Medical Physics for World Benefit

www.MPWB.org

Working together for effective patient care

Levelling the Playing Field: Access to Resources for Medical Physicists Everywhere

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Support of Medical Physics in LMICs – the needs:

- Support for individual clinics / universities
- Grassroots activities
- Individualized education/training/mentoring
- Long term support and relationship building
- Nimble assistance and consultation

MPWB Vision: A world with access to safe and effective applications of physics and technology in medicine

- Peer-to-peer support: medical physicists by medical physicists
- Database of potential volunteers
- Fund short-term visits by volunteers to work alongside medical physicists in LMIC
- Build long-term relationships, on-going support
- Radiation Therapy + other Medical Physics areas
- Incorporated in US and Canada 2015/2016

Jacob Van Dyk, MSc, FCCPM, FCOMP, FAAPM
Founding President, MPWB

Co-founders
Yakov Pipman -Vice-President
Jerry White- Chairman of the Board
David Wilkins -Secretary/ Treasurer
Parminder Basran – Dir. Of Communications
Robert Jeraj –Dir. of Fund Raising

MPWB Mission:

To support activities which will yield effective and safe use of physics and technologies in medicine through advising, training, demonstrating and/or participating in medical physics-related activities, especially in low-to-middle income countries.

- Largely intellectual support through education, training, mentoring, collaborating
- Not into equipment donations
  - But will support related training initiatives as appropriate

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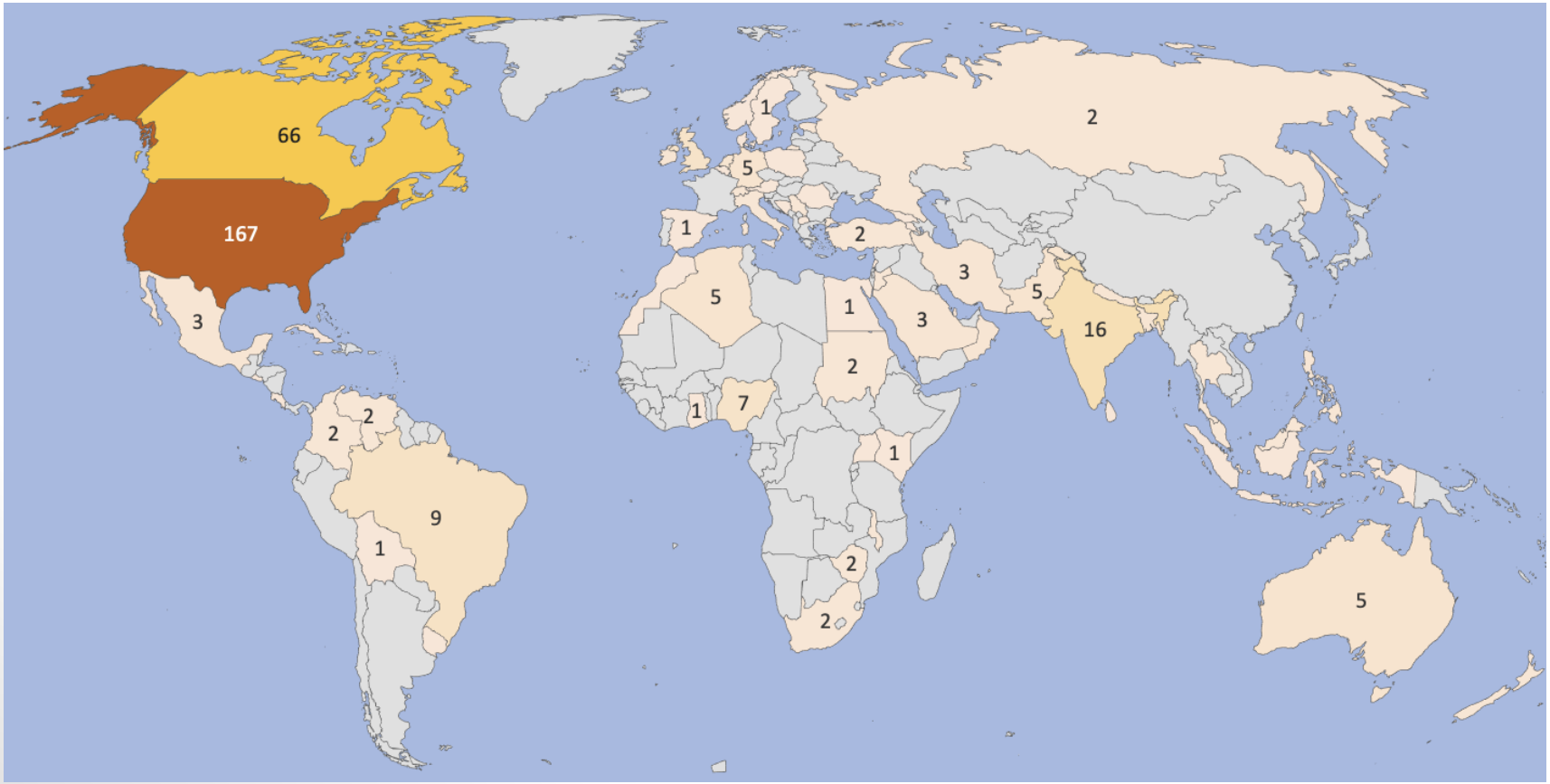
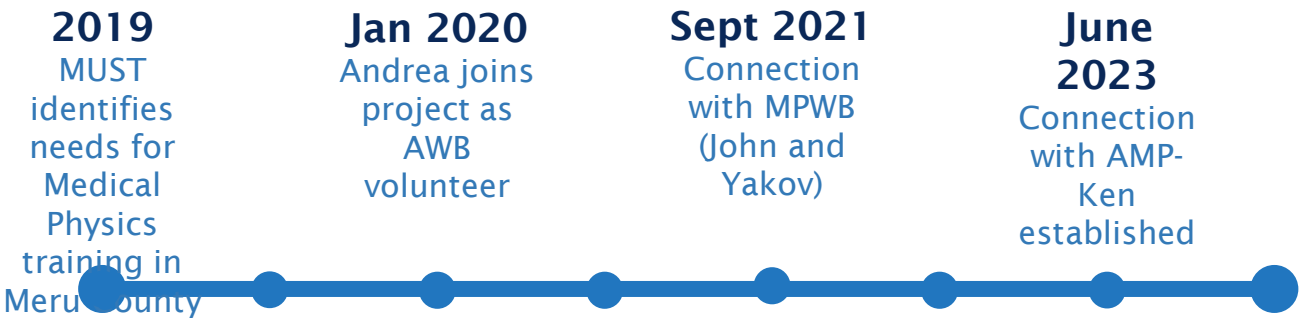
Members of MPWB – 2022 (244 total)



