Pharmacy education. The Italian academic viewpoint
Faculty of Pharmacy

- Pharmacy
  - Medicinal Chemistry and Technology
  - Herbal Medicine Sciences
  - Environmental Chemistry and Toxicology Sciences
  - Pharmaceutical Biotechnology and Medicinal Biotechnology
### Total number of Pharmacy higher education institutes in Italy

| 1. Faculty of Pharmacy, University of Bari | 17. Faculty of Pharmacy, University of Pavia |
| 2. Faculty of Pharmacy, University of Bologna | 18. Faculty of Pharmacy, University of Perugia |
| 3. Faculty of Pharmacy, University of Cagliari | 19. Faculty of Pharmacy, University of Pisa |
| 4. Faculty of Pharmacy, University of Camerino | 20. Faculty of Pharmacy, University of Rome La Sapienza |
| 5. Faculty of Pharmacy, University of Catania | 21. Faculty of Pharmacy, University of Salerno |
| 6. Faculty of Pharmacy, University of Chieti | 22. Faculty of Pharmacy, University of Sassari |
| 7. Faculty of Pharmacy, University of Ferrara | 23. Faculty of Pharmacy, University of Siena |
| 8. Faculty of Pharmacy, University of Florence | 24. Faculty of Pharmacy, University of Trieste |
| 9. Faculty of Pharmacy, University of Genova | 25. Faculty of Pharmacy, University of Turin |
| 10. Faculty of Pharmacy, University of Messina | 26. Faculty of Pharmacy, University of Urbino |
| 11. Faculty of Pharmacy, University of Milan | 27. Faculty of Pharmacy, University of Calabria |
| 12. Faculty of Pharmacy, University of Modena | 28. Faculty of Pharmacy, University of Piemonte Orientale |
| 13. Faculty of Pharmacy, University of Naples Federico II | 29. Faculty of Pharmacy, University of Catanzaro |
| 14. Faculty of Pharmacy, University of Padova | 30. Faculty of Pharmacy, University of Basilicata |
| 15. Faculty of Pharmacy, University of Palermo | 31. Course in Pharmacy, Second University of Naples |
| 16. Faculty of Pharmacy, University of Parma | 32. Course in Pharmacy, University of Rome Tor Vergata |
## Faculty of Pharmacy

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Number of teaching staff (nationals)</td>
<td>1354</td>
<td>This number corresponds to the equivalent teaching staff. In Italy, a full professor has a value of 1, an associate professor a value of 0.7 and an assistant professor a value of 0.5. The total number of people is actually &gt;1354.</td>
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<tr>
<td>Number of applicants for entry</td>
<td>32889</td>
<td>Data from the Ministry of Universities and Research for 2008 <a href="http://www.miur.it/0002Univer/index_cf2.htm">http://www.miur.it/0002Univer/index_cf2.htm</a></td>
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<td>Graduates that become registered pharmacists.</td>
<td>1507</td>
<td>Data from national FOFI (Board of Pharmacist Italian Federation), 2008</td>
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<td>Fees per year</td>
<td>1891 €</td>
<td>The fee varies according to the family income</td>
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<td>(average)</td>
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<td>Length of course</td>
<td>5</td>
<td>Including the mandatory 6-month traineeship.</td>
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**Source:** PHARMINE (PHARMacy education IN Europe)
Unified Bachelor and Specialist Degrees

- Pharmacy

- Medicinal Chemistry and Technology

5 years
(300 Credits)
Coursework Degrees - Faculty of Pharmacy

Three year Bachelor’s Degree

• Herbal Medicine Sciences
• Environmental Chemical and Toxicological Safety Sciences
• Pharmaceutical Biotechnology

Specialist Degree

• Medicinal Biotechnology

3 years (180 Credits)

2 years (120 Credits)
Subjects covered throughout the course

- Animal and Plant Biology
- Pharmacology and Toxicology
- Technological and Regulatory Aspects
- Microbiology and Virology
- Anatomy and Physiology
- Biochemistry
- Physics and Mathematics
- Organic and Inorganic Chemistry
- Pathology
- Molecular Immunology and Endocrinology
Course Structure

- Lectures
- Laboratory Teachings
- Individual Laboratory Work
- Preparation of a final Thesis under the supervision of a tutor
- Pharmacy Practice
- Computer skills and language skills courses

The degree course is affiliated with Socrates/Erasmus.
Professional Practice

In order to graduate from the Faculty of Pharmacy, students must successfully complete a period of Pharmacy practice.

