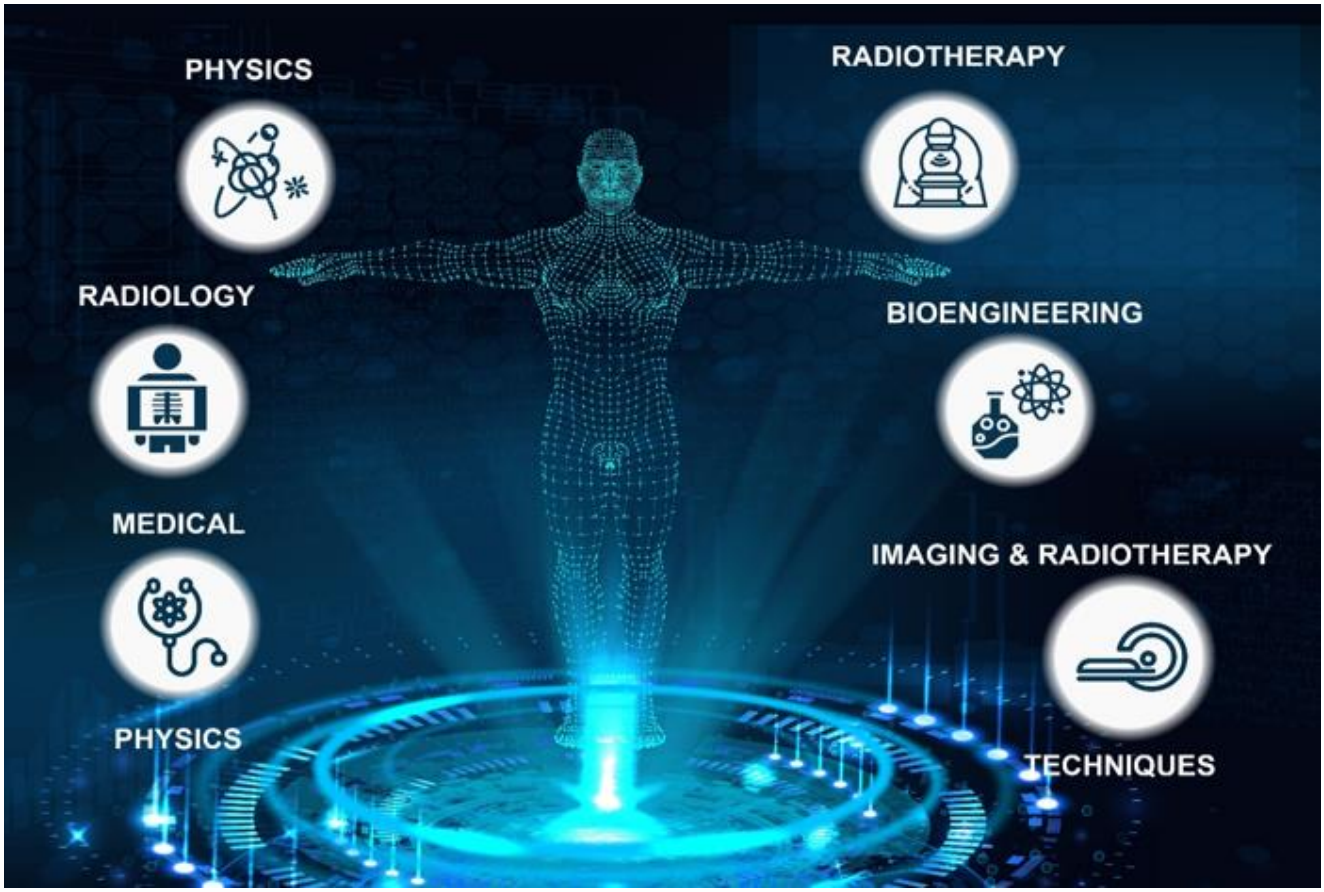
Heavy Ion Therapy - Treatment Planning
Detailed Programme of Studies



Click on the Hyperlinks to access the respective YouTube Course Video

Session 1

Particle Therapy Overview - Manjit Dosanjh (CERN/SEEIIST/ENLIGHT)
Cancer Data Statistics and the Balkans - Mimoza Ristova (UKIM)
A Brief Introduction to Particle Accelerators - Maurizio Vretenar (CERN)
Accelerators for Medicine - Maurizio Vretenar (CERN)
Cancer Radiotherapy Introduction - Joao Seco (DKFZ)
MatRad General Introduction - Hans-Peter Wieser (LMU Munich), Niklas Wahl (DKFZ)
MatRad Installation & Data - Hans-Peter Wieser (LMU Munich), Niklas Wahl (DKFZ)

