



**COURSE OF STUDY: Primary teacher education**

**ACADEMIC YEAR: 2023-2024**

**ACADEMIC SUBJECT: Elements of Didactics of Physics**

General information	
Year of the course	
Academic calendar (starting and ending date)	Second semester
Credits (CFU/ETCS):	9
SSD	Didactics and History of Physics - FIS/08
Language	Italian
Mode of attendance	Laboratory attendance is mandatory; lectures attendance is recommended.

Professor/ Lecturer	
Name and Surname	Angela Laurora
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Telephone	
Department and address	Studio no. 302, 3rd floor, For.Psi.Com Dept.
Virtual room	Microsoft Teams platform
Office Hours (and modalities: e.g., by appointment, on line, etc.)	To arrange an appointment it is preferable to send an email from own institutional address.

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
70	60	10	155
CFU/ETCS			
9	8	1	

<b>Learning Objectives</b>	The course aims to provide the skills for a correct approach to physics teaching in kindergarten and primary school.
<b>Course prerequisites</b>	It's necessary a knowledge of basic concepts in mathematics.

<b>Teaching strategie</b>	Lectures + Laboratory
<b>Expected learning outcomes in terms of</b>	
<b>Knowledge and understanding on:</b>	The student will acquire knowledge about the interpretation of main physical phenomena directly perceived by students.
<b>Applying knowledge and understanding on:</b>	The student will achieve knowledge of the experimental methodologies to acquire qualitative and quantitative information on main physical phenomena.

<b>Soft skills</b>	<ul style="list-style-type: none"> <li>• <i>Making informed judgments and choices</i> Within the teaching methodologies of physics, the student will be able to identify the best strategy for transferring acquired knowledge and skills to the classroom context.</li> <li>• <i>Communicating knowledge and understanding</i> The student will master the proper vocabulary of physics and ability to adapt it to the classroom context, without creating "misconceptions" that may be a hindrance to scientific training in higher school cycles.</li> <li>• <i>Capacities to continue learning</i> By acquiring elements of the historical-scientific method, the student will develop an open attitude towards the continuous updating on scientific knowledge and didactics of Physics.</li> </ul>
<b>Syllabus</b>	
<b>Content knowledge</b>	<ul style="list-style-type: none"> <li>• Introduction to Didactics of Physics</li> <li>• The historical and laboratory approach for teaching of Physics.</li> <li>• Measurements and units of measurement.</li> <li>• Light and vision.</li> <li>• Elements of astronomy and celestial mechanics; elements of mechanics.</li> <li>• Density and Archimedes' principle.</li> <li>• Heat and temperature; thermodynamics phenomenologies.</li> <li>• Sound.</li> <li>• Elements of electrostatics and electrical circuits.</li> </ul>
<b>Texts and readings</b>	<ul style="list-style-type: none"> <li>• M. Gagliardi e E. Giordano, <i>Metodi e strumenti per l'insegnamento e l'apprendimento della fisica</i>, Edises, Napoli, 2014.</li> <li>• Straulino S. - Olmi B., <i>Astronomia. Per gli studenti di Scienze della Formazione Primaria</i>, Zanichelli, Bologna, 2020.</li> <li>• Leone M., <i>Insegnare e apprendere fisica nella scuola dell'infanzia e primaria</i>, Mondadori, Milano, 2020.</li> </ul>
<b>Notes, additional materials</b>	
<b>Repository</b>	Didactic materials will be made available on the University's e-learning platform.

<b>Assessment</b>	
<b>Assessment methods</b>	The assessment of learning consists of an oral examination on the basic contents of the course and on the experiences proposed during the laboratory.
<b>Assessment criteria</b>	<ul style="list-style-type: none"> <li>• <i>Knowledge and understanding</i> The student will be expected to demonstrate an understanding of the concepts to interpret the major physical phenomena perceived by pupils.</li> <li>• <i>Applying knowledge and understanding</i> The student should demonstrate knowledge of experimental methodologies to acquire qualitative and quantitative information about major physical phenomena.</li> <li>• <i>Autonomy of judgment</i> The student will have to demonstrate the ability to identify a possible educational path on the fundamental topics to promote the learning of Physics, taking into account the most common preconceptions on the topic by the students.</li> </ul>

	<ul style="list-style-type: none"> <li>• <i>Communicating knowledge and understanding</i> The student must demonstrate knowledge of the specific vocabulary of Physics and be able to adapt it in the classroom context, avoiding creating "misconceptions" in the interpretation of physical phenomena.</li> <li>• <i>Capacities to continue learning</i> The student will be expected to demonstrate, based on knowledge of the laboratory and historical approach, an awareness of the need for continuous updating on scientific knowledge and didactics of Physics.</li> </ul>
Final exam and grading criteria	Evaluation of the exam will take into account the evaluation criteria and the grade will be given in thirtieths.
<b>Further information</b>	