

Master of Science Programme in Physics, 120 ECTS - STUDY PLAN

FIRST YEAR

COURSES	SEMESTER	ECTS	ECTS PARTITIONING
<u>PHYSICS LABORATORY</u>	ANNUAL	10	5 LECTURES 5 PRACTICE
<u>COMPUTATIONAL METHODS FOR PHYSICS</u>	2	9	5 LECTURES 4 PRACTICE
Two elective courses among the following options			
<u>THEORETICAL PHYSICS</u>	1	8	7 LECTURES 1 EXERCISES
<u>STATISTICAL MECHANICS</u>	2	8	7 LECTURES 1 EXERCISES
<u>THEORY OF QUANTUM COMPUTATION</u>	1	8	7 LECTURES 1 EXERCISES
<u>MODELS AND TOOLS FOR WEATHER PREDICTION AND CLIMATE</u>	2	8	7 LECTURES 1 EXERCISES
Two elective courses among the following options			
<u>NUCLEAR AND SUBNUCLEAR PHYSICS</u>	1	6	4 LECTURES 2 PRACTICE
<u>CONDENSED MATTER PHYSICS</u>	2	6	5 LECTURES 1 EXERCISES
<u>QUANTUM ELECTRONICS FOR ATOMIC PHYSICS</u>	1	6	4 LECTURES 2 PRACTICE
<u>ISOTOPE PHYSICS AND METHODS</u>	1	6	4 LECTURES 2 PRACTICE

<u>STOCHASTIC PROCESSES</u>	2	6	5 LECTURES 1 EXERCISES
One elective course from Group C		6	
<u>FURTHER LINGUISTIC KNOWLEDGE</u>			
<u>OR</u>			
<u>ITALIAN COURSE FOR NON-ITALIAN CITIZENS</u>	1	4	

GROUP C COURSES	SEMESTER	ECTS	
<u>ASTROPHYSICS</u>	2	6	6 LECTURES
<u>APPLIED BIOPHOTONICS</u>	2	6	4 LECTURES 2 PRACTICE
<u>ECOLOGICAL CLIMATOLOGY</u>	2	6	4 LECTURES 2 PRACTICE
<u>INTRODUCTION TO OPTICAL SENSING TECHNIQUES</u>	2	6	4 LECTURES 2 PRACTICE
<u>NETWORK SCIENCE</u>	2	6	6 LECTURES
<u>MACHINE LEARNING AND AI (FIRST PART)</u>	2	6	4 LECTURES 2 PRACTICE
<u>PHOTONICS AND NANOTECHNOLOGIES</u>	1	6	4 LECTURES 2 PRACTICE
<u>PHYSICS FOR BIOMEDICAL APPLICATIONS</u>	1	6	4 LECTURES 2 PRACTICE
<u>MODELING OF COMPLEX SYSTEMS</u>	1	6	5 LECTURES 1 EXERCISES
<u>NUCLEAR ASTROPHYSICS</u>	1	6	4 LECTURES 2 PRACTICE
<u>AEROSPACE PHYSICS METHODOLOGIES</u>	1	6	4 LECTURES

2 PRACTICE

SRCOND YEAR (63 ECTS)

COURSES	YEAR	SEMESTER	ECTS
One elective course from Group C			6
Two elective courses from Group D			6
CURRICULAR INTERNSHIP		2	3
MASTER THESIS AND DISSERTATION		ANNUAL	42

GROUP D COURSES				
<u>LASER SPETTROSCOPY</u>	2	1	6	5 LECTURES 1 EXERCISES
<u>ADVANCED EXPERIMENTAL TECHNIQUES FOR NUCLEAR AND PARTICLE PHYSICS</u>	2	1	6	5 LECTURES 1 EXERCISES
<u>PARTICLE ASTROPHYSICS</u>	2	1	6	5 LECTURES 1 EXERCISES
<u>MICROSCOPIC NUCLEAR STRUCTURE</u>	2	1	6	5 LECTURES 1 EXERCISES
<u>ASTROPHYSICAL TECHNIQUES</u>	2	1	6	5 LECTURES 1 EXERCISES

<u>EXPERIMENTAL GRAVITATION</u>	2	1	6	5 LECTURES 1 EXERCISES
<u>PHYSICS OF THE SUN AND OF THE HELIOSPHERE</u>	2	1	6	5 LECTURES 1 EXERCISES
<u>ASTROPHYSICS OF GALAXIES</u>	2	1	6	5 LECTURES 1 EXERCISES
<u>CLIMATE CHANGE AND RELATED IMPACTS</u>	2	1	6	5 LECTURES 1 EXERCISES
<u>AEROSPACE PROPULSION AND PLASMA PHYSICS</u>	2	1	6	5 LECTURES 1 EXERCISES
<u>SPACE ACCESS AND EARTH OBSERVATION</u>	2	1	6	5 LECTURES 1 EXERCISES
<u>ADVANCED OPERATIONAL RESEARCH</u>	2	1	6	5 LECTURES 1 EXERCISES
<u>NETWORK ANALYSIS</u>	2	1	6	5 LECTURES 1 EXERCISES
<u>NUMERICAL MODELS IN DATA PROCESSING</u>	2	1	6	5 LECTURES 1 EXERCISES
<u>PHYSICS FOR ARCHAEOLOGY AND CULTURAL HERITAGE</u>	2	1	6	5 LECTURES 1 EXERCISES
<u>MACHINE LEARNING AND AI (SECOND PART)</u>	2	1	6	5 LECTURES 1 EXERCISES

PROPAEDEUTICITY

- Condensed Matter Physics is propaedeutic to Photonics and Nanotechnologies
 - Statistical Mechanics is propaedeutic to Modeling of complex systems
 - Nuclear and Subnuclear Physics is propaedeutic to Particle astrophysics
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CONVERSION FROM ECTS TO HOURS:

1 ECTS OF LECTURES = 8 HOURS

1 ECTS OF EXERCISES/PRACTICE = 12 HOURS