



**UNIVERSITÀ DEGLI STUDI
DELL'INSUBRIA**

**DEPARTMENT OF SCIENCE AND HIGH
TECHNOLOGY**

DESCRIPTION OF THE EDUCATION COURSE (COURSE RULES)

MASTER'S DEGREE COURSE in PHYSICS

2024/2025



I - GENERAL INFORMATION

NAME OF THE DEGREE PROGRAMME (CDS)	Master's Degree in Physics
CLASS	LM 17
TYPE	2 year degree
LOCATION	Como
INTERNET ADDRESS	For information on the educational goals of the degree course, employment opportunities, admission requirements, admission procedures, expected learning outcomes, training path/study plan, final examination, you can consult the Annual Report (SUA-CdS), published on the web page of the course of study at the following address: www.uninsubria.it/magistrale-fisica
DEPARTMENT	Science and High Technology, DiSAT https://www.uninsubria.it/ugov/organizationunit/7976
RESPONSIBLE	Professor Alessia Allevi
COURSE TEACHING SECRETARIAT	https://www.uninsubria.it/node/620
CALENDAR OF TEACHING ACTIVITIES	<u>1st semester</u> : start date 23/09/2024 – end date 17/01/2025 <u>2nd semester</u> : start date 24/02/2025 – end date 13/06/2025 <u>Exam session</u> : from 01/12/2024 to 31/03/2026 To find out the dates of suspension of teaching activities and closures of University facilities due to national and local holidays and other closures (Christmas Holidays, Easter Holidays, University closures), students are required to consult the University Teaching Calendar approved by the Academic Bodies at this link: https://www.uninsubria.it/chi-siamo/sedi-e-orari/calendario-didattico-di-ateneo
FURTHER INFORMATION	ACCESS TO THE COURSE: free POSSIBLE DOUBLE DEGREE with the Linnaeus University of Kalmar-Vaxjo (Sweden) LANGUAGE IN WHICH TEACHING IS PROVIDED: English PRESENCE OF ANY PATHS/CURRICULA: General Physics Experimental and Medical Physics Data Science for Astrophysics
VERIFICATION OF THE POSSESSION OF CURRICULAR REQUIREMENTS AND THE ADEQUACY OF PERSONAL PREPARATION	Graduates of the class of degrees in Physical Sciences and Technologies (L30) and of the corresponding class relating to Ministerial Decree 509/99 can access the Master's Degree Course in Physics. Those who hold a degree of another class obtained at a national university, as well as those who hold another qualification obtained abroad and recognized as suitable, can also access the course. The graduates personal preparation, with particular attention to graduates in classes



	<p>other than L30, is verified by means of an interview on topics related to the disciplines covered in the fundamental courses of the three-year degree in Physics. The presence of solid foundations of classical and quantum physics, physics of matter and nuclear and subnuclear physics is ascertained. If integrations in specific scientific sectors are needed, these integrations will be quantified in credits that must be acquired before the admission to the Master's degree course. The knowledge of the English language (B2 level) is verified during the interview, or by submitting an appropriate certification to the commission.</p> <p>Non-EU students will be evaluated on the basis of the documentation they send by e-mail and the outcome of an interview aimed at verifying the skills to access the Master's Degree Course in Physics. The dates of the interviews will be set in such a way that interested students can have the time to apply for the residence visa for study purposes in the event of a positive evaluation.</p>
<p>CAREER GUIDANCE, ENROLLMENT PROCEDURES AND OTHER ADMINISTRATIVE ASPECTS</p>	<p>STUDENT SERVICE</p> <p>The INFOSTUDENTI service is a web application that offers a communication channel through which students or potential students can obtain useful information by contacting the various offices of the University (Student Secretariats, Right to Education and Student Services, Career Guidance and Placement, Teaching Secretariats and International Relations).</p> <p>With this system it will be possible to send questions and receive the related answers by also attaching documents and following the status of your request.</p> <p>You can access the service at the following link: https://www.uninsubria.it/servizi/infostudenti-servizio-informazioni-gli-studenti</p>