Session 2

Accelerator Physics - Mariusz Sapinski (SEEIIST)
Ion sources - Nadia Gambino (MedAustron)
Inverse Treatment Planning / Dose Optimization - Niklas Wahl (DKFZ)
Hands-On Treatment Planning Basics - Hans-Peter Wieser (LMU Munich), Niklas Wahl (DKFZ)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101008548

Recorded Q&A Session, Virtual Visits & Student Presentations - Yiota Foka (GSI), Aristeidis Mamaras (Auth)), Christian Graeff (GSI), Marco Pullia (CNAO), Angelica Facoetti (CNAO)

Session 3

Linear Accelerators - Giovanni Bisoffi (INFN)
Injection to Synchrotrons - Elena Benedetto (SEEIIST)
Beam Extraction Methods - Rebecca Taylor (ICL)
Imaging in Radiotherapy - Joao Seco (DKFZ)
Impact and Mitigation of Uncertainties in Particle Therapy Treatment Planning - Niklas Wahl (DKFZ)
Hands-On Range Uncertainties - Hans-Peter Wieser (LMU Munich), Niklas Wahl (DKFZ)
Range Verification Methods - Hans-Peter Wieser (LMU Munich)
Recorded Q&A Session, Virtual Visits & Student Presentations - Mr Damir Skrijelj (UNSA), Niklas Wahl (DKFZ), Silvia Molinelli (CNAO), Stipe Pavic (UNSA)

Session 4

Gantries and Beam Delivery - Elena Benedetto (SEEIIST)
Beam Instrumentation - Mariusz Sapinski (SEEIIST)
Basics of Accelerator Control Systems - Matej Polzelnik (CosyLab)
Introduction to Radiobiology - Albana Topi (GSI)
Biological Dose Optimization - Hans-Peter Wieser (LMU Munich)
Hands-On Treatment Planning Basics: Hands-On Biological/Carbon Planning - Hans-Peter Wieser (LMU Munich), Niklas Wahl (DKFZ)
Recorded Q&A Session, Virtual Visits & Student Presentations - Yiota Foka (GSI) Aristeidis Mamaras (AuTh), Mr Damir Skrijelj (UNSA), Fehima Ugarak (University of Sarajevo)), Uta Bilow (Technische Universitaet Dresden), Kenneth Cecire (QuarkNet, University of Notre Dame), Albana Topi (GSI)

Session 5

ECR Ion Sources - Nadia Gambino (MedAustron)
Ion-Source/Linac Sarajevo Project - Mariusz Sapinski (SEEIIST)
Low Energy Accelerators, Applications - Milko Jaksic (Ruder Boskovic Institute)
Radiation Safety Planning with FLUKA - Haris Dapo (ANKARA Univ./TARLA)
AI/ML in Particle Therapy: State-of-Play and Future Perspective - Uros Mitrović (CosyLab JSC)
Experiences of Existing Heavy Ion Therapy and Research Infrastructures, Future Plans, Upgrades
- Clinical Experience on benefits of Heavy-Ion Therapy - Ester Orlandi (CNAO)
- Particle Therapy Approach Exploring the Synergies Between Carbon Ion and Immune Response - Slavisa Tubin (MedAustron)
- From Pioneering Heavy Ion Therapy at GSI to the HIT and MIT Hospitals - Christian Graeff (GSI)
- From Fundamental Research to Medical Applications - Manuela Cirilli (CERN), Benjamin Frisch (CERN)
- CNAO Accelerator Complex and Upgrade Plans - Marco Pullia (CNAO)

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Accelerator Complex for Next Generation Heavy Ion Therapy and Research Facilities - Mariusz Sapinski (SEEIIST)
Treatment Planning Methods at MedAustron - Markus Stock (MedAustron)
Use of FLUKA Monte Carlo in Hadron Therapy - Vasilis Vlachoudis (CERN)
Recorded Q&A Session, Virtual Visits & Student Presentations - Yiota Foka (GSI), Aristeidis Mamaras (AuTh), Albana Topi (GSI), Ivan Knezevic (Ministry of Economic Development of Montenegro))

Other Video Resources

Hadron Therapy Facility
Heavy Ion Therapy Research Integration - Transnational Access
HITRIplus Beam Access
CNAO – The Particle Travel
HIT - World Class Oncology at Heidelberg University Hospital
MedAustron patient treatment
MedAustron in a Nutshell
Cosylab radiotherapy products suite
GSI- FAIR – The Universe in the Laboratory
CERN - From particle physics to medicine
ENLIGHT: Hadron-therapy in Europe
Hadrontherapy
CERN:HIT – A New Dimension in Cancer Therapy
New Horizon in Cancer Care: Heavy Ion Radiotherapy – Medical Frontiers

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