



UNIVERSITÀ  
DI CAMERINO

## School of Science and Technology

Degree course in  
**Physics**

(Classe **L-30**)

## UNIVERSITY'S DEGREE COURSE HANDBOOK

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**Course Time: 3 years**  
**ECTS: 180**

**Main teaching building:**  
**Address: via Madonna delle Carceri 9b, 62032, Camerino (MC), Italy**

**Academic Year 2010-2011**

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**Web site:** <http://www.sst.unicam.it/SST>

**Web site:** <http://www.df.unicam.it/fisica/>

## 2. Introduction

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Physics is a basic science that has as its main goal the discovery of the basic laws of natural phenomena that occur at all length scales, from the cosmos to elementary particles. Characteristic of physics is an investigation method that is based on a dialectic relation between theory and experiment. The ability to shift between these two methodologies is the most characteristic skill of a physicist. In addition to preparing for scientific research (in universities or research institutes), the study of physics provides a solid scientific base, which can be advantageously applied in the worlds of industrial production and the service sector.

The School of Science and Technology at the University of Camerino offers a comprehensive training in Physics, which is divided into three phases. The first phase corresponds to a three-year Degree in Physics which concludes with the awarding of the first level degree, the laurea in fisica. There is no requirement for an original thesis, but only a brief dissertation (the tesina). The name of the second level degree is laurea magistrale (Master in Physics). It lasts two years and can be studied after the first level degree. This second degree concludes with a genuine thesis involving original contributions from the student with an average duration of about 9 months. This degree gives access to higher level job positions and is a prerequisite for any further continuation of studies.

Students who wish to pursue further studies, in the third phase can choose a Professional Master course (typically lasting one year), a Specialized School (for example, the School of Specialization in Health Physics of four years duration, or a course of Doctoral Research. Every year at the University of Camerino a Doctorate in Physics (three-year) is activated, enabling students to start a research activity at international level.

Graduates of the undergraduate degree in Physics find positions in the Labour Market in the fields of industry, finance, services and public administration. They carry out technical tasks or professional support in monitoring and diagnostics in medical, health and environmental activities or related to energy savings, or conservation and restoration in the field of cultural heritage. They also carry out analysis and financial management, and quality control, taking part to the identification of items to be checked, range of tolerance, methods of control.

## 3. Learning outcomes and verification modalities

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The graduate in Physics at the University of Camerino, will be able to: i) possess a good knowledge and understanding of classical and modern physics, and of the methods of physics as a whole; ii) possess a good knowledge of mathematics, information science and chemistry; iii) model a great variety of natural phenomena and of technological problems; iv) apply the main experimental techniques, perform measurements in a completely independent way, and critically analyze data.

The assessment of the knowledge and abilities acquired in an educational activity is carried through the evaluation of a written and/or oral exam at the end of the educational activity. In the case of a laboratory activity, the final evaluation may involve also a practical test in the lab. The result of tests held during the course can also be taken into account. However, the participation to these tests is optional for the students and any negative result will not preclude admission to the final exam. For courses broken up into modules, written and/or oral tests can be held at the end of each module. Learning activities are evaluated by a mark out of thirty, with the possibility of the additional recognition of "lode" (with praise). For the allocation of credits for work experience or internship, verification of attendance is required and a report on the activities countersigned by the teacher/supervisor. The evaluation can be expressed with only two possible grades: "satisfactory" or "not satisfactory".

## 4. Admissions rules and entry requirements (D.M. 270/04)

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Eligible to register are students who have completed the upper-level middle school diploma or equivalent foreign qualification. In order to allow the students to begin their studies as best as possible, the Italian Ministry of Education and Research imposes to preliminary establish the initial level of knowledge and competences of the students, related to the chosen degree course. All the freshmen have the opportunity to take part to a specific test. If the test is not passed, it does not preclude enrollment in Courses, but does permit an evaluation of the students' preparation in order to place them in the best possible condition for managing with the University courses. The test must be in any case afforded before enrolling to the exams of the teaching activities of the degree course.

