagnostic and laboratory tests needed to validate injuries suspected from physical examination and the mechanism of abdominal injury, as well as specialized diagnostic tests depending on the mechanism of injury (e.g. U/S, CT-scan, diagnostic peritoneal lavage, laparoscopy, thoracoscopy etc.) the student should also be able to interpret these tests during patient monitoring, before and after the beginning of treatment.

### **4. Basic and more specialized invasive skills**

- Control external bleeding by applying immediate pressure.
- Intravenous catheter placement and administration of colloids and blood.
- Pelvic occlusion and immobilization in case of an "open book" fracture and patient immobilization on a board.
- Placement of nasogastral tube, urethral catheter, while knowing the contraindications or differentiations to their placement.

### **5. Communication skills**

The student should be able to explain the problem to the patient, while reassuring and encouraging him/her psychologically, since, out of nowhere the patient is in a strange environment, potentially without any friends or family close, where apart from pain he/she feels all kinds of insecurities about what is going to happen and the results of the procedures.

## **III. Behavioral issues**

The student should be able to understand the unfavorable situation the patient is in and be tolerant towards any strange or aggressive behavior.

Also, the student must be aware of the fact that treating a patient with trauma in the hospital ER requires team spirit, since it requires contribution from doctors of several specialties. All these professionals should cooperate peacefully with each other as well as other team members (paramedical staff, nurses) and obey directions from the team leader, in order to achieve the desired results.

## **CRANIOCEREBRAL TRAUMA**

### **Training Goals**

Craniocerebral Trauma (CCT) is the fourth most common cause of death in general, whilst being the most common cause of death during the first four decades of a patient's life.

The most common cause of CCT is car accidents, fall, and criminal action. Less common are work and sport-related accidents and leisure activities.

CCT, depending on the gravity of the situation can be life-threatening for the patient; however other injuries can encumber its outcome. Early assessment and evaluation of a CCT patient, which requires knowledge of these injuries' pathophysiology and the right treatment maneuvers, are factors determining a better outcome for these patients.

### **General Training Goals**

After the courses' end the student should be able to:

- Initially evaluate and resuscitate a CCT patient
- Further manage a CCT patient

### **Special Training Goals**

#### **Theoretical Knowledge -Skills-Behavior**

#### **I. Theoretical Knowledge**

After the courses' end the student should be able to:

1. Value medical history taking and knowledge of CCT mechanism towards better patient management.
2. Discern other injuries that can encumber CCT outcome or change its clinical appearance
3. Evaluate the level of consciousness using the Glasgow Coma Score (GCS) and classify CCT accordingly (light, medium, severe CCT)
4. Know the ophthalmic pupils' reactions to light, their meaning and what neurological lateralization means ( hemiparesis, hemiplegia)
5. Know scalp, cranial, meningeal and cerebral anatomy
6. Know the physiology of endocranial pressure (Monro-Kellie dogma, volume-endocranial pressure curve, cerebral filtration pressure, cerebral blood flow, cerebral edema, cerebral intussusceptions)
7. To recognize CCT morphology (cranial fracture, cerebral concussion epidural and subdural hematomas, cerebral contusion, cerebral haemorrhage, traumatic subarachnoid haemorrhage, diffuse axial injury).
8. To discern between a full bladder, hypoxemia, or pain when dealing with a stimulated or aggressive patient with an altered level of consciousness.
9. To recognize situations that could impede with a CCT patient's evaluation (alcohol, drugs, epilepsy, hypoxemia, hypovolaemic shock).
10. To recognize CCT complications (cerebrospinal fluid leak, metatraumatic epilepsy, traumatic arohernia, after-concussion syndrome)
11. To know the treatment principles of light, medium and severe CCT (monitoring, imaging tests, indications of invasive surgical treatment, indications of treatment in an ICU, indications of drug treatment of endocranial hypertension).
12. To suspect and timely perform therapeutic maneuvers in patients with CCT

#### **II. Skills**

Apart from theoretic knowledge, the student must acquire a set of specific skills when managing a CCT patient, such as:

1. Medical History taking (mechanism of injury, drugs, drugs that alter the level of consciousness, other injuries).

2. Physical Examination (evaluation according to GCS, examination and assessment of the pupils' reaction to light, recognizing hemiparesis or hemiplegic, recognizing blunt cranial trauma, recognizing clinical signs of basilar skull fracture (rhinorrhea, logorrhea, other injuries of facial cranium)
3. Ordering and interpreting laboratory tests (simple cranial x-ray, cerebral CT)
4. Communication skills

The student should be able to explain the problem to the patient, while reassuring and encouraging him/her psychologically, since, out of nowhere the patient is in a strange environment, potentially without any friends or family close, where apart from pain he/she feels all kinds of insecurities about what is going to happen and the results of the procedures.

### **III. Behavioral issues**

The student should be able to understand the unfavorable situation the patient is in and be tolerant towards any strange or aggressive behavior.

Also, the student must be aware of the fact that treating a patient with trauma in the hospital ER requires team spirit, since it requires contribution from doctors of several specialties. All these professionals should cooperate peacefully with each other as well as other team members (paramedical staff, nurses) and obey directions from the team leader, in order to achieve the desired results.

## **SPINAL COLUMN TRAUMA**

### **Training Goals**

Spinal Column Trauma is very common in modern times, and it can lead to severe permanent disability. Every patient presenting with trauma above the clavicles, as well as every trauma patient, should be considered to have a spinal column injury, and be managed with extreme caution even in the absence of clinical symptoms and signs.

Approximately 55% of spinal column trauma occurs in cervical spine, 15% in thoracic spine, 15% in thoraco-lumbar spine and 15% in lumbar-sacral spine. Also, approximately 5% of patients with CCT present with spinal column injury, while 25% of spinal column injury patients present with at least medium severity CCT.

### **General Training Goals**

After the courses' end the student should be able to:

- Describe basic elements of spinal column anatomy and physiology.
- Not evaluate a patient presenting with spinal column injury.
- To discern between common types of spinal column injury and their imaging characteristics.
- To manage a patient with spinal column trauma during the primary survey.
- To know how to immobilize a patient with spinal column trauma and when/how to mobilize him/her.

### **Special Training Goals**

#### **Theoretical Knowledge -Skills-Behavior**

##### **I. Theoretical Knowledge**

After the courses' end the student should be able to:

- Know the anatomic details of the spinal column and the spinal cord.
- Know how to evaluate sensation (dermatomes) and motor (myotomes) functions.
- Discern between neurogenic and spinal shock (hypotension-bradycardia), its management and its effect on other organs (lungs, heart, “quiet” compartmental syndrome).
- Know the classification of spinal cord injury according to:
  1. Anatomic level.
  2. Severity of neurological deficit (paraplegia, tetraplegia)
  3. To suspect and diagnose hemiplegia et hemiparaplegia spinalis (Brown-Sequard syndrome).
  4. Morphology of injury (presence or absence of fracture/dislocation).
- To know the special types of spinal column injury:
  - Atlanto-axial subluxation
  - Atlas fractures
  - Atlanto-axial rotator subluxation
  - Axial fracture
  - Odontoid fracture
  - Rear spinal elements fracture
  - Fractures and dislocations of cervical vertebrae (C3-C7)
  - Fractures of thoracic vertebrae (T1-T10)
  - Fractures of thoraco-lumbar junction (T11-L1)
  - Fractures of lumbar vertebrae
- To order and interpret correctly imaging tests:
  - Anterior and lateral spinal x-rays
  - Radiologic markers
  - Open mouth view
  - Swimmer’s view
  - CT
  - MRI
- To know the management of a patient with spinal injury through the primary survey, and how to immobilize or mobilize him/her.

## II. Skills

After the courses’ end the student should be able to:

- a. Know how to physically examine a patient with spinal column trauma as well as sensory and motor functions.
- b. Know how to apply a cervical collar.
- c. Know how to safely transfer a patient with spinal column injury, and how to safely mobilize him/her (log-roll technique).
- d. Order and interpret laboratory and imaging tests (skull x-ray, cerebral CT)

## III. Behavioral issues

The student should be able to understand the unfavorable situation the patient is in and be tolerant towards any strange or aggressive behavior.

Also, the student must be aware of the fact that treating a patient with trauma in the hospital ER requires team spirit, since it requires contribution from doctors of several specialties. All these professionals should cooperate peacefully with each other as well as other team members (paramedical staff, nurses) and obey directions from the team leader, in order to achieve the desired results.

## MUSCULOSKELETAL TRAUMA

### Training Goals

Although musculoskeletal trauma exists in approximately 85% of patients with blunt trauma, is rarely life-threatening, or threatening the viability of a patient's limb if it is timely diagnosed and correctly managed. For this reason, patients with obvious isolated musculoskeletal trauma should be initially managed the same way as patients with multi-systemic trauma.

### General Training Goals

After the courses' end the student should be able to:

- To recognize and describe the importance of musculoskeletal trauma in the multi-trauma patient.
- To recognize a life-threatening or limb-threatening musculoskeletal trauma, and to be able to evaluate and manage it.
- To know the basic principles of evaluation and management of simple musculoskeletal trauma.
- To know how to correctly immobilize or mobilize a patient with musculoskeletal trauma.

