


OVERVIEW ON THE EVALUATION AND
ASSESSMENT MECHANISMS FOR THE
POSTGRADUATE EDUCATIONAL COURSE IN
RADIATION PROTECTION AND THE SAFETY OF
RADIATION SOURCES (PGEC)

A. A . Da Silva, K. Karfopoulos, A. Margetic, B. Nasri,
A. Noureddine, Y. Serfor-Armah, R. Shweikani, A.
Timoshchenko, M. H. Zulkifli



Content

1. Introduction

- *IAEA's Regional Training Centres*
- *PGEC*

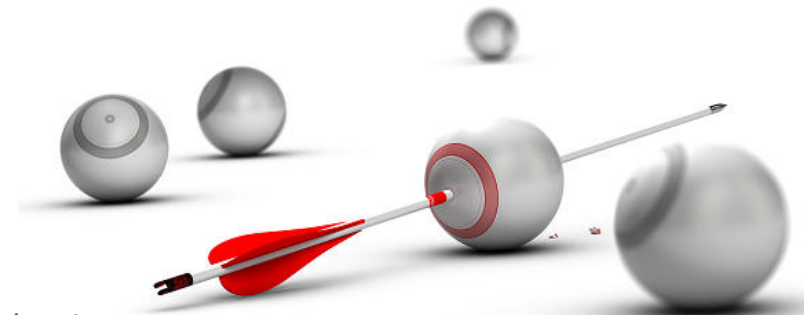
2. Assessment and Evaluation Mechanisms

3. The annual PGEC Directors' meeting

4. Conclusions

Objective

To present the **evaluation and assessment mechanisms** of the PGEC and the way that their results are taken into account during **the annual meetings of the PGEC Directors**, for the **sustainability and continuous improvement** of the Course



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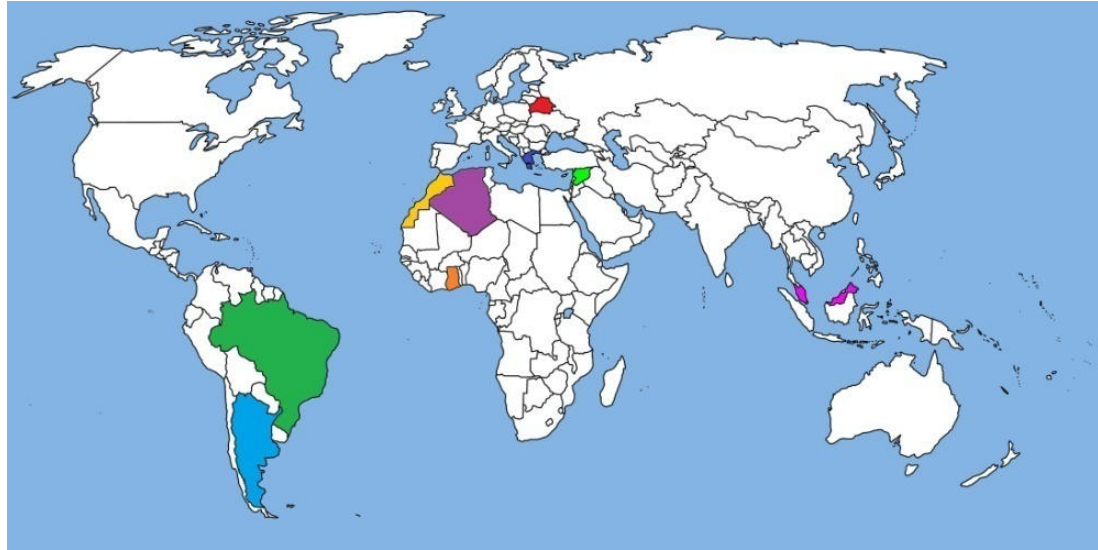
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IAEA's Regional Training Centers (RTCs)



- They provide E&T **in collaboration with and with the support of IAEA** for the Member States (MSs) in region.
- They comply with **the criteria established** by the IAEA's Steering Committee on E&T in radiation protection and waste safety.
- Education and Training Appraisal (**EduTA**) missions conducted in Member States hosting the RTC

