## INFORMATION ABOUT THE COURSE

- **WHY CHOOSE THIS DEGREE COURSE**

Chemistry is a discipline which is continuously evolving and plays a vital role in the life of mankind, the environment and modern society. It is and will be a lead player in reducing the environmental impact of many processes, such as, pollution reduction, waste management, environmental monitoring, the research and development of renewable energy sources, synthesizing new molecules.

The Three-Year Chemistry Degree Course (L-27) offers a comprehensive learning pathway, aimed at attaining fundamental competencies in the field of chemistry, physics and mathematics. The course offers direct, continuous contact with lecturers and guarantees optimum use of the teaching structures and laboratory equipment.

*COURSE ACCESS*

In order to enrol on the Degree Course, it is necessary to have gained a five-year High School Diploma (or equipollent certificate). The Degree Course has a maximum set number of students which is fixed at 75. Admission to the first year involves passing an entrance test. The criteria and entrance test methods are laid out in detail every year in the Admission Notice. The access list is drawn up based on the points gained in this test. The entrance test is also designed to check the "entry level" knowledge of students. Those students who, despite falling within the set number, gain lower than minimum points in one or more of the basic subjects (maths, physics, etc.) will be obligatorily assigned to a so-called Pre-Sessional Training course (OFA). Details of OFA allocation rules, the subjects which OFA can be assigned for and methods (times and procedures) for successfully undertaking OFA courses are all described in the Course Outline.

*OBJECTIVES AND COURSE OUTLINE*

A Chemistry graduate has basic knowledge of chemistry which can lead to a career requiring know-how for applying methods and techniques as well as familiarity with scientific methods. The competencies gained will enable a Chemistry graduate to interact with contiguous professional figures both from a cultural point of view and to continue studying on a Post-Graduate Chemical Sciences course.

The course lasts three years: the first year provides the basic skills in mathematics, physics and chemistry required for the more complex course contents offered in the following years. Details of courses, programmes and lecturers can be found in the Course Outline. Teaching is organised into two semesters with intervals during which exams sessions are timetabled. Each exam is detailed in the Course Outline for each course. Teaching methods provide for frontal instruction in classrooms and laboratories. The third year of the course provides on-the-job-training (200 hours which correspond to 8 type-F University Credit Modules). This can include teaching time to reinforce such competencies as language or IT skills as well as work or research activities which can be carried out in either agencies, companies or organisations which are external to the University or in its research laboratories. Students can make use of extensive information on offer from lecturers and the specific University Offices in coming to a decision on where to do their on-the-job-training. In the third year of the course, students must carry out thesis work with supervision by a lecturer (8

University Credit Modules). The dissertation must be carried out on a topic either by compilation or experimentally with original research. Further information for final year students is available in the Final Year Students section on this site.

*EXPECTED LEARNING RESULTS*

1) *Knowledge and ability to understand*: a successful graduate will know the principles of algebra, physics and chemistry. He or she will know the properties, structures and reactivity of elements and their compounds as well as organic molecules, including bio-molecules. He or she will know the principles of organic synthesis, chemical analysis, thermodynamics, kinetics and quantum mechanics.
2) *Ability to apply knowledge and understanding:* a successful degree student will be able to resolve specific problems by knowing the methodologies to apply, will be able to carry out organic and inorganic reactions using chemical substances safely and will be familiar with laboratory equipment, will be able to carry out calculations, separations and purifications, structural identification, collect and elaborate experimental data.
3) *Autonomy of judgement:* a successful degree student will be able to interpret experimental data, decide if it is relevant, plan and conduct experiments, diagnose a problem and propose solutions. Laboratory work, on-the-job-training and an experimental thesis on an original research topic will help to develop autonomous decision-making abilities.
4) *Communication skills:* a successful degree student is able to share information, ideas, problems and solutions of a scientific nature both orally and in writing in their own language and in another EU language. These skills are incentivised throughout the course, by exams and while preparing laboratory reports as well as putting together the final dissertation.
5) *Learning ability:* a Chemistry graduate knows how to consult scientific literature and online databases in their specific sector and is able to undertake future studies sufficiently autonomously. He or she is also able to work towards targets and adapt to various subject matters.