Webinar series (MPWB YouTube page)

- COVID-19 impact in medical physics practice
- Modern Radiation Therapy with Co-60
- 3D-Printing in Radiotherapy.
- Selection of Megavoltage Treatment Technologies for External Beam Radiation Therapy: A Global Perspective
- Cost effective globally deployable radiation therapy: The same but smarter ... and radically different
- Technologies, Opportunities and Challenges of Automated Treatment Planning in Radiotherapy
- Automated Treatment Planning: A resource with potential benefits in both high- and low-income countries
- Our Pale Blue Dot-Climate Crisis and Healthcare
- Risk based Quality Management

Medical Physics MSc in Kenya
PROJECT HISTORY



(c/o Andrea Hemmerich, AWB)

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Stakeholders at MUST, local hospitals and AMPKen, with AWB and MPWB

National MP organization in Jamaica

Jamaican Association for Physics in Medicine
National Cancer Treatment Centre
22 Deanery Rd, Kingston
Japm.org.jm
876-924-9092 EXT: 2044/2068

- Work with Medical Physicists to establish the Jamaican Association for Physics in Medicine
- Collaborate on Statutes, by-laws, etc. (3 years +)
- Official Registration (Oct 2021)
- National Member organization of IOMP (2022)
- First English-speaking member of ALFIM (2022)
- First JAPM official act for the Caribbean (Nov 2023!)

Capacity building of clinical Medical Physics in Latin America.

- Consortium of seven clinical training programs in Argentina willing to take additional trainees.
- First program in Latin America accredited by IOMP is part of the initiative
- Several Latin American countries lack training programs or capacity
- MPWB exploring ways to support this collaborative effort as pilot program.

