



UNIVERSITÀ
DEGLI STUDI
DI TRIESTE

A.A. 2026-2027

SECOND-LEVEL POSTGRADUATE MASTER DEGREE IN
MEDICAL PHYSICS
14ND EDITION

At the University of Trieste, in accordance with Article 3, paragraph 9 of Ministerial Decree No. 270 of 22 October 2004, and pursuant to the *Regulations governing First- and Second-Level University Master's Programmes, Advanced Training Courses, and Continuing and Recurring Higher Education Courses*, the **Second-Level University Master's Programme in Medical Physics** (hereinafter referred to as the “Master’s Programme”) is established for the Academic Year 2026–2027.

The Master’s Programme is activated upon the proposal of the **Department of Physics (DF)**, in collaboration with the **Abdus Salam International Centre for Theoretical Physics (ICTP)**, which acts as a co-proponent under a specific agreement.

Further information is available at the following webpages:

- <https://df.units.it/en/graduate-schools/advanced-master-programmes>
- <https://www.ictp.it/programmes/mmp.aspx>

EDUCATIONAL OBJECTIVES

The **Second-Level Master's Programme** aims to provide specialized academic and professional training in the fields of **Medical Physics** and **Radiation Metrology**. The programme is structured around three specific subject areas:

- Medical Physics for Diagnostic Imaging
- Medical Physics for Radiation Oncology
- Radiation Dosimetry

According to international guidelines, before undertaking a supervised clinical training programme, a medical physicist or radiation metrology specialist must receive appropriate postgraduate education in order to acquire the knowledge that forms the foundation for developing the competencies required to practice professionally in a hospital or metrology centre. Accordingly, the Master's Programme is organized as follows:

- **First year:** a postgraduate academic programme taught by both university faculty members and experienced clinical medical physicists and metrologists from leading national reference centres.



- **Second year:** a structured and individualized clinical or professional internship (“residency”) carried out at an affiliated hospital or radiation metrology centre.

The **Medical Physics** and **Radiation Metrology** curricula differ during the first year only by a limited number of credits, in accordance with international guidelines. The residency programmes, however, are distinct and take place within their respective professional environments.

PROFESSIONAL PROFILE

Worldwide, there is a shortage of professionals in Medical Physics, including both clinical medical physicists and academic medical physicists, according to assessments conducted by the International Atomic Energy Agency (IAEA). Similarly, there is a growing need to train highly specialized professionals capable of ensuring the accuracy and reproducibility of dosimetry systems used in different countries. The safe and effective application of technology in diagnostic imaging, radiation oncology, and radiation dosimetry requires adequately trained medical physicists and metrologists.

The Master’s Programme in Medical Physics is jointly proposed and organized by the University of Trieste and the International Centre for Theoretical Physics (ICTP). The ICTP and the IAEA provide scholarships for students from developing countries.

To facilitate international recognition of the qualification, the Medical Physics programme is accredited by the International Organization for Medical Physics (IOMP).

DURATION AND ACADEMIC CREDITS (ECTS CREDITS)

The Master's Programme has a **two-year duration** and offers two curricula:

TAUGHT COURSEWORK:

- **Medical Physics Curriculum:** 550 hours
- **Radiation Metrology Curriculum:** 590 hours

INTERNSHIP / RESIDENCY TRAINING:

- **Medical Physics Curriculum:** 1,500 hours
- **Radiation Metrology Curriculum:** 1,500 hours

The programme requires a total of **3,000 hours** of academic commitment, including individual study and preparation of the final thesis, and awards **120 ECTS credits (CFU)**.

QUALIFICATION AWARDED



Students who have attended the taught courses, completed the required internship activities, passed any intermediate assessments, and successfully completed the final examination will be awarded the **Second-Level University Master's Degree in Medical Physics**.

PROGRAMME SCHEDULE AND FREQUENCY

The programme has a **two-year duration**, running from **January 2027 to December 2028**.

Classes will be held approximately according to the following schedule:

- **First Year:**
 - First term: January–March
 - Second term: April–June
 - Third term: September–November
- **Second Year:**
 - Supervised clinical residency/internship: January–November (including a two-week summer break), on a weekly basis.

LANGUAGE AND TEACHING METHOD

Teaching activities are conducted in English and delivered in a traditional in-person format.

ATTENDANCE REQUIREMENTS

Attendance is **mandatory** for at least **80% of the total scheduled hours** of both the taught coursework and the internship/residency training.

