2013

REPORT

ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

School of Engineering and Architecture

Laurea Magistrale (Second cycle degree/Two year Master - 120 ECTS) in Electronic Engineering A.Y. 2013/2014

Programme Director Prof. Riccardo Rovatti

INDICE

WHAT IS THE STUDY PROGRAMME REPORT?

What is the Study Programme Report?

The Study Programme Report provides updated information which is important for the purposes of Quality Assurance and is published annually by the University of Bologna.

The main aspects of the teaching programme are described in detail, with a view to assuring the principle of transparency and promoting self-assessment and continuous improvement processes.

The document provides a concrete overview of the features and results of the Study Programme for students, families, employers and so on.

For example, regarding the current issue of employment, it describes the learning outcomes and career opportunities; it also includes statistics on the percentage of employed graduates (D.4. Employment situation).

The document is organised into five sections and a glossary:

A. Presentation and prospects

Key information on the Study Programme, including the expected learning outcomes, career opportunities and further studies.

B. Teaching and Learning

The updated course structure diagram with the full titles and listings of the course units and the latest published lecture timetable.

C. Resources and services

The list of teaching staff and their relative curricula, the offices (secretariats), services (work placements) and infrastructures (libraries, laboratories) available to students.

D. The Study Programme in Figures

Key data shows how many students are enrolled, how many have been assigned additional learning requirements, how many drop out after the first year, how many graduate in line with the programme schedule, the opinions of attending and graduating students on the teaching programmes and information concerning graduate employment.

E. Find out more: the quality of your Study Programme

How the quality system applied to your Study Programme works. The quality system of your Study Programme is a set of processes and responsibilities adopted to guarantee the quality of all Study Programmes at the University of Bologna.

NOTES:

• Reports are available for all Study Programmes for which it is possible to enrol in the first year in academic year 2012/2013: the information and data provided is as updated as possible.

• Sections A, B and C provide data for the academic year 2012/2013.

• Section D presents data regarding the Study Programmes in the last three academic years.

• The information and data were taken from the University databases and the reports published by the Statistical Observatory of the University of Bologna and AlmaLaurea, and are updated to **15 June 2012.**

A. PRESENTATION AND PROSPECTS

This section presents the key information concerning the Study Programme, including the expected learning outcomes, career opportunities and further studies, updated to the academic year 2013/2014.

A.1. PRESENTATION

This paragraph provides information on the specific learning outcomes of the Study Programme and the curriculum.

The study programme follows a learning path which is coherent with the profile of the referred professional figures identified in the ISTAT category of professional classifications under point 2.1.1.4. Electronics and Telecommunications Engineers.
Graduates in Electronic Engineering will have an in-depth knowledge of the specific subjects of this class, particularly concerning the fields of advanced design of micro- and nano-electronic devices, solid state sensors and biosensors, modelling and design of integrated digital e analogical circuits, the reliability of components and the design of innovative components, systems and processes. Ample room will be reserved for the learning of modern assisted design, modelling and simulation methods. The university study programme will be complemented by basic, related and supplementary subjects which aim to produce professional figures with a broad knowledge base. The computing equipment and laboratories available for use at the university, and constantly being enhanced, allow for the study of fields of application. Work placements may also be carried out in collaboration with public and private bodies and companies operating in the territory.
Graduates will possess the following skills:
- Proficiency in the advanced design of even particularly complex and innovative components, systems and processes, using modern calculation and design methods.
- In-depth knowledge of the typical systems in use in the sector.
- Ability to design innovative components, systems and processes.
- Organisational and management skills even in complex industrial systems.

The achievement of the professional learning skills is assured by a course curriculum which aims to produce graduates with a solid methodological background, integrated by specific practical skills deriving from targeted laboratory experimentation, who are able to design and management systems, processes and services both in the specific field of Electronic Engineering and in other contexts in which information technologies hold particular importance. For this purpose, 2nd cycle students are guided in the process of learning about problems, reference models and methods inherent to the design of modern electronic systems, as well as the relative standards and the most advanced technologies available for their concrete application. Methodological studies will be particularly frequent in the study programme. Particular emphasis is placed on the organic focus on the fundamental principles, the use of examples in the definition of technical and scientific approaches, the presentation of environments and instruments which together support the design of specific sectoral systems and architectures with a system-oriented vision.
The specific skills will be complemented by a solid background in physics and mathematics, in-depth knowledge of the specific areas of study laid down in the specified in the university degree class regulations concerning Information Engineering, including computer engineering, Telecommunications, biomedical and automation engineering, business culture and appropriate knowledge of technological policies and research in the European Union.

A.2. ADMISSION REQUIREMENTS

This paragraph provides information on the knowledge required for admission to the Study Programme.

Entrance to this program is granted to applicants that comply, first, with the curriculum requirements and, second, with the necessary prior preparation. If the curriculum requirements are not complied with, the access to the Electronics Program is denied. If the curriculum requirements are complied with, the applicant's prior preparation is checked. Entrance is granted if all requirements are fulfilled. The procedure to verify the curriculum requirements and prior preparation are listed below in short.Curriculum Requirements
For the applicants that have an Italian University degree the curriculum requirements are described in a more detailed manner in the part of Art. 1 written in Italian. They are synthesized below.
The curriculum requirements are automatically fulfilled by the applicants that have any of the following degrees:
1. An Italian first-level University degree conforming to the provisions of either the Ministry Decree 509/1999 or the Ministry Decree 270/2004 ("Laurea").
2. An Italian second-level University degree conforming to the provisions of either the Ministry Decree 509/1999 or the Ministry Decree 270/2004 ("Laurea specialistica" or "Laurea magistrale").
3. An Italian University degree whose legal duration was at least five years, and that conforms to the provisions of either the Ministry Decree 509/1999 or the Ministry Decree 270/2004, or to earlier Italian Decrees or Laws ("Laurea specialistica a ciclo unico", or "Laurea magistrale a ciclo unico", or "Laurea").
For the applicants that have a foreign University degree, the fulfillment of the curriculum requirements is evaluated on a case-by-case basis by the Electronic-Engineering Board (" Consiglio di Corso di Studio").Checking the adequacy of the applicant's prior preparation

For the applicants that have an Italian University degree the method for checking the adequacy of the prior preparation is described in a more detailed manner in the part of Art. 1 written in Italian. It is synthesized below for the applicants that have a University degree obtained abroad.

For all applicants that comply with the curriculum requirements, the verification of the applicants prior preparations is performed on a case-by-case basis by the Electronic-Engineering Board.

The degree programme can provide a session for international students and appoint a commission to assess the students' personal competencies and skills, consistent with the competition notice awarding scholarships (scolarships deadline is scheduled in May).

If the Commission considers the international student's level of knowledge and skills to be satisfactory, he/she will be exempted from sitting the test to verify the personal competencies and skills planned for all students.

A.3. LEARNING OUTCOMES

This paragraph provides information on the knowledge and skills students will have acquired by the end of the Programme.

KNOWLEDGE AND UNDERSTANDING:

2nd cycle graduates will have an in-depth knowledge of the methodological and operative aspects of mathematical disciplines, basic sciences and computing, will be able to demonstrate an understanding of electronics which extends and reinforces the skills acquired in previous studies and assure the production and application of original ideas, often in a research context, including also design and innovation skills in avant-garde sectors including the field of electronic micro and nanotechnologies and sensoristics.

The achievement of the ability to apply the above knowledge and understanding will be accomplished through the learning activities organised in the "Electronic Engineering" programme, supplementary and complementary activities as well as further activities including work placement and laboratories.

The teaching methods include participation in seminars and exercises in the classroom and in the laboratory, individual and group projects, guided self-study and autonomous study.

Assessment of the achievement of the described learning outcomes shall be mainly through tests, written and oral exams and project work.

ABILITY TO APPLY KNOWLEDGE AND UNDERSTANDING:

2nd cycle graduates:

- will be able to apply their knowledge and understanding to solve problems inherent in new or unfamiliar areas which are part of wider (or interdisciplinary) contexts in the electronics field;

- will have an in-depth knowledge of the structure and properties of the devices and materials they produce, as well as information transmission systems and are able to apply this knowledge to advanced prototypes, autonomously assessing performance during use and forecasting operational behaviour;

- will be able to coordinate and autonomously manage experimentation, research and development, testing and quality control activities for convention and non-conventional products;

- will be able to manage design groups, identifying the best solutions for product realisation, and can skilfully participate in customer negotiations, together with sales staff, suggesting improvements and adaptations, taking autonomous initiatives and competently interpreting the needs of the purchaser in order to transform them into appropriate design specifications, identifying and assigning tasks, verifying work and the operative insertion of new resources;

- will be able to produce or simulate prototypes in the laboratory, with an in-depth knowledge of the sectoral production processes, and will be able to modify or design devices for particular market needs;

- will be able to produce or simulate prototypes in the laboratory for specific Information Engineering systems, assessing the performance using specifically designed prototypes.

The achievement of the ability to apply the above knowledge and understanding will be accomplished through the learning activities organised in the "Electronic Engineering" programme, supplementary and complementary activities as well as further activities including work placement and laboratories.

The teaching methods include participation in seminars and exercises in the classroom and in the laboratory, individual and group projects, guided self-study and autonomous study.

Assessment of the achievement of the described learning outcomes shall be mainly through tests, written and oral exams and project work.

JUDGEMENT SKILLS:

2nd cycle graduates will be able to keep abreast of the developments in methods, techniques and instruments in the sector, autonomously researching or following training courses aimed at the acquisition of additional skills, they will be able to integrate their knowledge and manage complexity, also formulating opinions on the basis of limited or incomplete information, mainly in their own sector, but also in the more general field of Information Engineering, including considerations on social and ethical responsibility in the application of such knowledge and opinions.

The aforementioned judgement skills are accomplished through the learning activities organised in the "Electronic Engineering" programme, as well as further activities including work placement and laboratories and the preparation for the final examination.

The teaching methods include participation in seminars and exercises in the classroom and in the laboratory, individual and group projects, guided self-study and autonomous study.

Assessment of the achievement of the described learning outcomes shall be mainly through tests, written and oral exams and project work.