MPWB Virtual Mentorship Program

Goal: To set a sustainable mentorship program:

- Define need, expectations, and requirements.
- Find and match mentors and mentees
- Mentorship agreements
- Standard measurements of performance
- Metrics measuring the success of the program
- MPWB's global survey on virtual mentoring at end of 2021 (Manuscript in progress)
- Multiple 'informal' mentorship relations

Establishing a MPWB Virtual Mentorship Program

- Started looking at operational issues (2019):
  - Small working group had questions on how to best proceed
- 2020 - 2021 undertook a global survey to inform program
  - 2022 – data compilation completed
  - 2023 – analysis completed

Virtual Mentoring Survey (con't)

Analysis showed common themes/suggestions:

- Develop mentoring handbook to detail process
- Have potential mentors and mentees apply to participate:
  - giving background with technical expertise, technologies in use, job role, expectations, …
- Match mentor and mentee and use formal mentorship agreement defining:
  - expectations expected frequency, length, and format of meetings
  - review process with criteria for continuation or termination
- Review overall program regularly and refine as needed

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Virtual Mentoring Survey (con't)

Work now underway :

- Developing mentoring program policies
- Will start soliciting for potential mentors and mentees and begin matching….
  - Perhaps using Kenyan program as a pilot project.
  - Will be looking for volunteers with MSc Physics teaching experience willing to mentor instructors in Meru, Kenya.

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- Sponsorship of LMIC Medical Physicists to attend AAPM Annual Meetings remotely

Year	Awardees	Countries
2021	37	37
2022	45	25
2023	30	13

- Communications

Peter Sandwall II (News Editor)

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News Brief Friday, September 3, 2021

Important notices, upcoming deadlines, and events happening in the MPWB community.

MPWB Virtual Mentorship Survey

- Medical Physics for World Benefit is performing an international survey to investigate whether the Medical Physics community considers virtual mentoring to be of benefit to the community, especially for under-resourced contexts? Questions regarding challenges and successes in the virtual mentoring process will be addressed as a way of optimizing the virtual mentoring experience. All Medical Physicists (clinical, academic, industrial, or governmental) or Medical Physicists in training (graduate students or residents) from both high-income and lower-income countries are invited to participate.
- The link to the survey can be found here: https://uwo.eu.qualtrics.com/jfe/form/SV_dgtHBEO2gPi2aS9

MPWB Webinar Series Take Note! September 15, 2021

We are please to host the next MPWB webinar:

Technologies, Opportunities and Challenges of Automated Treatment Planning in Radiotherapy

Speaker: Ben Heijmen (Erasmus MC, Netherlands)

VOLUME 7 ISSUE 1 MARCH 2022

Benefit Exchange

A newsletter of *Medical Physics for World Benefit*

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Inside This Issue

Guest contributor:

Philip Kyeremeh Jnr Oppong, PhD(c)
Global Center for Biomedical Science and Engineering, Graduate School of Medicine, Hokkaido University, Sapporo, Japan

Introduction

Greetings Physicists! To facilitate and encourage collaboration, we seek contributions describing both MPWB-affiliated and non-affiliated projects and updates that may be of interest to our readership. Examples include the work of IAEA, various international professional societies (ALFIM, AFOMP, EFOMP, *et al.*), non-governmental organizations like RadAid and Global Access to Cancer Care Foundation, and institutional teams. Our newsletter aims to highlight and connect individuals and organizations involved in improving physics in medicine internationally.

Global Awareness

As part of our effort to increase awareness and collaboration, we highlight a specific geographic region in each publication. In this issue we travel with medical physics doctoral candidate **Philip Kyeremeh Jnr Oppong** to his home country, the West African nation of Ghana, as he shares recent advances in medical physics practice:

Ghana is a West African country located just above the equator with the Greenwich meridian passing through Tema, its main industrial city. With a low and sandy coastline on the Gulf of Guinea, Ghana occupies a total area of 239,567 sq.km of tropical rain forest and several water bodies-including rivers, lakes and streams that extends northward from the coastline. Ghana is one of the leading countries across Africa partly due to a relative political stability, a fast-growing economy (with a nominal GDP at $74.26 billion per 2021 estimates) and a relatively evolving service delivery industry.