*POST-GRADUATE OPPORTUNITIES*

1) *Access to further studies:* the 3-year Chemistry Degree course guarantees direct access to the University of Ferrara Post-Graduate Chemical Sciences course (LM-54). A successful Post-Graduate Chemical Sciences student can also gain access to the Chemical Sciences Doctorate course at the University of Ferrara. At the end of the course, a successful PhD student has all the knowledge, skills and abilities required to undertake a University career both in Italy and abroad.
2) *Career outlook:* A Chemistry graduate will have career prospects in analytical laboratories, quality control, safety management and certification, in industrial settings (the food industry, manufacturing, cosmetics, textiles), in agencies which monitor environmental quality and protect cultural heritage. The statistics in our possession (http://www.almalaurea.it/) demonstrate that successful 3-year degree students mostly decide to go on with their studies with a Post-Graduate Chemical Sciences degree.

- **ENROLLMENT**

Enrol on a degree course http://www.unife.it/studenti/en/admission-and-recognition/enroll-to-a-degree-course-1

- **PROGRAMMES, COURSES AND TEACHERS - A.A. 2016/17**

**Important information for students when consulting programmes:**
programmes can be consulted (in English as well as in Italian) by clicking on the subject name in the table below and then selecting "English course description". **To learn more about the OBLIGATORY teaching units** aimed at acquiring type-A, B and C credits activated by the Chemistry degree course in the 2016/17 academic year, consult the following table;

| Semester when courses are on offer | Course (click on course name to access the programme) | CFU | Teacher |
|---|---|---|---|
| 1° anno - 1° semestre | Analisi I | 6 | Alessandra Fiocca |
| 1° anno - 1° semestre | Chimica generale ed inorganica | 6 | Carlo Alberto Bignozzi |
| 1° anno - 1° semestre | Laboratorio di chimica generale ed inorganica | 6 | Lorenza Marvelli |
| 1° anno - 1° semestre | Algebra e geometria | 6 | Cinzia Bisi |
| 1° anno - 2° semestre | Fisica I | | Piero Rosati |
| 1° anno - 2° semestre | Chimica organica I + Laboratorio di chimica organica I | 12 | • Per Chimica organica: Olga Bortolini<br>• Per Laboratorio: Alessandro Massi |
| 1° anno - 2° semestre | Chimica analitica I + Laboratorio di chimica analitica I | 12 | Alberto Cavazzini |
| 1° anno - 2° semestre | Lingua inglese: verifica delle conoscenze | 6 | Lessons: teacher from the InLingua Institute. Registration of mark: Giancarlo Fantin (UniFE) |

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|---|---|---|---|
| 2° anno - 1° semestre | Chimica organica II + Laboratorio di chimica organica II | 12 | Marco Fogagnolo |
| 2° anno - 1° semestre | Analisi II | 6 | Alessandra Fiocca |
| 2° anno - 1° semestre | Chimica inorganica | 6 | Maria Teresa Indelli |
| 2° anno - 2° semestre | Biochimica | 6 | Mirko Pinotti |
| 2° anno - 2° semestre | Laboratorio di chimica inorganica | 6 | Alessandra Molinari |
| 2° anno - 2° semestre | Fisica II e Laboratorio di fisica | 8 | Federico Montoncello |
| 2° anno - 2° semestre | Chimica fisica I con esercitazioni | 8 | Hassoun Jusef |
| 2° anno - 2° semestre | Chimica degli alimenti | 6 | Annalisa Maietti |
| 3° anno - 1° semestre | Chimica fisica II con esercitazioni | 8 | Celestino Angeli |
| 3° anno - 1° semestre | Cinetica chimica e laboratorio | 8 | Hassoun Jusef |
| 3° anno - 1° semestre | Chimica industriale | 6 | Olga Bortolini |
| 3° anno - 2° semestre | Chimica analitica II + Laboratorio di chimica analitica II | 12 | Chimica analitica II: Maria Chiara Pietrogrande<br>Laboratorio: Luisa Pasti |

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|---|---|---|---|
| 3° anno - 2° semestre | TIROCINIO | 8 | Registration of mark: Giancarlo Fantin |

**To learn more about teaching units which STUDENTS CAN EXERCISE FREE CHOICE OVER** aimed at acquiring type-D credits activated by the Chemistry degree course in the 2016/17 academic year, consult the following list;

| Semester when courses are on offer | Course (click on course name to access the programme) | Cfu | Teacher |
|---|---|---|---|
| 1° semestre | Principi di sintesi organica | 6 | Marco Fogagnolo |
| 1° semestre | Chimica per i beni culturali | 6 | Maurizio Dal Colle |
| 1° semestre | Chimica metallorganica | 6 | Eleonora Polo |
| 2° semestre | Radiochimica | 6 | Alessandra Boschi |
| 2° semestre | Chimica bioanalitica | 6 | Maria Chiara Pietrogrande |