



# UNIVERSITÀ DEGLI STUDI DI PALERMO

Department: Biological, Chemical and Pharmaceutical Sciences and Technologies

A.Y. 2017/2018

## DEGREE COURSE IN PHARMACY

### Characteristics



Class of Master's Degree (MSc) on Pharmacy and industrial pharmacy (LM-13)



5 YEARS



PALERMO



PLANNED ACCESS



2018

### Educational objectives

In accordance with the EEC Directive 85/432, the 2nd cycle degree course in Pharmacy provides the theoretical and practical training needed to carry out the profession of Pharmacist, after the relevant professional qualification. The pharmacist should be prepared to perform the duties of a health professional with multi-disciplinary scientific competences (chemical, biological, pharmaceutical, pharmacological, toxicological and technological) within the framework of the national health service.

Graduates in Pharmacy are authorized to carry out the following professional activities: professional expert of drugs and health products (including medical devices, diagnostic products and health products, dietary products, herbal products and cosmetics); expert in quality control, storage, preservation and distribution of drugs in the wholesale and pharmacies open to the public and hospital pharmacies, information and advice in the field of drug and over-the-counter products, in direct relationship with the public.

Mandatory professional training, in a public pharmacy or in a hospital under the supervision of pharmaceutical services for not less than six months is awarded with 30 credits (equivalent to 750 hours).

Course outline.

The first four course years of the course provide core, class specific and integrative educational activities, as well as "other educational activities" among the activities suggested by the Degree Course and the ones offered by the University. The fifth course year is mostly devoted to practical professional training and to the preparation of the final dissertation. The structure of the course provides students with a gradual and constant progression of their competence level.

The specific learning outcomes of the degree course will be achieved through:

- Core activities (mathematics, physics, chemistry, biology and medicine) useful for a sound scientific background introductory to the understanding and advancement in class specific subjects;
  - Class specific activities (chemical, biological, pharmaceutical, pharmacological and technological competences), needed to acquire command of the chemical and structural features of active ingredients, pharmaceutical forms and raw materials used for the formulation of therapeutical preparations, as well as of the pharmacological bases of their action, including pharmacotherapeutic, toxicological aspects, etc.;
  - Educational activities aiming at the knowledge of laws and deontological norms useful for the various aspects of professional activity;
  - Class related and integrative activities with respect to biology and food chemistry, completing their professional education.
- Elective activities for 12 credits in total will be also provided, integrating the above mentioned activities.

The degree course aims at providing graduates with a good knowledge of English language.

All scientific sectors are covered by an adequate number of credits, both at theoretical and experimental level, divided in more course years, thus providing graduates with advanced knowledge and competences in the pharmaceutical sector.

### Professional opportunities

Profile:

Pharmacist, Chemist and similar Professions, Researcher and Industrial Operator in Pharmaceutical Sciences

Functions:

Graduates in Pharmacy graduate may have directing management positions in their field of study.

The specific skills of graduates may be listed as follows:

- Knowledge of every aspects of Drugs;
- Multidisciplinary chemical skills with particular reference to analytical and synthetic techniques;

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- Biology and nutrition skills.

Graduate in pharmacy may enroll in the professional Board of pharmacists and chemists

#### Skills:

Graduates in Pharmacy have exclusive competence on the distribution and pharmacological characteristics of the drugs, both in hospital and as professional pharmacists.

They also possess chemistry skills that can be widely used in chemical and biological analysis laboratories and in the pharmaceutical industry, in research, production, control and quality departments.

#### Career opportunities:

Pharmacist;

Director of Pharmacy;

Associate pharmacist;

Hospital pharmacist (after specific qualification)

Drug sale representative;

Researcher and technician in the field of design, synthesis and production of medicines, both in industrial and university fields;

Responsible for Quality Controls in Pharmaceutical Companies;

Operator in chemical and biological analysis laboratories;

Teaching in secondary schools (after relevant qualification examination)