IAEA's Regional Training Centers (RTCs)

Core criteria for establishment & recognition

- The distribution of RTCs within a region
- E&T activities conducted in a language understood by participants
- MSs with adequate radiation protection infrastructure and national capability for training at the PGEC level
- MS provide easy entry access for foreign participants, and be accessible by common transportation
- Comply with the IAEA requirements and guidance



IAEA's Regional Training Centers (RTCs)

Core criteria for establishment & recognition

- Resources to carry out the **experiments and practical exercises** needed for the PGEC in cooperation of other bodies.
- Adequate **administrative & logistic capability**, training facilities, methodology for selection of participants and trainers, & formal system for assessing the students.
- Appropriate **QMS in place for E&T** activities.
- Carry out **on-the-job fellowship training**, conducting seminars, hosting workshops and refresher courses.



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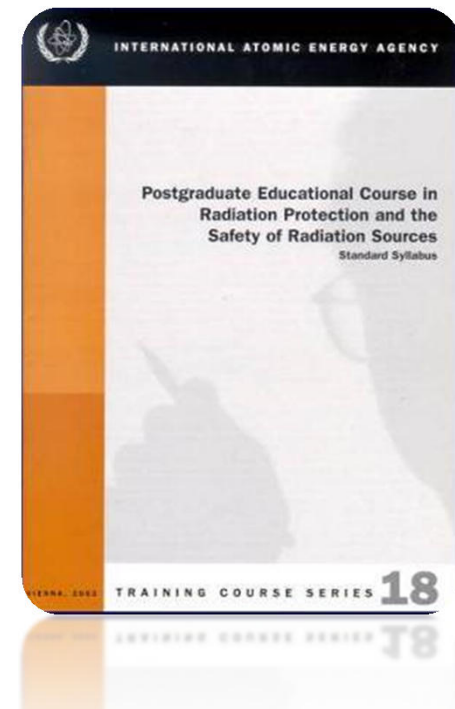
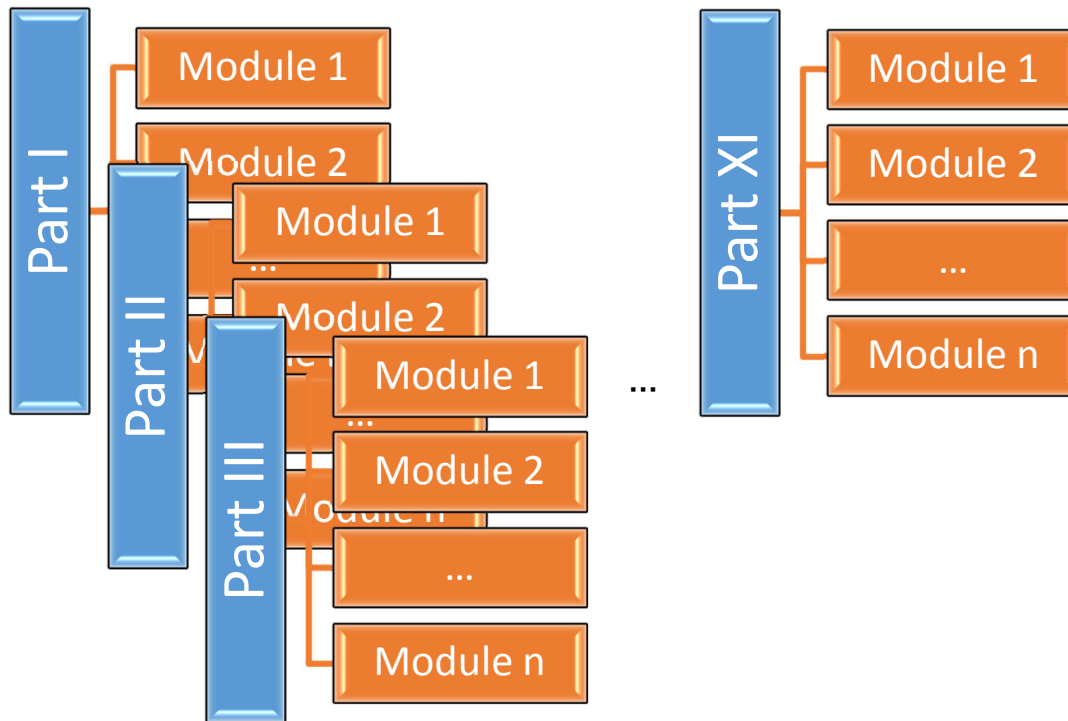
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Course Content

