



UNIVERSITY OF CATANIA
Faculty of Mathematical, Physical and Natural Sciences



MAGISTRAL DEGREE COURSE IN

BIOMOLECULAR CHEMISTRY

Academic year 2005-2006

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1. ADDRESSES AND LINKS

Faculty of Mathematical, Physical and Natural Sciences

Corso Italia, 57

95123 Catania

Tel.: 095 373769 - 095 7195 790

Fax: 095 7223654

Web: www.unict.it/psmf/it

Orientation Project

It provides many different services in order to give support to both students that want to enrol at our University and secondary school teachers that want to retrieve information about the Orientation themes.

Orientation Counselling

Via Napoli, 117

Tel 095 7229805

Fax 095 7229809

email: cofori@unict.it

Web: www.unict.it/orientamento/

MAGISTRAL DEGREE COURSE

Web site of the magistral degree course : <http://www.unict.it/chimbiomol/>

Chairman of the magistral degree course (*CCLM*)

Prof. Enrico Rizzarelli

Chemistry Department

Viale Andrea Doria 6- 95125 Catania

Phone: 095 7385070- Fax: 095 337678

Office Hours: individual meetings can be arranged by appointment

E-mail: erizzarelli@unict.it

Magistral Course Degree's Office

Chemistry Department

Viale Andrea Doria 6- 95125 Catania

Tel. 095 7385070- Fax: 095 337678

Office Hours: opening hours and by appointment

Rooms and labs for lessons

Lessons of the Magistral Degree Course take place at the Chemistry Department, Viale Andrea Doria 6- 95125 Catania. Due to the interdisciplinary approach of the course, some lessons could take place in more appropriate locations usually assigned for such subjects of the program. Rooms and Labs are indicated together with the lessons timetable and can be found at the Web address of the degree course.

Graduates Student Office

The graduate student office offers the following services:

- Dealing with all the bureaucratic matters during the student career (certificates, transfers, exams, final test);
- Giving administrative and counselling information;
- Filing all the documents.

Student Office of the Faculty of Science

Via A. Di Sangiuliano - Catania

Tel. 095 7307265

e-mail: segmfu@unict.it

Manager: Maria Rapisarda

Service center for problems of the disabled

Via Antonino di Sangiuliano, 264

Tel.095-7307294

Fax.095-7307293

e-mail: uds2@unict.it , csd@unict.it

Web: www.unict.it/csd

Office Hours:

Monday from 09,00 to 14,00

Tuesday from 15,00 to 18,00

Friday from 09,00 to 14,00

2 MAGISTRAL DEGREE COURSE IN BIOMOLECULAR CHEMISTRY

2.1 Introduction

The magistral degree course in biomolecular chemistry was founded at the Faculty of Mathematical, Physical and Natural Sciences in the academic year 2004-2005 in order to give an answer to the rising need of professional people with chemistry skills able to work in very new and interdisciplinary fields, operating between Chemistry and Biology.

In Italy, the chemistry area includes almost 200.000 workers, 33% of whom are in the pharmaceutical business. In Europe, the chemistry Italian production is in third place with England after Germany and France. Although small and medium industries represent 50% of the global work market and sales, the influence of the foreign multinationals is as relevant as almost 35%.

The traditional job market that is targeted by the University of Catania consists of the new pharmaceutical and biotechnological industries (Berna, Wyeth, etc.) that are added to the already present national industries (SIFI, Bausch & Lomb, STMicroelectronics etc.) as well as other industries in the agroindustrial field (YOMO, ZONIN, etc.).

The credits obtained in the first level chemistry degree of all Italian Universities are valid also for the Degree Course. As in other European and extra European models, students that graduated also in other related disciplines (Agricultural, Biology, Biotechnology, Natural Sciences, Medicine, Pharmacy, C.T.F., Industrial Chemistry) from Italian or foreign Universities are eligible for the Degree Course as well as people that have equivalent titles for which different credits will be attributed.