II - STUDY PLAN

PLANNED TEACHING - Cohort 2024/2025

By planned teaching we mean the set of courses provided for the entire course of study, which must be taken by all students who enroll in the current academic year (Enrollment Cohort) to complete the training course and obtain the qualification. The degree course includes courses of 6 CFU, 7 CFU, 8 CFU and 9 CFU which must be combined to obtain a CFU number equal to 120. Given the possibility of building the study plan according to one's aptitudes, the total sum of the credits can exceed this value.

LES = lesson, LAB = laboratory

CURRICULUM OF GENERAL PHYSICS FUNDAMENTAL TEACHINGS:

FIRST YEAR								
SEMESTER	INTEGRATED COURSE / TEACHING Title	COURSE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
	FREE CHOICE ACTIVITIES			D/A STUDENT'S CHOICE	6		V	
	SIMILAR/SUPPLEMENTARY TEACHING			C/SIMILAR/SUPPLEMENTARY TRAINING ACTIVITIES	6		V	
	CORE COURSES			B/ CHARACTERIZING EDUCATIONAL ACTIVITIES	30		V	

SECOND YEAR								
SEMESTER	INTEGRATED COURSE / TEACHING Title	COURSE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
	FREE CHOICE ACTIVITIES			D/A STUDENT'S CHOICE	6		V	
	AS MANY CHARACTERIZING COURSES AS YOU NEED FOR A TOTAL OF 42 CHARACTERIZING CREDITS IN THE STUDY PLAN			B/ CHARACTERIZING EDUCATIONAL ACTIVITIES	12		V	
	SIMILAR/SUPPLEMENTARY TEACHING			C/SIMILAR/SUPPLEMENTARY TRAINING ACTIVITIES	6		V	



	TRAINING			F/OTHER USEFUL KNOWLEDGE FOR ENTERING THE JOB MARKET	6			
	PREPARATION OF THE FINAL EXAM				48		V	

(*) G – GRADE, V – EXAM, I – SUITABILITY, F – ATTENDANCE

ELECTIVE COURSES

AT LEAST 6 CREDITS IN THE "EXPERIMENTAL APPLICATION" DISCIPLINARY AREA

1st YEAR / 2nd YEAR								
SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
II	SCIENTIFIC PYTHON		FIS/01	B/EXPERIMENTAL APPLICATION	6	LES:66	V	
II	BASICS AND APPLICATIONS OF NON-LINEAR AND QUANTUM OPTICS		FIS/01	B/EXPERIMENTAL APPLICATION	6	LES:48	V	
I	PHYSICAL BASIS OF DIAGNOSTIC IMAGING		FIS/07	B/EXPERIMENTAL APPLICATION	6	LES:48	V	
I	BASIS OF MEDICAL PHYSICS - year II		FIS/07	B/EXPERIMENTAL APPLICATION	6	LES:48	V	
I	OPTICS WITH LABORATORY		FIS/01	B/EXPERIMENTAL APPLICATION	6	LAB:32 LAB:22	V	
II	ADVANCED EXPERIMENTAL AND DATA ANALYSIS TECHNIQUES IN PARTICLE AND NUCLEAR PHYSICS		FIS/07	B/EXPERIMENTAL APPLICATION	6	LAB:66	V	

* G – GRADE V – EXAM I – GRADE F – ATTENDANCE

AT LEAST 12 CREDITS IN THE "THEORY AND FOUNDATIONS OF PHYSICS" DISCIPLINARY AREA

1st YEAR / 2nd YEAR								
SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS



I	QUANTUM PHYSICS III		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	8	LES:64	V	
II	QUANTUM INFORMATION THEORY		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	8	LES:64	V	
I	STATISTICAL PHYSICS I		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	6	LES:48	V	
II	STATISTICAL PHYSICS II - year I		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	6	LES:48	V	
II	PHYSICS OF COMPLEX SYSTEMS - year II		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	6	LES:48	V	
I	GENERAL RELATIVITY		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	8	LES:64	V	
I	GEOMETRICAL METHODS IN PHYSICS - year I		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	8	LES:64	V	
I	THEORETICAL PHYSICS - year II		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	8	LES:64	V	
I	PHYSICS OF DYNAMICAL SYSTEMS		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	6	LES:48	V	

*G – GRADE V – EXAM I – GRADE F – ATTENDANCE

AT LEAST 12 CREDITS IN THE "MICROPHYSICS AND THE STRUCTURE OF MATTER" DISCIPLINARY AREA

1st YEAR / 2nd YEAR								
SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
I	RADIATION AND DETECTORS - year II		FIS/04	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	
II	SOLID STATE PHYSICS - year I		FIS/03	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	
I	LASER PHYSICS		FIS/03	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	
I	ELEMENTARY PARTICLE PHENOMENOLOGY		FIS/04	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	8	LES:64	V	



I	MANY BODY PHYSICS		FIS/03	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	
I	QUANTUM AND SEMICLASSICAL OPTICS		FIS/03	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	
II	COLLECTIVE PROPERTIES OF CONDENSED MATTER SYSTEMS - year II		FIS/03	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	
II	METAMATERIALS		FIS/03	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	

*G – GRADE V – EXAM I – GRADE F – ATTENDANCE

IT IS NOT COMPULSORY TO INCLUDE COURSES IN THE "ASTROPHYSICS" DISCIPLINARY AREA

1st YEAR / 2nd YEAR								
SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
I	ELEMENTS OF ASTROPHYSICS		FIS/05	B/ASTROPHYSICS	7	LES:56	V	
II	INTRODUCTION TO COSMOLOGY		FIS/05	B/ASTROPHYSICS	8	LES:64	V	
II	COMPUTATIONAL ASTROPHYSICS		FIS/05	B/ASTROPHYSICS	7	LES:56	V	
II	TIME-DOMAIN ASTROPHYSICS		FIS/05	B/ASTROPHYSICS	6	LES:48	V	
I	ARTIFICIAL INTELLIGENCE FOR ASTROPHYSICAL PROBLEMS		FIS/05	B/ASTROPHYSICS	6	LES:48	V	
I	ASTROPHYSICAL FLUID DYNAMICS		FIS/05	B/ASTROPHYSICS	6	LES:48	V	

*G – GRADE V – EXAM I – GRADE F – ATTENDANCE

AT LEAST 12 CFU RELATED AND SUPPLEMENTARY COURSES

1st YEAR / 2nd YEAR								
SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS



I	DETECTION AND CHARACTERIZATION OF OPTICAL STATES LABORATORY		ING-INF/05	C/RELATED OR SUPPLEMENTARY	6	LAB :66	V	
II	OPTICAL SIGNAL ANALYSIS		ING-INF/05	C/RELATED OR SUPPLEMENTARY	6	LES:32 LAB:22	V	
II	APPLIED ELECTRONICS - year I		ING-INF/01	C/RELATED OR SUPPLEMENTARY	6	LES:48	V	
II	LABORATORY OF BIOPHYSICS AND PHOTOPHARMACOLOGY		FIS/07	C/RELATED OR SUPPLEMENTARY	6	LAB:66	V	
I	ANALYTIC AND PROBABILISTIC METHODS IN MATHEMATICAL PHYSICS 1		MAT/07	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
II	ANALYTIC AND PROBABILISTIC METHODS IN MATHEMATICAL PHYSICS 2		MAT/07	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
I	NUMERICAL SOLUTION OF PDE A - year II		MAT/08	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
I	NUMERICAL SOLUTION OF PDE B - year I		MAT/08	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
I	INTELLIGENT SYSTEMS		INF/01	C/RELATED OR SUPPLEMENTARY	9	LES:72	V	
I	MODELS FOR BIOLOGICAL SYSTEMS - year II		INF/01	C/RELATED OR SUPPLEMENTARY	6	LES:48	V	
I	DYNAMICAL SYSTEMS A - year II		MAT/07	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
I	DYNAMICAL SYSTEMS B - year I		MAT/07	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
II	APPLIED STATISTICS		SECS-S/01	C/RELATED OR SUPPLEMENTARY	8	LES:48 LAB: 32	V	

