



SCHEMA PER LA SCELTA DEI PIANI SI STUDIO INDIVIDUALI

CORSO DI LAUREA MAGISTRALE IN FISICA – COD. 0518H

CLASSE LM-17 (FISICA)

A.A. 2018/19

Sequenza:

- a) Lo studente sceglie il percorso tra le opzioni (scelta già operata al momento dell'iscrizione):
- Experimental Physics
 - Theoretical and Computational Physics

Se il percorso è "Experimental Physics", allora lo studente sceglierà l'area tematica tra le seguenti:

- Biological and Medical Physics
- Experiment Design and Implementation
- Experiments on Fundamental Interactions and Cosmology
- Nanophotonics
- Physics and Chemistry for Energy and the Environment
- Physics of Complex Systems
- Physical Science Communication and Teaching Methods

Se invece il percorso è "Theoretical and Computational Physics", allora lo studente sceglierà l'area tematica tra le seguenti:

- Condensed Matter and Quantum Gases
- Statistical and Biological Physics
- Theory of Fundamental Interactions and Cosmology
- Theoretical and Computational Nuclear Physics and Related Areas

- b) a seconda della scelta del percorso e dell'area tematica, lo studente compila una delle schede allegate. Se il piano di studi viene selezionato seguendo le schede predisposte, l'approvazione è automatica. Altrimenti dovrà essere compilato un modulo a parte da sottoporre al coordinatore delle attività didattiche per l'approvazione.

L'elenco completo degli insegnamenti è riportato nel Manifesto degli Studi:
<http://offertaformativa.unitn.it/it/lm/fisica/regolamenti-e-manifesti>

PERCORSO / CURRICULUM: **EXPERIMENTAL PHYSICS**

AREA TEMATICA / AREA OF SPECIALIZATION: **BIOLOGICAL AND MEDICAL PHYSICS**

Esami caratterizzanti obbligatori / Mandatory exams:

145164- Experimental Methods	FIS/01	B – 6
145644- Quantum Mechanics, Fields and Symmetries	FIS/02	B – 6
145648- Experimental Physics	FIS/01	B – 6

Quattro esami caratterizzanti a scelta vincolata / Four exams on basic topics:

Un esame a scelta tra i seguenti / One among the following exams:

- 145646 – Quantum Field Theory I
- 145649 – Computational Physics
- 145177 – Statistical Mechanics

Tre esami a scelta tra i seguenti / Three among the following exams:

- 145645 – Nuclear and Subnuclear Physics
- 145653 – Solid State Physics I
- 145654 – Solid State Physics II
- 145651 – Quantum Theories for Multiparticle Systems
- 145660 – Fundamental Interactions

Quattro esami affini/integrativi. Gli esami consigliati per l'area tematica sono: / Four exams on more specialized topics. The recommended courses within the area of specialization are:

- 145232 – Laboratory of Energy Conversion Processes
- 145283 – Laboratory of Advanced Photonics
- 145338 – Bio-Medical Imaging
- 145514 – Radiation Biophysics
- 145235 – Molecular and Cellular Biophysics
- 145512 – Nanoscience
- 145282 – Photonics
- 145171 – Optoelectronics
- 145285 – Statistical Field Theory

Ulteriori due esami (12 CFU) a libera scelta / Two further exams (12 CFU) at free choice:

We suggest to choose two exams taken from the exams in the above lists, among those not yet selected, or exams taken from the full list of active courses in the Master of Science in Physics (see the complete list in the Manifesto degli Studi). Students who want to choose exams different from those ones, must send a specific request to the coordinator of the teaching activities of the Physics Department for approval.