COMMUNICATION SKILLS:

2nd cycle graduates:

-will be able to effectively communicate orally and in writing both in Italian and at least English, to a high level of knowledge;

- will be able to work and participate in working groups also acting as manager or coordinator;

- will be able to interact with subjects and professions other than their own;

- will be able to communicate their own conclusions, knowledge and related principles in a clear, unambiguous manner to both specialist and non specialist interlocutors.

The aforementioned communication skills are accomplished through the participation in core and supplementary learning activities as well as further activities including work placement and laboratories and the preparation for the final examination.

The teaching methods include participation in exercises in the classroom and in the laboratory, individual and group projects and guided self-study.

Assessment of the achievement of the described learning outcomes shall be mainly through written and oral exams and project work.

LEARNING SKILLS:

2nd cycle graduates will possess the learning skills required to autonomously keep abreast of developments and update their own skills, but also carry out independent design and research activities.

The aforementioned learning skills are achieved through learning activities in the disciplinary fields laid down in the degree programme system and in particular the activities carried out partly in an autonomous manner.

The specific teaching methodologies include tutorials. Assessment of the achievement of the learning skills shall be through the various exams organised throughout the programme.

A.4. CAREER OPPORTUNITIES

This paragraph provides information on the occupational profile, functions and fields of employment available to graduates of this Programme.

Professional figure:

Electronic Engineer.

Main functions:

The 2nd cycle degree programme in Electronic Engineering specifically aims to produce professional figures who are able to fill technical and technical-organisational roles in working contexts which demand the knowledge of methodological and operative aspects of basic sciences and engineering, even in advanced design and research context, privileging the specific aspects of electronics but without ignoring also more general areas.

2nd cycle graduates in Electronic Engineering will be familiar with the main features of the methods and techniques for designing electronic components, integrated electronic systems, equipment and relative production processes. The study programme is complemented by laboratory experiences and elements of modern business culture and technological policies and research in the European Union, through seminars, lectures and/or work placement.

The knowledge profile of Electronic Engineering graduates allow them to work profitably in the design, development, engineering, production, operation and maintenance of electronic systems, as well as similar areas including those of the related Classes.

Career opportunities:

Graduates of the 2nd cycle degree programme in Electronic Engineering will be able to operate professionally in production innovation and development, advanced design, planning and programming, management of complex systems, both freelancing and as employees in manufacturing and service industries and in the civil service. They will be able to find employment in design firms as well as manufacturers of electronic and optoelectronic components, equipment, systems and infrastructure, including sensor systems, in manufacturing industries, in all production and operational areas which apply electronic technologies or infrastructure for signal processing in the civil, industrial and information fields, in control and regulatory authorities, public and private research institutes, with responsibilities for design, research, development, management, as well as university teaching. Among the career areas in particular are telecommunications systems managers, managers of electronic and optoelectronic systems, service providers, technical and sales offices and professional firms, authorities including ITU, ETSI, ENAV, national and international agencies (TLC, ASI, ESA Authority), industries producing remote measuring, remote control and remote monitoring systems, manufacturing industries using electronic technologies and infrastructures for the automation and monitoring of their own production processes, biomedical equipment manufacturers. Referring to the ISTAT categories of professional classifications, graduates in Electronic Engineering fall mainly under sector 2.2.1.4 — Electronic and Telecommunications Engineers.

The city of Bologna, where this 2nd cycle degree programme is located, lies at the heart of one of the highest concentrations of small and medium enterprises in the country. The skills obtained in the degree programme are demanded and appreciated not only by the

specific industries of the sector, but also in a wider technological area, including mechanics companies, services and food processing industries, all of which are well represented locally.

A.5. OPINION OF SOCIAL PARTNERS AND POTENTIAL EMPLOYERS

This paragraph describes the outcome of the consultation with the representative employment and trade organisations.

This information is not available in English at this time.

A.6. FURTHER STUDIES

It gives access to thirdcycle studies (PhD/Specialisation schools) and to professional master'sprogrammes.

B. TEACHING AND LEARNING

This section describes the updated course structure diagram (for academic year 2013/2014), with the full titles and listings of the course units and the latest published lecture timetable.

B.1. COURSE STRUCTURE DIAGRAM

The link takes you to the Study Programme course structure diagrams. You can also access to each course unit content.

- Study plan: all course units in the programme

B.2. CALENDAR AND LECTURE TIMETABLE

The links take you to the teaching calendar (exam session and final examination session) and the lecture timetable (in Italian).

- Lecture timetable
- Exam sessions
- Final examination sessions

C. RESOURCES AND SERVICES

This section provides a list of teaching staff and their relative curricula and and description of the services available to students for the academic year 2013/2014.

C.1. TEACHERS

The paragraph lists the lecturers who teach in the Study Programme: from here you can access the personal web pages of each one (in Italian). Information updated to 28 May 2013 (in Italian).

Permanent teaching staff:

Andrisano, Oreste	Falciasecca, Gabriele	Masotti, Diego	Salmon Cinotti, Tullio
Arcozzi, Nicola	Ferri, Massimo	Melchiorri, Claudio	Santarelli, Alberto
Avanzolini, Guido	Fiegna, Claudio	Metra, Cecilia	Sgallari, Fiorella
Baccarani, Giorgio	Florian, Corrado	Neri, Giovanni	Speciale, Nicolò Attilio
Benini, Luca	Franchi Scarselli, Eleonora	Obrecht, Enrico	Tarchi, Daniele
Buratti, Chiara	Gnudi, Antonio	Raffaelli, Carla	Tartarini, Giovanni
Cappello, Angelo	Guerrieri, Roberto	Reggiani, Susanna	Toth, Paolo
Chiari, Lorenzo	Lamberti, Claudio	Riccò, Bruno	Vanelli Coralli, Alessandro
Colle, Renato	Lanzoni, Massimo	Rizzoli, Vittorio	
Corazza, Giovanni Emanuele	Lodi, Andrea	Rovatti, Riccardo	
De Marchi, Luca	Masetti, Guido	Rudan, Massimo	

Contract teaching staff:

Caporale, Salvatore

D'Emma, Gaetanino Costantino

Mangia, Mauro

Yezzi, Anthony Joseph

C.2. STUDENT SERVICES: OFFICES

C.2.1. FUTURE STUDENTS

The link take you to the webpage which provides specific information about the offices and the services for the future students (in italian).

- Future students

C.2.2. ENROLLED STUDENTS

The link take you to the webpage which provides specific information about the offices and the services for the enrolled students (in italian).

- Enrolled students

C.2.3. INTERNATIONAL STUDENTS

The links take you to the reference Work Placement and International Relations office for the Study Programme, where available.

- International students

C.2.4. GRADUATES

- Graduates

D. THE STUDY PROGRAMME IN FIGURES

Information on students' starting their university careers, how many students are in line with the regular programme, opinions of students and graduates on the teaching programmes and information concerning graduate employment.

This section provides the data of the last academic years for the Study Programme (SP) and a comparison with similar Study Programmes. The University of Bologna has divided its Study Programmes into four groups:

- *BIOMEDICAL group: Study Programmes of the Schools of Pharmacy, Biotechnology and Sport Science; Medicine; Agriculture and Veterinary Medicine*

- *SCIENTIFIC-TECHNOLOGICAL group: Study Programmes of the Schools of Engineering and Architecture; Sciences*

- *SOCIAL SCIENCES group: Study Programmes of the Schools of Economics, Management, and Statistics; Law, Political Sciences*

- *HUMANITIES group: Study Programmes of the Schools of Arts, Humanities, and Cultural Heritage; Foreign Languages and Literatures, Interpreting and Translation; Psychology and Education*

The section presents the results of the Study Programme for the last three academic years.

Main data shows how many students enrolled, the number of students assigned OFA, how many drop out after the first year, how many graduate in line with the programme schedule, the opinions of attending and graduating students on the teaching programmes and information concerning graduate employment.

The information and data presented in this section, updated to 28 May 2013, were taken from University databases and AlmaLaurea.

Study Programmes may be subject to degree programme system modifications from one academic year to the next, and the data provided in this section may refer to a programme with a slightly different system to the one currently running (such as programme title, course structure diagram and list of lecturers). However, indicatively the data presents the general trend of the Study Programme over the past three years.

Most of the Study Programmes running at the University of Bologna have been reformed in compliance with DM 270/04, most of them from the academic year 2008/2009. For this reason for the previous academic years for some information, as opinion of the graduates and employment situation, are provided in the reports of those Programmes, on the paragraph D.5. refers to the Study Programmes as they were presented prior to the reform.

D.1. STUDENTS STARTING THEIR UNIVERSITY CAREERS

Characteristics of incoming students at the beginning of their study. Tables and graphs provide information on number of enrolled students (new careers), focusing on the characteristics of students and results of any entrance tests.