*G – GRADE, V – EXAM, I – GRADE, F – ATTENDANCE



**DATA SCIENCE FOR ASTROPHYSICS
FUNDAMENTAL TEACHINGS:**

FIRST YEAR								
SEMESTER	INTEGRATED COURSE / TEACHING Title	COURSE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
	FREE CHOICE ACTIVITIES			D/A STUDENT'S CHOICE	6		V	
	SIMILAR/SUPPLEMENTARY TEACHING			C/SIMILAR/SUPPLEMENTARY TRAINING ACTIVITIES	6		V	
	CORE COURSES			B/ CHARACTERIZING EDUCATIONAL ACTIVITIES	30		V	

SECOND YEAR								
SEMESTER	INTEGRATED COURSE / TEACHING Title	COURSE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
	FREE CHOICE ACTIVITIES			D/A STUDENT'S CHOICE	6		V	
	AS MANY CHARACTERIZING COURSES AS YOU NEED FOR A TOTAL OF 42 CHARACTERIZING CREDITS IN THE STUDY PLAN			B/ CHARACTERIZING EDUCATIONAL ACTIVITIES	12		V	
	SIMILAR/SUPPLEMENTARY TEACHING			C/RELATED/SUPPLEMENTARY TRAINING ACTIVITIES	6		V	
	TRAINING			F/OTHER USEFUL KNOWLEDGE FOR ENTERING THE JOB MARKET	6			
	PREPARATION OF THE FINAL EXAM				48		V	

G – GRADE, V – EXAM, I – SUITABILITY, F – ATTENDANCE



ELECTIVE COURSES

AT LEAST 6 CREDITS IN THE "EXPERIMENTAL APPLICATION" DISCIPLINARY AREA

1st YEAR / 2nd YEAR								
SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
II	SCIENTIFIC PYTHON		FIS/01	B/EXPERIMENTAL APPLICATION	6	LES:66	V	
II	BASICS AND APPLICATIONS OF NON-LINEAR AND QUANTUM OPTICS		FIS/01	B/EXPERIMENTAL APPLICATION	6	LES:48	V	
I	OPTICS WITH LABORATORY		FIS/01	B/EXPERIMENTAL APPLICATION	6	LES:32 LAB:22	V	
II	ADVANCED EXPERIMENTAL AND DATA ANALYSIS TECHNIQUES IN PARTICLE AND NUCLEAR PHYSICS		FIS/07	B/EXPERIMENTAL APPLICATION	6	LAB:66	V	

*G – GRADE, V – EXAM, I – GRADE, F – ATTENDANCE

AT LEAST 6 CREDITS IN THE "THEORY AND FOUNDATIONS OF PHYSICS" DISCIPLINARY AREA

1st YEAR / 2nd YEAR								
SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
I	QUANTUM PHYSICS III		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	8	LES:64	V	
I	STATISTICAL PHYSICS I		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	6	LES:48	V	
II	STATISTICAL PHYSICS II - year I		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	6	LES:48	V	
II	PHYSICS OF COMPLEX SYSTEMS - year II		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	6	LES:48	V	
I	GENERAL RELATIVITY		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	8	LES:64	V	