FINAL EXAMINATION

The **final examination** consists of the candidate's defense of a **written thesis** prepared by the candidate on a topic relevant to the Master's Programme of study. The final grade is awarded on a **scale of 110 points**.

ADMISSION REQUIREMENTS

- 1) Holders of a **Master's Degree in Physics** (Class LM-17), a **Specialist Degree in Physics** (Class 20/S), or a degree in Physics awarded under academic regulations in force prior to Ministerial Decree No. 509/1999 are eligible for admission.
- 2) Applicants holding a **foreign qualification deemed equivalent** may also be admitted, solely for the purpose of admission to the Master's Programme, subject to evaluation by the Master's



Programme Board. For this purpose, the Board may also assess the adequacy of the applicant's academic background and preparation.

APPLICATION FOR ADMISSION

See Section 2 of the **Single Call for Applications for University Master's Programmes – Academic Year 2026/2027. Only applications accompanied by all the required documentation will be considered.*

SELECTION PROCEDURE

Selection will take place **only if the number of applications exceeds the maximum number of available places**.

For admission purposes, the Selection Committee may award a maximum of **40 points** based on candidates' qualifications and credentials.

The following qualifications will be considered:

- Degree thesis in a subject relevant to the Master's Programme;
- Degree grade;
- Publications and/or professional experience relevant to the Master's Programme subjects;
- Certificates of attendance for courses related to the field.

Points will be allocated as follows:

- **Degree grade:** up to 5 points
- **Degree thesis relevant to the Master's Programme subjects:** up to 5 points
- **Professional experience relevant to the Master's Programme subjects:** up to 10 points
- **Attendance of courses relevant to the Master's Programme subjects:** up to 5 points
- **Teaching activities in courses relevant to the Master's Programme subjects:** up to 5 points
- **Scientific publications relevant to the Master's Programme subjects:** up to 7 points
- **Educational/outreach publications relevant to the Master's Programme subjects:** up to 3 points

The **minimum score required for admission is 20 points**. Candidates who obtain a score below this threshold will not be considered to have passed the admission selection.



For the evaluation of qualifications, applicants must upload all required supporting documentation through the online application procedure, together with the appropriate forms (Qualifications Summary Form), available on the Master's Programme website.

CRITERIA FOR THE EVALUATION OF CANDIDATES IN THE EVENT OF A TIE

In the event of a tie in the final ranking, preference will be given to the **younger candidate**.

ELIGIBILITY OF GRADUATING STUDENTS

**See Section 3 of the Single Call for Applications for University Master's Programmes – Academic Year 2026/2027.*

AVAILABLE PLACES

The Master's Programme provides for a **maximum of 30 participants**.

The **minimum number of participants required for the programme to be activated is 10**. If this minimum is not reached, the Master's Programme will not be offered.

A maximum of **2 auditors** may also be admitted.

PARTICIPATION FEE: 1984,00 €

- **1^a rata:** 992,00 € → scadenza: entro i termini di immatricolazione
- **2^a rata:** 992,00 € → scadenza: 27/04/2027

Al contributo onnicomprensivo va aggiunta l'imposta di bollo, di importo pari a 16,00€, che sarà fatturato unitamente alla **1^a rata**.

ADMISSION FEE: €40.00

Non-refundable, to be paid by 20/10/2026 upon submission of the application for admission via PagoPA. Failure to pay the fee will result in exclusion from the selection process and from any subsequent admission to the Master's program.

DIRECTION



The Master's Program Administration is based at the Department of Physics (DF).
The Director of the Master's Program is Professor Renata Longo: rlongo@units.it; +39 040 558 3383.

INFORMATION

ADMINISTRATIVE INFORMATION (tuition fees and contributions, applications and enrolment, certificates, withdrawal from studies, extended enrolment, University, etc.)

Teaching Services Division – Postgraduate Office
Piazzale Europa, 1 - 34127 Trieste (I)

PEC	ateneo@pec.units.it
e-mail	master@amm.units.it
Web	www.units.it/master
Telephone Help Desk: Monday to Thursday, 12:00 p.m. – 1:00 p.m.	+39 040/5583094

INFORMATION ON TEACHING ACTIVITIES (class schedules, classrooms, and teaching arrangements)

International Centre for Theoretical Physics – Abdus Salam (ICTP) – Contact person: Manuela Schipizza;
schipizza@ictp.it; +39 040 2240 4487.