Spanning for an entire semester, the practice period is conducted under the supervision of a professor from the University as well as a professional supervisor from:

- Community or hospital Pharmacy
Specialist Degree Course of Pharmacy

Medicinal Chemistry and Technology (CTF)
OBJECTIVES

Offer the training needed for:

- Working in the field of research and development of medicinals and health related products
- Work as experts in the field of medicinals and health products
- Work in a Pharmacy
- Work in a Health Store
Career and Employment

Based on CEE 85/432 a pharmacy graduate registered at the College of Pharmacists is legally entitled to perform the following jobs:

- Prepare medicinal products and dosage forms
- Perform large scale production and quality control
- Perform wholesale of medicinal products to pharmacies or other authorized distributors
Career and Employment

Based on CEE 85/432 a pharmacy graduate registered at the College of Pharmacists is legally entitled to perform the following jobs:

- Preparation, quality control and distribution of medicinal products to pharmacies or health stores
- Divulgence of information and advice in the field of medicinal products
The Degree Course of PHARMACY

offers

Technical and practical knowledge in the field of biology, pharmacology, chemistry, toxicology, pharmaceutical technology and law

creates

A professional whose main area of expertise is the Community of Hospital Pharmacy
The Degree Course of
MEDICINAL CHEMISTRY AND TECHNOLOGY

offers

technical and practical knowledge in the field of
Chemistry, biology, pharmaceutics, pharmacology, toxicology,
pharmaceutical technology and regulations

creates

A professional
Whose main field of expertise
is the pharmaceutical industry...
The Degree Course of MEDICINAL CHEMISTRY AND TECHNOLOGY

offers

Privileged position in

• pharmaceutical research and development
• production supervisor
• department heads (pharmaceutical production: solids, parenterals, liquids, semi-solids packaging,...)
• quality control
• logistics, planning, purchasing, distribution
The Degree Course of MEDICINAL CHEMISTRY AND TECHNOLOGY

offers

Privileged positions in

• regulatory affairs
• quality assurance, validation of production processes
• staff training, inspections
• scientific information specialist
• clinical research
• marketing
• pharmacovigilance
Both degrees allow membership of the professional body through Board of Pharmacists State examination
The student must earn a total of 300 credit points.
Specific activities, under the supervision of the professor, aimed towards the completion of the final thesis and conducted in university laboratories or those of private institutions.

Chemistry, biology, pharmacy, pharmacology, toxicology, Technology and regulatory.

Professional Pharmacy practice.
Fields of expertise

a) Medicinal science and development
b) Applied Technology
c) Experimental Pharmacology.
d) Therapeutic Pharmacology.
e) Molecular Characterization.
f) Chemical methodologies applied to biosystems
g) Logistic and regulatory affairs
Constituted by law in 1967 (DPR 1037/67).
- Admission to the State Examination and membership of the Board of Pharmacists allowed by 1972 (DPR 739/72).
- 1969: first CTF degree course constituted at the University of Pavia.
- 1973: CTF degree course at the University of Milano.
CTF distinctive courses

- Medicinal products industrial manufacturing with lab.
- Medicinal chemistry (advanced) [choice].
- Advanced pharmaceutical technology [choice].
- Patents legislation and Regulatory issues [choice].
- Clinical pharmacology [choice].
- Cellular and molecular pharmacology [choice].
- Advanced methods in synthesis and analysis [choice].
- Advanced methods in molecular characterization [choice].