



# UNIVERSITÀ DEGLI STUDI DI PALERMO

Department: null

A.Y. 2009/2010

## 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

The rapid changes in society also involve the development of the profession of pharmacist, aiming at increasing the interaction and response to the population health needs. The Pharmacist, playing a key role in the entire health system can and must contribute to the improvement of the healthcare system.

Graduates in Pharmacy, upon passing the relevant certification, can carry out, in accordance to EEC D Directive 85/432, the profession of pharmacist.

The most important career opportunities for pharmacists imply the exercise of the following professional activities:

- Preparation of dosage form of drugs;

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- Fabrication and testing of medicinal products;
- Drug control in control laboratories;
- Storage, preservation and distribution of drugs in the wholesale stage;
- Preparation, testing, storage and distribution of medicinal products in public pharmacies;
- Preparation, testing, storage and distribution of drugs in hospitals (hospital pharmacies);
- Dissemination of information and advice on drugs and health protection.

In addition, the qualification to the profession of Chemist, enables graduates, according to DPR June 5, 2001 n. 328, to register in the Section A of the Chemists professional board, for the exercise of the following professional activities:

- Chemical analysis by any method and for any purpose;
- Management of chemical laboratories performing chemical analyses;
- Testing of non-hazardous or hazardous chemicals.

The educational programme might also take into account other professional activities which might be carried out in the European Union by the holders of that degree in order to offer equal employment opportunities in Europe.

#### 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
07802 - ANIMAL AND PLANT BIOLOGY	8	Ann.	V		
- ANIMAL BIOLOGY Gentile(PA)	4	Ann.		BIO/13	C
- PLANT BIOLOGY Gentile(PA)	4	Ann.		BIO/15	B
01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE	12	Ann.	V		
- CHEMISTRY LABORATORY Rubino(RU)	4	Ann.		CHIM/03	A
- GENERAL AND INORGANIC CHEMISTRY Stocco(PO)	8	Ann.		CHIM/03	A
13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE	16	Ann.	V		
- MATHEMATICS Tulone(RU)	8	Ann.		MAT/05	A
- PHYSICS D'Asdia(II)	8	Ann.		FIS/07	A
01799 - ANALYTICAL CHEMISTRY Bongiorno(PA)	6	Ann.	V	CHIM/01	A
01286 - HUMAN ANATOMY Palma(PO)	6	Ann.	V	BIO/16	A
01115 - COMPUTING SKILLS	3	Ann.	G		F

51

Subjects 2 ° year	CFU	Sem.	Val.	SSD	TAF
01542 - BIOCHEMISTRY Livrea(PO)	10	Ann.	V	BIO/10	B
01933 - ORGANIC CHEMISTRY Buscemi(PO)	10	Ann.	V	CHIM/06	A
09065 - PHARMACEUTICAL ANALYSIS OF DRUGS I Petrucci(PA) [A-L], Petrucci(PA) [M-Z]	10	Ann.	V	CHIM/08	B
01549 - APPLIED (MEDICAL) BIOCHEMISTRY Pintaudi(RU)	10	Ann.	V	BIO/10	B
13281 - GENERAL MICROBIOLOGY, HYGIENE AND MEDICAL STATISTICS - INTEGRATED COURSE	10	Ann.	V		

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Subjects 2 ° year	CFU	Sem.	Val.	SSD	TAF
- GENERAL MICROBIOLOGY <i>Schillaci(PO)</i>	4	Ann.		BIO/19	A
- HYGIENE AND MEDICAL STATISTICS <i>Oliveri(PA)</i>	6	Ann.		MED/42	A
01703 - PHARMACEUTICAL BOTANY AND PHARMACOGNOSIS - INTEGRATED COURSE	16	Ann.	V		
- PHARMACEUTICAL BOTANY <i>Spadaro(PA)</i>	8	Ann.		BIO/15	B
- PHARMACOGNOSIS <i>Biondi(RU)</i>	8	Ann.		BIO/14	B