A further opportunity UNICAM gives is a placement-test for establishing the level of knowledge of the English language. If the result of these tests suggests that a supplementary teaching activity is needed to fill some gap in the preparation, UNICAM will organize specific activities of this kind, called **Corsi di Integrazione**. All the related information (date of the test, modalities,...) will be available at UNICAM website.

For what concerns the Degree Course in Physics, what is required is a knowledge of basic mathematics (in the fields of Algebra, Geometry and Trigonometry) and training in developing logic-deductive ability, abstraction and empirical observation.

## 5. Job opportunities

Graduates of the undergraduate degree in Physics find positions in the Labour Market, in the fields of industry, finance, services and public administration, carrying out technical tasks or professional support in the following areas:

- i) acquisition and processing of data in the laboratory;
- ii) monitoring and diagnostics in medical, health and environmental activities or related to energy savings, or conservation and restoration in the field of cultural heritage;
- iii) modelling and numerical simulation of decision making;
- iv) installation, testing and maintenance of complex equipment;
- v) quality control, identification of items to be checked, range of tolerance, methods of control;

The course is also the first step which, may lead, through a subsequent master degree and a phd course, to get positions in the fields of training, learning and dissemination of scientific culture, for example as a university professor or a teacher at secondary, post-secondary and technical schools.

Based on experience, graduates in physics find, in general, stable employment in a short time after the Master program. There is limited information on employment prospects of graduates in physics after the first degree; in fact in the past, the majority of students continued their studies through to the second level.

## 6. Teaching organization

Just before the beginning of the teaching activities, all freshmen have the opportunity to participate to the "giornate di ambientamento" (acquaintance days) which are organized every year at the beginning of October (specific information will be available at the UNICAM website). These days will be useful to get acquaintance with the University world and with all the UNICAM student services.

The acquisition of skills and knowledge by students is recorded as university credits (CFU). Credits represent the task of learning, including individual study, practice exercises and laboratory work, that required to be done by the student for the first degree in Physics.

The average amount of work in a year for a student engaged in full-time university studies and in possession of adequate initial preparation is fixed at 60 credits. To attain the degree in Physics the student must have gained 180 credits.

Normally the program of individual learning activities maintains a consistency in the ratio of around 1/3 between the time devoted to assisted teaching activities and the time spent studying individually. The organisation of the Degree in Physics into six semesters and its overall duration (three years) and are only indicative, serving as a reference for the organization of the teaching and for calculating the number of credits. Students can earn these credits and attain the degree in less than three years.

A credit is a standard load of 25 hours of work. A purely indicative qualification, a credit could correspond to 7 hours of classroom lectures, or 6 hours of lectures with an additional of 2 hours of practice exercises. These values may vary depending on the type of teaching. In laboratory courses instead about 50% of the face to face teaching hours is devoted to practical exercises in the laboratory, for which a credit approximately corresponds to 12 hours of directed activities.

In order to encourage good motivated students to enrol for the Degree in Physics, there is the opportunity for recognition of credits for studies undertaken before enrolment in the same course or before commencement of the related learning activities. In particular there will be recognition of no more than 3 credits for study projects agreed to between the scholastic institution where the student came from and the Advisory Board of the Course, in cases there exists an agreement between the University and the other institution.

Teaching is divided into 2 semesters according to the following calendar:

1-8 october 2010: beginning of the first year courses with the orientation days for freshmen; October 4 2010: beginning of the first semester for second and third year students; January 28 2011: end of the first semester.

Session I Exams: January 31 2011 – February 26 2011

Teaching for Semester II: February 28 2011– June 10 2011

Session II Exams: June 13 2011 – July 30 2011

Session III Exams: September 1 2011 – October 1 2011.