PERCORSO / CURRICULUM: **EXPERIMENTAL PHYSICS**

AREA TEMATICA / AREA OF SPECIALIZATION: **EXPERIMENT DESIGN AND IMPLEMENTATION**

Esami caratterizzanti obbligatori / Mandatory exams:

145164- Experimental Methods	FIS/01	B – 6
145644- Quantum Mechanics, Fields and Symmetries	FIS/02	B – 6
145648- Experimental Physics	FIS/01	B – 6

Quattro esami caratterizzanti a scelta vincolata / Four exams on basic topics:

Un esame a scelta tra i seguenti / One among the following exams:

- 145646 – Quantum Field Theory I
- 145649 – Computational Physics
- 145177 – Statistical Mechanics

Tre esami a scelta tra i seguenti / Three among the following exams:

- 145645 – Nuclear and Subnuclear Physics
- 145653 – Solid State Physics I
- 145654 – Solid State Physics II
- 145651 – Quantum Theories for Multiparticle Systems
- 145660 – Fundamental Interactions

Quattro esami affini/integrativi. Gli esami consigliati per l'area tematica sono: / Four exams on more specialized topics. The recommended courses within the area of specialization are:

- 145230 – Laboratory of Advanced Electronics
- 145283 – Laboratory of Advanced Photonics
- 145175 – Quantum Optics
- 145171 – Optoelectronics
- 145374 – High Energy Astrophysics
- 145511 – Atomic Physics
- 145282 – Photonics
- 145338 – Bio-Medical Imaging
- 145514 – Radiation Biophysics
- 145652 – Physics of Materials

Ulteriori due esami (12 CFU) a libera scelta / Two further exams (12 CFU) at free choice:

We suggest to choose two exams taken from the exams in the above lists, among those not yet selected, or exams taken from the full list of active courses in the Master of Science in Physics (see the complete list in the Manifesto degli Studi). Students who want to choose exams different from those ones, must send a specific request to the coordinator of the teaching activities of the Physics Department for approval.

PERCORSO / CURRICULUM: **EXPERIMENTAL PHYSICS**

AREA TEMATICA / AREA OF SPECIALIZATION: **EXPERIMENTS ON FUNDAMENTAL INTERACTIONS AND COSMOLOGY**

Esami caratterizzanti obbligatori / Mandatory exams:

145164- Experimental Methods	FIS/01	B – 6
145644- Quantum Mechanics, Fields and Symmetries	FIS/02	B – 6
145648- Experimental Physics	FIS/01	B – 6

Quattro esami caratterizzanti a scelta vincolata / Four exams on basic topics:

Un esame a scelta tra i seguenti / One among the following exams:

- 145646 – Quantum Field Theory I
- 145649 – Computational Physics
- 145177 – Statistical Mechanics

Tre esami a scelta tra i seguenti / Three among the following exams:

- 145645 – Nuclear and Subnuclear Physics
- 145653 – Solid State Physics I
- 145654 – Solid State Physics II
- 145651 – Quantum Theories for Multiparticle Systems
- 145660 – Fundamental Interactions

Quattro esami affini/integrativi. Gli esami consigliati per l'area tematica sono: / Four exams on more specialized topics. The recommended courses within the area of specialization are:

- 145230 – Laboratory of Advanced Electronics
- 145283 – Laboratory of Advanced Photonics
- 145374 – High Energy Astrophysics
- 145171 – Optoelectronics
- 145175 – Quantum Optics
- 145646 – Quantum Field Theory I
- 145649 – Computational Physics
- 145224 – General Relativity and Cosmology
- 145169 – Nuclear Astrophysics
- 145647 – Quantum Field Theory II
- 145285 – Statistical Field Theory

Ulteriori due esami (12 CFU) a libera scelta / Two further exams (12 CFU) at free choice:

We suggest to choose two exams taken from the exams in the above lists, among those not yet selected, or exams taken from the full list of active courses in the Master of Science in Physics (see the complete list in the Manifesto degli Studi). Students who want to choose exams different from those ones, must send a specific request to the coordinator of the teaching activities of the Physics Department for approval.