D.1.1. ENROLMENTS

The **graph** and the **table** show the number of new careers of the Study Programme compared with the average of similar Study Programmes (which belong to the same group), for the indicated academic years.
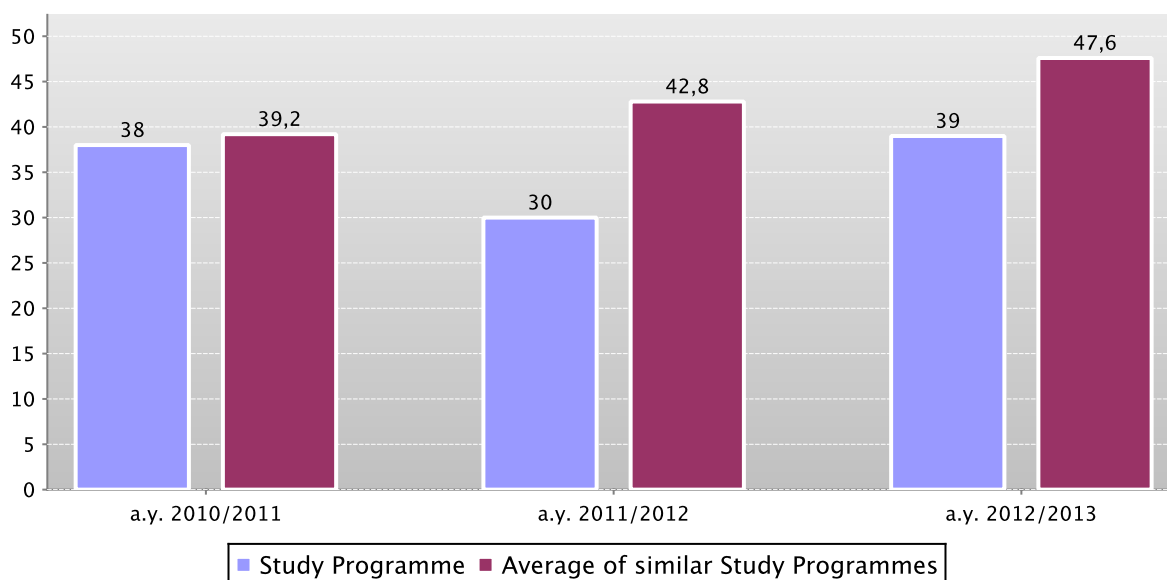
New careers

	a.y. 2010/2011		a.y. 2011/2012		a.y. 2012/2013	
	New careers	Total N. enrolled students	New careers	Total N. enrolled students	New careers	Total N. enrolled students
Study Programme	38	86	30	100	39	101
Average of similar Study Programmes	39,2	60,4	42,8	62,9	47,6	62,6

D.1.2. ADDITIONAL DATA ON STUDENTS' STARTING THEIR UNIVERSITY CAREERS

D.1.2.1. CANDIDATES REGISTERED FOR THE ENTRANCE EXAM

In academic year 2012/2013 access to this Study Programme was not restricted.

D.1.2.2. INCOMING STUDENTS

Geographic origin, type of 1st cycle degree, age and gender of students.

The data shows a homogeneus group of students (cohort) which started together their academic career.

Students which have passed to an other Study Programme, transferred from an other university, or registered to a 2nd degree are not included.

The **tables** show the number, geographic origin, gender, age, type and grade of 1st cycle degree of students enrolling in the degree programme.

The Study Programme data is compared with the average of similar Study Programmes (which belong to the same group), for the indicated academic years.

		New careers	Students coming from the province of the Study Programme site	Students coming from other provinces where Unibo has a site	Students coming from other provinces of Emilia Romagna region	Students coming from other Italian regions	Students coming from abroad	Gender M	Gender F	22 or less	23 - 24	25 or more
Students 2010/2011	Study Programme	38	39,5%	7,9%	5,3%	31,6%	15,8%	78,9%	21,1%	34,2%	42,1%	23,7%
	Average of similar Study Programmes	39,2	26,0%	19,0%	8,2%	42,6%	4,3%	70,2%	29,8%	36,7%	42,3%	21,0%
Students 2011/2012	Study Programme	30	46,7%	13,3%	3,3%	36,7%		83,3%	16,7%	20,0%	56,7%	23,3%
	Average of similar Study Programmes	42,8	25,6%	18,3%	8,1%	44,8%	3,2%	66,3%	33,7%	31,2%	46,7%	22,2%
Students 2012/2013	Study Programme	39	64,1%	7,7%		25,6%	2,6%	92,3%	7,7%	23,1%	56,4%	20,5%
	Average of similar Study Programmes	47,6	27,9%	18,2%	6,2%	43,2%	4,6%	68,2%	31,8%	32,0%	44,7%	23,3%

		First Cycle Degree: University of previous studies				First Cycle Degree: more frequent class		First Cycle Degree: grade					
		University of Bologna	Other Italian Universities	Foreign University	Other not defined	Class code and name	% of students	First Cycle Degree grade between 66 and 90	First Cycle Degree grade between 91 and 100	First Cycle Degree grade between 101 and 105	First Cycle Degree grade between 106 and 110	First Cycle Degree grade 110 and honors	First Cycle Degree grade not available
Students 2010/2011	Study Programme	52,6%	18,4%		28,9%	9 INGEGNERIA DELL'INFORMAZION	55,3%	18,4%	21,1%	13,2%	5,3%	13,2%	28,9%
	Average of similar Study Programmes	75,1%	17,9%	0,6%	6,4%	10 INGEGNERIA INDUSTRIALE	25,3%	16,3%	31,8%	16,8%	14,2%	14,5%	6,4%
Students 2011/2012	Study Programme	73,3%	16,7%		10,0%	9 INGEGNERIA DELL'INFORMAZION	53,3%	16,7%	46,7%	10,0%	13,3%	6,7%	6,7%
	Average of similar Study Programmes	71,3%	21,4%	0,4%	6,9%	10 INGEGNERIA INDUSTRIALE	15,9%	15,3%	34,0%	17,7%	13,6%	12,5%	6,8%
Students 2012/2013	Study Programme	56,4%	12,8%		30,8%	9 INGEGNERIA DELL'INFORMAZION L-8 INGEGNERIA DELL'INFORMAZION	33,3%	17,9%	38,5%	5,1%	2,6%	5,1%	30,8%
	Average of similar Study Programmes	67,6%	15,8%	0,4%	16,3%	L-9 INGEGNERIA INDUSTRIALE	21,0%	16,4%	33,9%	12,8%	11,1%	9,5%	16,3%

D.2. REGULARITY OF STUDIES

Insight into the regularity with which the students pass their exams. The graphs and the tables provide information on the number of students who leave the programme between the first and second year and the number of regular graduates, focusing on the number of credits obtained at the end of the first year, on the exams passed and average grade achieved for each course unit.

D.2.1. STUDENTS LEAVING THE PROGRAMME BETWEEN YEARS 1 AND 2

Here the number of students leaving the Study Programme is shown.

The **graph** shows the percentage of students who leave the programme after the first year compared to the average of similar Study Programmes (belonging to the same group).

The **table** shows the registered students (new careers), the percentage of students leaving the programme who pass to a different Study Programme in the same university, transfer to another university or withdraw from studies as well as the enrolled repeating students and those enrolled in the second year.

The Study Programme data is compared with the average of similar Study Programmes (which belong to the same group), for students registered (new careers) in the indicated academic years.

Percentage of withdrawals between years 1 and 2
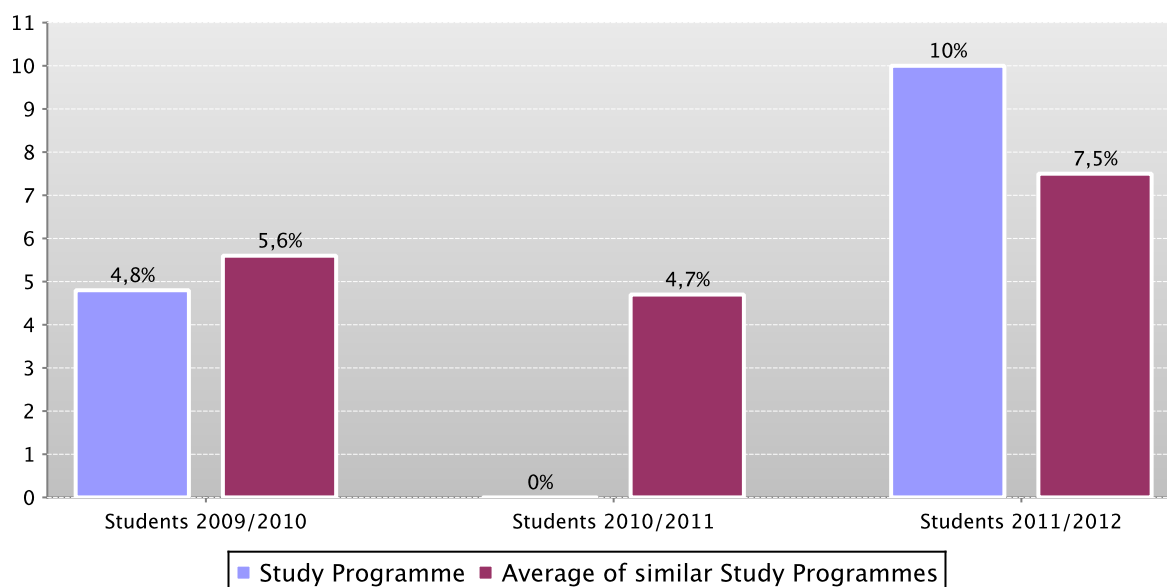
		New careers	% withdrawals	% passages and transfers	% repeating students	Students enrolled in the second year
Students 2009/2010	Study Programme	42	4,8%	0,0%	0,0%	40
	Average of similar Study Programmes	40,5	5,6%	0,8%	0,1%	37,9
Students 2010/2011	Study Programme	38	0,0%	2,6%	0,0%	37
	Average of similar Study Programmes	39,2	4,7%	0,7%	0,0%	37,1
Students 2011/2012	Study Programme	30	10,0%	0,0%	0,0%	27
	Average of similar Study Programmes	42,8	7,5%	1,3%	0,1%	39

D.2.2. REGULAR GRADUATES

Here you will find information on regular graduates, on how many students, at the end of the regular programme duration, left the programme and how many are still enrolled but not aligned to the exam schedule.

The **graph** and the **table** show the situation concerning the registered students (new careers) for the indicated academic year, at the end of the regular duration of the Study Programme, highlighting the percentage of regular graduates, the number of students still enrolled (not aligned to the exam schedule and repeating students), students who have left the programme (including passages, transfers and withdrawals).

The Study Programme data is compared with the average of similar Study Programmes (which belong to the same group), for students enrolled in the indicated accademic year.

