### 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
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

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

Assessment

Final exam about classes and tutorials.

Contact

Imad Kansau
UE 42 B Psychiatry

7 ECTS

**Content**

**Classes**
- Semiology of psychiatric diseases
- Sedatives, anxiolytics, hypnotics
- Neuroleptics
- Lithium

* 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

Patrick Hindlet
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

Marie-Camille Chaumais
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
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

Nathalie Chaput
Laurence Bonhomme-Faivre
UE 61 Medical devices

4 ECTS

Content

Classes
- The medical devices (MD)
  - MD and combined products
  - Different classes of MD (rules and classification parameters)
  - European Community marking
  - Risk analysis
  - Device vigilance

* Classes (all students in amphitheater). On line-lessons downloaded from the DOKEOS pedagogical platform early in the year could be proposed.

Assessment

Final exam about classes.

Contacts

Najet Yagoubi