2.2 Targets

The acquirement of a solid cultural background in Chemistry Sciences will be aimed to the knowledge of the chemical processes that are involved with all the different aspects of the structure and the function of living organisms. The molecular approach toward the mechanisms that allow the cells to transform energy, to communicate each other and with the external environment and to store, express and pass information to the next generations, will be the main target for the graduate student of second level in Biomolecular Chemistry. Students will have a solid cultural knowledge of the bases of

Chemistry and Biology and the structure and functioning of biological systems will be deeply investigated. The graduated in Biomolecular Chemistry will acquire a thorough knowledge of the most recent chemistry and instrumental methodologies applied to the biological systems. A wide biological background will be also added to these chemistry-instrumental competences. In this field the graduated will be provided with all the necessary instruments, both theoretical and practical, in order to be able to develop and plan personal approaches to the fundamental and/or applied research. The experimental aspects will be of fundamental importance in the graduated interdisciplinary training. The graduated will be able to use and investigate the information of the new post-genomic disciplines, particularly proteomics and metallomics. In order to do this, the graduated will acquire new skills that will allow him/her to use the mathematical and informatics tools. He/She will be able to speak and write in at least another language spoken in the European Union other than Italian. Periods of training will be held at research and analysis laboratories of private companies and government institutions (prevention services, ASL, CNR, Universities, etc.) as well as in the medical, pharmaceutical, environmental, agroindustrial sectors and in all the other ones where an inter- and multidisciplinary approach between chemistry and biology is requested.

The degree program will guide the students to follow the right courses to build up the appropriate competences that will be considered necessary by the definition of deficits and personalized curricula. This is a flexible answer to the need of students that have graduated in disciplines different from first level Chemistry. Students will be able to follow individual educational routes that will allow them: to develop a good expertise in the analytical application to the biological systems using instrumentation with high complexity and sophistication; to have a specific knowledge about the molecular aspects related to biomolecules, cells, tissues and organisms in normal and altered conditions, as well as their reciprocal interactions, environmental and biotic effects on living creatures.

The “Biomolecular Chemistry” graduated will be an expert in proteomic and metallomic with an interdisciplinary background with boundaries between Chemistry and Biology.

2.3 Didactic Organization

The Magistral Degree Course is based on characterizing activities, useful for the final thesis and for the introduction in the job market. During the two years, training activities are inserted in the program, up to 120 credits (CFU). The didactic activity of one year is divided into two periods, ending up with exam sessions. In the academic year 2005-2006, the activation of the Magistral Degree Course is completed (first and second year).

The distribution of the courses in the semesters with the assigned credits (CFU) is shown in the following table:

1st YEAR

Courses	CFU
Personalized Courses	7
Environmental Chemistry	2
Bioinorganic Chemistry with Proteins Chemistry Lab (2 modules 3+4)	7
Physical Chemistry of biological Systems	5
Advanced analytical methodologies with advanced instrumentation Labs (3 modules 3+2+2)	7
Personalized or Optional Courses	6
Advanced Biochemistry (3 modules 3+3+2)	8
Metallomics with Proteomic elements	5
Molecular Biology with Bioinformatic elements and DNA and recombinant proteins Labs (3 modules 4+4+2)	10
Elements of Integrative Physiology	3

2nd YEAR

Courses	CFU
Optional Courses	6
Modelling and bioactive molecules design (two modules 3+5)	8
Applied Microbiology	3
Molecular Pharmacology	3
Experimental thesis or period of training	10
Experimental Thesis or period of training	30

In addition to the courses indicated in the didactic organization of the specialistic degree, in the academic year 2005-2006 the following courses are activated:

Activated courses for the fulfilment of the deficits:

Integrative Course of Chemistry 1 (modular: 2 CFU Complements of Chemistry, 2 CFU Instrumental Analysis, 3 CFU Elements of Physical Chemistry)

Personalized Courses:

Integrative Course of Biology (modular: 3 CFU Cellular Physiology, 2 CFU Genetics, 2 CFU Biology of Cell)

Integrative Course of Chemistry 2 (modular: 3 CFU Organic Chemistry, 2 CFU Inorganic Chemistry, 2 CFU Analytical Chemistry).

Optional Courses to be activated in 2005-2006 academic year:

Biochemistry and Clinic Molecular Biology

Biopolymers

Biotechnologies of animal organisms

Biotechnologies of vegetable organisms

Chemistry of Food

Chemistry of Coordination Compounds

Chemistry of the Natural Substances

Chemistry and Biotechnology of Fermentations

Pharmaceutical Chemistry

Supramolecular Chemistry

General Pharmacology

Functional Genomics and Proteomics

Informatics

Physical methods in biological systems

General Microbiology

Organization of Scientific Research

Probability and Mathematical Statistics

Transport of Drugs

3 CFU will be assigned for all the optional courses.

Tutti i corsi a scelta dello studente prevedono un impegno di 3 CFU.