### Special Training Goals

#### Theoretical Knowledge -Skills-Behavior

##### I. Theoretical Knowledge:

After the courses' end the student should be able to:

- Know, by using and evaluating the ABC protocols (primary survey), how to discern a patient (knowledge of clinical symptoms and signs) with an acute, life-threatening haemorrhage problem (severe pelvic injury with large vessel injury, blunt or penetrating trauma with large vessel rupture) as well as which are the right actions during resuscitation and haemorrhage control (immediate pressure and immobilization). Finally, to know how to evaluate a patient with compartmental syndrome and its resuscitation principles.
- To know how to discern limb-threatening injuries (open fractures and joint injuries, vessel injuries and amputative injuries, compartmental syndrome, neurologic deficits after fractures and dislocations - axillary and sciatic nerve in the corresponding shoulder and pelvic injuries) and how to manage them. Also to know how to choose candidates for limb reattachment after amputating injuries and which are the basic principles of transferring an amputated limb, when the patient also needs to be transferred to another institution for reattachment.
- To know how to locate and treat other simple musculoskeletal injuries (bruises, cuts, joint injuries, dislocations).
- To know the importance of injury mechanism, in order to timely recognize musculoskeletal trauma in a multi-trauma patient, as well as which elements of the mechanism should be searched for.

##### II. Skills

Apart from theoretic knowledge, the student must acquire a set of particular skills, when managing a patient with musculoskeletal trauma, such as:

###### 1. Medical History Taking

The student should be capable of taking, recording and presenting the musculoskeletal trauma patient's Medical History including:

- Mechanism of injury: part the patient played in the accident, where and

how the patient was located and in which distance from the vehicle, if he/she wore any seatbelt/helmet, in what state was the vehicle found, if there was an explosion, environmental conditions during the accident, the pre-traumatic state of the patient and other general information regarding the vehicle.

- Pre-existing medical conditions
- Prescription Drugs
- Allergies
- Tetanus immunization status

## **2. Physical Examination**

The student must be able to perform physical examination of the patient with musculoskeletal trauma (Inspection: Haemorrhage, disfigurement, edema, paleness, inspection of the back. Palpation: temperature, sensitivity, crepitation. Assessment of sensor and motor functions. Assessment of joint stability. Assessment of blood circulation: skin color and temperature, peripheral heart beats, capillaries, paresthesia).

## **3. Ordering and Interpreting Laboratory tests**

The student must be able to choose the necessary diagnostic laboratory tests needed to validate injuries suspected from the mechanism of injury and physical examination of the patient with musculoskeletal trauma, as well as specialized diagnostic tests (e.g. CT-scan, angiography etc.). The student should also be able to interpret the results of these tests before and after the beginning of treatment, as well as during patient monitoring.

## **4. Basic and more specialized invasive skills**

- External haemorrhage control by applying immediate pressure.
- Immobilizing fractures
- Skeletal retraction
- Plaster splint

## **6. Communication skills**

The student should be able to explain the problem to the patient, while reassuring and encouraging him/her psychologically, since, out of nowhere the patient is in a strange environment, potentially without any friends or family close, where apart from pain he/she feels all kinds of insecurities about what is going to happen and the results of the procedures.

## **III. Behavioral issues**

The student should be able to understand the unfavorable situation the patient is in and be tolerant towards any strange or aggressive behavior.

Also, the student must be aware of the fact that treating a patient with trauma in the hospital ER requires team spirit, since it requires contribution from doctors of several specialties. All these professionals should cooperate peacefully with each other as well as other team members (paramedical staff, nurses) and obey directions from the team leader, in order to achieve the desired results.

## **BURNS AND COLD INJURIES**

### **Training Goals**

Burns are common injuries which are usually caused by exposure to high levels of external heat (thermal burns), or less commonly due to exposure to chemicals (acid,

alkali, petroleum products, chemical burns), or after exposure to a high voltage electrical source (electric burns). In direct contradiction, cold injuries are uncommon in our country due to warm climate, and can be classified to local (frostbites) and systemic (hypothermia). In 85% of cases, burns are simple (low severity) and can be managed in a health office basis. However, extended burns and hypothermia are an important cause of morbidity and mortality. Knowledge and application of resuscitation and definite treatment principles in these kinds of injuries can minimize their complications and mortality rates.

### **General Training Goals**

After the courses' end the student should be able to know:

- How to initially evaluate and resuscitate a patient presenting with thermal, chemical, electrical, radioactive burns or a patient presenting with hypothermia or cold injuries.
- In turn, how to further manage these patients.

### **Special Training Goals**

#### **Theoretical Knowledge -Skills-Behavior**

#### **I. Theoretical Knowledge**

After the courses' end, the student should be able to:

1. Evaluate the ABC protocols and discern the patient (knowledge of clinical symptoms and signs) presenting with airway burns, who needs emergency and definite airway management, as well as the patient with chemical trachibronchitis due to inhaling byproducts of combustion, who needs breathing support.
2. To suspect CO poisoning in the patient presenting with burns, and be able to further manage and treat this condition.
3. Know how to stop the burn pathophysiology from further expanding.
4. Know the importance of medical history taking and mechanism of injury in patient management.
5. To evaluate the extent (rule of nine) and the depth of the burn injury, circulation issues peripherally a circular third-degree burn and to discern the presence of other injuries.
6. Apply the general principles of primary resuscitation and management of burn patients.
7. Know specialized forms of burn injury (chemical-electrical, due to radiation) and apply the corresponding principles of primary evaluation and treatment.
8. Know the prevention principles of hypothermia and the way to counteract it if need be (process of re-heating), as well as when a hypothermic patient with no vital signs is considered deceased.
9. Know the way of primary evaluation and management of patients presenting with local cold injuries.
10. Know how to immunize a patient for tetanus and pain management.
11. Know the specific criteria for transferring a patient with burn or cold injuries to a specialized burn center.

#### **II. Skills:**

Apart from theoretical knowledge, the student must acquire a certain set of skills when managing a patient presenting with burns or cold injury, such as:

1. **Medical History Taking**

The student should be able to take, record and present the medical history of a burn victim, including:

- Mechanism of injury
- Pre-existing medical conditions
- Prescription Drugs
- Allergies
- Tetanus immunization status.

Also, in a patient presenting with cold injuries, the following:

- Environment temperature where the patient was residing.
- Duration of exposure.
- Environmental conditions (humidity degrees, wind, etc.)
- General state of the patient (open wounds, peripheral angiopathy, alcohol abuse etc).

## **2. Physical Examination**

The student should be able to perform a full physical examination of the patient presenting with burns or cold injury, to evaluate the extent and depth of the lesions, to be able to measure the core temperature of the patient and suspect or discern other coexisting injuries.

## **3. Ordering and interpreting laboratory tests**

The student must be able to choose the necessary diagnostic laboratory tests needed to validate injuries suspected from the mechanism of injury and physical examination of the patient, as well as specialized diagnostic tests. The student should also be able to interpret the results of these tests before and after the beginning of treatment, as well as during patient monitoring (blood analysis tests, imaging tests, blood gas tests, measurement of CO blood levels etc.)

## **4. Basic and more specialized invasive skills**

The student should be able to wholly evaluate a trauma patient, beginning by assessing the vital signs based on the ABC protocols, while simultaneously supporting and managing any other problems. Also, to evaluate the vital signs of a patient with hypothermia and start the re-heating process while supporting the vital functions.

More specifically, the student must be able to perform:

- Cervical spine immobilization and cervical collar placement.
- Ensuring an open airway by jaw-thrusting or chin-lifting, performing suction in the stomato-pharynx and remove foreign objects if needed. Placing an oro- or naso-pharyngeal airway (temporary airway management).
- Definite airway management (oro or naso-tracheal intubation, surgically performed cricothyrotomy).
- Ventilating the patient using an ambu-valve mask.
- Emergency treatment of tension pneumothorax (Thoracic drainage by needle aspiration or placement of a chest tube).
- Emergency treatment of traumatic pneumothorax.
- Controlling external bleeding by applying pressure. Placement of intravenous catheters and administering colloids and blood.
- Incise necrotic tissue in order to preserve peripheral blood flow in circular third degree burns.
- Patient immobilization on a board. Immobilization of fractures. Placement of nasogastral tube, urethral catheter, while knowing the contraindications or differentiations to their placement.

## **5. Communication Skills**



The student should be able to explain the problem to the patient, while reassuring and encouraging him/her psychologically, since, out of nowhere the patient is in a strange environment, potentially without any friends or family close, where apart from pain he/she feels all kinds of insecurities about what is going to happen and the results of the procedures.

### III. Behavioral issues

The student should be able to understand the unfavorable situation the patient is in and be tolerant towards any strange or aggressive behavior.

Also, the student must be aware of the fact that treating a patient with trauma in the hospital ER requires team spirit, since it requires contribution from doctors of several specialties. All these professionals should cooperate peacefully with each other as well as other team members (paramedical staff, nurses) and obey directions from the team leader, in order to achieve the desired results.

### Comprehensive Trauma Courses Catalogue

Subject	Duration
1. Trauma Epidemiology	1 hour
2. Trauma mechanism	1 hour
3. Primary Survey/Management	2 hours
4. Airway/Breathing	1 hour
5. Shock	1 hour
6. Thoracic Trauma	1 hour
7. Abdominal trauma	1 hour
8. CranioCerebral Trauma (CCT)	2 hours
9. Spinal Column trauma	1 hour
10. Musculoskeletal Trauma	30 λεπτά
11. Burns-Cold injuries	30 λεπτά
12. Trauma in extreme age groups	30 λεπτά
13. Trauma in Pregnancy	30 λεπτά
14. Transferring a Trauma Patient	30 λεπτά
15. Trauma scenarios-discussion	1 hour
16. Long bone fractures	1 hour
17. Sacral bone fractures	1 hour
18. Open fractures	1 hour
19. Lower radius fractures	1 hour
20. Upper humerus fractures	1 hour
21. Fractures in children	1 hour
22. Metatraumatic osteogenesis	1 hour
23. Injuries in athletes	1 hour
24. Practical applications	2 hours
Total	24,5 hours

**ENDOCRIN GLANDS** 4<sup>th</sup> year, 7<sup>th</sup> semester (mandatory)  
**Hours** Teaching: 25, Laboratory-, Tutorial-, Clinic- (per week)  
**ECTS Units** 4

**Teachers** Th. Alexandridis, M.Asimakopoulou, N. Georgopoulos, A.Kourea, V.Kyriazopoulou, K.Markou, Ch.Skopa, G.Sotiropoulou-Mponikou, J.Habeos, A.Psyrogiannis.