Program Director: Professor Renata Longo; rlongo@units.it; +39 040 558 3383.

Academic Office – Department of Physics (DF): didattica.df@units.it; +39 040 558 3378.

INFORMAZIONI SUL RILASCIO DEL DIPLOMA/PERGAMENA
diplomilaurea@amm.units.it

Telephone Help Desk Monday to Thursday, 12:00 p.m. – 1:00 p.m.	+39 040/5582945
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Public office reception services are available by appointment

ORDINAMENTO DIDATTICO DEL MASTER DI II LIVELLO IN "Fisica Medica"							
Denominazione attività didattica	Settore Scientifico Disciplinare	CFU	N. ORE TOT.	N. ORE DIDATTICA FRONTALE	Tipo attività	Tipo esame	Tipo valutazione
I ANNO							
Anatomy and physiology		4	100	32			
Anatomy and physiology	MEDS-22/A	3	75	24	LECTURE	ORALE	Grade (out of 30)
Anatomy for radiotherapy	MEDS-22/A	1	25	8	LECTURE	ORALE	Grade (out of 30)
Radiobiology		1	25	12			
Radiobiology	PHYS-06/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)
Radiation Physics		3	75	24			
Radiation Physics	PHYS-06/A	3	75	24	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Radiation dosimetry		4	100	32			
Radiation dosimetry	PHYS-06/A	4	100	32	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Physics of nuclear medicine and exercises		5	125	48			
Physics of nuclear medicine (a)	PHYS-06/A	2	50	16	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Nuclear medicine exercise	PHYS-06/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)
Physics of nuclear medicine (b)	PHYS-06/A	2	50	20	LECTURE +PRACTICAL SESSION.	WRITTEN EXAMINATION	Grade (out of 30)
Medical imaging fundamentals		4	100	32			
Medical imaging fundamentals	PHYS-06/A	4	100	32	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Physics of diagnostic and interventional radiology with X ray 1		2	50	16			Grade (out of 30)
Physics of diagnostic and interventional radiology with X ray 1	PHYS-06/A	2	50	16	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Physics of diagnostic and interventional radiology with X ray 2		2	50	20			
Physics of diagnostic and interventional radiology with X ray 2	PHYS-06/A	2	50	20	LECTURE +PRACTICAL SESSION.	WRITTEN EXAMINATION	Grade (out of 30)
Physics of diagnostic radiology with US and MRI		4	100	32			
Physics of diagnostic radiology with US and MRI	PHYS-06/A	4	100	32	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Physics of imaging detectors		2	50	16			
Physics of imaging detectors	PHYS-06/A	2	50	16	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Physics of radiation oncology and exercises 1		8	200	76			
Physics of radiation oncology: fundamentals and MU calculation	PHYS-06/A	3	75	24	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Exercise on Physics of radiation oncology: treatment planning 3D-CRT	PHYS-06/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)



Exercise Physics of radiation oncology: acceptance tests and quality control	PHYS-06/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)
Physics of radiation oncology: imaging in radiotherapy .	PHYS-06/A	1	25	8	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Physics of radiation oncology imaging in radiotherapy: exercises	PHYS-06/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)
Physics of radiation oncology: technology and therapy machines	PHYS-06/A	1	25	8	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Equipment specifications, acquisition and management		1	25	8			Grade (out of 30)
Equipment specifications, acquisition and management	PHYS-06/A	1	25	8	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Physics of radiation oncology and exercises 2		5	125	48			
Physics of radiation oncology and exercise: IMRT/VMAT	PHYS-06/A	2	50	20	LECTURE +PRACTICAL SESSION.	WRITTEN EXAMINATION	Grade (out of 30)
Physics of radiation oncology: Dose calculation models and exercise on artificial intelligence	PHYS-06/A	2	50	20	LECTURE +PRACTICAL SESSION.	WRITTEN EXAMINATION	Grade (out of 30)
Physics of radiation oncology: brachytherapy techniques	PHYS-06/A	1	25	8	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Radiation Protection		3	75	24			
Radiation Protection 1	PHYS-06/A	2	50	16	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Radiation Protection 2	PHYS-06/A	1	25	8	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Information technology in medicine		1	25	8			
Information technology in medicine	PHYS-06/A	1	25	8	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Statistical analysis in medicine: exercises		1	25	12			
Statistical analysis in medicine: exercises	MEDS-24/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)
Exercise on IT in medicine		1	25	12			
Exercise on IT in medicine	PHYS-01/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)
Exercise on diagnostic radiology		1	25	12			
Exercise on diagnostic radiology	PHYS-06/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)