#### Final examination features

The final test consists of the preparation of a written dissertation concerning the gathering and critical processing of bibliographic materials or other data related to the course cultural and professional content (compilatory dissertation), or an experimental activity about an original (mono- or multidisciplinary) topic, carried out in a research laboratory in which a member of the Faculty works, or in other public or private facilities, with which specific agreements have been established (experimental dissertation). The original dissertation, prepared by the student under the guidance of a supervising professor is publicly discussed in front of a Board of Professors, and final mark will be awarded out of 110.

| Subjects 1 ° year   | CFU | Sem. | Val. | SSD     | TAF |
|---|-----|------|------|---------|-----|
| 00133 - GENERAL AND INORGANIC CHEMISTRY<br><i>Rubino(RU)</i>                                      | 12  | 1    | V    | CHIM/03 | A   |
| 19181 - PHYSICS WITH ELEMENTS OF MATHEMATICS<br><i>D'Oca(PA)</i>                                  | 12  | 1    | V    | FIS/07  | A   |
| 01115 - COMPUTING SKILLS  | 4   | 1    | G    |         | F   |
| 04677 - ENGLISH LANGUAGE  | 6   | 1    | G    |         | E   |
| 19236 - ANIMAL AND PLANT BIOLOGY WITH<br>ELEMENTS OF PHARMACEUTICAL BOTANY -<br>INTEGRATED COURSE | 10  | 2    | V    |         |     |
| - ANIMAL BIOLOGY<br><i>Gentile(PA)</i>  | 5   | 2    |      | BIO/13  | C   |
| - PLANT BIOLOGY<br><i>Rosselli(PA)</i>  | 5   | 2    |      | BIO/15  | C   |
| 01286 - HUMAN ANATOMY<br><i>Campanella(PO)</i>  | 6   | 2    | V    | BIO/16  | A   |
| 32035 - MICROBIOLOGY AND HYGIENE<br><i>Schillaci(PO)</i>  | 10  | 2    | V    | BIO/19  | A   |

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| Subjects 2 ° year   | CFU | Sem. | Val. | SSD     | TAF |
|---|-----|------|------|---------|-----|
| 01799 - ANALYTICAL CHEMISTRY<br><i>Barreca(RD)</i>  | 6   | 1    | V    | CHIM/01 | A   |
| 01933 - ORGANIC CHEMISTRY<br><i>Buscemi(PO)</i>   | 10  | 1    | V    | CHIM/06 | A   |
| 09065 - PHARMACEUTICAL ANALYSIS OF DRUGS I<br><i>Montalbano(PA) [A-L], Montalbano(PA) [M-Z]</i> | 10  | 1    | V    | CHIM/08 | B   |
| 19389 - PHARMACOGNOSIS<br><i>Venturella(RU)</i>   | 8   | 1    | V    | BIO/14  | B   |
| 19178 - GENERAL AND MOLECULAR BIOCHEMISTRY<br><i>Tesoriere(PO)</i>                              | 12  | 2    | V    | BIO/10  | B   |

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| Subjects 2 ° year                                 | CFU | Sem. | Val. | SSD    | TAF |
|---|-----|------|------|--------|-----|
| 03379 - HUMAN PHYSIOLOGY<br><i>La Guardia(PQ)</i> | 8   | 2    | V    | BIO/09 | A   |
| 08656 - NUTRITION SCIENCE<br><i>Di Majo(RU)</i>   | 6   | 2    | V    | BIO/09 | A   |

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| Subjects 3 ° year  | CFU | Sem. | Val. | SSD     | TAF |
|--|-----|------|------|---------|-----|
| 19170 - GENERAL AND CLINICAL PATHOLOGY AND MEDICAL TERMINOLOGY<br><i>Vasto(PA)</i>       | 8   | 1    | V    | MED/04  | A   |
| 01215 - PHARMACEUTICAL ANALYSIS OF DRUGS 2<br><i>Raffa(PA) [A-L], Raimondi(PA) [M-Z]</i> | 10  | 1    | V    | CHIM/08 | B   |
| 01873 - PHARMACEUTICAL AND TOXICOLOGICAL CHEMISTRY 1<br><i>Barraja(PO)</i>               | 10  | 1    | V    | CHIM/08 | B   |
| 01549 - APPLIED (MEDICAL) BIOCHEMISTRY<br><i>Pintaudi(RU)</i>                            | 8   | 2    | V    | BIO/10  | B   |
| 19174 - DIETARY FOOD AND PRODUCTS<br><i>Di Stefano(PA)</i>                               | 6   | 2    | V    | CHIM/10 | C   |
| 19173 - GENERAL PHARMACOLOGY AND PHARMACOTHERAPY<br><i>Notarbartolo Di Villarosa(PA)</i> | 10  | 2    | V    | BIO/14  | B   |
| 19179 - PHARMACEUTICAL TECHNOLOGY<br><i>Giammona(PO)</i>                                 | 8   | 2    | V    | CHIM/09 | B   |