**Description**

The Integration teaching course in Endocrinology is performed under the tag of Internal Medicine, in the form of specific case presentations which have been defined during the constitution of integrated teaching program. Its duration is 2 weeks- 5 hours daily and includes the following subject matters:

**Hypothalamic-pituitary Axis:** Courses in Anatomy and Physiology, normal operation of the axis, secretion and effect of hormones, courses in inter-regulation with peripheral endocrine glands, disease entities concerning the axis (hypo- and hyper-function primary-secondary, hypothalamus/pituitary diseases, pituitary adenomas secreting or not hormones, their clinical state and reproductive endocrinology)

**Thyroid Gland** Courses in Embryology, Anatomy, Cytology, Physiology, Normal operation of the gland, Iodine intake and metabolism, Secretion and effect of thyroid hormones, disease entities regarding the gland, (hypofunction, hyperfunction, bronchocele, Thyroid nodules, Thyroid cancer, Thyroiditis, Thyroid and pregnancy)

**Calcium Metabolism-Bones-Parathyroid Glands** Courses on Bone growth and reconstruction, Homeostasis of Phosphorus and Calcium, hypo- and hyper- function of parathyroids, Paget disease, osteoporosis)

**Adrenal Glands** Courses in Anatomy, Physiology, normal operation of the adrenals, Hormone secretion and effect (gluco- and mineralo- corticoids, catecholamines), hyperfunction (Cushing syndrome) hypofunction (Addison Syndrome), adrenal tumors, endocrinal hypertension.

**Diabetes Mellitus – Metabolic Syndrome – Lipids - Obesity**

Courses in Epidemiology, Classification, Pathogenesis and Diagnosis of Diabetes Mellitus. Treatment, acute and chronic complications, hypoglycemia.

Lipoproteins in general, lipoprotein metabolism, primary and secondary dyslipidemia, treatment. Obesity and its complications in general.

**HEALTH  
PROMOTION/  
DISEASE  
PREVENTION/  
COMMUNITY  
MEDICINE**

4<sup>th</sup> year, 7<sup>th</sup> semester (mandatory)

**Hours**

Teaching: 25, Laboratory-, Tutorial-, Clinic- (per week)

**ECTS Units**

2

**Teachers**

E. Gelastopoulou, A. Vantarakis

**Description**

Basic principles of Preventive Medicine, Levels of Prevention, Primary and secondary prevention. Systemic pre-symptomatic Control. Evaluation of diagnostic tests and application in Preventive Medicine. Prevention of cardiac diseases, malignant neoplasia in the community level. Control of infectious diseases within the community. Epidemiologic Supervision. Basic principles of Health Promotion. Health promotion programs. Health promotion within the community, workplaces, school. Public Health. National Health Systems and Health Policies.

**FEVER OF UNKNOWN** 4<sup>th</sup> year, 7<sup>th</sup> semester (mandatory)

**ORIGIN – FINAL**

**STAGE PATIENT –**

**EVIDENCE BASED**

**MEDICINE -**

**ONCOLOGY –**

**INFECTIOUS DISEASES**

**Hours**

Teaching: -, Laboratory -, Tutorial -, Clinic 25 (per week)

**ECTS Units**

4

**Teachers**

C. Gogos, M. Maragkos, G. Panos, C. Kalofonos, T. Petsas, D. Siampelis, K. Spyropoulos, P. Polychronopoulos, T. Makatsoris, T. Papadas, N. Mastronikolis, D. Dougenis, E. Kourea, B. Zolota, K. Asimakopoulos, E. Gelastopoulou, A. Tsamantas, M. Stavropoulos, D. Karavias, G. Antonakis, A. Athanasopoulos, D. Kardamakis, K. Markou, D. Koukouras, A. Symeonidis, K. Thomopoulos, E. Tzorakoleftherakis, C. Skopa

**Description**

The courses' goal understands, on behalf of the student, of the definition and differential diagnosis of fever of unknown origin, as well as the main specialized infectious diseases that are not included in the other systems integrated teachings program. Also, the general principles of oncology, management of final stage patients, and the most important cancers. It includes the subject matters listed below:

INFECTIOUS DISEASES:

1. Fever of unknown origin
2. Sepsis
3. Respiratory infections
4. Urinary tract infections
5. Skin and soft tissue infections
6. Endovascular infections
7. Weil Syndrome
8. Brucella infections

Teachers: C.Basiaris, C.Gogos, M.Maragkos, G.Panos, E.Polyzogopoulou, S.Gyali

ONCOLOGY

1. Introduction and presentation of two patient cases- patient problems:
  - a) Abdominal pain, cachexia, anemia, abdominal tumor
  - β) Haemoptysis, hoarseness, thoracic pain, epilepsyC.Kalofonos
2. Diagnostic approach of patient with abdominal tumor – Management of icteric syndrome- ERCP  
K.Thomopoulos
3. Pain management and related symptoms – patient support  
M.Karanikolas
4. Ascites management and electrolyte imbalance  
C.Triantos
5. Radiologic diagnostic patient approach  
T.Petsas
6. Invasive Radiology in Oncology: possibilities and prospects  
D.Siampelis
7. Dyspnea- haemoptysis in cancer patients: Diagnostic approach and support.  
K.Spyropoulos
8. Neurologic issues in patients with cancer  
P.Polychronopoulos

9. Paraneoplastic Syndromes  
T.Makatsoris
10. Hoarseness – Diagnostic approach in patients with head-neck neoplasia  
T.Papadas
11. Head-neck tumors – Rhinopharyngeal cancer  
St.Naksakis
12. Therapeutic principles of head-neck tumors  
N.Mastronikolis
13. Thoracic tumors: surgical staging and management  
D.Dougenis
14. Pathogenesis-Histologic types and prognostic factors in lung cancer.  
K.Kourea
15. Treatment of thoracic tumors  
T.Makatsoris
16. Communicating and informing the oncologic patient  
G.Oikonomou
17. Carcinogenesis principals  
B.Zolota
18. Cancer cell Biology and Gene therapy  
A.Athanasiadou
19. Diagnostic and therapeutic approach in cancer patients  
C.Kalofonos
20. Emergencies in Oncology  
A.Onienadom
21. Infectious diseases in oncologic and final stage patients  
M.Maragkos
22. Psychiatric disorders in oncologic patients: prevention, diagnosis, treatment  
K.Asimakopoulos
23. Cancer epidemiology and prevention principles  
E.Gelastopoulou
24. Intestinal tumors: diagnostic approach-clinical presentation  
K.Thomopoulos
25. Pathogenesis and prognostic factors in stomach and large intestine tumors  
A.Tsamantas
26. Intestinal tumors: Surgical approach  
M.Stavropoulos
27. Metastasectomy: Yes or No? In which tumors?  
D.Karavias
28. Intestinal tumors: Conservative treatments  
A.Koutras
29. Gynecologic tumors: Diagnostic-Therapeutic approach  
G.Antonakis
30. Urological tumors: Diagnostic-Therapeutic approach  
A.Athanasopoulos
31. Principles of radiotherapy in genitourinary tract tumors and bone metastases  
D.Kardamakis
32. Endocrinic tumors  
K.Markou
33. Breast Lump: Diagnostic approach – Staging- Clinical appearance of cancer  
D.Koukouras
34. Breast cancer pathogenesis – prognostic factors  
S.Skopa
35. Principals of surgical approach on breast tumors

- E.Tzorakoleftherakis
36. Principles of Radiotherapy in Breast cancer  
D.Kardamakis
37. Principles of Systemic therapy in Breast Cancer  
C.Kalofonos
38. Anemia of chronic disease  
A.Symeonidis
39. Epidemiology-Diagnostic approach of hematologic malignancies  
A.Spyridonidis
40. Basic principles of therapeutic approach in hematologic malignancies  
A.Symeonidis
41. Holistic patient approach – Dilemmas - Conclusions  
C.Kalofonos

**NEUROLOGY**

**Hours**

**ECTS Units**

**Teachers**

4<sup>th</sup> year, 7<sup>th</sup> semester (mandatory)  
Teachings:-, Laboratory-, Tutorial-, Clinic 35 (per week)  
4  
P.Papathanasopoulos, E.Chroni, P.Polyxronopoulos, I.Elloul

**Description**

The course's goals are:

- a) Complete knowledge of muscular deficit signs.
- b) Complete knowledge of common diseases of the nervous system and skeletal muscles, by analyzing the pathogenetic mechanisms of aetiology, histopathologic manifestations, clinical manifestations and principals of treatment. Good coverage of neurological emergencies and their management.
- c) Understanding of paraclinical tests used in Neurology.
- d) Development of students' ability to take a comprehensive Neurologic History, to execute a complete neurologic physical examination and evaluate the findings.

In more detail the following subjects are taught: Crude anatomophysiology and detailed description of signs in: Muscle reflexes, Muscle tone, Pyramidal system, Peripheral neuron, Sensor function, Exopyramidal system, cerebellum, reflexes, cerebrospinal fluid, cranial nerves, autonomous nervous system, spinal cord, medulla, pons, midbrain, limbic system, Consciousness (sleep, coma), thalamus, Hypothalamus, skeletal muscles.