In response to the healthcare needs of a rapid population growth (currently logged at 31.07 million), there have been remarkable investments in the quantity and quality of healthcare delivery facilities as well as the development of human capital with both government and private investor involvements. Several schools and colleges have been established across the 16 regions of the country to accentuate commitments to improving healthcare and quality of life.

One of such is the setting up of the Graduate School of Nuclear and Allied Science's Department of Medical Physics, University of Ghana. The mandate of the Department has been to train medical physicists from Ghana and other African countries to feed into the continent's Radiological Science and Technology agenda in healthcare delivery.

- Continued, pg. 3

Open Syllabus Project for Medical Physics Residents

Issue:

Medical Physics training in LMICs requires access to high quality and timely educational medical physics resources.

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Open Syllabus Project for Medical Physics Residents

Challenges:

Access to high quality, relevant, and timely educational content can be a challenge for LMIC.

Learning objectives for LMIC may need prioritization when compared to learning objectives in HIC Medical Physics residency programs.

Different credentialing MP Residency bodies can define learning objectives and competency profiles differently

- Efomp.org, campep.org, etc.,

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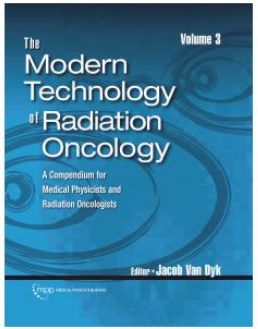

Chapter 16

Radiation Oncology Medical Physics Resources for Working, Teaching, and Learning

Jacob Van Dyk

Updated 5 July 2016

https://medicalphysics.org/documents/vandykch16.pdf

In Partnership with Institutions and Educators Around the World to Enhance the Learning and Teaching of Medical Imaging Physics, Engineering, and Technology and To Utilize Technology to Enhance Human Performance in the Educational Process

The Foundation works with established institutions and organizations and does not receive unsolicited proposals.

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TreatSafely Foundation

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Open Syllabus Project for Medical Physics Residents

Challenges:

- Content in Medical Physics Residency Syllabi – Relevancy of MPR Syllabus for LMIC
- Access to Educational Content – Accessibility of online resources
- Connecting Content with Learning Objectives and Competencies

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HOW might we…

- Devise a relevant Medical Physics Residency Syllabus given the various competency profiles and learning objectives?
- Provide and improve access to online educational resources?
- Connect relevant learning objectives with accessible educational resources

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Solution:

Establish a relevant in Medical Physics Residency Syllabus for LMIC and link relevant learning objectives with accessible educational resources.

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Open Syllabus Project for Medical Physics Residents

Open Syllabus Project

List of Core Medical Physics Competencies

Where to get it

CONNECT

What to learn

HTML, YouTube, PDF
TG Reports, Licensed Content
Etc.,

IAEA Radiation Oncology Residency Syllabus w/ modifications

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Open Syllabus Project for Medical Physics Residents

Project Objectives:

- Create an “Open Syllabus”: capture the core elements in medical physics training from various professional entities, organizations and resources;
- Curate the syllabus content: define, select and/or collect all digital assets and materials which may be used in achieving the learning objectives in this open-syllabus;
- Publish the syllabus: content will be published on the MPWB website, along with web-links to educational resources that could be used to meet learning objectives;
- Partner: when and where possible, partner with organizations in development of the open-syllabus.

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Open Syllabus Project for Medical Physics Residents

Deliverables:

- A single syllabus that captures core-competencies in clinical medical physics practice (within one of the specialities), coupled to links of online resources and/or assets, for publication as a web-based document;
- Establish a workflow for updating and monitoring the syllabus and all associated links

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Open Syllabus Project for Medical Physics Residents

In Scope

- Radiation oncology medical physics

Out of Scope (for now)

- Diagnostic imaging medical physics (and other sub-disciplines)
- Actual delivery of educational content
- Assessment of educational content (e.g. testing, evaluation processes, examinations etc.,)
- All educational materials at the undergraduate and graduate level

