

SCIENTIFIC PROGRAMME

Course director: Maria Mania Aspradakis (MMA)

Faculty: Anders Ahnesjö (AA) Mania Aspradakis (MMA) Edmond Sterpin (ES)
Nuria Jornet (NJ) Crister Ceberg (CC) Victor Hernandez (VH)

The schedule is in **Central European Time (CET)**

DAY 1 – Monday 23.11.2026

Time	Duration	Lecture – Chairpersons: MMA / CC	Teacher
Introduction and basic concepts			
13:00 - 13:15	15"	Introduction to the course	MMA
13:15 - 13:30	15"	Dose formalism and MU computations: Setting the scene	AA
13:30 - 14:00	30"	Basic concepts, definitions, cavity theory, convolution, superposition ray trace, fluence and the Boltzmann transport equation	CC
14:00 – 14:30	30"	<i>Practical: basic concepts</i>	CC
14:30 – 14:45	15"	Break	
Input data			
14:45 – 15:15	30"	Linac head design	CC
15:15 – 15:45	30"	Characterisation of the patient	NJ
15:45 – 16:00	15"	Break	
16:00 - 16:45	45"	Dose measurements: Part 1 The best detector for different jobs – detectors for input data collection	NJ
16:45 – 17:30	45"	<i>Practical: commissioning data and methodologies</i>	NJ/ MMA

DAY 2 – Tuesday 24.11.2026

Time	Duration	Lecture – Chairpersons: AA / MMA	Teacher
Modelling the radiation source			
13:00 - 13:40	40"	Multisource models part I	AA
13:45 - 14:20	35"	Multisource models part II	AA
14:20 - 14:35	15"	Break	
14:35 - 15:15	40"	MLC modelling	VH
Modelling dose in the patient – Part I			
15:15 - 15:45	30"	Factor-based formalisms	MMA
15:45 - 16:00	15"	MU calculations in common TPS	MMA
16:00 - 16:15	15"	Break	
16:15 - 16:50	35"	The Monte Carlo method (photon beams)	ES
16:50 - 17:00	10"	<i>Introduction to homework (DIY calculations): head scatter modelling & in-air output ratios</i>	MMA
17:00 – 17:30	30"	<i>Preparation for practical on setting up a PSQA programme</i>	VH/MMA

DAY 3 – Wednesday 25.11.2026

Time	Duration	Lecture – Chairpersons: CC / ES	Teacher
11:00 – 12:00	60"	<i>Discussion on homework (DIY calculations): head scatter modelling & in-air output ratios</i>	AA/MMA
Modelling dose in the patient part II			
13:00 - 13:40	40"	Photon Beams: Deterministic solution of the LBTE – a numerical grid-based approach	CC
13:45 - 14:20	35"	Photon Beams: Point kernel approaches	AA
14:20 - 14:35	15"	Break	
14:35 - 15:15	40"	Photon Beams: Pencil beam kernel approaches	AA
15:15 - 15:45	30"	Dose to medium and/or water and review of management in common TPS	ES
Challenges in treatment planning			
15:45 - 16:00	15"	Break	

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16:00 - 16:30	30"	The problematic of treatment planning under loss of lateral electronic equilibrium	ES
16:30 - 17:00	30"	Plan complexity and robustness	VH
17:00 - 17:15	15"	Break	
17:15 - 17:45	30"	Managing uncertainties: PTV, probabilistic planning & robustness evaluation	ES
17:45 - 17:55	10"	<i>Introduction to homework (DIY calculations): pencil beam kernel approach</i>	MMA

DAY 4 – Thursday 26.11.2026

Time	Duration	Lecture – Chairpersons: MMA	Teacher
11:00 – 12:00	60"	<i>Discussion on homework (DIY calculations): pencil beam kernel approach</i>	AA/MMA
Verification of the planned dose (Plan QA) – part I			
13:00 - 13:30	30"	Dose measurements: Part 2 Detector systems for plan verification	NJ
13:30 - 14:00	30"	TPS commissioning and performance testing	NJ
14:00 - 14:15	15"	Break	
Verification of the planned dose (PSQA) – part II			
14:15 - 14:45	30"	In-vivo dosimetry for treatment verification	NJ
14:45 - 15:15	30"	Concepts, methodologies and current guidance for Plan QA	VH
15:15 - 15:30	45"	<i>Practical on setting up a PSQA programme</i>	VH
15:30 - 15:45	15"	Break	
MCQ and Closing remarks			
15:45 – 16:30	45"	MCQs - Take Home messages / Recap ☐ Modelling the source ☐ Modelling the patient ☐ Modelling dose in the patient ☐ Detector systems and measurement methodologies ☐ Verification of planned dose/PSQA	all