Clinical semiology, etiology, pathogenesis, diagnosis, differential diagnosis in the following neurological disorders: Vascular diseases, infectious diseases, epilepsy, migraine, headache, demyelinating neuropathy, degenerative and dysplastic disorders, cortex atrophy, exopyramidal system disorders.

Spinocerebellar ataxia, motor neurone disease, peripheral neuropathy, muscle disorders (muscular dystrophies, metabolic, inflammatory from disorder of the neuromuscular junction), neurologic manifestations due to systemic diseases, paraneoplastic syndromes involving nervous system and muscles, injuries, tumors and vascular dysplasia of the central nervous system.

Electrophysiological and histopathological testing methods of the central nervous system, peripheral nerves and muscles, as well as elements of neural-imaging methods.

Exams in nervous system are oral, simultaneous for neurology and neuro-surgery, and the grade is calculated as a unified sum.

**PSYCHIATRY**

4th year, 7th semester (mandatory)

**Hours**  
**ECTS Units**  
**Teachers**

Teaching:-, Laboratory-, Tutorial-, Clinic 27 (per week)

4

K.Asimakopoulos, F.Gourzis, A.Katrivanou and staff psychiatrists of the Department of Psychiatry

**Description**

Aim of the course is that undergraduate students acquire the basic necessary knowledge in order to (a) become familiar with the corpus of psychiatric nosology, including the more common and mild psychiatric disorders which are treated mainly by primary care, as well as more rare and severe disorders, which necessitate hospitalization, and (b) to be capable of treating common psychiatric disorders on a primary level, and further develop clinical competence and therapeutic attitudes towards psychiatric patients.

The syllabus corresponds to the topics listed in the Consensus statement elaborated recently by the Hellenic College of Academic Psychiatry.

*Topics*

The list of recommended topics during the course of Psychiatry is as follows:

I. General Part

1. Subject of Psychiatry: General Considerations
2. Signs and Symptoms in Psychiatry
3. Psychiatric Interview, History and Mental Status Examination
4. Psychiatric Diagnosis and current Classification systems of Mental Disorders

Disorders

5. Developmental Stages and Psychological Defense Mechanisms
6. Psychiatry and Biological Sciences
7. Psychiatry, Psychology, Sociology and other Sociocultural Sciences

II. Psychiatric Nosology

8. Delirium, Dementia, Amnesic and other Cognitive Disorders.
9. Substance-related disorders
10. Schizophrenia and other Psychotic Disorders
11. Depression, Dysthymia, Bipolar Disorder, Cyclothymia
12. Generalized Anxiety Disorder, Panic Disorder, Agoraphobia, Social Phobia, Specific Phobias, Obsessive-Compulsive Disorder, Posttraumatic Stress and Acute Stress Disorders and other related disorders
13. Disorders due to a General Medical Condition and Psychosomatic Medicine
14. Eating disorders
15. Sleep disorders
16. Sexual and Gender Identity disorders
17. Personality Disorders and Impulse-Control Disorders
18. Childhood Psychiatric Disorders (mental health boundaries, anxiety mood, psychotic and other disorders)
19. Pervasive developmental disorders and Mental Retardation
20. Mental disorders of Adolescence

III. Psychiatric Therapy

21. Biological Therapies
22. Psychotherapies
23. Psychosocial Interventions

- IV. Special Issues
24. Psychiatric Emergencies
  25. Consultation- Liaison Psychiatry
  26. Geriatric Psychiatry
  27. Transcultural Psychiatry
  28. Social Psychiatry and Epidemiology of Psychiatric Disorders
  29. Public Health and Psychiatry, System of Mental Health Services (Psychiatry in primary health care, secondary and tertiary mental health care, prevention in Psychiatry)
  30. Forensic Psychiatry
  31. Violence and Suicidal behavior
  32. Psychological Assessment and Laboratory Testing in Psychiatry
  33. Evidence Based Psychiatry

**GYNECOLOGY -  
OBSTETRICS**

**Hours**

**ECTS Units**

**Teachers**

4<sup>th</sup> year, 7<sup>th</sup> semester (mandatory)

Teachings:-, Laboratory-, Tutorials-, Clinic 25 (per week)

4

G.Antonakis, G.Dekavalas, B.Tsapanos, A.Kaponis, N.Georgopoulos,  
G.Androutsopoulos, G.Michail

**Description**

The course's goal is to learn pathophysiology of the female reproductive system, as well as conservative and surgical treatment of its diseases. Also, to learn physiology of Pregnancy, Labor and Accouchement, as well as management of medical issues and complications that can occur during these periods.

Integrated Teachings Program:

1. Normal Pregnancy: Normal changes during pregnancy, Drugs & Pregnancy, Pregnancy hyperemesis, Embryoplacenta unit, Overdue pregnancy, Diabetes mellitus and pregnancy.
2. 1<sup>st</sup> Trimester Haemorrhage: Automatic abortion, Ectopic pregnancy, Trophoblastic disease.
3. Hypertension during pregnancy: Preeclampsia-Eclampsia, Endometrial growth retardation, Hypertension and pregnancy
4. Uterus size not correlating with pregnancy stage: Multiple pregnancy, hydramnios, oligoamnios, anomalies related to the embryo, abnormal caryotype, fetal death
5. 3<sup>rd</sup> trimester haemorrhage: Placenta abruption, Placenta previa, vasa previa, isoimmunization (ABO, Rh).
6. Preterm Labor: Premature rupture of membranes, Infections during pregnancy
7. Fetal Distress: Fetal Hypoxia, Trauma during labor.
8. Normal labor.
9. Labor monitoring- Abnormal labor: Abnormal progress, Abnormal presentations, Invasive labor, Caesarian section, Uterine rupture, Amniotic fluid embolism, Maternal mortality, Induced labor
10. Accouchement: Normal accouchement, Infections (endometritis, urinary tract infections, infection of perineotomy), Sheehan syndrome, Perineal rupture, Venal thrombosis, Psychiatric disorders, Breast infections (mastitis, abscess), Thyroiditis.
11. Haemorrhage during accouchement: Coagulation disorders, Uterine atony,

- Retroverted uterus, Retained placenta
12. Acute Pelvic Pain: Ectopic pregnancy, Infections, Acute salpingitis, Ovarian neoplasia, Ovarian cysts (rupture, haemorrhage, torsion), Non-gynecologic causes.
  13. Chronic Pelvic Pain: Endometriosis, Dysmenorrhea, Infections, Dyspareunia, Pre-menstrual syndrome, Non-gynecologic disorders, Psychiatric disorders.
  14. Vaginal Secretions: Cervicitis, Vaginitis, Fistula, Foreign Object, Infections, Vaginal neoplasia.
  15. Pelvic mass: Uterine fibroid, uterine adenomyosis, Endometriosis, Ovarian Neoplasia, Non-gynecologic causes, Pregnancy, Ectopic pregnancy, Uterine, Neoplasia.
  16. Infertility: Endocrine disorders, Male factor, Salpingic factor, Ovulation disorders, Endometriosis, Immunologic factor, Unknown causes.
  17. Contraception: Contraceptive pills, Blocking methods, endometrial spirals, Selective pregnancy interruption, Rhythm Method, Coitus Interruptus, Birth Control (Tubal ligation, seminal ligation), Techniques after copulation.
  18. Amenorrhea & Oligomenorrhea: Menopause, Delayed pubescence, primary amenorrhea, secondary amenorrhea (pregnancy, chromosomal disorders, Premature ovarian deficiency), Ovulation disorders, Endocrine disorders, Prolactinoma, Drugs, Weight loss, Psychiatric disorders.
  19. Haemorrhage disorders of the reproductive system: Cervix neoplasia, Uterine Neoplasia, Vaginal Neoplasia, Premature pubescence, Atrophic vaginitis, Dysfunctional metrorrhagia, foreign object, Haemorrhage during 1<sup>st</sup> trimester, Menarche.
  20. Pelvic floor dysfunction: Uterus prolapsed, Stress incontinence, Cystocele, Rectocele, Urethrocele.
  21. Dermatologic Disorders of Outer Reproductive System: Bartholin gland cyst, Condylomata, Herpes, Vaginal dystrophy and neoplasia, Vaginitis, Pruritus.
  22. Disorders in Cervix Cytology: Pap test, Cervix cancer, Infections.
  23. Breast lump and Mastodynia: Cancer, Fibrocystic Disease, Gynaecomastia, Inflammation and abscess.