Situation of students 2010/2011 at the end of regular duration of the study programme
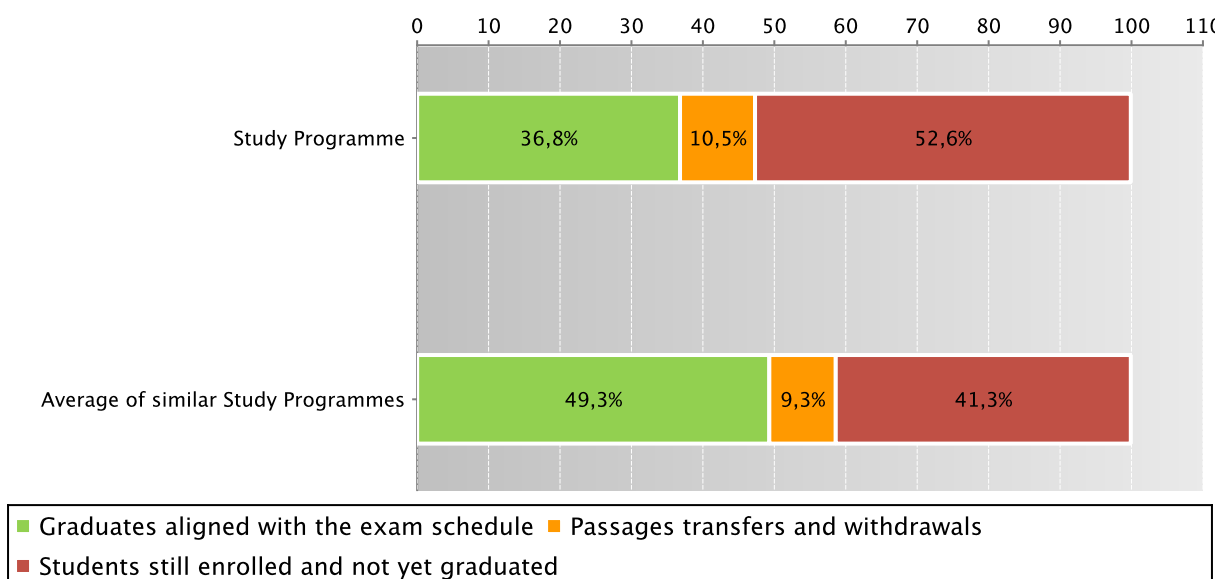
- Graduates aligned with the exam schedule
- Passages transfers and withdrawals
- Students still enrolled and not yet graduated

		New careers	Regular graduates		Passages transfers and withdrawals		Students still enrolled and not yet graduated	
			N.	%	N.	%	N.	%
Students 2009/2010	Study Programme	42	13	31,0%	3	7,1%	26	61,9%
	Average of similar Study Programmes	40,5	17	42,0%	4,3	10,7%	19,1	47,2%
Students 2010/2011	Study Programme	38	14	36,8%	4	10,5%	20	52,6%
	Average of similar Study Programmes	39,2	19,3	49,3%	3,7	9,3%	16,2	41,3%

See data of previous academic years – Study Programme D.M. 509/99 Electronic Engineering (code 0233) paragraph D.5.2.2.

D.2.3. ADDITIONAL DATA ON REGULARITY OF STUDIES

D.2.3.1. CREDITS OBTAINED BY STUDENTS IN THE 1ST YEAR

This offers an insight into how regularly students pass their exams.

The **graph** shows the distribution of the students according to the number of credits obtained at the end of the first year.

In addition, the **table** shows the number of students registered at the second year and average credits obtained during the first year.

The Study Programme data is compared with the average of similar Study Programmes (wich belong to the same group), for students registered in the indicated academic years.

Distribution of the students in 2011/2012 according to the number of credits obtained at the end of the first year*

41 or more credits acquired: 22,2%

0 credits acquired: 3,7%

from 1 to 20 credits acquired: 37%

from 21 to 40 credits acquired: 37%
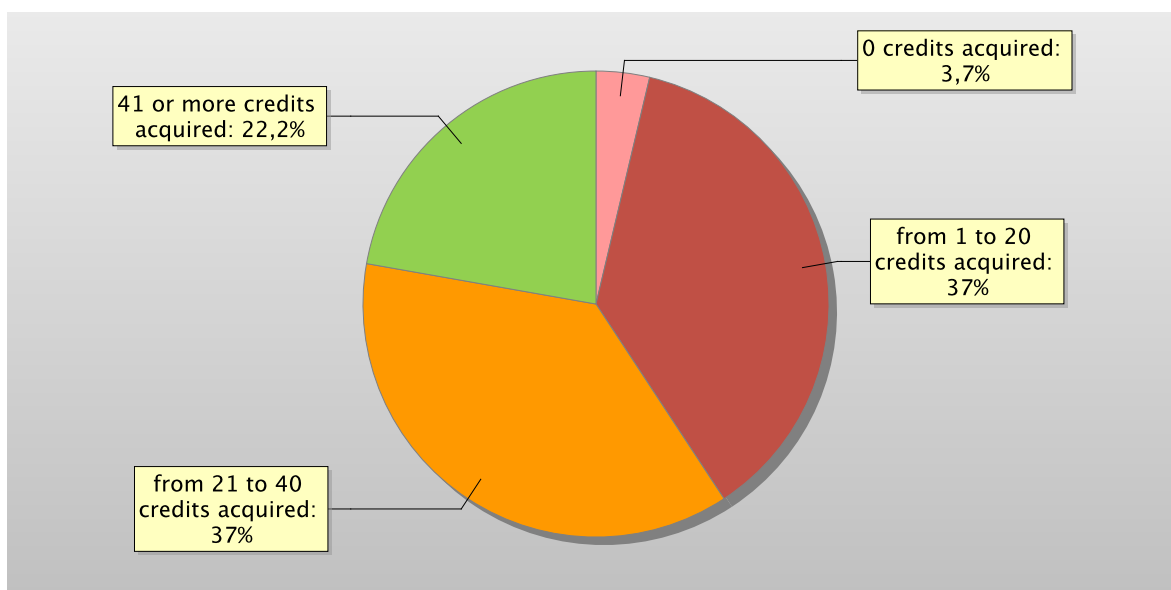
		Students enrolled in the 2nd year	% students with *				Average credits per student
			0 credits acquired	from 1 to 20 credits acquired	from 21 to 40 credits acquired	41 or more credits acquired	
Students 2009/2010	Study Programme	40	17,5%	25,0%	42,5%	15,0%	22
	Average of similar Study Programmes	37,9	8,1%	22,8%	42,5%	26,7%	29
Students 2010/2011	Study Programme	37	16,2%	27,0%	35,1%	21,6%	24,2
	Average of similar Study Programmes	37,1	6,8%	17,0%	45,8%	30,4%	31,2
Students 2011/2012	Study Programme	27	3,7%	37,0%	37,0%	22,2%	25,8
	Average of similar Study Programmes	39	3,1%	16,3%	45,0%	35,6%	33,9

*Note: by convention, credits are considered to be obtained by students by 31st October of the year following the year of enrolment.

D.2.3.2. EXAMS PASSED AND AVERAGE GRADE

The **table** shows number of exams passed and average grade achieved for each course unit in the calendar year 2011. Marks for the exams passed are expressed out of thirty.

The data refers to the course unit code and therefore includes the various branches of the programme divided into channels or sub-groups, divided by letter.

It considers all subjects for which a grade is assigned, and therefore excludes all those to which a pass/fail score is allocated.

The data concerning previous programmes is given in a separate section.

Data of the Study Programme D.M. 270/04 Ingegneria elettronica (code 0934)

	N. of exams passed	Average grade *
28642 FOUNDATIONS OF INDUSTRIAL ROBOTICS	3	
29161 MATHEMATICAL METHODS M	8	27,9
30689 NANOTECHNOLOGIES FOR MATERIALS	1	
34949 ELETTRONICA DELLE TELECOMUNICAZIONI M-A	2	
34950 ELETTRONICA DELLE TELECOMUNICAZIONI M-B	2	
35151 DESIGN FOR TESTABILITY AND RELIABILITY OF INTEGRATED CIRCUITS M	7	26,4
35152 HARDWARE-SOFTWARE DESIGN OF EMBEDDED SYSTEMS M	9	28,2
35155 ELEMENTS OF STATISTICS AND SIGNAL PROCESSING M	7	28
35158 ADVANCED ELECTROMAGNETIC TRANSMISSION TECHNIQUES AND DEVICES M	4	
35164 SOLID STATE SENSORS M	4	

	N. of exams passed	Average grade *
35167 COMMUNICATION SYSTEMS: THEORY AND MEASUREMENT M	6	25,2
35171 SOLID STATE PHYSICAL CHEMISTRY M	3	
35184 BIOMEDICAL TRANSDUCERS M	8	27,8
35190 WIRELESS SENSOR NETWORKS M	10	27,5
35195 DIGITAL COMMUNICATIONS M	8	27,4
35198 NANOTECHNOLOGY FOR MATERIALS M	7	27,4
35223 CALCOLATORI ELETTRONICI M	17	25,8
35315 ELETTRONICA DEI SISTEMI DIGITALI M E LABORATORIO C.I.	17	27,4
35326 LABORATORIO DI ELETTRONICA DEI SISTEMI DIGITALI M	1	
35331 ANALISI MATEMATICA M E METODI NUMERICI PER L'INGEGNERIA M C.I.	22	27,5
35333 CAMPI ELETTROMAGNETICI E SISTEMI D'ANTENNA M	30	27,7
35359 MICROELETTRONICA M	21	27,6
35360 CIRCUITI ELETTRONICI ANALOGICI M	6	26,7
35362 ELABORAZIONE ELETTRONICA DEI SEGNALI DIGITALI M	10	26,9
35363 ELABORAZIONE STATISTICA DEI SEGNALI NEI SISTEMI ELETTRONICI M	4	
35364 ARCHITETTURE DIGITALI PER L'ELABORAZIONE DEL SEGNALE M	7	24,4
35365 ELETTRONICA DELLO STATO SOLIDO M	1	
35367 ELETTRONICA INDUSTRIALE M	14	28,9
35368 SISTEMI A MICROPROCESSORE M	15	27,3
35369 METODOLOGIE DI PROGETTAZIONE HARDWARE E SOFTWARE M	11	29,7
35370 SISTEMI ELETTRONICI AD ALTA AFFIDABILITÀ M	16	28
35371 ELABORAZIONE DI DATI E SEGNALI BIOMEDICI M	12	27,9
35372 STRUMENTAZIONE BIOMEDICA M	11	28,1
35373 SENSORI A STATO SOLIDO M	6	25,8
35374 BIOINGEGNERIA DELLA RIABILITAZIONE M	12	27,6
35425 BIOIMMAGINI E INGEGNERIA CLINICA M	14	27,6
35426 CHIMICA FISICA DEI MATERIALI SOLIDI M	3	
37085 PRINCIPLES, MODELS AND APPLICATIONS FOR DISTRIBUTED SYSTEMS M	1	
37118 PRINCIPLES OF MULTIMEDIA APPLICATIONS AND SERVICES M	1	
37689 ELETTRONICA DELLE TELECOMUNICAZIONI M-AB C.I.	1	
37691 INTRODUCTION TO NUMERICAL METHODS M	5	
37745 SOLID STATE ELECTRONICS + TCAD M	7	28,1
38375 PROGETTO DI CIRCUITI ANALOGICI M - A	10	27,2
38376 PROGETTO DI CIRCUITI ANALOGICI M - B	3	
66308 BUSINESS EXCELLENCE AND PROJECT MANAGEMENT M	1	

	N. of exams passed	Average grade *
69421 ELABORAZIONE DEI SEGNALI NEI SISTEMI ELETTRONICI M	1	

* Note: no average grade is given if the number of exams passed is less than or equal to 5.