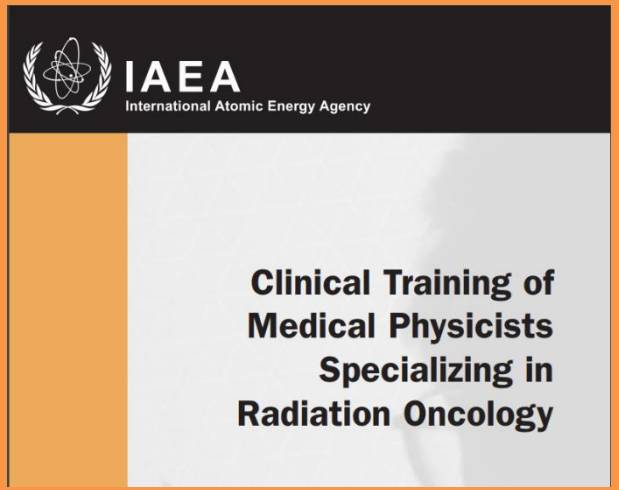
Open Syllabus Project for Medical Physics Residents

Working Example:

Content

Open Syllabus Project

List of Core Medical Physics Competencies



http://www-pub.iaea.org/MTCD/publications/PDF/TCF-37.pdf

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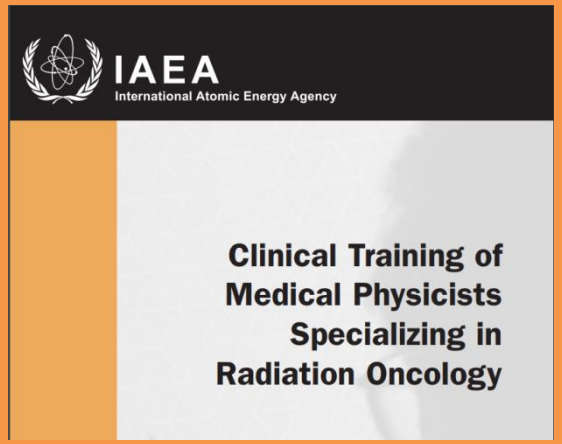
Open Syllabus Project for Medical Physics Residents

List of Core Medical Physics Competencies

Modules

- Radiation Safety and Protection
- Radiation Dosimetry for Ext. Beam Therapy
- Brachytherapy
- Etc.,



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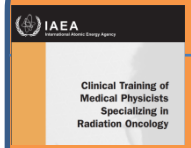
List of Core Medical Physics Competencies



Radiation Dosimetry for Ext. Beam Therapy

	MODULE 3. RADIATION DOSIMETRY FOR EXTERNAL BEAM THERAPY
Objectives	To develop the skills and expertise required in radiation dosimetry for external beam therapy.
Competencies Addressed in this Module	• Capability in the understanding and use of ionisation chambers for relative and absolute determination of absorbed dose to water in radiotherapy beams. • Capable to perform dose measurements in radiotherapy beams using a range of dosimeters. • Capable to perform absorbed dose determination in external beam radiotherapy • Capable to perform relative dose measurements in external beam radiotherapy. • To be able to perform and analyse dose verification measurements in a • Able to monitor the accuracy of dose planned and delivered to Individual patients, patient groups, in standard treatment techniques and in special or new treatment techniques. • Ability to manage a QA programme for all dosimetry equipment

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Open Syllabus Project for Medical Physics Residents

List of Core Medical Physics Competencies

Radiation Dosimetry for Ext. Beam Therapy

	MODULE 3. RADIATION DOSIMETRY FOR EXTERNAL BEAM THERAPY
Core Reading List	INSTITUTE OF PHYSICS AND ENGINEERING IN MEDICINE AND BIOLOGY, The IPEMB code of practice for the determination of absorbed dose for x-rays below 300 kV generating potential (0 035 mm Al - 4 mm Cu; 10 - 300 kV generating potential), Phys. Med. Biol. **41** (1996) 2605-2625. INTERNATIONAL ATOMIC ENERGY AGENCY, Absorbed Dose Determination in External Beam Radiotherapy: An International Code of Practice for Dosimetry Based on Standards of Absorbed Dose to Water ,Technical Reports Series No. 398, IAEA, Vienna (2000). INTERNATIONAL COMMISSION ON RADIATION UNITS AND MEASUREMENTS, Fundamental Quantities and Units for Ionizing Radiation, ICRU Rep. 60, Bethesda, MD (1998). INTERNATIONAL ORGANIZATION FOR STANDARDIZATION, Guide to the expression of uncertainty in measurement, 2nd ed. [Published by ISO in the name of BIPM, IEC, IFCC, IUPAC, IUPAP and OIML], ISO, Geneva (1995).