**66**

Subjects 3 ° year	CFU	Sem.	Val.	SSD	TAF
03369 - GENERAL PHYSIOLOGY <i>Giammanco(PA)</i>	8	Ann.	V	BIO/09	A
01215 - PHARMACEUTICAL ANALYSIS OF DRUGS 2 <i>Migliara(PC) [A-L], Raffa(PA) [M-Z]</i>	10	Ann.	V	CHIM/08	B
01873 - PHARMACEUTICAL AND TOXICOLOGICAL CHEMISTRY 1 <i>Aiello(PO)</i>	8	Ann.	V	CHIM/08	B
13288 - PHARMACEUTICAL TECHNOLOGY, SOCIOECONOMICS AND REGULATIONS I <i>Giammona(PO)</i>	10	Ann.	V	CHIM/09	B
13289 - FOOD SCIENCE AND FOOD CHEMISTRY - INTEGRATED COURSE	16	Ann.	V		
- FOOD CHEMISTRY <i>Lamartina(PA)</i>	8	Ann.		CHIM/10	C
- FOOD SCIENCE <i>La Guardia(PQ)</i>	8	Ann.		BIO/09	A
12472 - PATHOLOGY <i>Caruso(CU)</i>	8	Ann.	V	MED/04	A
01216 - PHARMACEUTICAL ANALYSIS OF DRUGS 3 <i>Camarda(PA) [A-L], Maggio(RU) [M-Z]</i>	10	Ann.	V	CHIM/08	B

**70**

Subjects 4 ° year	CFU	Sem.	Val.	SSD	TAF
01870 - MEDICINAL AND TOXICOLOGICAL CHEMISTRY 2 <i>Plescia(PO)</i>	8	Ann.	V	CHIM/08	B
03153 - PHARMACOLOGY AND PHARMACOTHERAPY <i>Mantia(PO)</i>	10	Ann.	V	BIO/14	B
01871 - PHARMACEUTICAL AND TOXICOLOGICAL CHEMISTRY 3 <i>Lamartina(PA)</i>	6	Ann.	V	CHIM/08	B
07333 - PHARMACEUTICAL TECHNOLOGY, SOCIOECONOMICS AND REGULATIONS 2/ CHEMISTRY OF COSMETIC PRODUCTS - INTEGRATED COURSE	18	Ann.	V		
- CHEMISTRY OF COSMETIC PRODUCTS <i>Bajardi(PA)</i>	8	Ann.		CHIM/09	B
- PHARMACEUTICAL TECHNOLOGY, SOCIOECONOMICS AND REGULATIONS II <i>Giannola(PA)</i>	10	Ann.		CHIM/09	B
07645 - TOXICOLOGY <i>Venturella(RU)</i>	10	Ann.	V	BIO/14	B
Free subjects (suggested)	12				D

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Subjects 4 ° year	CFU	Sem.	Val.	SSD	TAF
	<b>64</b>				
Subjects 5 ° year	CFU	Sem.	Val.	SSD	TAF
04677 - ENGLISH LANGUAGE	4	Ann.	G		E
05917 - FINAL EXAMINATION	15	Ann.	G		E
07553 - PROFESSIONAL PRACTICE	30	Ann.	G		S
	<b>49</b>				

## OPTIONAL SUBJECTS

Free subjects (suggested)	CFU	Sem.	Val.	SSD	TAF
01202 - CHEMICAL TOXICOLOGICAL ANALYSIS <i>Agozzino(PA)</i>	3	Ann.	V	CHIM/10	D
13350 - DRUG SURVEILLANCE AND PHARMACOECONOMICS <i>Neri(RU)</i>	6	Ann.	V	CHIM/09	D
07711 - DRUG VEHICULATION AND TARGETING <i>Palumbo(PO)</i>	6	Ann.	V	CHIM/09	D
06692 - MEDICAL STATISTICS <i>Casuccio(PO)</i>	3	Ann.	V	MED/42	D
05710 - POLYMERS OF PHARMACEUTICAL INTEREST <i>Cavallaro(PO)</i>	3	Ann.	V	CHIM/09	D
08282 - STRUCTURE AND FUNCTION OF PROTEINS <i>Allegra(PO)</i>	6	Ann.	V	BIO/10	D