Syllabus: The standard syllabus of the PGEC has a Modular Structure

Duration: 22 weeks on average



Syllabus

Syllabus: The standard syllabus of the PGEC has a Modular Structure

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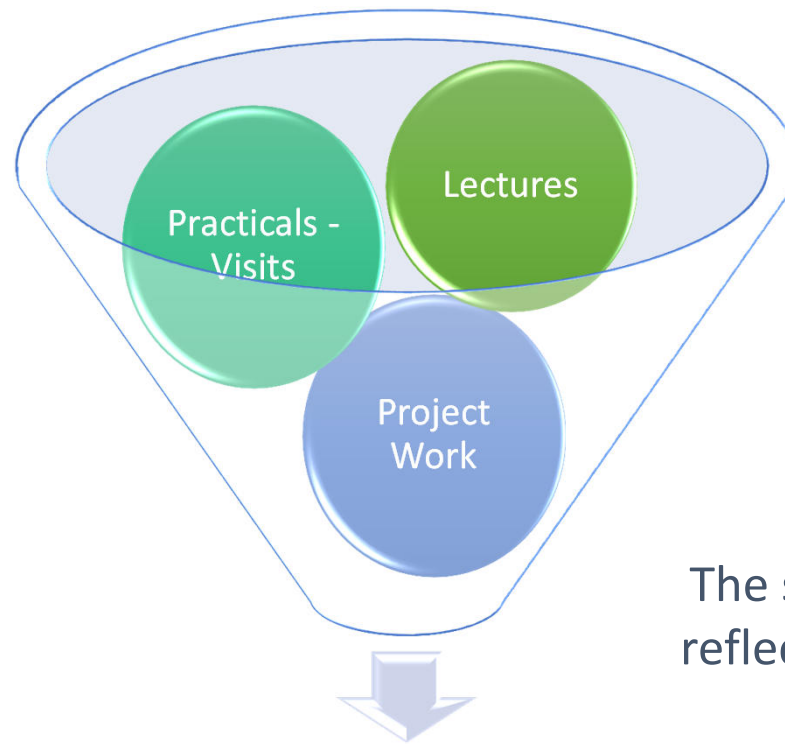
 I. Review of Fundamentals	 VII. Planned Exposure Situations – Occupational & public exposure
 II. Quantities and Measurements	 VIII. Medical Exposures
 III. Biological Effects	 IX. Emergency Exposure Situations
 IV. International System of RP – Regulatory Framework	 X. Existing exposure situations
 V. Assessment of External & Internal Exposures	 XI. Training the Trainers
 VI. Planned Exposure Situations – Generic Requirements	

PROJECT WORK

Course Content

Syllabus: The standard syllabus of the PGEC has a Modular Structure

Duration: 22 weeks on average



The syllabus is under revision to reflect the new IAEA Basic Safety Standards

PGEC

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Assessment and Evaluation Mechanisms