### Complete study plan

1st year – active in a.a. 2010/11					
1st semester					
Teaching activity	SSD	ECTS	Modules	Typology	Mark or idoneity
Mathematical Analysis I	MAT/05	12		a	Mark

General Physics I (First Module)	FIS/01	9	Mechanics	a	Mark
Numerical calculus	MAT/08	9		c	Mark
<b>2nd semester</b>					
Teaching activity	SSD	ECTS	Modules	Typology	Mark or idoneity
Geometry	MAT/03	12		a	Mark
Experiments of Physics I	FIS/01	9		a	Mark
English	L-LIN/12	6		e (3) f (3)	Mark
General Physics I (Second Module)	FIS/01	6	Thermodynamics	a	Mark

<b>2nd year – active in a.a. 2011/12</b>					
<b>1st semester</b>					
Teaching activity	SSD	ECTS	Modules	Typology	Mark or idoneity
Mathematical Analysis II	MAT/05	9		a	Mark
General Physics II (First Module)	FIS/01	9	Electricity and magnetism	b	Mark
Chemistry	CHIM/03	6		a	Mark
Analytical Mechanics	MAT/07	9		c	Mark
<b>2nd semester</b>					
Teaching activity	SSD	ECTS	Modules	Typology	Mark or idoneity
Mathematical Methods of Physics	FIS/02	12		b	Mark
General Physics II (Second Module)	FIS/01	6	Electromagnetic waves	b	Mark
Experiments of Physics II	FIS/01	9		b	Mark

<b>3rd year – active in a.a. 2012/13</b>					
<b>1st semester</b>					
Teaching activity	SSD	ECTS	Modules	Typology	Mark or idoneity
Quantum Mechanics	FIS/02	12		b	Mark
Experiments of Physics III	FIS/01	9		b	Mark
Free choice activity		6		d	Mark or idoneity
<b>2nd semester</b>					
Teaching activity	SSD	ECTS	Modules	Typology	Mark or idoneity

Physics of Matter	FIS/03	12		b	Mark
Nuclear and Subnuclear Physics	FIS/04	6		b	Mark
Free choice activity		6		d	Mark or idoneity
Final exam		6		e	Mark
<b>Total number of ECTS</b>		<b>180</b>			

<p><b>Typology</b></p> <p>a introductory course          b core course          c supplementary course          d elective course          e for the final exam and for knowledge of a foreign language          f other (additional language skills, computer skills, internship/work experience stage etc.)          g local specific activities</p>
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After passing the first year exams and within July 31 2010, the student may submit for approval by the Advisory Board of the School of Science and Technology an individual curriculum proposing learning goals other than those proposed in the standard curriculum.

#### Features of the final exam

The candidate shall prepare a review-type dissertation on a topic agreed to by one of the teachers of the degree. The candidate must then conduct a discussion in front of the Degree Board which will evaluate the candidate's ability to carry out independent study.

The degree mark, given as a percentage plus the possibility of the label "lode" (cum laude, with praise), will depend on the student's curriculum, on the preparation and scientific level attained at the completion of studies. To determine the degree mark at the end of the exam, the Board first evaluates the actual work completed assigning a mark out of 30. Then the Board determines the degree mark using the following procedure:

- the weighted average is calculated of all the marks out of 30 obtained in training activities, including the mark just obtained for actual work completed, and training activities carried out during the three-year degree, using the Credit Units as the weighting factor;
- the weighted average is transformed into a fraction of 110;
- this fraction is multiplied by a coefficient associated with the duration of the student's academic career;
- to this is added the product of 0.05 times the number of credits attained "con lode" (with praise);
- the result of this is then approximated to the closest integer;
- if the mark so obtained is at least 111, the committee may assign the label "lode", but only if they unanimously agree.

## 7. Teaching activities and teachers

Attachment A of this handbook contains in detail any information about active courses and relative teachers offered by School of Science and Technology and Degree Course for the following sets of students

- Freshmen starting **in 2010 and attend the 1<sup>st</sup> year**
- Students who started in 2009 and **attend the 2<sup>nd</sup> year**
- Students who started in 2008 and **attend the 3<sup>rd</sup> year**

## 8. Curricula for teachers, programs of individual learning activities, educational facilities

The programs of individual learning activities with their descriptions are made available by teachers on the University website, under the section 'Courses'.

Through this “gateway” it is possible to access the course lecturers’ CVs and a description of the educational and scientific facilities available.