*G – GRADE, V – EXAM, I – GRADE, F – ATTENDANCE

AT LEAST 6 CREDITS IN THE "MICROPHYSICS AND THE STRUCTURE OF MATTER" DISCIPLINARY AREA

1st YEAR / 2nd YEAR								
SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
I	RADIATION AND DETECTORS - year II		FIS/04	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	
II	SOLID STATE PHYSICS - year I		FIS/03	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	
I	LASER PHYSICS		FIS/03	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	
I	ELEMENTARY PARTICLE PHENOMENOLOGY		FIS/04	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	8	LES:64	V	
II	COLLECTIVE PROPERTIES OF CONDENSED MATTER SYSTEMS - year II		FIS/03	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	
II	METAMATERIALS		FIS/03	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	

*G – GRADE, V – EXAM, I – GRADE, F – ATTENDANCE

AT LEAST 12 CREDITS IN THE "ASTROPHYSICS" DISCIPLINARY AREA

1st YEAR / 2nd YEAR								
SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
I	ELEMENTS OF ASTROPHYSICS		FIS/05	B/ASTROPHYSICS	7	LES:56	V	
II	INTRODUCTION TO COSMOLOGY		FIS/05	B/ASTROPHYSICS	8	LES:64	V	
II	COMPUTATIONAL ASTROPHYSICS		FIS/05	B/ASTROPHYSICS	7	LES:56	V	
II	TIME-DOMAIN ASTROPHYSICS		FIS/05	B/ASTROPHYSICS	6	LES:48	V	



I	ARTIFICIAL INTELLIGENCE FOR ASTROPHYSICAL PROBLEMS		FIS/05	B/ASTROPHYSICS	6	LES:48	V	
I	ASTROPHYSICAL FLUID DYNAMICS		FIS/05	B/ASTROPHYSICS	6	LES:48	V	

*G – GRADE, V – EXAM, I – GRADE, F – ATTENDANCE

AT LEAST 12 CFU RELATED AND SUPPLEMENTARY COURSES

1st YEAR / 2nd YEAR								
SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
I	DETECTION AND CHARACTERIZATION OF OPTICAL STATES LABORATORY		ING-INF/05	C/RELATED OR SUPPLEMENTARY	6	LAB :66	V	
II	OPTICAL SIGNAL ANALYSIS		ING-INF/05	C/RELATED OR SUPPLEMENTARY	6	LES:32 LAB:22	V	
II	APPLIED ELECTRONICS - year I		ING-INF/01	C/RELATED OR SUPPLEMENTARY	6	LES:48	V	
II	LABORATORY OF BIOPHYSICS AND PHOTOPHARMACOLOGY		FIS/07	C/RELATED OR SUPPLEMENTARY	6	LES:66	V	
I	ANALYTIC AND PROBABILISTIC METHODS IN MATHEMATICAL PHYSICS 1		MAT/07	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
II	ANALYTIC AND PROBABILISTIC METHODS IN MATHEMATICAL PHYSICS 2		MAT/07	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
I	NUMERICAL SOLUTION OF PDE A - year II		MAT/08	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
I	NUMERICAL SOLUTION OF PDE B - year I		MAT/08	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
I	INTELLIGENT SYSTEMS		INF/01	C/RELATED OR SUPPLEMENTARY	9	LES:72	V	
I	MODELS FOR BIOLOGICAL SYSTEMS - year II		INF/01	C/RELATED OR SUPPLEMENTARY	6	LES:48	V	
I	DYNAMICAL SYSTEMS A - year II		MAT/07	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
I	DYNAMICAL SYSTEMS B - year I		MAT/07	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
II	APPLIED STATISTICS		SECS-S/01	C/RELATED OR SUPPLEMENTARY	8	LES:48 LAB: 32	V	

*G – GRADE, V – EXAM, I – GRADE, F – ATTENDANCE



**EXPERIMENTAL AND MEDICAL PHYSICS
FUNDAMENTAL TEACHINGS:**

FIRST YEAR								
SEMESTER	INTEGRATED COURSE / TEACHING Title	COURSE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
	FREE CHOICE ACTIVITIES			D/A STUDENT'S CHOICE	6		V	
	SIMILAR/SUPPLEMENTARY TEACHING			C/SIMILAR/SUPPLEMENTARY TRAINING ACTIVITIES	6		V	
	CORE COURSES			B/ CHARACTERIZING EDUCATIONAL ACTIVITIES	30		V	