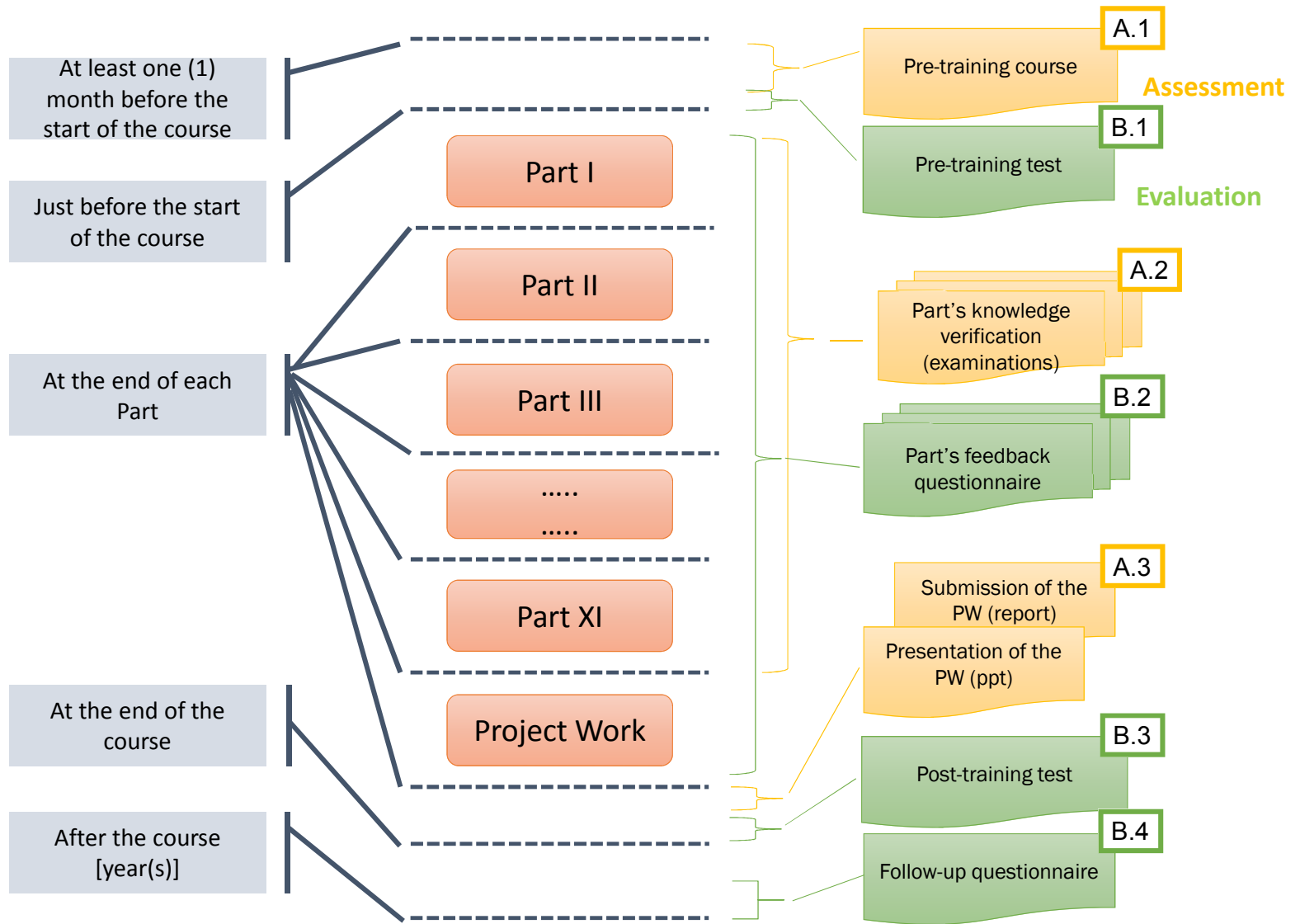
Assessment

A structured activity by which **the knowledge and/or skills and/or attitudes of an individual are measured** using one or more methods. Assessment is often conducted at the end of a training session or course to determine the extent to which trainees have met the training objectives.

