Biomedical Physics Curriculum for master degree in «Scienze Fisiche» (Physical Sciences)

- General link :

https://scienzefisiche.cdl.unipv.it/en

- Link Biomedical Physics :

https://scienzefisiche.cdl.unipv.it/en

- Presentation webinar :

https://thestudyabroadportal.com/open-day/biomedical-physics-at-the-university-of-pavia-exploring-the-life-phenomenon-through-the-principles-of-physics/?utm_source=University/

- More information :

https://apply.unipv.eu/en_GB/courses/course/172-masters-program-physical-sciences--biomedical-physics-curriculum

https://fisica.cdl.unipv.it/en/node/185

https://scienzefisiche.cdl.unipv.it/it/informazioni-pratiche/guida-dello-studente/guida-dello-studente-laurea-scienze-fisiche-202425

- Study plan :

https://scienzefisiche.cdl.unipv.it/en/practical-information/study-plan

Study plan – 120 ECTS – 2 years

ECTS credits = CFU credits

48 CFU (of which : 6 CFU in FIS/02 or FIS/08, 1 class ; 12 CFU in FIS/04 or FIS/03, 2 classes ; 30 CFU in FIS/01 or FIS/07, 5 classes) **to be acquired by 8 classes from the following table:**

Nome insegnamento	Sector	CFU	Semester
Quantum electrodynamics *	FIS/02	6	I
Computational methods in Physics *	FIS/02	6	II
Particle physics *	FIS/04	6	I
Physics of ionizing radiations *	FIS/04	6	I
Laboratory of ionizing radiations *	FIS/04	6	II
Statistical methods in physics *	FIS/01	6	I
Artificial Intelligence for Experimental and Applied Physics *	FIS/01	6	II
Particle detectors *	FIS/01	6	II
Rheology and Diagnostic Techniques: Theory and Practice *	FIS/07	6	I
Physics of innovative oncological therapy techniques *	FIS/07	6	I
Simulations in experimental and applied physics *	FIS/07	6	I
Physics of medical imaging *	FIS/07	6	I
Medical diagnostic techniques with ionizing radiations *	FIS/07	6	II
Introduction to ionizing radiation protection *	FIS/07	6	II

12 CFU, 2 classes, to be acquired with electives.

For example one can choose transversal classes :

Agile Project Management	3 CFU - II semester
Entrepreneurship	3 CFU – I semester
Italian language for foreign students	3 CFU – II semester
Presentation making	3 CFU – II semester

12 CFU, 2 classes, from the following table :

Nome insegnamento	Settore	CFU	Semestre
General biology, anatomy and human physiology	BIO/06	6	I
Radiation biophysics and radiobiology	MED/36	6	II
Machine learning	ING-INF/05	6	II
MRI Physics for Neuroscience	M-PSI/02	6	II
Bioinformatics	ING-INF/06	6	II

36 CFU	**Thesis training**
6 CFU	**Other activities**
6 CFU	**Final exam**

Videolectures

Quantum electrodynamics *	tbd
Computational methods in Physics *	tbd
Particle physics *	tbd
Physics of ionizing radiations *	Y
Laboratory of ionizing radiations *	tbd
Statistical methods in physics *	tbd
Artificial Intelligence for Experimental and Applied Physics *	Y
Particle detectors *	tbd
Rheology and Diagnostic Techniques: Theory and Practice *	tbd
Physics of innovative oncological therapy techniques *	Y
Simulations in experimental and applied physics *	Y
Physics of medical imaging *	Y
Medical diagnostic techniques with ionizing radiations *	N
Introduction to ionizing radiation protection *	tbd

General biology, anatomy and human physiology	tbd
Radiation biophysics and radiobiology	Y
Machine learning	tbd
MRI Physics for Neuroscience	tbd
Bioinformatics	tbd

Suggestions

1) Physics of Ionizing Radiation	I year
2) General biology, anatomy and human physiology	I year
3) Laboratory of ionizing radiation	I year
4) Physics of Medical Imaging	I year
5) Radiation biophysics and radiobiology	I year (after 1 and 2)
6) Introduction to ionizing radiation protection	I or II year (after 1 and possibly "Radioactivity")
7) Simulation in Biomedical Physics	II year (after Informatics methods, 1st year of BD)
8) Physics of innovative oncological therapy techniques	II year (after 1 and possibly 5)
9) Rheology and Diagnostic Techniques:Theory and Practice	II year
10) Computational methods in Physics	standalone (algorithms and performances)
11) Stastistical methods in Physics	standalone (param est, Montecarlo,best fit,etc.)