Students are advised to check the effective activation of the optional courses by visiting the specialistic degree course Web site.

2.4 Methods

Teaching hours consists of modules and the didactics will be carried out in the following fashion:

1. Lessons, also supported with multimedial and audiovisual aids;
2. Exercises, numerical and of different kind, in normal or computerized rooms;
3. Experimental work in labs;
4. Individual or group periods of training in external structures.

Due to the strong experimental content and to the poor availability of appropriate books, attendance to all the didactic activities is compulsory. The verification methods will be defined every year. In order to have the validation of the attendance, students have to reach at least 70% of the total teaching time. Exception to this limit will be evaluated by the President.

2.5 Degree Course Organization

The following commissions are established for the Magistral Degree Course:

Didactic Commission

Members: Prof. Vito De Pinto, Prof. Antonio Raudino

Organizing Commission

Members: Prof. Daniele Condorelli, Prof. Salvatore Fisichella, Prof. Salvatore Guccione, Prof. Giuseppe Pappalardo, Prof. Giuseppe Ruberto, Prof. Giuseppe Spoto

Selfvalidation Commission

Members: Prof. Domenico Garozzo, Prof. Enrico Rizzarelli, Prof.ssa Stefania Stefani, Prof. Giuseppe Spoto

Furthermore a **Managing Committee** is due to coordinate the relationship between the University and the external world, according to the University regulation. For the academic year 2005-2006, the members of the Managing Committee are:

Dr. Salvatore Celeste, Research Manager Wyeth Lederle, Catania

Dr. Giuseppe Condorelli, Managing Director, Condorelli S.p.A.

Dr. Sebastiano Mangiafico, Research Vice-President Bausch & Lomb

Dr. Michele Palmieri, STMicroelectronics Lab-on-chip R&D Manager, Catania

Dr. Antonio Pogliese, President Ente Fiera Catania

Dr. Francesco Poli, già General Director ASL CT “Garibaldi”

Dr. Claudio Torrisi, President Ordine Chimici Catania

3. MAGISTRAL DEGREE COURSE ADMISSIONS

The Magistral Degree Course in Biomolecular Chemistry will issue a sustainable number of places for the courses. This number is decided every year in collaboration with the Managing Committee and it depends on the infrastructure and teaching resources.

Admissions to the Magistral Degree Course is agreed not only to the first level Chemistry graduated of the Italian Universities, but also to those that own the following educational qualifications: 1/Biotechnologies, 20/Agricultural, Agroindustrial and Forestry Sciences and Technologies, 12/Biological Science, 27/Sciences and Technologies for the Nature and Environment, 40/ Zootechnic and of Animal Production Sciences and Technologies, 24/Chemistry and Pharmaceutical Technologies, 25/ Physics, as well as the degree courses that are activated by the Faculties of Medicine and Pharmacy, and by the Industrial Chemistry Degree Committee, and an equivalent certificate issued by Italian or foreign Universities, of which at least 120 CFU can be assigned.

The credits obtained from the first level “Chemistry” degree will be entirely accepted, while those obtained from other degree courses will be differently evaluated. In order to properly evaluate the obtained credits and to have a personalized course program, an on line pre-enrollment is demanded by going to the Magistral Degree Course Web site. This has to be done by the date reported in the Studies Manifest, with which students have to indicate the totally or partially fulfilled program of the three-year degree course. The Didactic Commission will evaluate the student career by the date indicated in the Studies Manifest and it will propose an individual course program with possible deficits and/or

personalized plans that are finalized to harmonically meet the student knowledge with the targets of the specialistic degree course.

The fulfillment of the deficits can be carried out by the attendance to specific courses appositely run by the Magistral Degree Course, or by attendance to other activated courses run by the University of Catania. Subsequently, by the date indicated in the Studies Manifest, the evaluation test of the candidates merit will be carried out.

In order to establish the ranking, according to the art. 6, paragraph 2, of the D. M. n° 509/99, the following items will be considered:

- Average score of the exams of the Degree Course of origin
- Time elapsed for the achievement of the “Laurea” title
- Performed activities for the achievement of the “Laurea” title
- Score obtained in the Admissions test

Candidates can be formally registered to the course after the ranking determination.

