



# UNIVERSITÀ DEGLI STUDI DI PALERMO

**Department: null**

**A.Y. 2009/2010**

## **DEGREE COURSE IN PHYSICS - APPLIED PHYSICS -**

### **Characteristics**



Class of Master's Degree  
(MSc) on Physics (LM-17)



2 YEARS



FREE ACCESS



2020

### **Educational objectives**

The 2nd cycle Degree Course in Physics aims at providing students with the capability of promoting and developing scientific and technological innovation, managing technologies in ambits related to physic subjects in the industrial, environmental, healthcare, cultural heritage and public administration sectors.

The 2nd cycle Degree Course in Physics has a twofold educational objective. On one hand it will consolidate and enlarge basic competences in Physics which have already been acquired through the 1st cycle degree course, integrating them with advanced issues about fundamental aspects.

In order to provide students with specific competences in various specialist areas, the course might be divided in different curricula; each curriculum will be related to specific current issues as well as outstanding methodological aspects. The specific Curricula are: Biophysics, Physics of Matter, Theoretical Physics, Astrophysics and Applied Physics. The possibility of choice among various curricula justifies the variability of credit intervals for class specific activities). The wider intervals are related to the "experimental-applicative" and for the "astrophysical, geophysical and space" ambits and lead to curricula in Biophysics, Physics of Matter and Astrophysics. The variability of credit interval with respect to the ambit "theoretical physics and fundamentals of physics" leads to a curriculum in Theoretical Physics. The interval of the "microphysics and structure of matter" ambit is functional to various possible curricula and is less wide than the others, being related to common subjects.

Finally, the credit interval for related activities is functional to possible other curricula.

The educational plan will in any case aim at providing:

- command of the scientific research method, joined with a sound cultural background in classic and modern physics;
- in-depth knowledge of the modern measurement equipment, of the techniques for analysing data, and of the supporting mathematical and computer tools;
- in-depth scientific and operational background in various disciplines of Physics;
- capability of operate autonomously, even with the responsibility of groups and operational projects;
- capability of using acquired competences for modelling complex systems in the field of applied sciences;

Through these educational activities the 2nd cycle degree course in Physics aims at educating graduates with competences complying with the qualifying objectives of the degree class Lm-17.

### **Professional opportunities**

Thanks to the acquired competences, 2nd cycle graduates in Physics will find professional opportunities in various production areas, to carry out professional activities requiring advanced knowledge of Physics and of its methodologies. They might also carry out modelling and analysing activities with the relevant mathematical and computer tools.

They may find professional opportunities in:

- Universities and research institutions;
- R&D branches in advanced technology industry, with respect, in particular, to electronics, ICT, innovative and nanostructured materials, optics, biotechnologies, optoelectronics and space industry;
- Professional physics laboratories at large and, in particular, radioprotection, medical Physics, Analyses of historic and artistic materials, acquisition and processing of environmental data, etc...
- Agencies for environmental control
- Technical-commercial areas if the third sector and public administration, including the use of ICT.

The acquired competences will enable 2nd cycle graduates in Physics the access to all professions of 2.1.1.1. of ISTAT classification (Physics and Astronomers). The education of these graduates also aims at advanced scientific and technological research activities, and at teaching and dissemination of scientific culture.

Legenda: Per. = periodo o semestre, Val. = Valutazione (V=voto, G=giudizio), TAF= Tipologia Attività Formativa (A=base, B=caratterizzante, C=Affine, S=stages, D=a scelta, F=altre)

**Final examination features**

It consists of the preparation of an original written dissertation, and of the discussion in front of an examining Board; the dissertation should be related to a specialist topic of the selected curriculum, and it should be prepared under the guidance of a supervising professor.

Subjects 1 ° year	CFU	Sem.	Val.	SSD	TAF
14040 - APPLIED PHYSICS I AND II - LABORATORY - INTEGRATED COURSE	12	Ann.	V		
- APPLIED PHYSICS I - LABORATORY <i>Leone(PO)</i>	6	Ann.		FIS/07	B
- APPLIED PHYSICS II - LABORATORY <i>Cannas(PO)</i>	6	Ann.		FIS/07	B
02120 - COMPLEMENTS OF QUANTUM MECHANICS <i>Messina(CU)</i>	6	Ann.	V	FIS/03	B
13775 - COMPLEMENTS OF STRUCTURE OF MATTER AND STATISTICAL PHYSICS - INTEGRATED COURSE	12	Ann.	V		
- COMPLEMENTS OF STRUCTURE OF MATTER <i>Cannas(PO)</i>	6	Ann.		FIS/01	B
- STATISTICAL PHYSICS <i>Passante(PA)</i>	6	Ann.		FIS/03	B
13778 - MATHEMATICAL METHODS OF PHYSICS AND NUMERICAL PROCESS SIMULATIONS - INTEGRATED COURSE	12	Ann.	V		
- MATHEMATICAL METHODS OF PHYSICS <i>Fiordilino(CU)</i>	6	Ann.		MAT/05	C
- NUMERICAL SIMULATION OF PHYSICAL PROCESSES <i>Peres(CU)</i>	6	Ann.		MAT/08	C
07411 - THEORY OF RELATIVITY <i>Molteni(PA)</i>	4	Ann.	V	FIS/02	B
13772 - COMPLEMENTS OF NUCLEAR AND PARTICLE PHYSICS <i>Ziino(PA)</i>	4	Ann.	V	FIS/04	B
13771 - UNIVERSE PHYSICS <i>Robba(CU)</i>	4	Ann.	V	FIS/05	B
Optional subjects	12				B
<b>66</b>					

Subjects 2 ° year	CFU	Sem.	Val.	SSD	TAF
01192 - OTHER EDUCATIONAL ACTIVITIES	2	Ann.	G		X
05917 - FINAL EXAMINATION	38	Ann.	G		E
Optional subjects II	6				C
Free subjects	8				D
<b>54</b>					

**OPTIONAL SUBJECTS**

Optional subjects	CFU	Sem.	Val.	SSD	TAF
08294 - MOLECULAR BIOPHYSICS <i>Leone(PO)</i>	6	Ann.	V	FIS/01	B
06632 - MOLECULAR SPECTROSCOPY <i>Leone(PO)</i>	6	Ann.	V	FIS/07	B
03264 - PHYSICS OF BIOSYSTEMS <i>Levantino(RU)</i>	6	Ann.	V	FIS/07	B
11478 - PRINCIPLES OF RADIATION/MATTER INTERACTION	6	Ann.	V		

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Optional subjects	CFU	Sem.	Val.	SSD	TAF
- ATOM-ELECTROMAGNETIC RADIATION INTERACTION <i>Passante(PA)</i>	3	Ann.	V	FIS/01	B
- RADIATION-MATTER INTERACTION AND HIGH ENERGIES <i>Robba(CU)</i>	3	Ann.	V	FIS/01	B
Optional subjects II	CFU	Sem.	Val.	SSD	TAF
09576 - BIOLOGICAL PHYSICAL CHEMISTRY	4	Ann.	V	CHIM/02	C
09597 - PREPARATION AND SYNTHESIS OF NANOSTRUCTURED SYSTEMS	4	Ann.	V	CHIM/02	C

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