SECOND YEAR								
SEMESTER	INTEGRATED COURSE / TEACHING Title	COURSE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
	FREE CHOICE ACTIVITIES			D/A STUDENT'S CHOICE	6		V	
	AS MANY CHARACTERIZING COURSES AS YOU NEED FOR A TOTAL OF 42 CHARACTERIZING CREDITS IN THE STUDY PLAN			B/ CHARACTERIZING EDUCATIONAL ACTIVITIES	12		V	
	A SIMILAR/SUPPLEMENTARY TEACHING			C/RELATED/SUPPLEMENTARY TRAINING ACTIVITIES	6		V	
	TRAINING			F/OTHER USEFUL KNOWLEDGE FOR ENTERING THE JOB MARKET	6			
	PREPARATION OF THE FINAL EXAM				48		V	

G – GRADE, V – EXAM, I – SUITABILITY, F – ATTENDANCE

ELECTIVE COURSES

AT LEAST 18 CREDITS IN THE "EXPERIMENTAL APPLICATION" DISCIPLINARY AREA



1st YEAR / 2nd YEAR

SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
II	SCIENTIFIC PYTHON		FIS/01	B/EXPERIMENTAL APPLICATION	6	LES:66	V	
II	ELEMENTS OF DOSIMETRY AND RADIOPROTECTION		FIS/07	B/EXPERIMENTAL APPLICATION	6	LES:48	V	
I	PHYSICAL BASIS OF RADIOTHERAPY		FIS/07	B/EXPERIMENTAL APPLICATION	6	LES:48	V	
I	PHYSICAL BASIS OF DIAGNOSTIC IMAGING		FIS/07	B/EXPERIMENTAL APPLICATION	6	LES:48	V	
I	BASIS OF MEDICAL PHYSICS - IIo anno		FIS/07	B/EXPERIMENTAL APPLICATION	6	LES:48	V	
II	MEDICAL PHYSICS LABORATORY		FIS/07	B/EXPERIMENTAL APPLICATION	6	LES:66	V	
I	OPTICS WITH LABORATORY		FIS/01	B/EXPERIMENTAL APPLICATION	6	WEL:32 LAB:22	V	
II	ADVANCED EXPERIMENTAL AND DATA ANALYSIS TECHNIQUES IN PARTICLE AND NUCLEAR PHYSICS		FIS/07	B/EXPERIMENTAL APPLICATION	6	LES:66	V	

*G – GRADE V – EXAM I – GRADE F – ATTENDANCE

AT LEAST 6 CREDITS IN THE DISCIPLINARY FIELD "THEORY AND FOUNDATIONS OF PHYSICS"

1st YEAR / 2nd YEAR

SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
I	QUANTUM PHYSICS III		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	8	LES:64	V	
II	QUANTUM INFORMATION THEORY		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	8	LES:64	V	
I	STATISTICAL PHYSICS I		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	6	LES:48	V	
II	STATISTICAL PHYSICS II - year I		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	6	LES:48	V	



II	PHYSICS OF COMPLEX SYSTEMS - year II		FIS/02	B/THEORY AND FOUNDATIONS OF PHYSICS	6	LES:48	V	
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*G – GRADE V – EXAM I – GRADE F – ATTENDANCE

AT LEAST 6 CREDITS IN THE DISCIPLINARY FIELD "MICROPHYSICS AND THE STRUCTURE OF MATTER"