D.3. OPINIONS OF GRADUATES AND ATTENDING STUDENTS

Opinions of graduates on the Study Programme.
Tables and graphs provide information on the number of graduates who expressed positive opinions on the Study Programme, focusing on opinions expressed by attending students on course units.

D.3.1. OPINION OF GRADUATES

The **graph** shows the percentage of graduates (AlmaLaurea survey) who responded positively to the question: "**Are you generally satisfied with the Study Programme".**
In addition, the **table** shows the percentage of students who answered "Yes, to the same programme at the university" to the question "Would you register again to the university?".
The Study Programme data is compared with the average of similar Study Programmes (which belong to the same group), and the average of Study Programmes of the same class of other Italian universities for the graduates of the indicated years.

Graduates in 2012 who responded positively to the question: "Are you generally satisfied with this Study Programme?"

Data of the Study Programme D.M. 270/04 Ingegneria elettronica (code 0934)

Study Programme: 90,6% positive, 9,4% negative
Average of similar Study Programmes: 90,5% positive, 9,1% negative
Study Programmes of the same class in Italian Universities: 94,8%

■ Percentage of positive answers ■ Percentage of negative answers

Data of the Study Programme D.M. 270/04 Ingegneria elettronica (code 0934)
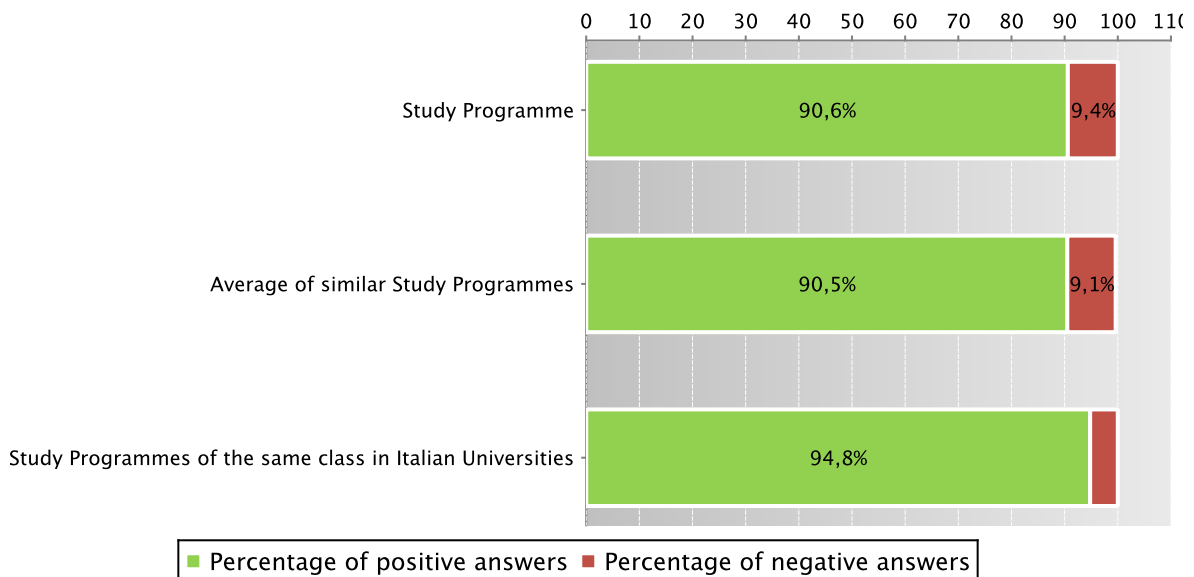
		N. graduates	Completed Questionnaires	% of positive answers to the question: "Are you generally satisfied with this Study Programme?"	% of answers "yes to the same Programme in the same University" to the question "Would you register again to the University"
2011	Study Programme	3	3		
	Average of similar Study Programmes	20	19,4	90,0%	78,4%
	Study Programmes of the same class in Italian Universities	85	83	92,8%	79,5%
2012	Study Programme	33	32	90,6%	81,3%
	Average of similar Study Programmes	22	21,5	90,5%	78,6%
	Study Programmes of the same class in Italian Universities	399	363	94,8%	77,7%

Symbols:

(*) The opinions of the Study Programmes with less than 5 graduates are not shown.

Further information on Graduates' Profile Report.

See data of previous academic years – Study Programme D.M. 509/99 Electronic Engineering (code 0233) paragraph D.5.3.1.

D.3.2 ADDITIONAL DATA ON OPINIONS OF STUDENTS

D.3.2.1. OPINION OF ATTENDING STUDENTS

The **graph** shows the percentage of attending students who responded positively to the question in the questionnaire: "Are you generally satisfied with this course unit?" in academic year 2011/2012.

The **table** also shows the number of completed questionnaires.

The Study Programme data is compared with the average of similar Study Programmes (which belong to the same group), for the indicated academic years.

The data concerning the students' opinion refers to the opinions of those attending lessons, whether they are enrolled in the current programme or a Study Programme running under pre-reform regulations (under D.M. 509).

For the University of Bologna the survey and subsequently analysis of the opinions of students attending the course is cared by *Aform* - Quality Assurance Department and *Arag* - Support Planning and Evaluation Department. The overall results and the methods of collection and analysis are described in the document published online on the Statistical Observatory of the University of Bologna (see the note in the glossary).

Students who responded positively to the question: "Are you generally satisfied with this course unit?" in academic year 2011/2012

Data of the Study Programme D.M. 270/04 Ingegneria elettronica (code 0934) and of the Study Programme D.M. 509/99 Ingegneria elettronica (code 0233)

Data of the Study Programme D.M. 270/04 Ingegneria elettronica (code 0934) and of the Study Programme D.M. 509/99 Ingegneria elettronica (code 0233)
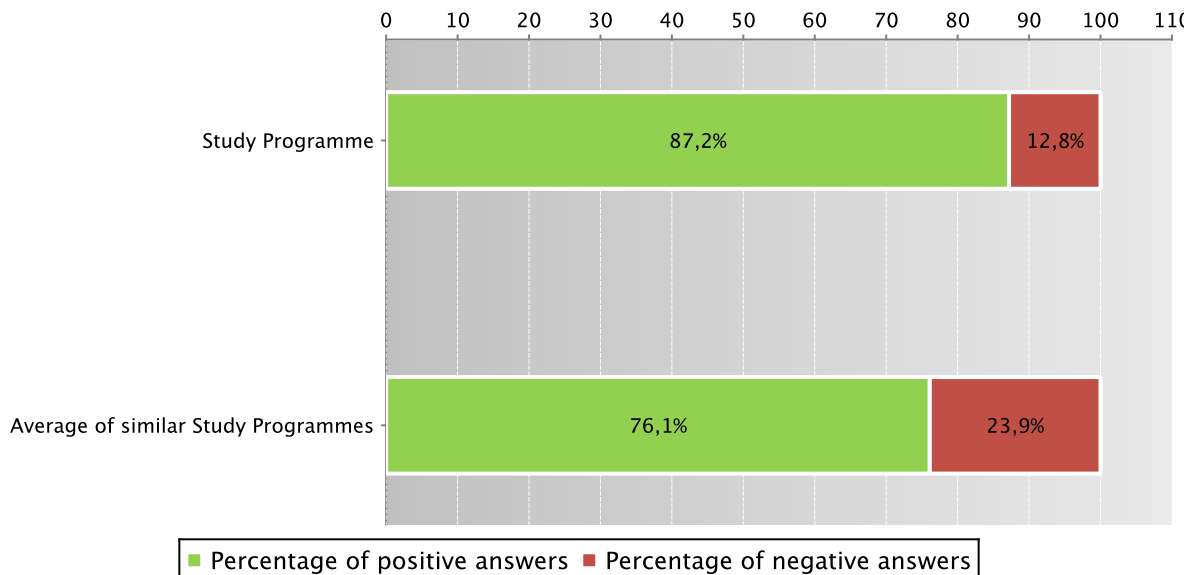
		Number of completed questionnaires	% of positive answers concerning the general satisfaction with the course unit – Question 19
a.y. 2009/2010	Study Programme	437	76,2%
	Average of similar Study Programmes	386,1	77,1%
a.y. 2010/2011	Study Programme	402	78,6%
	Average of similar Study Programmes	372,6	77,9%
a.y. 2011/2012	Study Programme	290	87,2%
	Average of similar Study Programmes	422,1	76,1%

Symbols:

(*) When there is a small number of questionnaires, the percentage of positive opinions on overall satisfaction is not presented.

Further information on Rapporto Opinione degli studenti frequentanti sulle attività didattiche (the content is in Italian).

