### Fourth (4th) year of Pharmacy study

**First semester:** from September to December  
**Exam period:** December/early January

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### Quatrième (4ème) année des études de Pharmacie

**Premier semestre :** de septembre à décembre  
**Période d’examens :** décembre / janvier

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UE 41 Health legislation and economics

4 ECTS

Content

Classes*

- Social security
  - History
  - The model of social welfare in France
  - The role of social welfare
  - The impact of social welfare
  - Social security systems

- Social security
  - Administrative and financial organization of the general system (RG)
  - Compulsory health insurance
  - Health insurance: the ONDAM system

- Health in numbers
  - Health accounts (CMT, DCS)
  - Social security expenses
  - Deficit of the general system RG, all risks included
  - Health insurance expenses
  - The growth of health expenditure

- Control of health expenditure
- Price and reimbursement of medical devices

- The notion of ethics/deontology
  - Ordinal origin (common feature of the professions organized in Orders)
  - Definition of ethics
  - Scope of the code of ethics

- Code of ethics for pharmacists (common obligations)
  - General obligations
  - Particular obligations (pharmacy, hospital, manufacturer, wholesaler, biologist)

- Sanction against breaches of professional ethics
  - Notion of disciplinary fault
  - Disciplinary boards of the French order of pharmacists
  - Main procedural rules

- Patients’ rights
  - Respect for the human body
  - Patients’ right to health care and free choice
  - The right to consent to the care
  - Medical confidentiality and medical information

* Classes (all students in amphitheater).

Assessment

Final exam about classes.

Contacts

Hélène Van Den Brink
Eric Fouassier
UE 42 Neurology and psychiatry

7 ECTS

Content

Module 1: Inflammatory and degenerative diseases
Classes
Reminders of neurophysiology
Parkinson’s disease and treatment
Multiple sclerosis (MS) and treatment
Alzheimer’s disease and treatment
Toxicity and neurodegeneration
Tutorials
Treatment of Parkinson’s and Alzheimer’s diseases

Module 2: Epilepsy, migraine, and other pathologies
Classes
Semiology of epilepsy and migraine, other neurological pathologies
Treatment of epilepsy and migraine
Tutorials
Treatment of epilepsy and migraine

Module 3: Pain
Classes
Pain assessment
Pharmacology of nonsteroidal anti-inflammatory drugs and opiates
Management and treatment of pain, strategies for using drugs
Tutorials
Pharmacology of nonsteroidal anti-inflammatory drugs and opiates

Module 4: Psychiatry
Classes
Semiology of psychiatric diseases
Sedatives, anxiolytics, hypnotics
Neuroleptics
Lithium

Module 5: Addiction and clinical toxicology of the CNS
Classes
Addiction
Clinical toxicology
Toxicology of morphine and narcotics

* Classes (all students in amphitheater), Tutorials (small groups of students).

Assessment

Final exam about classes and tutorials.

Contact
Imad Kansau
UE 43 Nutrition and metabolic diseases

7 ECTS

Content

Module 1: Lipoprotein metabolism and dyslipoproteinemia

Classes
- Lipoprotein metabolism
- Atherogenesis
- Biochemical exploration of dyslipoproteinemia and treatment of dyslipidemic patients
- Dietary recommendations
- Treatment and therapeutic strategy

Tutorials
- Lipoprotein metabolism

Module 2: Diabetes

Classes
- Metabolic syndrome, obesity and diabetes (epidemiology - semiology)
- Pancreatic hormones and glycemic control/blood sugar regulation
- Immunology of type 1 diabetes
- Biochemical exploration
- Dietary recommendations
- Oral antidiabetic drugs
- Insulin and insulin therapy. Treatment and therapeutic strategy of diabetes

Tutorials
- Diabetes and metabolic disorders

Module 3: Phosphocalcic metabolism and bone diseases

Classes
- Phosphocalcic homeostasis
- Biochemical exploration
- Treatment of phosphocalcic metabolic disorders

Tutorials
- Phosphocalcic metabolic disorders

* Classes (all students in amphitheater), Tutorials (small groups of students).

Assessment

Final exam about classes and tutorials.

Contact

Jean-Louis Paul
UE 44 Digestive diseases

7 ECTS

Content

**Module 1: Mouth, esophagus, stomach, and gut diseases**

**Classes**
- Semiology and explorations of mouth, esophagus, stomach, and gut diseases
- Pharmacology of anti-emetics, anti-diarrhea medication and drugs against constipation
- Therapeutic strategies of gastro-oesophageal reflux disease (GERD) and gastroduodenal ulcers.

**Tutorials**
- Treatment of gastroduodenal ulcers, gastro-oesophageal reflux disease, constipation

**Module 2: Liver, biliary tract and pancreas diseases**

**Classes**
- Liver, biliary tract and pancreas diseases, exploration and treatment
- Liver and pancreas biochemical explorations
- Iron metabolism and biochemical markers of malnutrition
- Therapeutic treatment of complications of cirrhosis
- Drugs and xenobiotics hepatotoxicity
- Viral hepatitis: viral markers, pathophysiology, and virological diagnosis
- Prevention and treatment of viral hepatitis

**Tutorials**
- Liver diseases

* Classes (all students in amphitheater), Tutorials (small groups of students).

