

**PhD in Physics**  
**University of Bologna**  
**2019/2020 Courses – 35<sup>th</sup> Cycle**

**Research Area: Theoretical Physics**

- Cristian Degli Esposti Boschi, Davide Vodola: Quantum Mechanics and Entanglement (24 hours)
- Fabio Maltoni: Collider physics: advanced topics (12 hours)

**Research Area: Nuclear and Subnuclear Physics**

- Nicolò Masi, Marco Selvi, Andrea Vicerè: Dark Matter Phenomenology and Gravitational Waves (24 hours)
- Camilla Vittori, Silvia Biondi: Higgs and Electroweak Physics at the LHC (24 hours)
- Roberto Spighi, Matteo Franchini: Physics of Hadrontherapy (12 hours)
- Alessandro Gabrielli, Off-Detector Trigger and DAQ (12 hours )
- Francesca Bellini: QCD in extreme conditions (12 hours)
- Per Grafstrom, Benedetto Giacobbe: Luminosity and Forward Physics, (12 hours\*)

**Research Area: Physics of Condensed Matter, Atoms and Molecules**

- Tobias Cramer: Probing material properties at the nano-scale with atomic force microscopy (12 hours)
- Gabriele Bolognini: Fundamentals of Photonics (12 hours)
- Luca Pasquini: Advanced Data Acquisition (12 hours)

**Research Area: Applied Physics**

- G. Castellani, D. Remondini, M. Bersanelli: Statistical Learning and Selected Research Topics (24 hours)

**Interdisciplinary Courses :**

- Daniele Bonacorsi: Applied Machine Learning (24 hours\*) in common with the PhD in DSC
- Alessia D'Orazio: European strategies and funding opportunities for Research and Innovation (16 hours \*)

According to the internal regulation of the PhD in Physics at the University of Bologna, the PhD students have to follow a number of classes in PhD courses or in Schools specifically directed at PhD students, for a total of 160 h (20 CFU) of scientific formation. The Courses will be held in January – February 2020, and in May-June 2020. According to the guidelines established by the PhD Board, the students:

- The students must attend at least 12 CFU (96 hours) of courses proposed by the PhD in Physics in the four research curricula.
- Of these 12 CFU, at least 6 CFU (48 hours) should be chosen in at least two different research curricula distinct from the one the student is going to perform his/her research.
- For each of the courses mentioned above, the student will give an exam within the end of the current academic year (deadline 15 October 2020).
- 3 CFU (24 hours) can be postponed at the second year (latest deadline 15 October 2021).