D.4. ENTRY INTO THE WORLD OF WORK

Employment situation of graduates of the Study Programme.
Tables and graphs provide information on the employment situation of graduates one year after graduating.
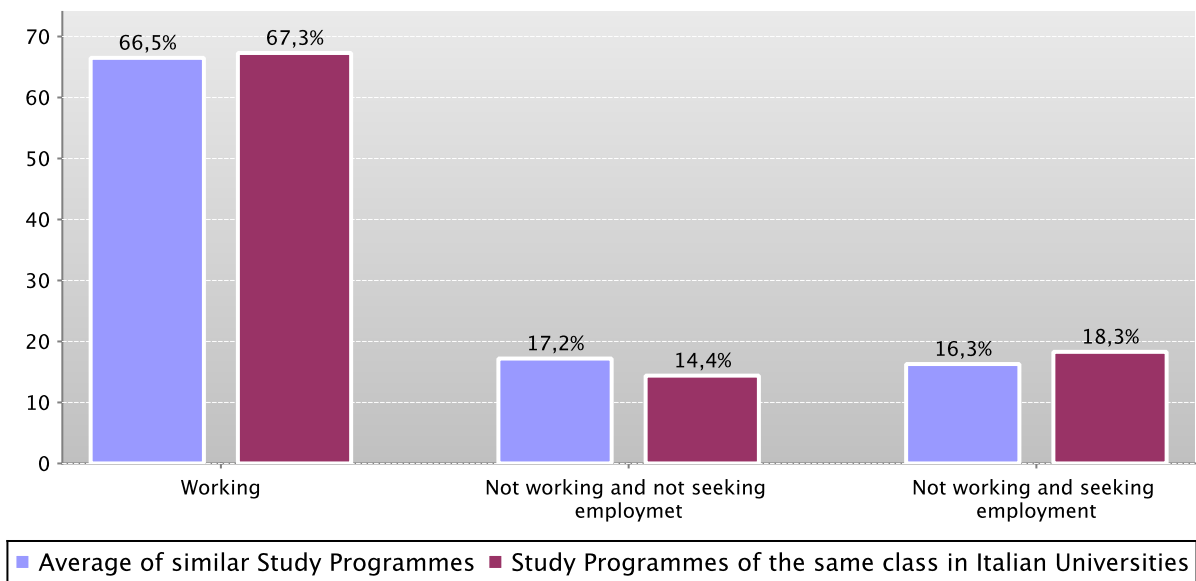
D.4.1. EMPLOYMENT SITUATION

The paragraph shows the employment situation of graduates one year after graduating.

The data is taken from the AlmaLaurea reports on the employment situation of graduates.

The **graph** shows who is working, who is not working and is not seeking employment, who is not working but is seeking employment.

In addition, the **table** shows the number of graduates interviewed, the number involved in internships and traineeships and the appropriateness of their degree to the job.

The Study Programme data is compared with the average of similar Study Programmes (which belong to the same group) and the average of Study Programmes of the same class of other Italian universities for the graduates of the indicated years.

Employment situation of graduates in 2011 one year after graduating

		N. graduates interviewed	Employment situation (1)				Degree's appropriateness for the job (referred to the graduates who just work) (3)	
			Working	Not working and not seeking employmet	Not working and seeking employment	Not working, not seeking employment, but following a university programme/traineeship (2)	Effective / very effective	Quite effective
Graduation Year 2011	Study Programme	3						
	Average of similar Study Programmes	17,8	66,5%	17,2%	16,3%	12,3%	58,1%	30,8%
	Study Programmes of the same class in Italian Universities	104	67,3%	14,4%	18,3%	10,6%	52,9%	44,3%

Symbols:

(*) The opinions of the Study Programmes with less than 5 graduates are not shown.

Notes on the AlmaLaurea report on the employment situation of graduates

(1) "Employment situation": the definition includes the number of employed graduates who declaring to carry out a paid work activity, provided that is not training activity (internship, traineeship, PhD degrees, specialization schools).

(2) "Number of those who do not work, who are not seeking employment but who are following a university programme/traineeship": the definition includes those who are enrolled in traineeships, PhD degrees, specialisation schools, Italian "master universitari" (first and second level). The presentation of this data complies with article 2 of D.M. 544 of 31st October 2007, as later provided for in Management Decree no. 61 of 10th June 2008 (transparency requirements).

(3) The evaluation of the appropriateness of the degree is obtained by a combination of the requirement of the relative qualification for the job held and the level of usage of the skills learned at university.

Further information on Graduates' Employment report.

D.5. INFORMATION ON PRE-REFORM PROGRAMMES (DM 509/99)

D.5.1. STUDENTS STARTING THEIR UNIVERSITY CAREERS

Characteristics of incoming students at the beginning of their study. Tables and graphs provide information on number of enrolled students (new careers), focusing on the characteristics of students.

D.5.1.1. ENROLMENTS

Data of enrolments of the last three academic years are shown in paragraph D.1.1.

D.5.1.2. ADDITIONAL DATA ON STUDENTS' STARTING THEIR UNIVERSITY CAREERS

D.5.1.2.1. CANDIDATES REGISTERED FOR THE ENTRANCE EXAM

Data of candidates registered for the entrance exam are shown in paragraph D.1.2.1.

D.5.1.2.2. INCOMING STUDENTS

Data of incoming students of the last three academic years are shown in paragraph D.1.2.2.

D.5.2. REGULARITY OF STUDIES

Insight into the regularity with which the students pass their exams.
Graphs and tables provide information on the number of students who leave the programme after the first year and the number of regular graduates, focusing on the number of credits obtained at the end of the first year, number of exams passed and the average grade achieved for each course unit.

D.5.2.1. STUDENTS LEAVING THE PROGRAMME BETWEEN YEARS 1 AND 2

Data of students leaving the Study Programme of the last three academic years are shown in paragraph D.2.1.
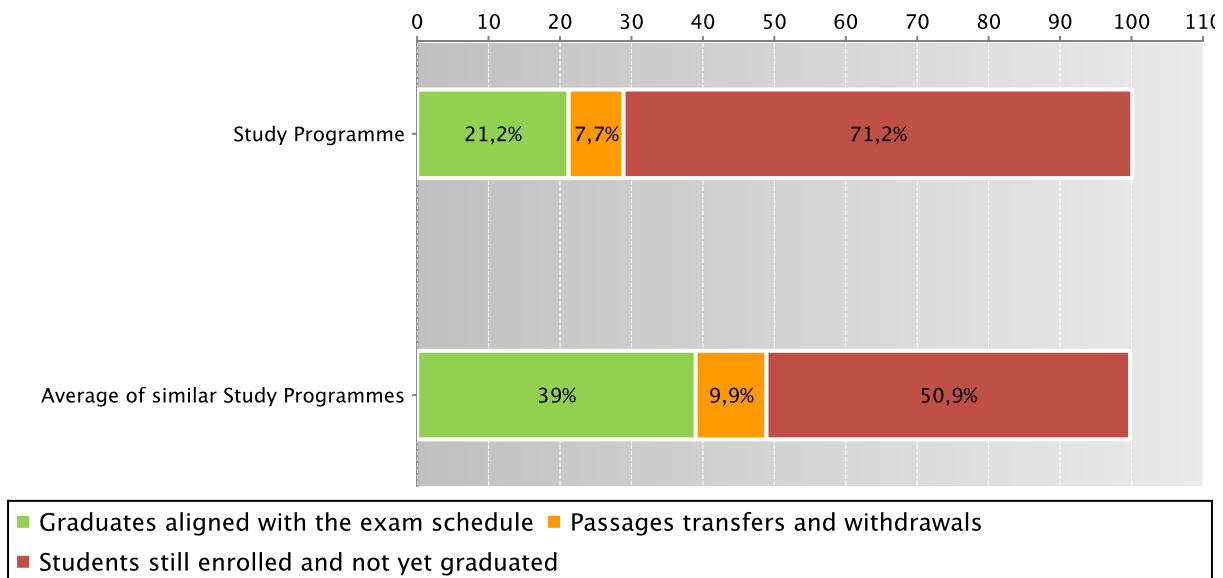
D.5.2.2. REGULAR GRADUATES

Here you will find information on regular graduates, on how many students, at the end of the regular programme duration, left the programme and how many are still enrolled but not aligned to the exam schedule.

The **graph** and the **table** show the situation concerning the students enrolled at the first year (new careers) for the indicated academic year, at the end of the regular duration of the Study Programme, highlighting the percentage of regular graduates, the number of students still enrolled (not aligned to the exam schedule and repeating students), students who have left the programme (including passages, transfers and withdrawals).

The Study Programme data is compared with the average of similar Study Programmes (which belong to the same group), for students registered in the indicated academic years.

Situation of students 2008/2009 at the end of regular duration of the study programme

Data of the Study Programme D.M. 509/99 Electronic Engineering (code 0233)

Data of the Study Programme D.M. 509/99 Electronic Engineering (code 0233)

		New careers	Regular graduates		Passages transfers and withdrawals		Students still enrolled and not yet graduated	
			N.	%	N.	%	N.	%
Students 2008/2009	Study Programme	52	11	21,2%	4	7,7%	37	71,2%
	Average of similar Study Programmes	42,6	16,6	39,0%	4,2	9,9%	21,7	50,9%

Go back to D.2.2. Regular graduates

D.5.2.3. ADDITIONAL DATA ON REGULARITY OF STUDIES

D.5.2.3.1. CREDITS OBTAINED BY STUDENTS IN THE 1ST YEAR

Data of credits obtained by students in the 1st year of the last three academic years are shown in paragraph D.2.3.1.

D.5.2.3.2. EXAMS PASSED AND AVERAGE GRADE

Data of exams passed and average grade are shown in paragraph D.2.3.2.