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| Subjects 4 ° year   | CFU | Sem. | Val. | SSD     | TAF |
|---|-----|------|------|---------|-----|
| 19175 - DRUG AND BIOMOLECULE ANALYSIS<br><i>Martorana(PA) [A-L], Martorana(PA) [M-Z]</i>                      | 8   | 1    | V    | CHIM/08 | B   |
| 01870 - MEDICINAL AND TOXICOLOGICAL CHEMISTRY 2<br><i>Diana(PO)</i>   | 10  | 1    | V    | CHIM/08 | B   |
| 19171 - PHARMACEUTICAL FORMS<br><i>Pitarresi(PO)</i>  | 8   | 1    | V    | CHIM/09 | B   |
| 19172 - DRUG REGULATIONS AND GALENICAL PREPARATIONS LABORATORY<br><i>Palumbo(PO) [A-L], Craparo(PA) [M-Z]</i> | 10  | 2    | V    | CHIM/09 | B   |
| 07645 - TOXICOLOGY<br><i>Venturella(RU)</i>   | 10  | 2    | V    | BIO/14  | B   |
| 18982 - PROFESSIONAL PRACTICE I   | 15  | 2    | G    |         | S   |

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| Subjects 5 ° year  | CFU | Sem. | Val. | SSD     | TAF |
|--|-----|------|------|---------|-----|
| 19168 - BIOTECHNOLOGICAL DRUGS<br><i>Cascioferro(PA)</i>                             | 6   | 1    | V    | CHIM/08 | C   |
| 19169 - DRUG SURVEILLANCE AND ECONOMICS AND MARKETING OF DRUGS<br><i>Craparo(PA)</i> | 8   | 1    | V    | CHIM/09 | B   |
| 08611 - PROFESSIONAL PRACTICE II   | 15  | 1    | G    |         | S   |
| 05917 - FINAL EXAMINATION  | 18  | 2    | G    |         | E   |
| Free subjects (suggested)  | 12  |      |      |         | D   |

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## OPTIONAL SUBJECTS

| Free subjects (suggested)   | CFU | Sem. | Val. | SSD     | TAF |
|---|-----|------|------|---------|-----|
| 16467 - BIOCHEMISTRY OF ORGANS AND SPECIALISED TISSUES<br><i>Pintaudi(RU)</i> | 6   | 2    | V    | BIO/10  | D   |
| 19167 - COSMETIC PRODUCT TECHNOLOGY<br><i>De Caro(PA)</i>                     | 6   | 2    | V    | CHIM/09 | D   |

## PROPAEDEUTICAL TEACHINGS

- 01215 - PHARMACEUTICAL ANALYSIS OF DRUGS 2
  - 09065 - PHARMACEUTICAL ANALYSIS OF DRUGS I
  - 01799 - ANALYTICAL CHEMISTRY
- 01799 - ANALYTICAL CHEMISTRY
  - 00133 - GENERAL AND INORGANIC CHEMISTRY
- 01870 - MEDICINAL AND TOXICOLOGICAL CHEMISTRY 2
  - 01873 - PHARMACEUTICAL AND TOXICOLOGICAL CHEMISTRY 1
- 01873 - PHARMACEUTICAL AND TOXICOLOGICAL CHEMISTRY 1
  - 01933 - ORGANIC CHEMISTRY
- 01933 - ORGANIC CHEMISTRY
  - 00133 - GENERAL AND INORGANIC CHEMISTRY
- 09065 - PHARMACEUTICAL ANALYSIS OF DRUGS I
  - 00133 - GENERAL AND INORGANIC CHEMISTRY