**PEDIATRICS**

**Hours**

**ECTS Units**

**Teachers**

4<sup>th</sup> year, 7<sup>th</sup> semester (mandatory)

Teachings:-, Laboratory-, Tutorials-, Clinic 25 (per week)

4

S.Mantagos, A.Varvarigou, V.Gkreka-Spiloti, M.Anthrakopoulos, A.Karatza, K.Sinopidis

**Description**

1. Infectious diseases
  - Vaccines
  - Fever: Differential Diagnosis, Laboratory investigation, Management – Bacteraemia/Sepsis/Meningitis
  - Rash and non-rash infectious diseases (Viral, bacterial, Kawasaki syndrome etc.)
  - Infections of upper respiratory tract (common cold, pharyngoamygdalitis, Otitis media, rhinopararhinocolpitis, lymphadenitis, EBV, CMV, etc)
  - Pneumonia
  - Gastroenteritis - Dehydration
  - Tuberculosis
  - Immunodeficiency
2. Neonatology
  - Physical examination of the fetus



- Neonate resuscitation, perinatal asphyxia, injuries during labor
  - Respiratory distress syndrome
  - Air leak syndrome
  - Meconium aspiration syndrome, congenital diaphragmatic hernia
  - Infections, Premature and delayed neonatal sepsis
  - Pulmonary hypertension
  - Neonatal jaundice, anemia
  - Metabolic disorders, spasms
  - Congenital infections
3. Corporeal and psychokinetic growth – Endocrinology
    - Normal and pathologic psychokinetic growth
    - Chromosomal anomalies
    - Normal and pathologic body growth: part A
    - Calcium Metabolism
    - Normal and pathologic growth: part B
    - Normal and pathologic pubescence
    - Normal and pathologic adrenal function
  4. Coma - Spasms
    - Diabetic ketoacidosis
    - Metabolic Disorders
    - Poisoning
    - Fever and non-fever spasms
  5. Pneumonology – Allergic Disorders
    - Embryology and physiology of the respiratory system
    - Asthma – Laryngitis - Bronchiolitis
    - Foreign object aspiration – Diphtheria
    - Cystic Fibrosis
    - Congenital pulmonary disorders
  6. Cardiology
    - Physical examination
    - Congenital cardiopathies with or without cyanosis
    - Acquired cardiopathies
    - Cardiac arrhythmias
  7. Abdominal pain – Congenital intestinal disorders
    - Embryology, physiology and special tests of the intestinal tract
    - Chronic and regressive abdominal pain
    - Acute abdominal pain of surgical aetiology
    - Defecation disorders: Constipation - Diarrhoea
    - Intestinal tract haemorrhage: Coffee ground vomitus, haematemesis, rectal haemorrhage
    - Congenital intestinal disorders
  8. Urinary tract
    - Pyuria – Haematuria - Proteinuria
    - Congenital urological disorders
  9. Anaemia
    - Hypochromic microcytic anaemia
    - Ferropenic, Mediterranean, Sickle cell anaemia
    - Other haemolytic anaemias – Aplastic anaemia
    - Thrombopenia – Leukemia - Lymphoma

## PART THREE



# POSTGRADUATE STUDIES

Post-graduate Studies (PGS) programs aim to promote knowledge and develop research, and can lead up to a PhD diploma acquisition. The timeframe, which can vary depending on the department, is defined in each program and cannot be less than six (6) semesters. The PGS programs also aim, before a PhD diploma, to offer the possibility of acquiring an MSc diploma. The timeframe, which can vary depending on the department, is defined in each program accordingly and cannot be less than four (4) semesters. An MSc diploma may be required as a compulsory prerequisite in order to proceed to composing a PhD thesis, by the regulation of PGS programs. Information about PGS programs is available on the website [www.med.upatras.gr](http://www.med.upatras.gr) under page «Εκπαίδευση».

The approved and valid PGS programs in the Department of Medicine of University of Patras are the following:

## A. Post-graduate Studies program entitled “Clinical and Clinical-Laboratory Medical Specialties”

The subject of this PGS program is the acquisition of a PhD diploma in Clinical and Clinical-Laboratory Medical Specialties.

Basic aim of this PGS program is to prepare PhD students who will autonomously be capable of promoting Scientific Medical Research and its philosophy, and who will contribute in meeting the country's educational research and healthcare needs, within the environment of fast-evolving and changing Medical Science and Technology.

This program is meant to include two “Circles” of studies:

- Basic Study Circle
- Clinical Study Circle

And leads to the acquisition of a PhD diploma on the subject matters of Clinical and Clinical-Laboratory Medical Specialties.

In this PGS program, Graduates of Greek medical Departments/Schools can be accepted, as well as graduates of equal and officially recognized Medical Schools outside the country (with a ΔΙΚΑΤΣΑ verified certificate).

Also, graduates of congener Greek or abroad Department Certificates can be accepted, relative to current existing legislation, whose certificates regard subject matters in which at least one Scientific Board member of the University of Patras, Department of Medicine exists, teaching a similar subject matter.

The timeframe of a PhD diploma acquisition is determined at six (6) semesters minimum and twelve (12) semesters maximum.

Extension of these deadlines is generally prohibited. As an exception, in special cases, a small deadline extension can be given, after a justified consensus of ΓΣΕΣ.

Also, a suspension of student status is possible, determined by a consensus of the Department ΓΣΕΣ, after a justified application of the student, in which duration all privileges of the post-graduate student are lifted.

(Information: Miss E. Kateli tel. 2610 969106)

## B. Interdepartmental Postgraduate Studies program in Medical Physics

Aim of this PGS program is specializing mainly Physics graduates in the Applications of Physics and Technology in Medicine, in order to contribute in health promotion and research evolution.

This IPSPMP program leads to the acquisition of (a) Master's Degree in Medical Physics and (b) PhD diploma.

After an open notice, in the program graduates from Physics, Electrical Engineers, Computer Engineers from Greek Departments or graduates from congener Institutions and Departments abroad, whose certificate is recognized and verified by ΔΙΚΑΤΣΑ, can be accepted

Applications from graduates of congener Technical Education Institutions can be accepted for initial evaluation, as indicated by Legislation 2327/95.

(Information: Miss R.Andreopoulou tel. 2610 969107, A.Aggelakopoulou tel. 2610 992942.)

### C. Interuniversity Postgraduate Studies program in Biomedical Engineering

The subject of this particular PGS program is to specialize graduate Engineers or Other Departments' graduates in application of technology in Medicine, in order to contribute in health promotion and research evolution.

This IPSPBE can lead to acquisition of: (a) Master's Degree in Biomedical Engineering and (b) PhD Diploma in Biomedical Engineering.

In this PGS program, after an open notice and selection, Engineering and Medicine graduates are accepted mainly, as well as graduates of equal and recognized congener Departments of similar scope, Greek and non-Greek.

Applications from graduates of congener Technical Education Institutions can be accepted for initial evaluation, as indicated by current Legislation.

(Information: Miss R.Andreopoulou tel. 2610 969107, A.Aggelakopoulou tel. 2610 992942.)

### D. Post-graduate Studies Program "Applications of Basic Medical Sciences"

This program aims in offering high-level postgraduate education, in order to understand the molecular basis of Human Disease and the application of Basic Medical Sciences Research results in clinical practice, utilizing knowledge and experience of Science Board Members and participation of specialized experts and distinguished scientists from other Universities of Greece and abroad. Offering the right theoretic and practical education in order to create specialized Medical Scientific Personnel capable of responsibly managing organization, processing and further development of Biomedical Services, is expected to carry chain positive, direct or indirect, consequences in the social and economic context of our country, such as:

- Increasing research potential as well as transfer of state-of-the-art technologies in our country.
- Facilitation of installment of specialized high level services in Healthcare Centers.
- Managing relevant problems within the country and avoid transferring patients abroad.
- Shortening convalescence time or absence from family/workplace, as a consequence of more effective service providing.
- Participation of productive dynamic of our country in supporting of specialization activities, through production and supply of equipment and disposables.

This program offers one study circle (four semesters) in the following five subject matters:

- 1) Pharmacokinetics/Toxicology
- 2) Molecular genetics/Cytrogenetics
- 3) Patho-Biochemistry
- 4) Neurosciences
- 5) Molecular Anatomy

and leads to the acquisition of a Master's Degree in **Applications of Basic Medical Sciences**.

**After acquisition of a Master's Degree, students who desire are evaluated and then selected to continue for a PhD diploma acquisition.** The minimum timeframe for this process is set at six compulsory semesters. The evaluation process and the general obligations of PhD students are defined in the Department's Studies Regulation.

After evaluation from a specialized committee, graduates from Greek or congener non-Greek Universities (Medicine, Life Sciences, Exact sciences, Technological Sciences) can be accepted, as well as congener to Biomedical Sciences, Technical Education Institution graduates according to Article 5, paragraph 13 of Law N. 2916/11-6-2001.

#### **E. Interdepartmental Postgraduates Studies Program in “Life Sciences Informatics” (LSI)**

This PGS Program aims to train graduates of Departments congener either to Informatics or Life Sciences in this hybrid new state-of-the-art Science. Life Sciences Informatics is the new interdepartmental section who uses Informatics Sciences and Computer Sciences to resolve problems in Life Sciences (E.g. analysis and data management software, Biological databases, models etc.). Problems are abundant and heterogeneous, and interaction between solutions and development of further access methods (see genetic algorithms, neuron computer networks). The term LSI reflects the amplitude of theoretic/research subjects, who include academic and professional models ranging from molecular (bioinformatics) to medical informatics as well as new dynamically evolving matters as neuroinformatics and others.

LSI program leads to acquisition of:

##### **1. Master’s Degree in “Life Sciences Informatics”** in the following Subject matters:

- a. Bioinformatics
- b. Neuroinformatics
- c. Medical Informatics

##### **2. PhD Diploma**

In the LSI program, graduates of Life Sciences and Informatics Departments of Greece are accepted as well as graduates of technical Education Institutions according to article 5, par.12 of Law N 2916/2001 or congener non-Greek Departments, recognized officially by ΔΙΚΑΤΣΑ.

The timeframe regarding acquisition of three titles, as per article, is set accordingly: For the Master’s Degree it is set to 4 academic semesters minimum, including the timeframe of thesis completion, and not beyond 8 academic semesters maximum. For the PhD Diploma, this duration is set to 8 academic semesters minimum (Master’s degree is counted as two years).

(Information: G.Harakidas tel. 2610 969114, S.Rapti, tel. 2610 969102.)

## **OPEN eClass PLATFORM**

Open eClass platform is a complete Electronic Studies Management System. It constitutes GUnet’s academic Network proposal for Asynchronous Tele-education Services support. This platform pursues to integrate new technologies and constructively use internet in the educational process. Introduction of Asynchronous Tele-education provides new possibilities in education, by offering an interactive medium of continuous communication between trainer and trainee. In parallel, electronic organization, storage and presentation of educational material is supported, independent of limiting factors of space and time in classic teaching methods, thus creating the foundations of a dynamic virtual education environment. Open class Platform’s designed aims towards corroborating the educational process. More specifically, teachers can easily and quickly create user-friendly and operational electronic classes, while using their own source material (notes, presentations, texts, images etc.). Trainees, on their side, acquire an alternative access point in offered theoretic knowledge.