At the request of the concerned students and according to the contingent needs, the Council of the Magistral Degree Course will deliberate the kinds of integrative didactic support that will be considered necessary in order to guarantee the possibility of attendance by disabled or working students.

Registration to the second year of the Magistral Degree Course is accorded to all the students that have obtained at least 60% of the 60 credits available in the first year.

Students that, at the end of the first year, has not reached the number of credits required can be registered as repeating ones and be exempted from attendance to the courses for which has already obtained the attendance certificate.

It is not allowed to be registered as a repeating student of the same year more than once.

The transfer to the 2nd year of the Magistral Degree Course by students of different educational provenience will be evaluated by the Didactic Commission. The latter will propose a course program containing the possible deficits to the students.

Students that have obtained both all the appropriate attendance certificates of the individual studies plan and all the credits required can be registered to the Degree Course as an “off-course” student. It is not allowed to be registered as an “off-course” student more than once.

4. CALENDAR OF COURSES AND EXAMS

The three-year degree courses are organized in two didactic periods (semesters) that last about 13 weeks, with 3 exam sessions within. Dates of beginning and closing of the didactic periods are indicated every year in the Course Manifest that can be downloaded from the Web site of the Faculty of Mathematical, Physical and Natural Sciences ([www.unict.it/psmf/ it](http://www.unict.it/psmf/it)) and from the Magistral Degree Course Web site.

5 FINAL EXAM AND TITLE ACHIEVEMENT

For the final exam an experimental thesis of specialistic “Laurea” is demanded. This experimental work will consist of 40 CFU of the second year course and it will have to study with particular attention towards the research and application details a specific theme regarding one of the specialization fields of the degree course. The thesis work can be carried out in extra-University labs, under the supervision of an internal tutor of the degree course.

The experimental thesis work can take into account practical lab activities and/or periods of training in extra-University structures.

6 INFORMATION FOR STUDENTS

6.1 Pre-University Activity acknowledgement

The Magistral Degree Course in Biomolecular Chemistry can acknowledge extra-cv activities, such as specialistic certificated courses or professional activities inherent to the chosen university program. The recognized activities can be considered as sostitutive or additional to the curriculum ones, depending on the cases. The acknowledgment request (unless otherwise specified) have to be presented to the Magistral Degree Course President. The Magistral Degree Course Council is the only one that can incontrovertibly issue decisions about the activities acknowledgement.

6.2 Diploma Supplement

To all the students that will have passed the final exam and that will have reached the right total number of credits, a Diploma supplement, in which a detailed description of the type, level, context, content, and status of the attended and successfully completed course will be issued.

6.3 Socrates Erasmus Program

The Socrates Erasmus program allows the students to spend sometime between three and twelve months in the arranged European University.

Students that have not already benefit of Erasmus scholarship can participate.

Exams that are passed while abroad are recognized by the University of Turin: thanks to Erasmus it is possible to carry on your own student career while living in a country with a lifestyle and an education system different from the native country.

To participate to the project there is a proclamation where the scholarships and the possible destinations are listed according to the Faculty and the destination Country.

Information can be retrieved from the following Web site:

<http://unict.socratesmanager.it/studenti>,

The Commission of the Degree Course or the Office of the International Affairs of the University of Catania

Tel. 095/7307218

Fax: 095/326161

E-mail: uri@unict.it

Office hours:

Tuesday 09.30/12.30

Wednesday 09.30/12.30

6.4 Career Centre

The **Career Center** of the University of Catania is an agency that follows the new graduated people entering the working environment, giving tools in order to find the appropriate professional path suited for everyone, informing on the most used work contracts of the first employment, giving advices on how to write a good CV, how to face a job interview, how to introduce oneself and on how to use properly all the skills to lay the basis for a good job hunting. If you are looking for help to find your job or some other training opportunities, or you simply want to know more about the working world, the Career Center of the University of Catania is located in Via Napoli, 117 Catania (corner viale Vittorio Veneto).

Phone: +39 095-7229802

Fax: +39 095-7229809

<http://www.unict.it/CareerCentre/>

Office Hours:

Tuesday and Friday: 09:30-12:30

Thursdays: 15.00-18.00