

University of Campania  
"Luigi Vanvitelli"  
Department of Mathematics  
and Physics

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### Where we are located

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### How to reach us

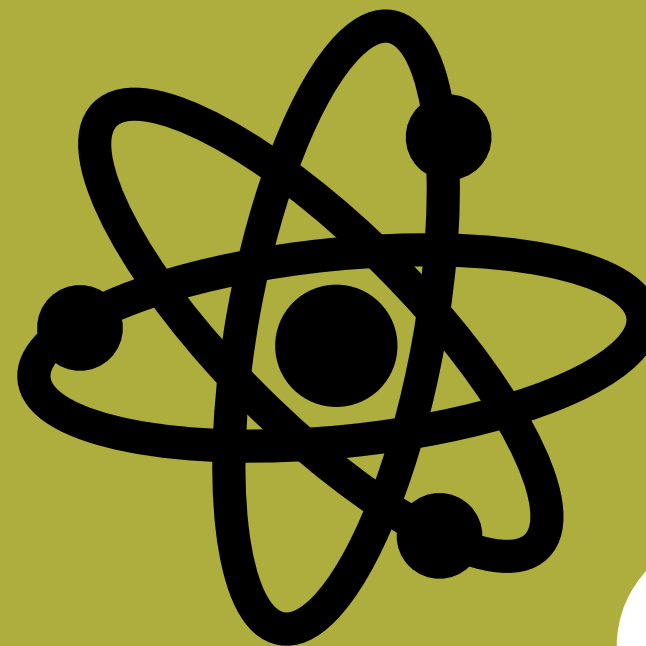
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**NEW  
COURSE!**

## Physics

*Master's Degree in Science (MSc),  
120 ECTS over 2 years with  
a programme entirely offered in  
English.*

*Become a Physicist at the Vanvitelli  
University and take the opportunity  
to immerse yourself in many different  
areas of Physics.*

**V** ●  
●  
Università  
degli Studi  
della Campania  
Luigi Vanvitelli

*Department of Mathematics  
and Physics*

## The Course

The Department of Mathematics and Physics (DMF) of the University of Campania “Luigi Vanvitelli” opens a Master of Science (MSc) Programme in Physics starting September 2020. Entirely offered in English, the MSc in Physics is strongly connected to the research activities performed at the DMF. During the 2-year Programme, the students will attend 10 modules and perform a master thesis to gain a total of 120 ECTS credits (ECTS standing for European Credit Transfer and accumulation System, which is equivalent to the Italian CFU system). The first two semesters (year 1) are devoted to acquire a solid knowledge in quantum physics, statistical mechanics, computational physics, matter physics, nuclear and subnuclear physics (see the study plan for details). During the third and fourth semesters (year 2), the students focus upon a few specialised training modules, followed by a master thesis work about an original research subject. Students can choose among five specialisations:

- Nuclear and Particle Astrophysics
- Atomic and Molecular Physics
- Physics of Complex Systems
- Environmental Physics
- Aerospace Physics

For the aims of the Programme, the MSc Teaching Board has established inter-institutional agreements within the Erasmus+ program with a few European universities, of Munich, the Nicolaus Copernicus University in Torun and the University of Lisbon.

Students have the opportunity to spend a period of study (preferably the third semester) at one of the partner universities in Europe. At the end of the Programme, the MSc graduate will have a deep and solid knowledge of modern physics, covering both theoretical and experimental aspects. They will be able to gain skills to manage complex experimental setups and become familiar with the latest technologies. Alternatively, they will learn to work with physical models, along with mathematical and numerical tools, to describe physical reality. For the admission, bachelor degree in physics or related field is required, along with English level B2 in the Common European Framework of Reference (CEFR).



## Professional skills

- Use physics instrumentation and technologies;
- Formalize a practical problem and solve it using a quantitative approach;
- Develop and promote scientific innovation and perform prototype design;
- Analyse scientific data using statistical and numerical methods;
- Apply Physics knowledge for the aims of interdisciplinary studies;
- Use computers and existing software as well as develop computer codes;
- Work effectively in a group environment, also of the multicultural type;
- Lead a project and/or coordinate a working group;
- Communicate research results to a scientific as well as to a non-expert audience.



## Job prospects for Physicists

With a Master's degree in Physics, you are attractive in the labour market, both in the public and private sectors, in fields connected to research, consultancy, engineering, and education. A few examples of job opportunities are reported hereafter.

- Research centres and laboratories;
- Astronomical observatories;
- High-tech companies and industries;
- Healthcare bodies utilising physics methodologies for diagnostics, therapy and radiation protection;
- Scientific museums and other centres devoted to scientific outreach and promotion;
- Companies for the design and development of IT tools;
- Agencies and companies active in environmental protection and monitoring;
- Business-oriented companies and banks.

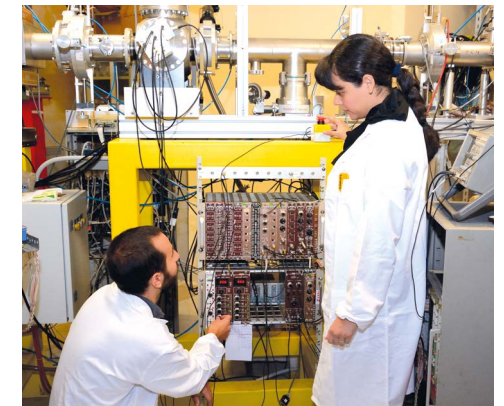
## PHYSICS Study Plan A.Y. 2020/21

### Year 1 (54 ECTS)

Courses	Semester	ECTS
<b>Nuclear and Subnuclear Physics</b>	1	8
<b>Physics Laboratory</b>	1	8
<b>Theoretical Physics</b>	1	8
<b>Statistical Mechanics</b>	2	8
<b>Computational Methods for Physics</b>	2	8
<b>Matter Physics</b>	2	8
<i>One module among the following options:</i>		
- Laser Physics and Spectroscopy		
- Stochastic processes		
- Astrophysics	2	6
- Ecological climatology		
- Aerothermodynamics and Thermostructures for Aerospace		

### Years 2 (66 ECTS)

Courses	Semester	ECTS
<b>Elective Course</b>	1	6
<b>Elective Course</b>	1	6
<i>One module among the following options:</i>		
- Nanotechnologies and Quantum Technologies		
- Modeling of complex systems		
- Particle astrophysics	1	6
- Physics for isotope research		
- Aerospace physics methodologies		
<b>European Languages</b>	1	3
<b>Curricular Internship</b>	2	3
<b>Master Thesis and dissertation</b>	2	42



### Table of elective courses

<b>Statistical Learning</b>
<b>DataMining and Big Data</b>
<b>Optoelectronics</b>
<b>Biophotonics</b>
<b>Optical Sensing</b>
<b>Advanced Experimental Techniques for Nuclear and Particle Physics</b>
<b>Nuclear Astrophysics</b>
<b>Climate Change and Related Impacts</b>
<b>Dynamic Models for Weather Prediction and Climate</b>
<b>Propulsion and Plasma Physics</b>
<b>Space Access and Earth Observation</b>