Basic Features of this platform are:

1. Discrete user roles
2. Discrete lesson categories

3. Ease of using and creating lessons
4. Structured lesson presentation
5. Stability and dependability
6. Ease of management

Basic Aims of this platform are:

1. Integrating new technologies in the educational process
2. Utilization of pre-existing educational material (notes, presentations etc.)
3. Constructive Internet use by trainers and trainees
4. Support of a dependable, low-cost Asynchronous Tele-education Service
5. Ease of install, management and versatility in meeting specialized needs and requirements

For more information, please visit the site: <https://class.parts.go>

## LABORATORY TRAINING REGULATIONS

### **General rule**

1. Laboratory exercises begin according to timetable definitions, without an “academic quarter” delay.

### **Supervisors and trainees**

2. Strictly prohibited are:
  - a. Food and drinks consumption in laboratories, tutorial halls and hallways
  - b. Smoking in laboratories, tutorial halls and hallways.
  - c. Entrance and occupancy in halls and hallways for non-personnel individuals.
3. During the exercise:
  - a. Oral use of pipettes is prohibited.
  - b. Open windows or open alcohol/ether bottles are prohibited when gas suppliers are lit on.
  - c. Any accident should be immediately reported to the exercise’s supervisor.
  - d. No communication between trainees, supervisors and both is required. In case of necessary communication, it should be done in an orderly and low-noise fashion, in order not to hassle everyone else.
3. Asthma and allergic patients, as well as every individual having a health problem due to exacerbate by materials used during the exercise, should immediately report to the exercise’s supervisor.

### **Trainees only**

1. Laboratory exercises are compulsory. Students should be on time, without any delays and have with them, wherever necessary, their own lab coats.
2. When reporting for a lab exercise, students should be updated about the subject matter related to the exercise taking place and have an active contribution to it.
3. During the exercise, full compliance with the rules of safely using toxic, caustic, radioactive, volatile substances or managing biological materials (e.g. blood, tissues etc.) is mandatory, the way these rules are defined by the exercise’s supervisors.
4. Compliance with rules regarding equipment cleanness (e.g. lights, microscopes) and benches is also mandatory, the way these rules are defined by the exercise’s supervisor.
5. Please avoid:

- A. Tampering with materials and equipment located on the exercise's bench before given instructions by the supervisors.
- B. moving laboratory devices or glass materials from supervisor-defined positions or from one position to another.
6. Abandoning the defined post during the exercise without the supervisor's consent, is generally prohibited.

## QUALITY ASSURANCE

### QUALITY ASSURANCE UNIT (QAU)

QEU is a central University Agency who coordinates collection of evidence who imprint the University's educational and research work, as it is performed by individual academic units, as well as the elements related to the university's operation in general (administrative, economic, technical specifications).

QEU convenes under the presidency of university of Patras' Deputy Dean of Academic Affairs and Personnel, and is composed of five members of Teaching-Research Personnel (TRP) and a common representative of administrative personnel.

Composition of the Quality Ensuring Unit is as follows:

#### President

**Prof. Pantelis Kyprianos**, Deputy Dean of Academic Affairs and Personnel

#### Members

**Demetrios Vergidis**, Professor, PTDE

**Nikolaos Karamanos**, Professor, Department of Chemistry

**Athanasios Karalis**, Associate Professor, ECD

**Konstantinos Berberidis**, Professor, Department of Computer Engineering and Informatics

**Constantinos Stathopoulos**, Associate Professor, School of Medicine

#### QAU Secretariat

modipsecr@upatras.gr, modip@upatras.gr, tel. 2610 – 996649/ 969047. Fax. 2610 – 996665

**Vasiliki Leontara**, Administration of Education and Research Employee

**Polina Tzortzotou** External Collaborator Tel. 2610 – 969890

The jurisdiction of University of Patras Quality Ensuring Unit is defined in articles v. 3374/05 and are still in effect according to articles 80 (παρ. 12, γ) of v. 4009/11 (195 Α') and include:

1. Evaluating University of Patras as a whole, by acting as an Internal Evaluation Team (IET) for the Institution. It caters for and constitutes the biannual Internal Report of the Institution's operation, which takes into account the corresponding Annual Internal reports of its Departments.
2. Responsibility for the constitution of the Internal Evaluation Report of the University of Patras, every four years.
3. Catering for the coordination, support and materialization of evaluation processes of the Academic Units and the Institution's Services, based on the quality of educational work, quality of research work, quality of studies' programs, as well as the quality of the rest of provided services (administrative services, student care, infrastructure etc.).
4. Overviewing and catering for timely constitution and submission of the Annual Internal Reports of the University's Departments.
5. Catering for the activation and support of the Internal Evaluation Process of the Institution's Academic Units, forwarding them to HQAA and contributing to organizing, by providing any offered means towards smooth conduct of on-site visits of external judges.

6. Receiving the Internal Evaluation Reports and forwarding them to the corresponding Academic Unit.
7. Catering for organization, operation, and overview of quality ensuring processes and evaluations of the Institution, the Academic Units and its services, within the context of indications and instructions of the HQAA.

## INTERNAL EVALUATION COMMITTEE

Every University of Patras' Department composes, with decision of the General Assembly, an **Internal Evaluation Committee (IEC)**, which is responsible for the conduction of the Department's Evaluation and caters for gathering all the evidence necessary for composition and submission of the Annual Internal Report and the department's Internal Evaluation Report, to the University of Patras' QEU. The Department of Medicine's IET is comprised of seven members and is defined in regular intervals after suggestion of the Department's President and Department of Medicine's General Assembly's approval. In the end of every Academic year, the Annual Internal Report is composed, which constitutes the description and imprint of the whole work performed by the Department and institutes the first and regularly repeated process, from which the necessary evidence and information are gathered, based on which the Department's **Internal Evaluation Report (IER)** is composed every four years. The IER is based on the quality analysis and comparative evaluation of all the four-year-markers, based on which the Department's Internal Evaluation is performed. More specifically, in the Department of Medicine, in every Academic Semester, the students are required to evaluate the Theoretic lessons as well as Laboratory and Clinical lessons. The evidence is gathered under responsibility of the Department's IET and is submitted for process to the Administration of Education and Research. The Evaluation's results are uploaded on the site of Informatics System for Quality Ensuring (<https://ps.modip.upatras.gr/>).

## MEDICAL STUDENTS SCIENTIFIC ASSOCIATIONS

### Hellenic Medical Students International Committee - HelMISC

**Address** HELMSIC PATRAS, P. O. BOX 1201, 26110 PATRAS

**General** The Hellenic Medical Students' International Committee (HelMISC) non-government, non-profit, non-political independent union. It was established in 1958 by Medical Students and today it is comprised of 7 Regional Committees, one in every city having a Medical School. The General Secretariat of HelMISC is located in Athens.

Main Purpose is to sensitize and activate medical students as well as society in matters including:

- Public Health
- Medical Education
- Promoting World Peace and Human Rights
- Prevention of Sexually Transmitted Diseases and AIDS
- Educational Student Exchange, in a Clinical and Laboratory level.

**What are HelMISC's clinical and research type exchanges?**

These are exchanges regarding Medical students, and are realized through contracts between countries all over the world and are divided into clinical and research types. Usually the research exchanges are performed in Laboratories



and clinical exchanges in Hospital Clinics.

***In which year can medical students participate in a research exchange and in which in a clinical exchange?***

In research exchange all years' students can participate and in clinical exchange students of 3<sup>rd</sup> year and above only.

HelMSIC's actions are basically divided into six thematic which also constitute the committees where its members are working:

- **SCOPE - Professional Exchanges:** every year in a national level, approximately 350 student exchanges are realized, in which students are trained in a University Clinic for one-month duration.
- **SCORE - Research Exchanges:** every year in a national level, approximately 100 student exchanges are realized, in which students are trained in a Research Center for one-month duration.
- **SCOPH - Public Health:** it includes community briefings in public health issues such as Diabetes, Substance abuse, cancer etc. For this purpose, specialized educational seminars are offered to Medical students who perform specially aimed interventions.
- **SCOPR - Human Rights and Peace:** It includes Human Rights in healthcare and health access for vulnerable individuals. Περιλαμβάνει τα ανθρώπινα δικαιώματα στο χώρο της υγείας και την πρόσβαση στην υγεία για ευπαθείς πληθυσμούς For this purpose, specialized educational seminars are offered to Medical students who perform specially aimed interventions.
- **SCORA - Reproductive Health & HIV/AIDS:** Informing medical Students and through them young people, on matters of sexual health and rights through training seminars of equivalent education.
- **SCOME - Medical Education:** Focuses on matters of Medical Education and changes in Studies' Program, while performing specialized workshops where Medical students can learn specific techniques.

Its targets are made reality through various activities, often in collaboration with other institutions, which include daily seminars, and medical interest speeches, researches, healthcare programs, medical students' updates in matters regarding medical specialties and medical training, medical students' exchanges, community contribution activities and public sensitization and information on matters of public health. In parallel, HelMSIC is a proud member of:

- International Federation of Medical Students' Associations – (IFMSA)
- European Medical Students' Association – (EMSA)
- Hellenic National Youth Council (HNYC).