D.5.3. OPINIONS OF ATTENDING STUDENTS AND GRADUATES

Opinions of graduates on the Study Programme.
Tables and graphs provide information on the number of graduates who expressed positive opinions on the Study Programme, focusing on opinions expressed by attending students on course units.
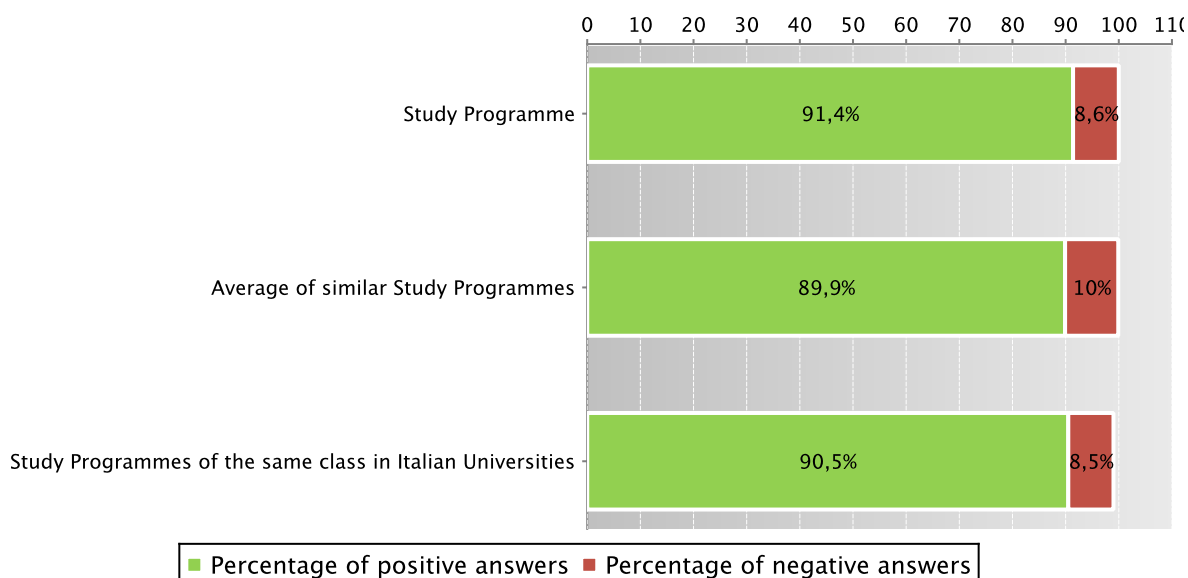
D.5.3.1. OPINION OF GRADUATES

The **graph** shows the percentage of graduates (AlmaLaurea survey) who responded positively to the question: "**Are you generally satisfied with the Study Programme**".

In addition, the **table** shows the percentage of students who answered "Yes, to the same programme at the university" to the question "Would you register again to the university?".

The Study Programme data is compared with the average of similar Study Programmes (which belong to the same group), for the indicated years.

Graduates in 2010 who responded positively to the question: "Are you generally satisfied with this Study Programme?"

Data of the Study Programme D.M. 509/99 Ingegneria elettronica (code 0233)

	0 10 20 30 40 50 60 70 80 90 100 110
Study Programme	91,4% / 8,6%
Average of similar Study Programmes	89,9% / 10%
Study Programmes of the same class in Italian Universities	90,5% / 8,5%

■ Percentage of positive answers ■ Percentage of negative answers

Data of the Study Programme D.M. 509/99 Ingegneria elettronica (code 0233)

		N. graduates	Completed Questionnaires	% of positive answers to the question: "Are you generally satisfied with this Study Programme?"	% of answers "yes to the same Programme in the same University" to the question "Would you register again to the University"
	Study Programme	35	35	91,4%	85,7%
2010	Average of similar Study Programmes	25,5	24,8	89,9%	78,6%
	Study Programmes of the same class in Italian Universities	739	687	90,5%	75,1%

Symbols:

(*) The opinions of the Study Programmes with less than 5 graduates are not shown.

Further information on Graduates' Profile Report.

Go back to D.3.1. Opinion of graduates

D.5.3.2 ADDITIONAL DATA ON OPINIONS OF STUDENTS

D.5.3.2.1. OPINION OF ATTENDING STUDENTS

Data of opinion of attending students of the last three academic years are shown in paragraph D.3.2.1.

D.5.4. ENTRY INTO THE WORLD OF WORK

Employment situation of graduates of the Study Programme.
Tables and graphs provide information on the employment situation of graduates one year after graduating.

D.5.4.1. EMPLOYMENT SITUATION

The paragraph shows the employment situation of graduates one year after graduating.
The data is taken from the AlmaLaurea reports on the employment situation of graduates.
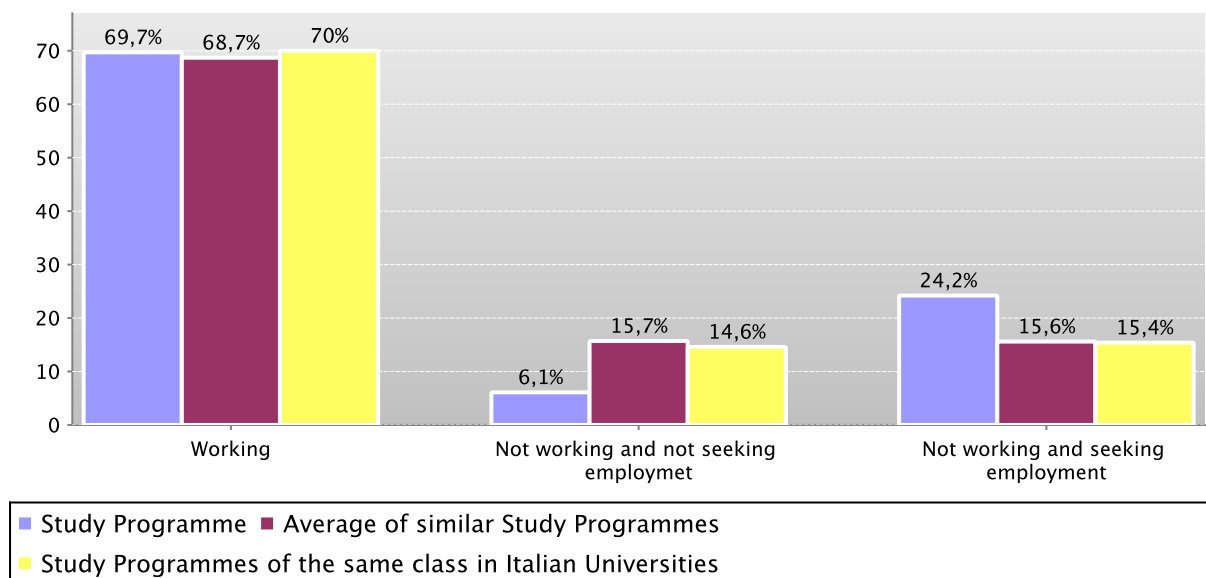The **graph** shows who is working, who is not working and is not seeking employment, who is not working but is seeking employment.
In addition, the **table** shows the number of graduates interviewed, the number involved in internships and traineeships and the appropriateness of their degree to the job.
The Study Programme data is compared with the average of similar Study Programmes (which belong to the same group) and the average of Study Programmes of the same class of other Italian universities for the graduates of the indicated years.

Employment situation of graduates in 2010 one year after graduating

Data of the Study Programme D.M. 509/99 Electronic Engineering (code 0233)

Data of the Study Programme D.M. 509/99 Electronic Engineering (code 0233)

		N. graduates interviewed	Employment situation (1)				Degree's appropriateness for the job (referred to the graduates who just work) (3)	
			Working	Not working and not seeking employmet	Not working and seeking employment	Not working, not seeking employment, but following a university programme/traineeship (2)	Effective / very effective	Quite effective
Graduation Year 2009	Study Programme	56	71,4%	14,3%	14,3%	8,9%	41,0%	41,0%
	Average of similar Study Programmes	32,1	63,8%	18,3%	17,9%	11,8%	55,3%	34,7%
	Study Programmes of the same class in Italian Universities	676	60,9%	18,6%	20,4%	13,5%	44,1%	43,6%
Graduation Year 2010	Study Programme	33	69,7%	6,1%	24,2%	6,1%	39,1%	52,2%
	Average of similar Study Programmes	23,5	68,7%	15,7%	15,6%	9,9%	57,4%	32,5%
	Study Programmes of the same class in Italian Universities	637	70,0%	14,6%	15,4%	9,4%	46,4%	41,8%

Symbols:

(*) The opinions of the Study Programmes with less than 5 graduates are not shown.

 Notes on the AlmaLaurea report on the employment situation of graduates

(1) "Employment situation": the definition includes the number of employed graduates who declaring to carry out a paid work activity, provided that is not training activity (internship, traineeship, PhD degrees, specialization schools).

(2) "Number of those who do not work, who are not seeking employment but who are following a university programme/traineeship"**:** the definition includes those who are enrolled in traineeships, PhD degrees, specialisation schools, Italian "master universitari" (first and second level). The presentation of this data complies with article 2 of D.M. 544 of 31st October 2007, as later provided for in Management Decree no. 61 of 10th June 2008 (transparency requirements).

(3) The evaluation of the appropriateness of the degree is obtained by a combination of the requirement of the relative qualification for the job held and the level of usage of the skills learned at university.

Further information on Graduates' Employment report.

E. FIND OUT MORE: THE QUALITY OF YOUR STUDY PROGRAMME

The University of Bologna has identified its objectives as the *personal, cultural and professional growth of students and the improvement of the quality of learning, also in relation to the needs of society* (Strategic Plan 2010-2013).
Students, employers and society as a whole, have the right to effective learning for individual and intellectual growth, to develop critical sense and to prepare for the world of work.
In the Statute and the Strategic Plan 2010-2013 the University of Bologna acknowledges its responsibility in guaranteeing the quality of its study programmes, and for this purpose adopts an "internal quality assurance system".