Global Health and Medical Ethics		1	25	8			Grade (out of 30)
Global Health and Medical Ethics	MEDS-24/B	1	25	8	LECTURE	WRITTEN EXAMINATION	Grade (out of 30)
Monte Carlo simulation methods		1	25	12			
Monte Carlo simulation methods	PHYS-01/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)
Guided exercise at Trieste Hospital		2	50	24			
Preliminary experiences	PHYS-06/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)
Guided exercise at hospital	PHYS-06/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)

In alternativa	MEDICAL PHYSICS CURRICULUM							
	Radiotherapy track							
	Physics of radiation oncology and exercises 3		2	50	24			
	Theory and exercises on small MV photon fields dosimetry	PHYS-06/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)
	Exercises of brachytherapy	PHYS-06/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)
	Theory and exercises on commissioning of linac and TPS		2	50	20			Grade (out of 30)
	Theory and exercises on commissioning of linac and TPS	PHYS-06/A	2	50	20	LECTURE +PRACTICAL SESSION.	WRITTEN EXAMINATION	Grade (out of 30)
	Diagnostic Imaging track							
	Physics of x-ray diagnostic and interventional radiology 3		2	50	20			
	Physics of x-ray diagnostic and interventional radiology 3	PHYS-06/A	2	50	20	LECTURE +PRACTICAL SESSION.	WRITTEN EXAMINATION	Grade (out of 30)
	Physics of nuclear medicine and exercises 2		2	50	20			
	Physics of nuclear medicine and exercises 2	PHYS-06/A	2	50	20	LECTURE +PRACTICAL SESSION.	WRITTEN EXAMINATION	Grade (out of 30)
Grade (out of 30)								
corsi già' presenti tra i corsi a scelta del curriculum Medical physics e obbligatori per il curriculum Radiation Metrology	RADIATION METROLOGY CURRICULUM							
	Physics of x-ray diagnostic and interventional radiology 3		2	50	20			
	Physics of x-ray diagnostic and interventional radiology 3	PHYS-06/A	2	50	20	LECTURE +PRACTICAL SESSION.	WRITTEN EXAMINATION	Grade (out of 30)
	Physics of radiation oncology and exercises 3		2	50	24			
	Theory and exercises on small MV photon fields dosimetry	PHYS-06/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)
	Exercises of brachytherapy	PHYS-06/A	1	25	12	PRACTICAL SESSION	WRITTEN EXAMINATION	Grade (out of 30)
	TOTALE ORE E CFU COMPLESSIVI I ANNO	-	60	1400	520			



**UNIVERSITÀ
DEGLI STUDI
DI TRIESTE**

MASTER UNIVERSITARIO DI II LIVELLO IN
FISICA MEDICA

A.A. 2026-2027

FISICA MEDICA - MEDICAL PHYSICS

A.A. 2026-2027

II ANNO							
MEDICAL PHYSICS CURRICULUM							
Supervised internship (Addestramento clinico vigilato, da svolgere presso uno o piu' ospedali)		55	1375		Tirocinio	orale	giudizio finale
Thesis defence (Prova finale - discussione tesi di master)		5	125			Tesi e dissertazione	Voto finale in centodecimi
TOTALE ORE E CFU COMPLESSIVI (II ANNO)		60	1500				

RADIATION METROLOGY CURRICULUM							
Metrology system		2	50	20			
Metrology system	PHYS-06/A	2	50	20	LEZIONE + ESERCITAZIONI	SCRITTO	Voto in trentesimi
Secondary standard dosimetry laboratory (SSDL) procedures		2	50	20			
Secondary standard dosimetry laboratory (SSDL) procedures	PHYS-06/A	2	50	20	LEZIONE + ESERCITAZIONI	SCRITTO	Voto in trentesimi
Supervised internship (Addestramento vigilato, da svolgere presso centri metrologici di riferimento nazionale)		51	1275		Tirocinio	orale	giudizio finale
Thesis defence (Prova finale - discussione tesi di master)		5	125			Tesi e dissertazione	Voto finale in centodecimi
TOTALE ORE E CFU COMPLESSIVI (II ANNO)		60	1500				

TOTALE ORE E CFU COMPLESSIVI		120	2900				
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