Through participation in international Student Associations, HelMSIC is channeling the Greek Medical Students' voices abroad, helping to facilitate communication and cooperation. HelMSIC cooperates with many non-government organizations and unions in Greece, in order to materialize its actions, such as Doctors of the World, Doctors without frontiers and ACT UP, while acting as a Scientific collaborator for the Center of Disease Control And Prevention. Kofi Annan, Secretary general for the United Nations, Addressing IFMSA members (and in that regard, HelMSIC members), stated that: ***“As medical students committed to sharing your knowledge and skills internationally, you are a powerful source of hope for the future. I commend your determination to use your medical training to benefit all members of society.”***

## HELLENIC SCIENTIFIC SOCIETY OF MEDICAL STUDENTS

**Establishment/Aim:** In 16.9.93 EEFIE was established after formal induction in the registry of Athens' First Degree Court, with No.14991. Since then it acts as a non-government, non-profit association, in an attempt to scientifically mobilize Hellenic Health Sciences Students. This attempt regards the reinforcement and support of Medical, Dentistry and Pharmacology Students through Greece, strengthening their relations and facilitating the fertile exchange of ideas. Based on these above targets, EEFIE organizes:

- ◆ Informative and training seminars
- ◆ One-day seminars in local departments
- ◆ Student participation programs in everyday clinical practice through summer vacation.
- ◆ Publication of scientific textbooks and the "in vivo" scientific journal.
- ◆ The annual Medical Student Congress

Various cultural events (excursions, exhibitions, concerts etc.)

**Association Structure - Organization** - Planning, organizing, and materializing these programs described above, is primarily work **of the students themselves**. EEFIE has local departments and offices in each Greek city which has a Medical School (Athens Thessaloniki, Patras, Irakleio, Larisa, Ioannina, and Alexandroupoli). It consists of approximately 1500 members, regular, emeritus and honorary. Any undergraduate Medical, Dentistry and Pharmacology student under 35 years of age can become a regular member. All regular members are equivalent. Graduates of the above University Departments can become emeritus members, carrying all rights of regular members except electing and being elected in administrative positions. Exceptional individuals, in the fields of scientific and community contribution, or contribution to EEFIE goals, can become honorary members, after unanimously elected by the Association's Administrative Board. Every member has a membership card which is used as a means of identification and access to shops inside the Association Discount Network, in every department city.

### DEPARTMENTS

Departments are managed through the Department Assembly, which is constituted of all the regular members who are registered in the department record, and of the elected 5-member Department Council, which in turn is comprised of President, Vice-president, Secretary, cashier and member.

### CENTRAL ADMINISTRATION

MAIN Overview of EEFI's attempts are monitored by the General Assembly (GA), and the Administrative Board (AB). GA is the supreme administrative structure and is comprised of every regular EEFIE member. The AB is constituted of 13 members: 4 members are elected by the GA (President, Vice-president, Secretary General and Cashier General), 7 Department representatives (President or legal replacement member), 1 EEFIE abroad-office representative and 1 Dentistry students' representative.

# HONORARY DOCTORATES

NAME AND SURNAME	DATE OF PROCLAMATION
<p style="text-align: center;"><b>Makis-Joachim Tzapogas</b> Professor of Vascular Diseases New York University, N.Y., USA</p>	<p>30-5-1991</p>
<p style="text-align: center;"><b>Bernard Ackerman</b> Professor of Skin Histopathology Jefferson Medical College, Philadelphia, USA</p>	<p>2-9-1999</p>
<p style="text-align: center;"><b>Argyrios N. Theofilopoulos</b> Professor of Immunology Scripps Clinic and Research Foundation, La Jolla, California, USA</p>	<p>30-5-2000</p>
<p style="text-align: center;"><b>Michael Gravanis</b> Professor of Anatomical Pathology Emory University School of Medicine Atlanta, Georgia, USA</p>	<p>11-7-2000</p>
<p>A. TH. Holiness the Ecumenical Patriarch <b>Messrs. Bartholomew</b></p>	<p>21-10-2000</p>
<p style="text-align: center;"><b>Evangelos Gragoudas</b> Professor of Ophthalmology Harvard Medical School, Boston, MA, USA</p>	<p>15-12-2000</p>
<p style="text-align: center;"><b>John Skandalakis</b> Professor of Surgical Anatomy Emory University School of Medicine Atlanta, Georgia, USA</p>	<p>10-7-2001</p>
<p style="text-align: center;"><b>George Stamatoyannopoulos</b> Professor of Genome Sciences and Medicine University of Washington</p>	<p>17-10-2001</p>
<p>Archbishop of Tirana Durres and All Albania <b>Messrs. Anastasios</b></p>	<p>29-11-2002</p>
<p style="text-align: center;"><b>Nicholaos Madias</b> Professor of Medicine-Nephrology Academic Dean of Medicine School Tufts University, Boston, MA, USA</p>	<p>27-3-2003</p>
<p style="text-align: center;"><b>Haralambos Gavras</b> Professor of Pathology Director of Hypertension-Atherosclerosis Department Boston University Medical Center, MA, USA</p>	<p>9-4-2003</p>

<p><b>Fotis Kafatos</b> Professor of Biology University of Crete</p>	19-5-2005
<p><b>Alan Wein</b> Professor-Director of Urology University of Crete</p>	19-5-2005
<p><b>Paul Maria Rommens</b> Professor of Surgery Traumatology Johannes Gutenberg Mainz, Germany</p>	4-11-2005
<p><b>Lucio Luzzatto</b> Professor of Haematology University of Genoa, Italy</p>	1-12-2006
<p><b>Knud Nierhaus</b> Professor of Biochemistry Institute of Molecular Genetics, Max-Planck Berlin, Germany</p>	10-11-2008
<p><b>Konstantinos Soldatos</b> Emeritus Professor of Psychiatry University of Crete</p>	10-11-2008
<p><b>William Hendee</b> Professor of Medical Physics University of Wisconsin, WI, USA</p>	15-12-2008
<p><b>Anthony Vintziliaos</b> Professor of Obstetrics, Gynecology &amp; Reproductive Medicine, School of Medicine, Stony Brook University, New York</p>	7-10-2009
<p><b>James D. Watson</b> Professor at Cold Spring Harbor Laboratory. Nobel Prize in Physiology or Medicine in 1962.</p>	13-4-2011
<p><b>George Chrousos</b> Professor of Pediatrics, Director of the First Department of Pediatrics, Medical School, Athens University</p>	23-11-2011
<p><b>Athanasios Papavasileiou</b> Professor of Biochemistry, Director of the Biological Chemistry Laboratory, School of Medicine University of Athens</p>	12-6-2013
<p><b>Basil Rigas</b> Professor of Gastroenterology-Hepatology, Director of Gastroenterology- Hepatology and Cancer Prevention, Stony Brook University, NY, USA.</p>	26-6-2013

# STATISTICAL DATA OF MEDICINE SCHOOL

Academic Year	Students (6 years)	Students (pending graduation)	Graduates	Faculty Members	Scientific Associates	PhD Dissertations
1977-78	62			4	1	
1978-79	158			4	2	
1979-80	245			15	4	1
1980-81	319			15	29	3
1981-82	404			17	35	4
1982-83	535		8	45	35	1
1983-84	583	4	56	47	32	9
1984-85	698	20	65	57	32	3
1985-86	830	57	53	61	29	8
1986-87	840	75	78	64	29	15
1987-88	806	121	77	66	18	16
1988-89	783	156	82	78	15	26
1989-90	785	167	109	93	12	14
1990-91	706	206	143	100	10	18
1991-92	665	238	116	103	8	24
1992-93	654	248	125	108	8	18
1993-94	716	234	122	114	7	14
1994-95	698	219	127	118	7	19
1995-96	691	288	113	115	7	19
1996-97	692	282	120	113	7	19
1997-98	679	277	95	117	5	12
1998-99	750	298	129	130	1	18
1999-00	797	282	133	131	1	25
2000-01	853	257	102	132	1	23
2001-02	889	270	64	147	1	21
2002-03	880	258	143	143	1	40
2003-04	947	234	157	148	1	28
2004-05	971	395	161	147	1	39
2005-06	849	276	135	151	1	31
2006-07	807	354	140	156	1	34
2007-08	749	288	185	157		31
2008-09	768	297	201	160		46
2009-10	820	281	155	161		51
2010-11	849	283	127	153		41
2011-12	863	267	118	154		33

## ESTABLISHED CLINICS AND LABORATORIES

	NAME	RELEVANT LAW	ESTABLISHMENT
<b>LABORATORIES</b>	BIOLOGICAL CHEMISTRY	L. 641/18-7-77	OGG 200/22-7-77
	GENERAL BIOLOGY	L. 641/18-7-78	OGG 200/22-7-78
	MEDICAL PHYSICS	L. 641/18-7-78	OGG 200/22-7-78
	ANATOMY	L. 641/18-7-78	OGG 200/22-7-78
	PHYSIOLOGY	L. 641/18-7-78	OGG 200/22-7-78
	GEN. PHARMACOLOGY	P.D. 789/19-8-80	OGG 194/26-8-80
	RADIOLOGY	P.D 789/19-8-80	OGG 194/26-8-80
	MICROBIOLOGY	P.D. 789/19-8-80	OGG 194/26-8-80
	ANATOMICAL PATHOLOGY	P.D. 789/19-8-80	OGG 194/26-8-80
	PUBLIC HEALTH	P.D. 789/19-8-80	OGG 194/26-8-80
	NUCLEAR MEDICINE	P.D. 269/11.9.02	OGG 307/02
<b>CLINICS</b>	PATHOLOGY	P.D. 789/19-8-80	OGG 194/26-8-80
	NEUROLOGY	P.D. 789/19-8-80	OGG 194/26-8-80
	PSYCHIATRY	P.D. 789/19-8-80	OGG 194/26-8-80
	SURGERY	P.D. 789/19-8-80	OGG 194/26-8-80
	ANAESTHESIOLOGY&INTENSE CARE	P.D. 292/26-7-93	OGG 130/3-8-93
	OPHTHALMOLOGY	P.D. 789/19-8-80	OGG 194/26-8-80
	PAEDIATRICS	P.D. 789/19-8-80	OGG 194/26-8-80
	OBSTETRICS-GYNEKOLOGY	P.D. 789/19-8-80	OGG 194/26-8-80
	DERMATOLOGY	P.D. 292/26-7-93	OGG 130/3-8-93
	UROLOGY	P.D. 292/26-7-93	OGG 130/3-8-93
	NEUROSURGERY	P.D. 292/26-7-93	OGG 130/3-8-93
	OTORHINOLARYNGOLOGY	P.D. 292/26-7-93	OGG 130/3-8-93
	ORTHOPAEDICS	P.D. 292/26-7-93	OGG 130/3-8-93
	CARDIOTHORACIC SURGERY	P.D 130/15-6-99	OGG 131/29-6-99
	PAEDIATRIC SURGERY	P.D. 49/16-2-01	OGG 38/5-3-01
	VASCULAR SURGERY	M.D38197/B1/31-3-08	OGG 690/21-4-08 &
	RECOVERY OF PATIENTS WITH SPINAL CORD INJURIES	M.D 0640/B1/9-7-10	OGG 1160/24-6-08 OGG 1091/19-7-10