Assessment

Final exam about classes and tutorials.

Contact

Robert Farinotti
UE 45 Heart and lungs

6 ECTS

Content

Module 1: Lung diseases
Classes
- Lung diseases (asthma, chronic obstructive pulmonary disease (COPD), acute respiratory distress syndrome (ARDS)…)
- Pulmonary clinical toxicology
- Pharmacology of asthma and COPD drugs
- Therapeutic treatment and strategies for asthma and COPD; oxygen therapy

Module 2: Heart rhythm disorders
Classes
- Heart rhythm disorders
- Heart rhythm toxicology
- Antiarrhythmics

Module 3: Thromboembolic disease
Classes
- Thromboembolic disease
- Pathophysiology and risk factors of thromboembolic disease
- Treatment and therapeutic strategies of thromboembolic disease

Tutorials
- Treatment and therapeutic strategies of thromboembolic disease

* Classes (all students in amphitheater), Tutorials (small groups of students).

Assessment

Final exam about classes and tutorials.

Contact

Imad Kansau
UE 46 Heart and vessels

6 ECTS

Content

Classes
- Arterial hypertension (high blood pressure)
- Coronary artery disease
- Heart failure
- Cardiovascular risk factors
- Laboratory tests in coronary artery disease and heart failure
- Pharmacology of drugs for cardiovascular system (except those for heart rhythm disorders)
- Therapeutic strategies for cardiovascular diseases
- Heart clinical toxicology

Tutorials
- The blood pressure
- Arterial hypertension (High blood pressure), heart rhythm disorders
- Heart failure, coronary disease

* Classes (all students in amphitheater), Tutorials (small groups of students).

Assessment

Final exam about classes and tutorials.

Contact

Robert Farinotti
UE 47 Cutaneous and ocular systems

5 ECTS

Content

**Module 1: Cutaneous system**

**Classes**
- Skin physiology
- Dermal route pharmacokinetics
- Skin semiology
- Main skin diseases
- Treatment of skin diseases
- Healing: pressure sores, ulcers, burns…

NB: cutaneous toxicology will be treated in immunology (allergies…)

**Practical works**
- Fungal skin infections
- Parasitic skin infections (including entomology)

**Module 2: Ophthalmology**

**Classes**
- Reminders of ocular physiology
- Eye diseases
- Treatment of eye diseases (including glaucoma)
- Ocular toxicology

* Classes (all students in amphitheater), Practical works (smaller groups of students in order to study in adapted practical rooms/laboratories).

Assessment

Final exam about classes.
Continuous assessment for the practical works with report writings, oral presentations and/or lectures. Attendance to practical works needs to be approved.

Contacts

Christine Lafforgue
Cécile Laugel
UE 48 Radioactivity and pharmaceutical applications

6 ECTS

Content

Classes
- General introduction and physical basics in radioactivity and its detection
- Interactions between radioactive radiations and living beings
- Radioactive sterilization
- Radiation protection and legislation
- Environmental exposures, radioactive waste, management of major crises
- Chemical synthesis of radiolabelled molecules and their use (including pharmaceutical formulation)
- Imaging and diagnosis
- Therapeutic applications
- Conference: professional experience

Tutorials
- Physical basics of radioactivity and imaging from the point of view of physics
- Chemistry and use of radiolabelled molecules
- Presentation of clinical cases

Practical works
- Radioactivity

* Classes (all students in amphitheater), Tutorials (small groups of students), Practical works (smaller groups of students in order to study in adapted practical rooms/laboratories).

Assessment

Final exam about classes and tutorials.
Continuous assessment for the practical works with report writings, oral presentations and/or lectures.
Attendance to practical works needs to be approved.

Contact

Florence Agnely
UE 49 Cancer

6 ECTS

Content

**Classes**
- Epidemiology, natural history of cancer (malignant transformation, progression, metastatic process), diagnosis (imaging, biopsies, TNM classification)
- Cancers: somatic genetic diseases (viral aetiology, oncogenes, anti-oncogenes, genetic predispositions…)
- Chemical carcinogenesis (environment, tobacco, DNA damage, repair)
- Antitumor immunity
- Surgical treatments, radiotherapy
- Cell therapy, monoclonal antibodies, and vaccines
- Biomarkers for cancer
- Therapeutic strategies and treatment of patients with solid tumors (colorectal cancer, breast cancer, prostate cancer, and lung cancer)
- Preparation of anti-cancer drugs in hospitals
- Toxicology of chemotherapy treatments (including central hemotoxicity)

**Tutorials**
- Clinical cases

* Classes (all students in amphitheater), Tutorials (small groups of students).

Assessment

Final exam about classes and tutorials.

Contact

Alain Gouyette
Laurence Bonhomme-Faivre