## PROPAEDEUTICAL TEACHINGS

01215 - PHARMACEUTICAL ANALYSIS OF DRUGS 2 09065 - PHARMACEUTICAL ANALYSIS OF DRUGS I 01799 - ANALYTICAL CHEMISTRY					
01216 - PHARMACEUTICAL ANALYSIS OF DRUGS 3 01215 - PHARMACEUTICAL ANALYSIS OF DRUGS 2					
01542 - BIOCHEMISTRY 07802 - ANIMAL AND PLANT BIOLOGY 01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE					
01549 - APPLIED (MEDICAL) BIOCHEMISTRY 01542 - BIOCHEMISTRY					
01703 - PHARMACEUTICAL BOTANY AND PHARMACOGNOSIS - INTEGRATED COURSE 07802 - ANIMAL AND PLANT BIOLOGY 01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE 13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE					
01799 - ANALYTICAL CHEMISTRY 01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE					
01870 - MEDICINAL AND TOXICOLOGICAL CHEMISTRY 2 01873 - PHARMACEUTICAL AND TOXICOLOGICAL CHEMISTRY 1					

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- 01870 - MEDICINAL AND TOXICOLOGICAL CHEMISTRY 2  
 01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE  
 07802 - ANIMAL AND PLANT BIOLOGY  
 13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE  
 01933 - ORGANIC CHEMISTRY
- 01871 - PHARMACEUTICAL AND TOXICOLOGICAL CHEMISTRY 3  
 01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE  
 07802 - ANIMAL AND PLANT BIOLOGY  
 13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE  
 01933 - ORGANIC CHEMISTRY  
 01870 - MEDICINAL AND TOXICOLOGICAL CHEMISTRY 2
- 01873 - PHARMACEUTICAL AND TOXICOLOGICAL CHEMISTRY 1  
 01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE  
 07802 - ANIMAL AND PLANT BIOLOGY  
 13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE  
 01933 - ORGANIC CHEMISTRY
- 01933 - ORGANIC CHEMISTRY  
 01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE
- 03153 - PHARMACOLOGY AND PHARMACOTHERAPY  
 12472 - PATHOLOGY  
 01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE  
 07802 - ANIMAL AND PLANT BIOLOGY  
 13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE  
 01933 - ORGANIC CHEMISTRY
- 03369 - GENERAL PHYSIOLOGY  
 01286 - HUMAN ANATOMY  
 01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE  
 13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE  
 07802 - ANIMAL AND PLANT BIOLOGY  
 01933 - ORGANIC CHEMISTRY
- 07333 - PHARMACEUTICAL TECHNOLOGY, SOCIOECONOMICS AND REGULATIONS 2/CHEMISTRY OF COSMETIC PRODUCTS - INTEGRATED COURSE  
 01933 - ORGANIC CHEMISTRY  
 01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE  
 07802 - ANIMAL AND PLANT BIOLOGY  
 13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE
- 07645 - TOXICOLOGY  
 01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE  
 07802 - ANIMAL AND PLANT BIOLOGY  
 13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE  
 01933 - ORGANIC CHEMISTRY  
 03153 - PHARMACOLOGY AND PHARMACOTHERAPY

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- 09065 - PHARMACEUTICAL ANALYSIS OF DRUGS I  
01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE  
13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE  
07802 - ANIMAL AND PLANT BIOLOGY
- 12472 - PATHOLOGY  
03369 - GENERAL PHYSIOLOGY  
01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE  
07802 - ANIMAL AND PLANT BIOLOGY  
13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE  
01933 - ORGANIC CHEMISTRY
- 13281 - GENERAL MICROBIOLOGY, HYGIENE AND MEDICAL STATISTICS - INTEGRATED COURSE  
01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE  
13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE  
07802 - ANIMAL AND PLANT BIOLOGY  
01933 - ORGANIC CHEMISTRY
- 13288 - PHARMACEUTICAL TECHNOLOGY, SOCIOECONOMICS AND REGULATIONS I  
01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE  
13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE  
07802 - ANIMAL AND PLANT BIOLOGY  
01933 - ORGANIC CHEMISTRY
- 13289 - FOOD SCIENCE AND FOOD CHEMISTRY - INTEGRATED COURSE  
01909 - GENERAL AND INORGANIC CHEMISTRY AND LABORATORY OF CHEMISTRY - INTEGRATED COURSE  
07802 - ANIMAL AND PLANT BIOLOGY  
13167 - MATHEMATICS AND PHYSICS - INTEGRATED COURSE  
01933 - ORGANIC CHEMISTRY