## 9. Teaching support services

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### • Post-graduate orientation

There is often a disconnect between the learning program at a university and the reality of the workplace into which the student needs to enter. The orientation service provides guidance both to those graduating and to postgraduates, in collaboration with the Internship and Placement Service, as well as room for reflection on the choices of support activities for vocational training. The initiative “Young People + University = Work” is of particular relevance here. This takes place each year, generally in the autumn. University students and new graduates are invited to attend the event to have an opportunity to listen to the accounts given by many different professionals, to meet and to establish direct contacts with company representatives, and to get to know experts from the world of work so they can start to plan out their own personal career path.

### • The mentoring program

Mentoring contributes to the cultural and professional training of the student, encouraging wider and more and active participation throughout the entire degree course.

The mentoring program has the following objectives:

- Assist the student in all aspects of their study
- Encourage different ways of participating in the training process
- Remove barriers to education through initiatives tailored to the needs, aptitudes and requirements of each individual student.

Unicam’s Mentoring Program uses and provides specific tutoring activities for both groups and individuals.

It organises a flexible range of teaching tutorials during the teaching year, conducted by tutors who have been chosen for their particular profiles aimed at activities for students who work and for the different teaching approaches required for e-learning.

- Support tutoring: provided by experienced students with the task of helping younger students in organizing their studies and get acquainted with the new environment.
- Group Tutoring: provides scheduled meetings with the course teachers, designed to highlight and resolve, also through input from the students, any problems encountered in the teaching course.
- Individual Tutoring: UNICAM assigns to each student a ‘teaching tutor’ whose task is to follow and advise the student throughout their course of study through regular meetings and through meetings requested by the student.
- Teaching tutoring: related specifically to basic science courses and to English and organized by means of supplementary courses, especially devoted for filling gaps in the student knowledge.

### • The opportunity to study abroad

Unicam offers many possibilities for international mobility:

#### ERASMUS for study

The program allows you to spend a period of study abroad (from 3 to 12 months), providing the opportunity to take courses, to take advantage of university facilities, to conduct research aimed at drafting your degree thesis, and to obtain recognition of exams taken abroad, provided they have been pre-designated in an appropriate study program.

Students who are interested can take part in the annual call from the University published in the period December - February.

#### Erasmus Student Placement (internship)

Starting in the 2007/2008 academic year, within the Erasmus program it is possible to hold internships (from 3 to 12 months) in enterprises, in research centres, and in European training centres, ensuring a recognition of curricular activities carried out abroad, provided there is agreement in advance with their respective Erasmus coordinators.

The Degree in Physics has established agreements within the Erasmus program with the following European universities:

Country	University	Language	Duration	Learning Activities
Czech Republic	Czech Technical University in Prague	ENGLISH	10 months	Courses/Final test
	Universidad de Extremadura	SPANISH	6 months	Courses/Final test

Spain				
France	Université Pierre et Marie Curie Paris VI	FRENCH	6 months	<i>Courses/Final test</i>
France	Université Louis Pasteur Strasbourg	FRENCH	3 months	<i>Courses/Final test</i>
Poland	Politechnika Gdanska	ENGLISH	6 months	<i>Courses/Final test</i>
Romania	University of Bucharest	ENGLISH	6 months	<i>Courses/Final test</i>
Romania	Valahia University of Targoviste	ENGLISH	6 months	<i>Courses/Final test</i>
Germany	Rheinische Friedrich-Wilhelms Universität Bonn	GERMAN	6 months	<i>Courses/Final test</i>
United Kingdom	University of Surrey	ENGLISH	6 months	<i>Courses/Final test</i>
Romania	Universitatea Transilvania Din Brasov	ENGLISH	6 months	<i>Courses/Final test</i>
Bulgaria	Sofia University Saint Kliment Ohridski	ENGLISH	6 months	<i>Courses/Final test</i>

## • Internships

The connection between the university and work is one of the priorities at Unicam. Unicam organises meetings and dialogues amongst students, graduates, professionals and companies. In this spirit, the internship is an important tool allowing students, both graduates or recently graduated, to 'practice' in a real working environment, an opportunity to learn directly about working-life and the opportunity to develop, in some cases, a specific expertise.

The University of Camerino has agreements with more than 1800 companies, institutions, administrative and professional offices, where students, both graduates and PhD students, may pursue their internship activities. You can do an internship both in Italy and abroad.