PERCORSO / CURRICULUM: **EXPERIMENTAL PHYSICS**

AREA TEMATICA / AREA OF SPECIALIZATION: **NANOPHOTONICS**

Esami caratterizzanti obbligatori / Mandatory exams:

145164- Experimental Methods	FIS/01	B – 6
145644- Quantum Mechanics, Fields and Symmetries	FIS/02	B – 6
145648- Experimental Physics	FIS/01	B – 6

Quattro esami caratterizzanti a scelta vincolata / Four exams on basic topics:

Un esame a scelta tra i seguenti / One among the following exams:

- 145646 – Quantum Field Theory I
- 145649 – Computational Physics
- 145177 – Statistical Mechanics

Tre esami a scelta tra i seguenti / Three among the following exams:

- 145645 – Nuclear and Subnuclear Physics
- 145653 – Solid State Physics I
- 145654 – Solid State Physics II
- 145651 – Quantum Theories for Multiparticle Systems
- 145660 – Fundamental Interactions

Quattro esami affini/integrativi. Gli esami consigliati per l'area tematica sono: / Four exams on more specialized topics. The recommended courses within the area of specialization are:

- 145283 – Laboratory of Advanced Photonics
- 145171 – Optoelectronics
- 145512 – Nanoscience
- 145282 – Photonics
- 145175 – Quantum Optics
- 145230 – Laboratory of Advanced Electronics

Ulteriori due esami (12 CFU) a libera scelta / Two further exams (12 CFU) at free choice:

We suggest to choose two exams taken from the exams in the above lists, among those not yet selected, or exams taken from the full list of active courses in the Master of Science in Physics (see the complete list in the Manifesto degli Studi). Students who want to choose exams different from those ones, must send a specific request to the coordinator of the teaching activities of the Physics Department for approval.

Esami caratterizzanti obbligatori / Mandatory exams:

145164- Experimental Methods	FIS/01	B – 6
145644- Quantum Mechanics, Fields and Symmetries	FIS/02	B – 6
145648- Experimental Physics	FIS/01	B – 6

Quattro esami caratterizzanti a scelta vincolata / Four exams on basic topics:

Un esame a scelta tra i seguenti / One among the following exams:

- 145646 – Quantum Field Theory I
- 145649 – Computational Physics
- 145177 – Statistical Mechanics

Tre esami a scelta tra i seguenti / Three among the following exams:

- 145645 – Nuclear and Subnuclear Physics
- 145653 – Solid State Physics I
- 145654 – Solid State Physics II
- 145651 – Quantum Theories for Multiparticle Systems
- 145660 – Fundamental Interactions

Quattro esami affini/integrativi. Gli esami consigliati per l'area tematica sono: / Four exams on more specialized topics. The recommended courses within the area of specialization are:

- 145232 – Laboratory of Energy Conversion Processes (*strongly recommended*)
- 145231 – Laboratory of Condensed Matter
- 145652 – Physics of Materials
- 145650 – Physics of Disordered Systems
- 145171 – Optoelectronics
- 145512 – Nanoscience

Ulteriori due esami (12 CFU) a libera scelta / Two further exams (12 CFU) at free choice:

We suggest to choose two exams taken from the exams in the above lists, among those not yet selected, or exams taken from the full list of active courses in the Master of Science in Physics (see the complete list in the Manifesto degli Studi). Students who want to choose exams different from those ones, must send a specific request to the coordinator of the teaching activities of the Physics Department for approval.

PERCORSO / CURRICULUM: **EXPERIMENTAL PHYSICS**

AREA TEMATICA / AREA OF SPECIALIZATION: **PHYSICS OF COMPLEX SYSTEMS**

Esami caratterizzanti obbligatori / Mandatory exams:

145164- Experimental Methods	FIS/01	B – 6
145644- Quantum Mechanics, Fields and Symmetries	FIS/02	B – 6
145648- Experimental Physics	FIS/01	B – 6

Quattro esami caratterizzanti a scelta vincolata / Four exams on basic topics:

Un esame a scelta tra i seguenti / One among the following exams:

- 145646 – Quantum Field Theory I
- 145649 – Computational Physics
- 145177 – Statistical Mechanics

Tre esami a scelta tra i seguenti / Three among the following exams:

- 145645 – Nuclear and Subnuclear Physics
- 145653 – Solid State Physics I
- 145654 – Solid State Physics II
- 145651 – Quantum Theories for Multiparticle Systems
- 145660 – Fundamental Interactions

Quattro esami affini/integrativi. Gli esami consigliati per l'area tematica sono: / Four exams on more specialized topics. The recommended courses within the area of specialization are:

- 145650 – Physics of Disordered Systems
- 145230 – Laboratory of Advanced Electronics
- 145231 – Laboratory of Condensed Matter
- 145283 – Laboratory of Advanced Photonics
- 145652 – Physics of Materials
- 145175 – Quantum Optics
- 145729 – Multiscale Methods in Soft Matter
- 145512 – Nanoscience
- 145659 – Computational Methods for transport phenomena
- 145730 – Structure and dynamics of complex networks

Ulteriori due esami (12 CFU) a libera scelta / Two further exams (12 CFU) at free choice:

We suggest to choose two exams taken from the exams in the above lists, among those not yet selected, or exams taken from the full list of active courses in the Master of Science in Physics (see the complete list in the Manifesto degli Studi). Students who want to choose exams different from those ones, must send a specific request to the coordinator of the teaching activities of the Physics Department for approval.

Esami caratterizzanti obbligatori / Mandatory exams:

145164- Experimental Methods	FIS/01	B – 6
145644- Quantum Mechanics, Fields and Symmetries	FIS/02	B – 6
145648- Experimental Physics	FIS/01	B – 6

Quattro esami caratterizzanti a scelta vincolata / Four exams on basic topics:

Un esame a scelta tra i seguenti / One among the following exams:

- 145646 – Quantum Field Theory I
- 145649 – Computational Physics
- 145177 – Statistical Mechanics

Tre esami a scelta tra i seguenti / Three among the following exams:

- 145645 – Nuclear and Subnuclear Physics
- 145653 – Solid State Physics I
- 145654 – Solid State Physics II
- 145651 – Quantum Theories for Multiparticle Systems
- 145660 – Fundamental Interactions

Quattro esami affini/integrativi. Gli esami consigliati per l'area tematica sono: / Four exams on more specialized topics. The recommended courses within the area of specialization are:

- 145230 – Laboratory of Advanced Electronics
- 145232 – Laboratory of Energy Conversion Processes
- 145153 – Experimental Physics Laboratory at High School Level I
- 145537 – Physics education: theoretical and experimental approaches
- 145661 – Storia della fisica e della matematica (*)
- 145210 – Comunicazione delle scienza (*)

(*) questo è un corso del terzo anno della laurea triennale in matematica / This course is taught at the third year of the "laurea triennale" in Mathematics.

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Esami caratterizzanti obbligatori / Mandatory exams:

145164- Experimental Methods	FIS/01	B – 6
145644- Quantum Mechanics, Fields and Symmetries	FIS/02	B – 6
145646- Quantum Field Theory I	FIS/01	B – 6

Quattro esami caratterizzanti a scelta vincolata / Four exams on basic topics:

Un esame a scelta tra i seguenti / One among the following exams:

- 145649 – Computational Physics
- 145177 – Statistical Mechanics

Tre esami a scelta tra i seguenti / Three among the following exams:

- 145645 – Nuclear and Subnuclear Physics
- 145653 – Solid State Physics I
- 145654 – Solid State Physics II
- 145651 – Quantum Theories for Multiparticle Systems
- 145660 – Fundamental Interactions

Quattro esami affini/integrativi. Gli esami consigliati per l'area tematica sono: / Four exams on more specialized topics. The recommended courses within the area of specialization are:

- 145175 – Quantum Optics
- 145285 – Statistical Field Theory
- 145513 – Quantum Gases and superfluidity
- 145374 – High Energy Astrophysics
- 145647 – Quantum Field Theory II
- 145511 – Atomic Physics

Ulteriori due esami (12 CFU) a libera scelta / Two further exams (12 CFU) at free choice:

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Esami caratterizzanti obbligatori / Mandatory exams:

145164- Experimental Methods	FIS/01	B – 6
145644- Quantum Mechanics, Fields and Symmetries	FIS/02	B – 6
145646- Quantum Field Theory I	FIS/01	B – 6

Quattro esami caratterizzanti a scelta vincolata / Four exams on basic topics:

Un esame a scelta tra i seguenti / One among the following exams:

- 145649 – Computational Physics
- 145177 – Statistical Mechanics

Tre esami a scelta tra i seguenti / Three among the following exams:

- 145645 – Nuclear and Subnuclear Physics
- 145653 – Solid State Physics I
- 145654 – Solid State Physics II
- 145651 – Quantum Theories for Multiparticle Systems
- 145660 – Fundamental Interactions

Quattro esami affini/integrativi. Gli esami consigliati per l'area tematica sono: / Four exams on more specialized topics. The recommended courses within the area of specialization are:

- 145338 – Biomedical Imaging
- 145650 – Physics of Disordered Systems
- 145171 – Optoelectronics
- 145175 – Quantum Optics
- 145514 – Radiation Biophysics
- 145729 – Multiscale Methods in Soft Matter
- 145652 – Physics of Materials
- 145235 – Molecular and Cellular Biophysics
- 145512 – Nanoscience
- 145513 – Quantum gases and superfluidity
- 145285 – Statistical Field Theory
- 145659 – Computational Methods for transport phenomena
- 145730 – Structure and dynamics of complex networks

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PERCORSO / CURRICULUM: **THEORETICAL AND COMPUTATIONAL PHYSICS**

AREA TEMATICA / AREA OF SPECIALIZATION: **THEORY OF FUNDAMENTAL INTERACTIONS AND COSMOLOGY**

Esami caratterizzanti obbligatori / Mandatory exams:

145164- Experimental Methods	FIS/01	B – 6
145644- Quantum Mechanics, Fields and Symmetries	FIS/02	B – 6
145646- Quantum Field Theory I	FIS/01	B – 6

Quattro esami caratterizzanti a scelta vincolata / Four exams on basic topics:

Un esame a scelta tra i seguenti / One among the following exams:

- 145649 – Computational Physics
- 145177 – Statistical Mechanics

Tre esami a scelta tra i seguenti / Three among the following exams:

- 145645 – Nuclear and Subnuclear Physics
- 145653 – Solid State Physics I
- 145654 – Solid State Physics II
- 145651 – Quantum Theories for Multiparticle Systems
- 145660 – Fundamental Interactions

Quattro esami affini/integrativi. Gli esami consigliati per l'area tematica sono: / Four exams on more specialized topics. The recommended courses within the area of specialization are:

- 145224 – General Relativity and Cosmology
- 145647 – Quantum Field Theory II
- 145374 – High Energy Astrophysics
- 145169 – Nuclear Astrophysics
- 145513 – Quantum Gases and superfluidity
- 145175 – Quantum Optics
- 145285 – Statistical Field Theory

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145646- Quantum Field Theory I	FIS/01	B – 6

Quattro esami caratterizzanti a scelta vincolata / Four exams on basic topics:

Un esame a scelta tra i seguenti / One among the following exams:

- 145649 – Computational Physics
- 145177 – Statistical Mechanics

Tre esami a scelta tra i seguenti / Three among the following exams:

- 145645 – Nuclear and Subnuclear Physics
- 145653 – Solid State Physics I
- 145654 – Solid State Physics II
- 145651 – Quantum Theories for Multiparticle Systems
- 145660 – Fundamental Interactions

Quattro esami affini/integrativi. Gli esami consigliati per l'area tematica sono: / Four exams on more specialized topics. The recommended courses within the area of specialization are:

- 145224 – General Relativity and Cosmology
- 145169 – Nuclear Astrophysics
- 145285 – Statistical Field Theory
- 145374 – High Energy Astrophysics
- 145514 – Radiation Biophysics
- 145647 – Quantum Field Theory II
- 145513 – Quantum Gases and superfluidity
- 145659 – Computational Methods for transport phenomena

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