Ο ΟΡΚΟΣ ΤΟΥ ΙΠΠΟΚΡΑΤΟΥΣ

ΜΝΥΜΙ ΑΠΟΛΛΥΝΑ ΙΗΤΡΟΝ, ΚΑΙ ΑΣΚΛΗΠΙΟΝ,  
ΚΑΙ ΥΓΕΙΑΝ, ΚΑΙ ΠΑΝΑΚΕΙΑΝ, ΚΑΙ ΘΕΟΥΣ ΠΑΝ-  
ΤΑΣ ΤΕ ΚΑΙ ΠΑΣΑΣ, ΙΣΤΟΡΑΣ ΠΟΙΕΥΜΕΝΟΣ, ΕΠΙ-  
ΤΕΛΕΑ ΠΟΙΗΣΕΙΝ ΚΑΤΑ ΔΥΝΑΜΙΝ ΚΑΙ ΚΡΙΣΙΝ ΕΜΗΝ  
ΟΡΚΟΝ ΤΟΝΔΕ ΚΑΙ ΞΥΓΓΡΑΦΗΝ ΤΗΝΔΕ ἩΓΗΣΑΣΘΕ  
ΑΙ ΜΕΝ ΤΟΝ ΔΙΔΑΞΑΝΤΑ ΜΕ ΤΗΝ ΤΕΧΝΗΝ ΤΑΥΤΗ  
Ν ΙΣΑ ΓΕΝΕΤΗΣΙΝ ΕΜΟΙΣΙ, ΚΑΙ ΒΙΟΥ ΚΟΙΝΩΣΑΣΘΑΙ, Κ-  
ΑΙ ΧΡΕΩΝ ΧΡΗΖΟΝΤΙ ΜΕΤΑΔΟΣΙΝ ΠΟΙΗΣΑΣΘΑΙ, Κ-  
ΑΙ ΓΕΝΟΣ ΤΟ ΕΞ ἙΥΤΕΡΟΥ ΑΔΕΛΦΟΙΣ ΙΣΟΝ ΕΠΙΚΡΙΝ  
ΕΣΙΝ ἈΡΡΕΣΙ, ΚΑΙ ΔΙΔΑΞΕΙΝ ΤΗΝ ΤΕΧΝΗΝ ΤΑΥΤΗΝ  
ΗΝ ΧΡΗΖΟΥΣΙ ΜΑΝΘΑΝΕΙΝ, ΑΝΕΥ ΜΙΣΘΟΥ ΚΑΙ ΞΥ-  
ΓΓΡΑΦΗΣ, ΠΑΡΑΓΓΕΛΙΗΣ ΤΕ ΚΑΙ ΑΚΡΟΗΣΙΟΣ ΚΑΙ ΤΗΣ  
ΛΟΙΠΗΣ ΑΠΑΣΗΣ ΜΑΘΗΣΙΟΣ ΜΕΤΑΔΟΣΙΝ ΠΟΙΗΣΑΣ-  
ΘΑΙ ΥΙΟΙΣΙ ΤΕ ΕΜΟΙΣΙ, ΚΑΙ ΤΟΙΣΙ ΤΟΥ ΕΜΕ ΔΙΔΑΞΑΝ-  
ΤΟΣ, ΚΑΙ ΜΑΘΗΤΑΙΣΙ ΣΥΓΓΕΓΡΑΜΜΕΝΟΙΣΙ ΤΕ ΚΑΙ ἌΡ-  
ΚΙΣΜΕΝΟΙΣ ΝΟΜΩ, ΙΗΤΡΙΚΩ, ἈΛΛΩ, ΔΕ ΟΥΔΕΝΙ.  
ΔΙΔΙΤΗΜΑΣΙ ΤΕ ΧΡΗΣΟΜΑΙ ΕΠ' ὈΦΕΛΕΙΗ, ΚΑΜΜΟ-  
ΝΤΩΝ ΚΑΤΑ ΔΥΝΑΜΙΝ ΚΑΙ ΚΡΙΣΙΝ ΕΜΗΝ, ΕΠΙ ΔΗΛΗ-  
ΣΕΙ ΔΕ ΚΑΙ ΑΔΙΚΗ, ΕΙΡΞΕΙΝ. ΟΥ ΔΩΣΩ ΔΕ ΟΥΔΕ  
ΦΑΡΜΑΚΟΝ ΟΥΔΕΝΙ ΑΙΤΗΘΕΙΣ ΘΑΝΑΣΙΜΟΝ, ΟΥΔΕΥ  
ΦΗΓΗΣΟΜΑΙ ΞΥΜΒΟΥΛΙΗΝ ΤΟΙΗΝΔΕ ὈΜΟΙΟΣ ΔΕ ΟΥ-  
ΔΕ ΓΥΝΑΙΚΙ ΠΕΣΣΟΝ ΦΘΟΡΙΟΝ ΔΩΣΩ. ἈΓΝΩΣ Δ-  
Ε ΚΑΙ ΟΣΙΩΣ ΔΙΑΤΗΡΗΣΩ ΒΙΟΝ ΤΟΝ ΕΜΟΝ ΚΑΙ ΤΕΧΝ-  
ΗΝ ΤΗΝ ΕΜΗΝ. ΟΥ ΤΕΜΕΛ ΔΕ ΟΥΔΕ ΜΗΝ ΛΙΘ-  
ΙΛΝΤΑΣ, ΕΚΧΩΡΗΣΩ ΔΕ ΕΡΓΑΤΗΣΙΝ ἈΝΔΡΑΣΙ ΠΡ-  
ΗΪΙΟΣ ΤΗΣΔΕ. ΕΣ ΟΙΚΙΑΣ ΔΕ ΟΚΟΣΑΣ ἈΝ ΕΣΩ,  
ΕΣΕΛΕΥΣΟΜΑΙ ΕΠ' ὈΦΕΛΕΙΗ, ΚΑΜΜΟΝΤΩΝ, ΕΚΤ-  
ΟΣ ΕΩΝ ΠΑΣΗΣ ΑΔΙΚΗΣ ΕΚΟΥΣΙΗΣ ΚΑΙ ΦΘΟΡΙΗΣ, Τ-  
ΗΣ ΤΕ ἈΛΛΗΣ ΚΑΙ ΔΦΡΟΔΙΣΙΩΝ ΕΡΓΩΝ ΕΠΙ ΤΕ ΓΥ-  
ΝΑΙΚΕΙΩΝ ΣΩΜΑΤΩΝ ΚΑΙ ἈΝΔΡΩΝ, ΕΛΕΥΘΕΡ-  
ΩΝ ΤΕ ΚΑΙ ΔΟΥΛΩΝ. Ἀ Δ' ἈΝ ΕΝ ΘΕΡΑΠΕΙΗ,  
Ἡ ἸΔΩ, Ἡ ΔΚΟΥΣΩ, Ἡ ΚΑΙ ἈΝΕΥ ΘΕΡΑΠΕΙΑΣ ΚΑΤΑ Β-  
ΙΟΝ ἈΝΘΡΩΠΩΝ, Ἀ ΜΗ ΧΡΗ ΠΟΤΕ ΕΚΛΑΛΕΕΣΘΑΙ  
ΕΞΩ, ΣΙΓΗΣΟΜΑΙ, ἈΡΡΗΤΑ ἩΓΕΥΜΕΝΟΣ ΕΙΝΑΙ ΤΑ ΤΟ-  
ΙΑΥΤΑ. ΟΡΚΟΝ ΜΕΝ ΟΥΝ ΜΟΙ ΤΟΝΔΕ ΕΠΙΤΕΛΕ-  
Α ΠΟΙΕΟΝΤΙ, ΚΑΙ ΜΗ ΞΥΓΧΕΟΝΤΙ, ΕΙΗ ΕΠΑΥΡΑΣΘ-  
ΑΙ ΚΑΙ ΒΙΟΥ ΚΑΙ ΤΕΧΝΗΣ ΔΟΞΑΖΟΜΕΝΩ, ΠΑΡΑ Π-  
ΑΣΙΝ ἈΝΘΡΩΠΟΙΣ ΕΣ ΤΟΝ ΔΙΕΙ ΧΡΟΝΟΝ ΠΑΡΑΒΑΙ-  
ΝΟΝΤΙ ΔΕ ΚΑΙ ΕΠΙΟΡΚΟΥΝΤΙ, ΤΑΝΑΝΤΙΑ ΤΟΥΤΕΩΝ.