1st YEAR / 2nd YEAR								
SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
I	RADIATION AND DETECTORS - year II		FIS/04	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	
I	LASER PHYSICS		FIS/03	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	
I	ELEMENTARY PARTICLE PHENOMENOLOGY		FIS/04	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	8	LES:64	V	
II	COLLECTIVE PROPERTIES OF CONDENSED MATTER SYSTEMS - year II		FIS/03	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	
II	METAMATERIALS		FIS/03	B/MICROPHYSICS AND THE STRUCTURE OF MATTER	6	LES:48	V	

*G – GRADE V – EXAM I – GRADE F – ATTENDANCE

IT IS NOT COMPULSORY TO INCLUDE COURSES IN THE "ASTROPHYSICS" DISCIPLINARY FIELD

1st YEAR / 2nd YEAR								
SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
I	ELEMENTS OF ASTROPHYSICS		FIS/05	B/ASTROPHYSICS	7	LES:56	V	
II	INTRODUCTION TO COSMOLOGY		FIS/05	B/ASTROPHYSICS	8	WLES:64	V	
II	COMPUTATIONAL ASTROPHYSICS		FIS/05	B/ASTROPHYSICS	7	LES:56	V	



II	TIME-DOMAIN ASTROPHYSICS		FIS/05	B/ASTROPHYSICS	6	LES:48	V	
I	ARTIFICIAL INTELLIGENCE FOR ASTROPHYSICAL PROBLEMS		FIS/05	B/ASTROPHYSICS	6	LES:48	V	
I	ASTROPHYSICAL FLUID DYNAMICS		FIS/05	B/ASTROPHYSICS	6	LES:48	V	

*G – GRADE, V – EXAM, I – GRADE, F – ATTENDANCE

AT LEAST 12 CFU RELATED AND SUPPLEMENTARY COURSES

1st YEAR / 2nd YEAR								
SEMESTER	COURSE Title	MODULE Title	Scientific sector S.S.D	SUBJECT AREA/ TAF	CFU	HOURS	ASSESSMENT METHODS*	REFERENCE TEACHERS
I	DETECTION AND CHARACTERIZATION OF OPTICAL STATES LABORATORY		ING-INF/05	C/RELATED OR SUPPLEMENTARY	6	LAB :66	V	
II	OPTICAL SIGNAL ANALYSIS		ING-INF/05	C/RELATED OR SUPPLEMENTARY	6	LES:32 LAB:22	V	
II	APPLIED ELECTRONICS - year I		ING-INF/01	C/RELATED OR SUPPLEMENTARY	6	LES:48	V	
II	LABORATORY OF BIOPHYSICS AND PHOTOPHARMACOLOGY		FIS/07	C/RELATED OR SUPPLEMENTARY	6	LES:66	V	
I	ANALYTIC AND PROBABILISTIC METHODS IN MATHEMATICAL PHYSICS 1		MAT/07	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
II	ANALYTIC AND PROBABILISTIC METHODS IN MATHEMATICAL PHYSICS 2		MAT/07	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
I	NUMERICAL SOLUTION OF PDE A - year II		MAT/08	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
I	NUMERICAL SOLUTION OF PDE B - year I		MAT/08	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
I	INTELLIGENT SYSTEMS		INF/01	C/RELATED OR SUPPLEMENTARY	9	LES:72	V	
I	MODELS FOR BIOLOGICAL SYSTEMS - year II		INF/01	C/RELATED OR SUPPLEMENTARY	6	LES:48	V	
I	DYNAMICAL SYSTEMS A - year II		MAT/07	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
I	DYNAMICAL SYSTEMS B - year I		MAT/07	C/RELATED OR SUPPLEMENTARY	8	LES:64	V	
II	APPLIED STATISTICS		SECS-S/01	C/RELATED OR SUPPLEMENTARY	8	LES:48 LAB:32	V	