Open Syllabus HyperLink

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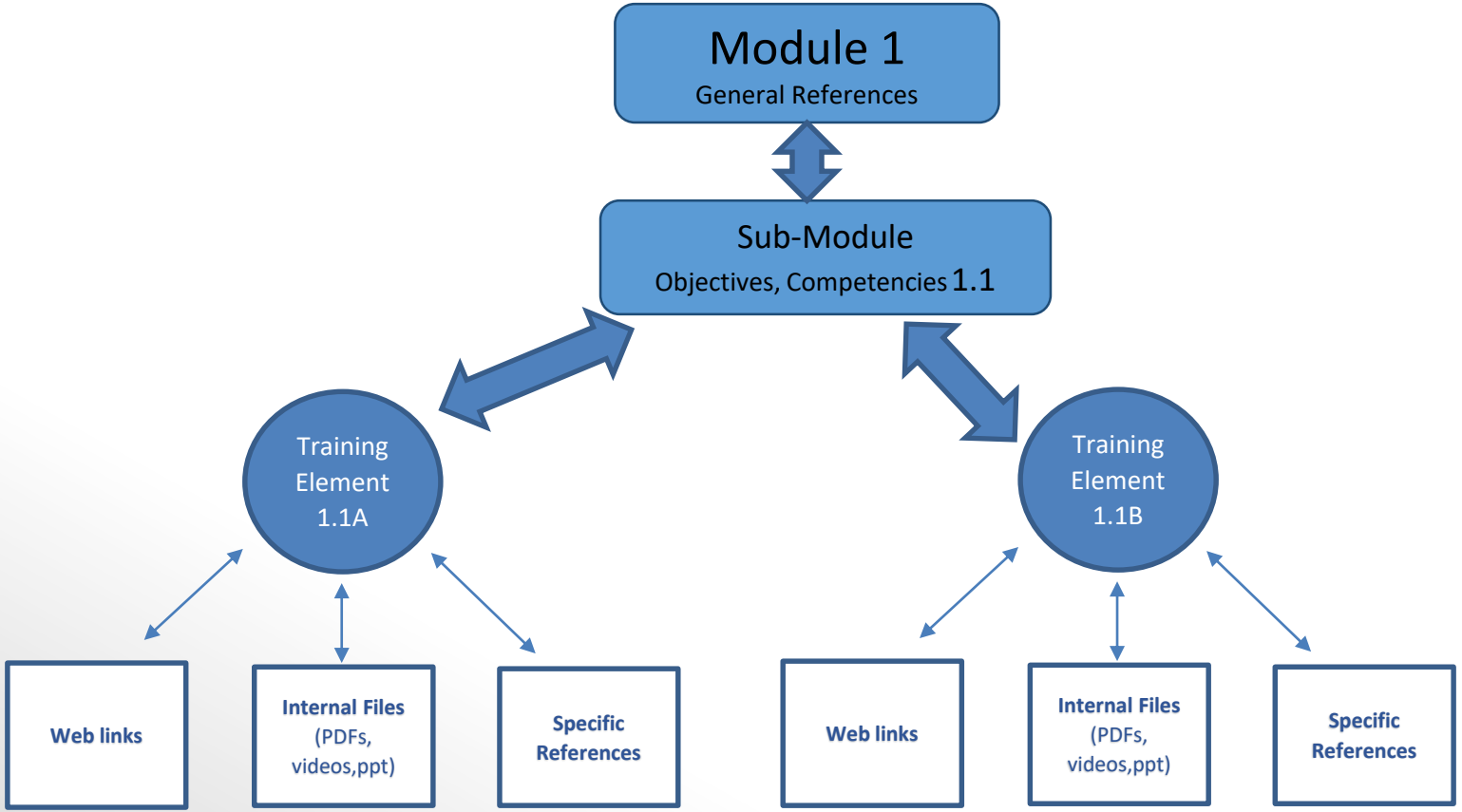