### Services offered

- Management of a database (Unicam Stage) through which internships are offered, to be carried out at companies or at public and private agencies
- Activation of post-graduate internships in companies
- Insertion of the CVs of UNICAM graduates in the online database UnicamJob
- Support activities during entry in the workplace
- Participation in the program 'Work Kit' ('Borsa Lavoro') (a net of online services and an open system for assembling inquiries and offers of work via the Internet: [www.unicam.it/laureati/mondolavoro/index.asp](http://www.unicam.it/laureati/mondolavoro/index.asp))

## • Services for welcoming students with disabilities

The 'Welcome Service for Disabled Students' aims at providing students with disabilities equal opportunities in dealing with their studies and the chance to fully live the college experience.

This objective is pursued through outreach activities, through technology, and through staff specially dedicated to students and to the removal of the physical and cultural barriers standing in the way of learning and in the way of everyday life.

By contacting the Service Tutors, it is possible map out a training plan, taking into account the particular disability and the individual goals, through the defining of solutions and through personalised participation.

### Facilities and services:

- Technological aids and directed teaching support
- Personalised examinations (for entry and achievement)
- Specialised tutoring
- Transport and relocation
- Procurement and delivery of library materials
- Exemption and reduction of taxes
- Furnished housing with a possible subsidy
- For the companion
- Access to university facilities
- Counseling
- Access to the sports facilities of C.U.S.

- Grants towards participation in the Socrates / Erasmus programmes
- Internships and training directed towards finding employment

## 10. *Sistema di assicurazione della qualità*

The Bachelor course in Physics is within the UNICAM quality management system **certificate ISO 9001:2008** (from **AFAQ-France**, a French leader and one of the first certification bodies at the global level) which guarantees students the quality of services provided. The guarantee is via a rigorous analysis of internal organizational procedures and the prompt addressing of any defects whether detected or reported by the students themselves. The Quality Management System includes the following support services for students: orientation, mentoring, international mobility, internships and placement, communication. These integrate with and support the educational activities, so as to contribute to the complete training of the student.



## 11. *Other useful information*

Internet Site of the University: <http://www.unicam.it>  
 Internet Site of the School of Science and Technology: <http://fast.unicam.it>  
 Internet Site for the Undergraduate Course in Physics: <http://www.df.unicam.it/fisica/>  
 Internet Site for Teaching: [http://web.unicam.it/studenti/guida\\_studente.asp](http://web.unicam.it/studenti/guida_studente.asp)

## 12. *Additional information for students who started in a.a. 2009/10*

Due to an unavoidable internal reorganization, it has been necessary to modify the study plan for what concerns the 2<sup>nd</sup> and 3<sup>rd</sup> year of the Degree Course in Physics. Therefore the actual plan will be the following one and not the one illustrated in the handbook of a.a. 2009/2010.

2nd year – active in a.a. 2010/11					
1st semester					
Teaching activity	SSD	ECTS	Modules	Typology	Mark or idoneity
Differential equations	MAT/05	9		c (5) f (4)	Mark
General Physics II	FIS/01	10		b	Mark
Chemistry	CHIM/03	5		c	Mark
Analytical Mechanics	MAT/07	5		c	Mark
2nd semester					
Teaching activity	SSD	ECTS	Modules	Typology	Mark or idoneity
Mathematical Methods of Physics	FIS/02	10		b	Mark
Modern Physics	FIS/01 FIS/03	10	Wave phenomena	b (5)	Mark
			Wave mechanics	b (4) f (1)	
Experiment of Physics II	FIS/01	10		g	Mark

3rd year – active in a.a. 2011/12					
1 <sup>st</sup> semester					

Teaching activity	SSD	ECTS	Modules	Typology	Mark or idoneity
Quantum Mechanics	FIS/02	10		b	Mark
Experiment of Physics III	FIS/01	10		g	Mark
Statistical Physics	FIS/03	5		d	Mark
<b>2nd semester</b>					
Teaching activity	SSD	ECTS	Modules	Typology	Mark or idoneity
Physics of Matter	FIS/03	10		b	Mark
Nuclear and Subnuclear Physics	FIS/04	6		b	Mark
Free choice activity		5		d	Mark or idoneity
Stage		5		f	Idoneity
Final exam		5		e	Voto