*G – GRADE, V – EXAM, I – GRADE, F – ATTENDANCE



III - RULES OF THE DEGREE COURSE

PREREQUISITES: not foreseen

RECOGNITION OF LANGUAGE AND COMPUTER CERTIFICATIONS: not foreseen

RECOGNITION OF PROFESSIONAL SKILLS OR EXAMS OBTAINED IN PREVIOUS CAREERS

Students from other Degree Programmes who have successfully passed the entrance examination can submit to the Student Secretariat a specific application for the recognition of their previous career when enrolling, indicating the activities for which they are requesting recognition. Such a request for students previously enrolled in another university (incoming transfers) must be accompanied by the syllabus of the exams taken in the previous career: without this syllabus, the activities will not be recognized. The exam syllabus should also be attached to the applications of students previously enrolled in another course at the University of Insubria (change of course) so that the validation procedure can be concluded quickly. For students who are enrolled in years subsequent to the first, attendance will be validated for the courses of the years prior to the year of enrollment. Applications for the exam recognition after the student's enrollment will not be evaluated.

ATTENDANCE OBLIGATIONS

Attendance is compulsory only for the laboratory courses, for which attendance is required for at least 75% of the planned teaching activities. Courses with a compulsory attendance must be followed according to the year of competence. Exceptions may be granted in case of internal transfer, transfer from another university, working students or students with other justified needs and in case of a health emergency. In particular, for working students, the time schedule of the practical activities will be agreed with the teachers of the laboratory courses.

ENROLLMENT IN THE YEARS FOLLOWING THE FIRST: No barriers are present

PROCEDURES FOR TRANSFERRING FROM OTHER DEGREE PROGRAMMES

Students coming from another University or from another Degree Programme of this University, or from previous cohorts, may request a transfer to the Degree Programme. Transfer requests will be considered by the Course Committee who will perform the recognition of the university credits on the basis of the following criteria:

- ✓ analysis of the program;
- ✓ evaluation of the congruity of the previous career scientific sectors and contents of the training activities, with the specific training goals of the course and of the individual activities.

The recognition is performed in accordance with art. 3 paragraphs 8 and 9 of the Ministerial decree for the redefinition of the Classes (March 16th 2007). The recognition is performed up to the amount of university credits foreseen by the course.

RULES FOR THE SUBMISSION OF STUDY PLANS AND INDIVIDUAL STUDY PLANS

Students must submit the Study Plan at the time of enrollment with the possibility of modifying it in the following year, according to the calendar of administrative obligations of the University. Information on the submission and compilation can be found on the web pages of the Student Secretariat (<https://www.uninsubria.it/servizi/presentazione-piano-di-studio>). The Study Plan must contain the indication of the Curriculum and the indication of the courses chosen by the student within the options allowed by the rules defined in this document. The educational activities chosen by the student can be selected from all the courses offered at the University.

The Course Committee may recognize up to 12 credits of free choice activities upon the presentation of an adequate documentation of the activities themselves. The Course Committee will assess the consistency of these activities with the goals of the degree course.

HOW TO ENROLL IN THE INTERNATIONAL INTEGRATED EDUCATIONAL PATH (DOUBLE DEGREE)

The Degree Course has an agreement with the Linnaeus University of Kalmar-Vaxjo (Sweden) for the issue of the joint degree: Master's Degree in Physics (University of Insubria) and Master in Physics (Linnaeus University). Students who wish to join the double degree programme must participate to the call issued every year by the University, by submitting a study plan that foresees the acquisition of at least 30 credits at the Linnaeus University where they have to spend at least one semester. If the application is



approved, the student will receive the University ERASMUS scholarship. More details can be found in the documents published on the website of the Degree Programme.

For information on the call and for further information on how to participate to the programme, please consult the following link:
<https://www.uninsubria.it/servizi/tutti-i-servizi/erasmus-traineeship>

For further information and insights, please consult the web page of the course:

www.uninsubria.it/magistrale-fisica

For students with disabilities and/or specific learning disorders, please consult the website page:

<https://www.uninsubria.it/servizi/tutti-i-servizi/servizi-studenti-con-disabilita-eo-dsa>