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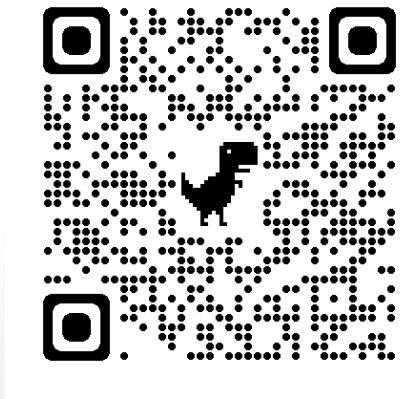
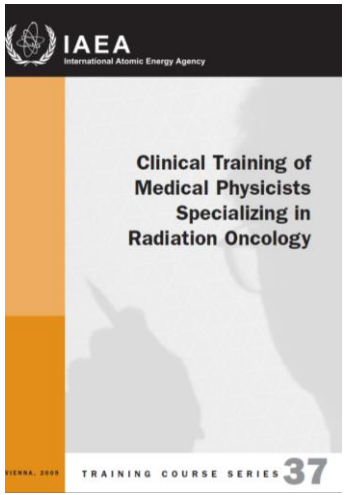
Open Syllabus Project

Website of Open Resources for Learning and Development of Medical Physics (WORLD of MP)

- *platform is still in its early stages but has immense potential to*
- *improve access to critical educational content for trainees, particularly given its organizational*
- *simplicity and reference to the IAEA TC-37 training document*





How to access it – test drive

https://www.mpwb.org/WorldOfMedicalPhysics

The entire syllabus:

- https://mpwb.org/resources/Documents/OpenSyllabus/output.html

Searchable terms within it

- https://mpwb.org/resources/Documents/OpenSyllabus/Filterable/output.html

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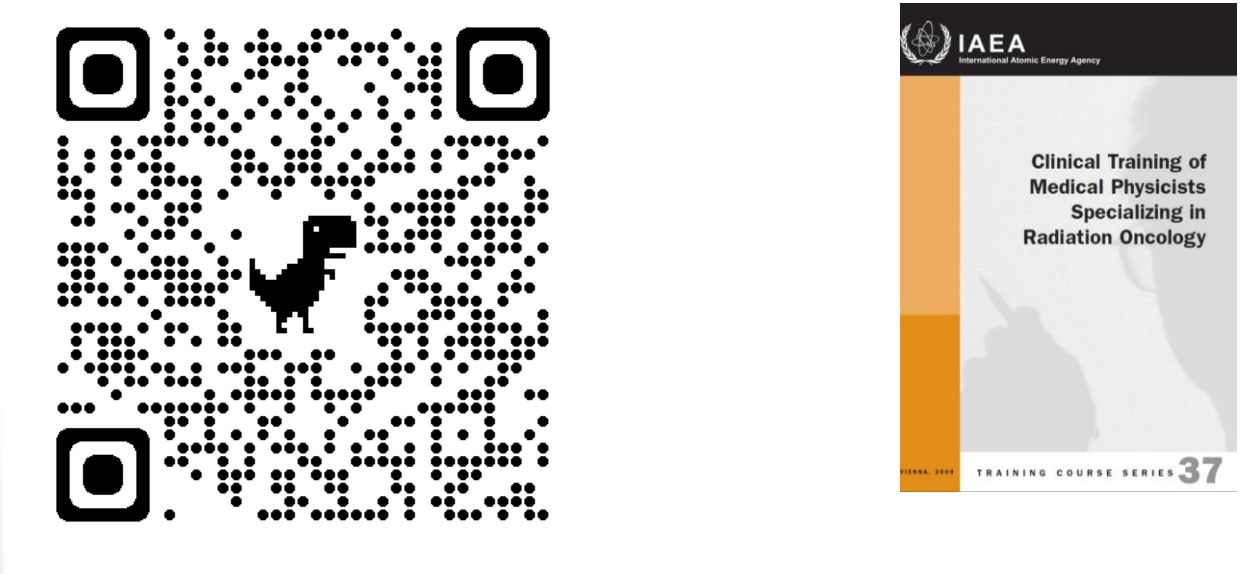
Open Syllabus Project

- Matching best on-line materials with IAEA residency syllabus
- Web-based open environment of educational resources



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Learn more about MPWB, and become a member!

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Questions, comments ???