#### Typology

- a introductory course
- b core course
- c supplementary course
- d elective course
- e for the final exam and for knowledge of a foreign language
- f other (additional language skills, computer skills, internship/work experience stage etc.)
- g local specific activities

### 13. *Additional information for students who started in a.a. 2008/09*

Due to an unavoidable internal reorganization, it has been necessary to modify the study plan for what concerns the 3<sup>rd</sup> year of the Degree Course in Physics. Therefore the actual plan will be the following one and not the one illustrated in the handbook of a.a. 2008/2009.

<b>3rd year – active in a.a. 2010/11</b>					
<b>1<sup>st</sup> semester</b>					
Teaching activity	SSD	ECTS	Modules	Typology	Mark or idoneity
Quantum Mechanics	FIS/02	10		b	Mark
Experiment of Physics III	FIS/01	10		g	Mark
Statistical Physics	FIS/03	5		b	Mark
<b>2nd semester</b>					
Teaching activity	SSD	ECTS	Modules	Typology	Mark or idoneity
Physics of Matter	FIS/03	10		b	Mark

Nuclear and Subnuclear Physics	FIS/04	5		b	Mark
Free choice activity		10		d	Mark or idoneity
Stage		5		f	Idoneity
Final exam		5		e	Voto

### Typology

- a introductory course
- b core course
- c supplementary course
- d elective course
- e for the final exam and for knowledge of a foreign language
- f other (additional language skills, computer skills, internship/work experience stage etc.)
- g local specific activities

## 14. Information for the students of the program in “Technologies for Innovation”

In a.a. 2010/11 the program of the degree course in Physics in “Technologies for Innovation will have its third year only activated. Presented in detail below is the organization of the different subjects, listing the discipline areas and types of subjects, the divisions into modules, and the number of credits awarded.

3rd year – active in a.a. 2010/11					
1 <sup>st</sup> semestre					
Teaching activity	SSD	ECTS	Modules	Typology	Mark or idoneity
Economy and management	SECS-P/08	10	Management (5)	c	Mark
	ING-INF/05		Logistics (5)		
Technology for data acquisition	FIS/01	8		b	Mark
Control technologies	ING-INF/04	10		c	Mark
Free choice activity		5		d	Mark or idoneity
II semestre					
Teaching activity	SSD	ECTS	Modules	Typology	Mark or idoneity
Material Diagnostics	CHIM/01	5		d	Mark
Sensors and measurement systems	ING-IND/12	5		c	Mark
Stage		10		f	Idoneity
Final exam		5		e	Mark

### **Typology**

- a introductory course
- b core course
- c supplementary course
- d elective course
- e for the final exam and for knowledge of a foreign language
- f other (additional language skills, computer skills, internship/work experience stage etc.)
- g local specific activities

## ANNEX A

### I year

Attività formativa	Modulo	SSD attività	Semestre	Tipologia attività (*)	CFU	n. ore lez.	ore eserc	ore lab	Docente Cognome	Docente Nome	Scuola di appartenenza
Fisica Generale I	Meccanica	FIS/01	I	a	9.0	54	18		Vitali	David	Scienze e tecnologie
Fisica Generale I	Termodinamica	FIS/01	II	a	6.0	36	12		Marini Bettolo	Umberto	Scienze e tecnologie
Calcolo Numerico		MAT/08	I	c	9.0	35		48	Simonucci	Stefano	Scienze e tecnologie
Esperimenti di Fisica I		FIS/01	II	a	9.0	28		60	Di Biasio	Antonio	Scienze e tecnologie
Lingua Inglese		L-LIN/12	II	e	3.0	30					
Lingua Inglese		L-LIN/12	II	f	3.0	30					
Analisi Matematica I		MAT/05	I	a	9.0	63			Giambò	Roberto	Scienze e tecnologie
Analisi Matematica I		MAT/05	I	a	9.0		63		Giambò	Roberto	Scienze e tecnologie
Analisi Matematica I		MAT/05	I	a	3.0		36				
Geometria		MAT/03	II	a	12.0	63	36		Pierrgallini	Riccardo	Scienze e tecnologie
Astronomia		FIS/05	II	d	6.0	40		12			