The Internal Quality Assurance system
The internal quality assurance system is a set of processes and responsibilities adopted to guarantee the quality of Study Programmes at the University of Bologna.
The guarantee of the quality of a Study Programme is the correspondence of the results achieved with the set objectives, in the following phases:

- Plan: defining the objectives
- Do: implementing the planned actions
- Check: checking that the objectives have been achieved
- Act: planning improvement action
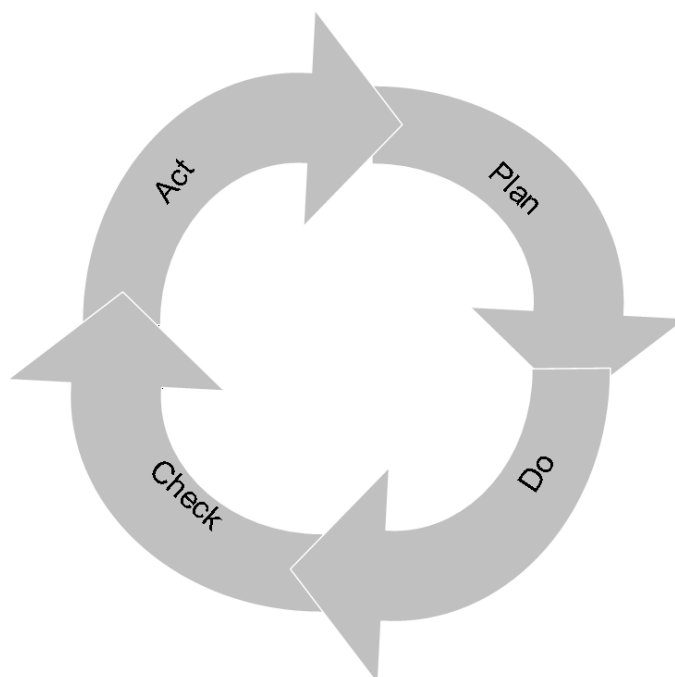
This path responds to the expectations of students, guides teaching behaviour and provides indicators for the assessment of results. Self-assessment is based on the analysis of significant data (for example, the number of students graduating in line with the exam schedule, students' opinions and the employment rates of graduates) and highlights strengths and weaknesses in order to reflect on the achieved results, critically consider one's own working methods and take steps for the continual improvement of the Programme. This path involves all educational stakeholders, including students, in order to make use of the contributions of everyone with first-hand knowledge of the Study Programme. Improvement is therefore a day to day development, concerning all aspects of teaching: from the lesson timetable to the publication of on-line programmes, from classroom management to exam methods, and the actual design of the Programme.

This is what happens in each phase:

- **Planning**: the Study Programme is the result of a proposal from the teaching structures and approved by the Academic Bodies.
- **Management**: Schools, Departments and Study Programmes manage the activities required to ensure teaching. The activities are organised as follows**:**

What we do	Who does what				
	Professors	**Study Programme**	**Schools**	**Departments**	**General Administration**
Teaching calendar, lessons programme and exam schedules			x		
Management of financial resources			x	x	
Classroom teaching	x				
Management of classrooms and laboratories			x	x	
Libraries and study rooms			x	x	
Approval of individual study plans		x			
Communication and information		x	x		Academic Affairs Division
Guidance service		x	x		Academic Affairs Division
Internships		x	x		Academic Affairs Division
Administrative services: Student Administration Office					Academic Affairs Division
Administration services: Degree programme office			x		Academic Affairs Division
Study grants and loans ad honorem					Academic Affairs Division
Student mobility: university subsidies and programmes					International Relations Division
Mobility: study grants for dissertations abroad			x		
Mobility: authorisations and recognitions		x			
Other students support services		x	x		x

- **Internal assessment:** every Study Programme periodically assesses its own results, evaluating, for example, the number of enrolled students, the number of withdrawing students, student opinions etc.; in this way, the strengths and weaknesses, as well as any implemented improvement actions, are highlighted. This phase is organised as follows:

What we do	Who does what
Definition, gathering and publication of evaluation data	Academic Bodies
According to the general guidelines of the University and national and international standards, are defined the tools through which should be evaluated the results (indicators). The survey data to be evaluate are published every year on the Report of the Study Program.	
Self-Assessment	Schools and Study Programmes
The Schools and Study Programmes assess the effectiveness of the previously adopted solutions, analyse the progress of their learning activities and draw up proposals for improvement.	

Internal audit

The results of the self-assessment process are reviewed in the following phases:

- Analysis: the University Quality Manager analyses the review documents, considering the ability to identify problems, propose solutions and the overall development of the internal quality assurance system.

- Review: The observations on the results obtained and the good practices adopted are examined together with the persons in charge of the Schools and Study Programmes in meetings organised by scientific-disciplinary field. The persons in charge receive the observations and inputs on the areas for development and the actions to be adopted in future to improve results.

- Sharing: the conclusions of the review activities are submitted to the Academic Bodies and the University Evaluation Board.

Quality Manager

Vice Rector for Teaching and Education

Academic Bodies

- **Improvement**: on the basis of the results of the internal audit, the Schools and Study Programmes plan improvement activities, to ensure that the Study Programmes increasingly respond to the needs of society. The cycle then starts over again, with the definition of actions to be implemented, the results of which are in turn verified, in a continuous path that guarantees the quality of education.

F. GLOSSARY TERMS

Additional Learning Requirements

Students enrolling in the first year of a first cycle or single cycle degree and who, following the results of the entrance exams established for each study programme, do not possess the knowledge required for access to the programme, are assigned additional learning requirements (OFA).

The OFA are fulfilled by passing an assessment test defined by the programme.

The non-fulfilment of the requirements by the date set by the Academic Bodies and published on the University Portal will lead to the re-enrolment in the first year of the programme.

AlmaLaurea

AlmaLaurea is an innovative in-line database service of graduates' curriculum vitae (1,620,000 CVs, from 53 Italian universities as of 05/07/2012), which offers a link between graduates, universities and businesses.

Created in 1994 on the initiative of the Statistical Observatory of the University of Bologna, managed by a consortium of Italian universities with the support of the Ministry of Education, University and Research, the purpose AlmaLaurea is to act as a point of contact between businesses and graduates, a reference within universities for anyone (students, businesses, etc...) working in the field of university studies, employment and the condition of young people at different levels.

Average of similar study programmes (belonging to the same group)

Average of the Study Programmes (which belong to the subject group)

Calculated average which refers to all study programmes of the same cycle which belong to the subject group.

There are four groups, composed as follows:

- BIOMEDICAL group: Study Programmes of the Schools of Pharmacy, Biotechnology and Sport Science; Medicine; Agriculture and Veterinary Medicine

- SCIENTIFIC-TECHNOLOGICAL group: Study Programmes of the Schools of Engineering and Architecture; Sciences

- SOCIAL SCIENCES group: Study Programmes of the Schools of Economics, Management, and Statistics; Law, Political Sciences

- HUMANITIES group: Study Programmes of the Schools of Arts, Humanities, and Cultural Heritage; Foreign Languages and Literatures, Interpreting and Translation; Psychology and Education

CFU University Learning Credits

University Learning Credits (CFU) were introduced under Italian Ministerial Decree no. 509/99 to comply with European legislation, and are a measurement of the volume of learning, including individual study, required of students; generally 1 CFU corresponds to 25 hours of a student's "overall learning effort".

Class

Degree classes group together study programmes of the same level and with the same key learning outcomes and available learning activities for a given number of credits and in sectors which are identified as indispensable. The features of the classes are set nationally, by Ministerial Decree, and are therefore common to all universities.

Cohort

Cohort refers to a group of students enrolled in the same academic year.

Enrolment status

In terms of enrolment, students may be:

- **Regularly enrolled**: students enrolled for as many or fewer years than the legal duration of the study programme, who do not fall into any of the following categories;

- **Not aligned with the exam schedule**: students who, without having graduated, have enrolled in all the years of the study programme and which, for programmes with compulsory attendance, have obtained all attendance certificates;

- **Repeating**: students re-enrolling in the same year of a programme again. Starting from academic year 2009-2010, students who have not fulfilled the assigned additional learning requirements within the deadline have to enrol in the 1st year as repeating students.

Entrance exam

Enrolment in a study programme may be free access or restricted access.

For all programmes with restricted access, candidates are required to sit an entrance exam and there are a limited number of places available. The entrance exam is a test which is used to draw up a graded list of candidates; students may enrol in the programme according to their place in the list. The methods of managing the call for applications and the list of candidates, including the methods for filling any unclaimed places, may vary from year to year. The test may be specific to a Degree Programme or may be part of a single exam covering several programmes from the same university or from other universities (during the registration the students should indicate their first choice).

The following definitions apply:

Available places = the number of places laid down in the call for applications to the Study Programme, or determined by subsequent legal provisions; these exclude any additional places reserved according to special provisions of the programme (e.g. for international study programmes, they do not include places for foreign students selected from other universities; for all programmes with restricted access regulated nationally, these do not include the places reserved for transferring students).

Number of candidates for the exam = number of students registered for the exam indicating the study programme as their first choice;

Number of participants in the exam = number of students participating in the exam indicating the study programme as their first choice;

Number of participants in the exam for every available place = number of students participating in the exam who indicated the study programme as their first choice as a ratio of the number of places available on the programme.

First year enrolments

This includes all students enrolled in the first year, including those joining the study programme in its first year through transferrals, as well as those enrolled in the first year but not for the first time (e.g. repeating students).

New Careers

Students who start a new university career (excluding transfers) from year one in a second cycle programme.

Passages and transfers

Passage: when a student applies to move to a different study programme from the one enrolled in the previous year, within the same university.

Transfer: when a student transfers from a study programme in one university to any programme in another university.

Registered students

Students who begin a career in the Italian University System for the first time and who enrol in the first year (i.e. for whom no previous university careers are recorded) of a First Cycle (L509, L) or Single Cycle programme (LSCU, LMCU)

Statistical Observatory of the University of Bologna

The Statistical Observatory was founded in 1997 in order to "provide the university governing bodies with a reliable and timely documentary and monitoring database aiming to promote decision-making processes and planning, particularly of learning activities and other services targeting the student population" (art.1 of the Founding and Operational Regulation). Following the disabling of the Statistical Observatory, as resolved by the Board of Governors on 14 December 2010, from the second semester of academic year 2010-11 the survey and subsequently analysis of the attending students opinion is cared for the University of Bologna by Academic Affairs Division - Quality Assurance Department and Control and Finance Division - Support Planning and Evaluation Department. The overall results and the methods of collection and analysis are described in the document published online on the Statistical Observatory of the University of Bologna.

University DataWarehouse

In information service for the managers of the University of Bologna organisational departments which gathers, integrates and reorganises data from various sources and makes it available for analysis and evaluation for the purposes of planning and decision-making.

Withdrawal

Suspension of studies by students who do not register in the next academic year, or who drop out from the degree programme.