### II year

Attività formativa	Modulo	SSD attività	Semestre	Tipologia attività (*)	CFU	n. ore lez.	ore eserc	ore lab	Docente Cognome	Docente Nome	Scuola di appartenenza
Chimica		CHIM/03	I	c	5.0	30	10		Lorenzotti	Adriana	Scienze e tecnologie
Fisica generale II		FIS/01	I	b	10.0	60	20		Stizza	Sergio	
Metodi matematici della Fisica II		FIS/02	II	b	10.0	60	20		Mancini	Stefano	Scienze e tecnologie
Esperimenti di Fisica II		FIS/01	II	g	10.0	42		48	Di Giuseppe	Giovanni	Scienze e tecnologie
Equazioni differenziali		MAT/05	I	c	5.0	40			Mancini	Giorgio	Scienze e tecnologie

Equazioni differenziali		MAT/05	I	f	4.0	14	18		Mancini	Giorgio	Scienze e tecnologie
Fisica Moderna	Fenomeni ondulatori	FIS/01	II	b	5.0	30	10		Stizza	Sergio	
Fisica Moderna	Meccanica ondulatoria	FIS/03	II	b	4.0	30			Marchesoni	Fabio	Scienze e tecnologie
Fisica Moderna	Meccanica ondulatoria	FIS/03	II	f	1.0		10		Marchesoni	Fabio	Scienze e tecnologie
Meccanica Analitica		MAT/07	I	c	5.0	30	10		Giachetta	Giovanni	Scienze e tecnologie

### III Year

Attività formativa	Modulo	SSD attività	Semestre	Tipologia attività (*)	CFU	n. ore lez.	ore eserc	ore lab	Sede (##)	Docente Cognome	Docente Nome	Scuola di appartenenza
Fisica Statistica		FIS/03	I	b	5.0	30	10		CAM	Marini Bettolo	Umberto	Scienze e tecnologie
Esperimenti di Fisica III		FIS/01	I	g	10.0	42		48	CAM	Pinto	Nicola	Scienze e tecnologie
Fisica della Materia		FIS/03	II	b	10.0	60	20		CAM	Strinati Clavanesse	Giancarlo	Scienze e tecnologie
Fisica Nucleare e Subnucleare		FIS/04	II	b	5.0	30	10		CAM	Marchesoni	Fabio	Scienze e tecnologie
Meccanica Quantistica		FIS/02	I	b	10.0	60	20		CAM	Tombesi	Paolo	Scienze e tecnologie
Energia ambiente fonti energ. rinn.		FIS/03	I	d	6.0	42			CAM	Pinto	Nicola	Scienze e tecnologie
Economia e gestione delle imprese	Organizzazione aziendale	SECS-P/08	I	c	5.0	40			REC			
Economia e gestione delle imprese	Logistica aziendale	ING-INF/05	I	c	5.0	40			REC			
Tecnologie per l'acquisizione dati		FIS/01	I	b	8.0	28		48	CAM	Conti	Massimo	Scienze e tecnologie
Diagnostiche avanzate per i materiali		CHIM/01	II	d	5.0	30	10		CAM	Nobili	Francesco	Scienze e tecnologie
Sensori e sistemi di misura		ING-IND/12	II	c	5.0	21		24	CAM	Gunnella	Roberto	Scienze e tecnologie
Disegno tecnico		ICAR/13	I	d	5.0	21		24	REC			
Tecnologie per il controllo dei processi		ING-INF/04	II	g	10.0	60	20		REC			

#### Legend:

- (\*) a introductory course  
 b core course

- c supplementary course
- d elective course
- e for the final exam and for knowledge of a foreign language
- f other (additional language skills, computer skills, internship/work experience stage etc.)
- s stage

- (#)
- CAM - Camerino
  - AP - Ascoli Piceno
  - SBT - San Benedetto del Tronto
  - MAT - Matelica