Evaluation

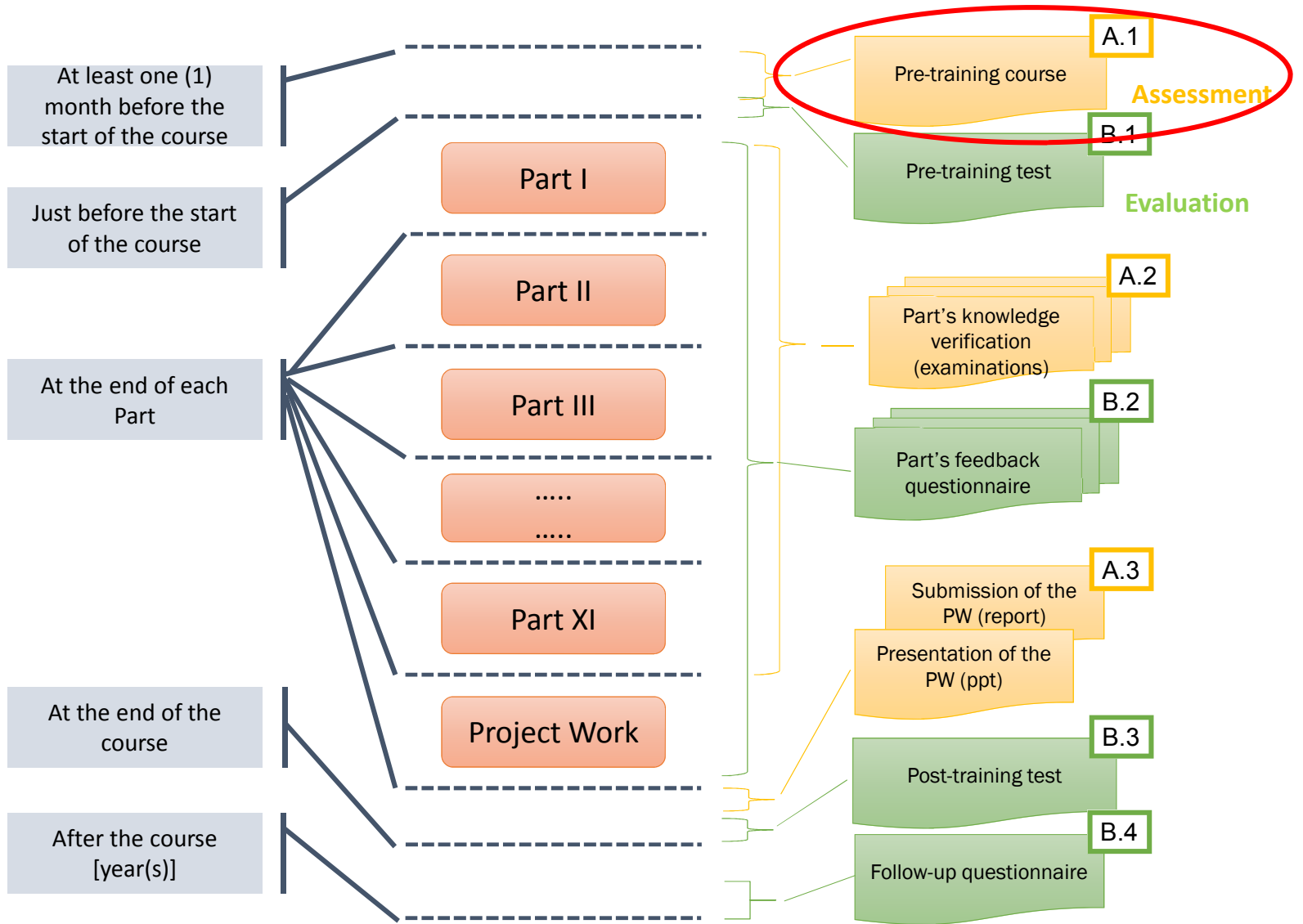
A series of activities used to measure **the adequacy and effectiveness of a training session, course or programme** (Evaluation is of “things” in contrast to an Assessment which is used as a measure of individuals). Evaluation can be Once-Off, Periodic or Continuous, depending on the frequency of the activity.

Assessment and Evaluation Mechanisms



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Assessment and Evaluation Mechanisms



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Pre-training
course

A.1

Aims

- To **refresh the knowledge** of the participants on basic subjects to facilitate their attendance at the PGEC
- To get information on **possible gaps** in participants competence

Delivery

- On line, conducted by the Regional Training Centres through the CLP4NET platform:
 - (+) Prompt availability of the results
 - (-) Participants to be registered in the platform
 - (-) All the participants need access to internet with related hardware (pc/laptop) in their home country

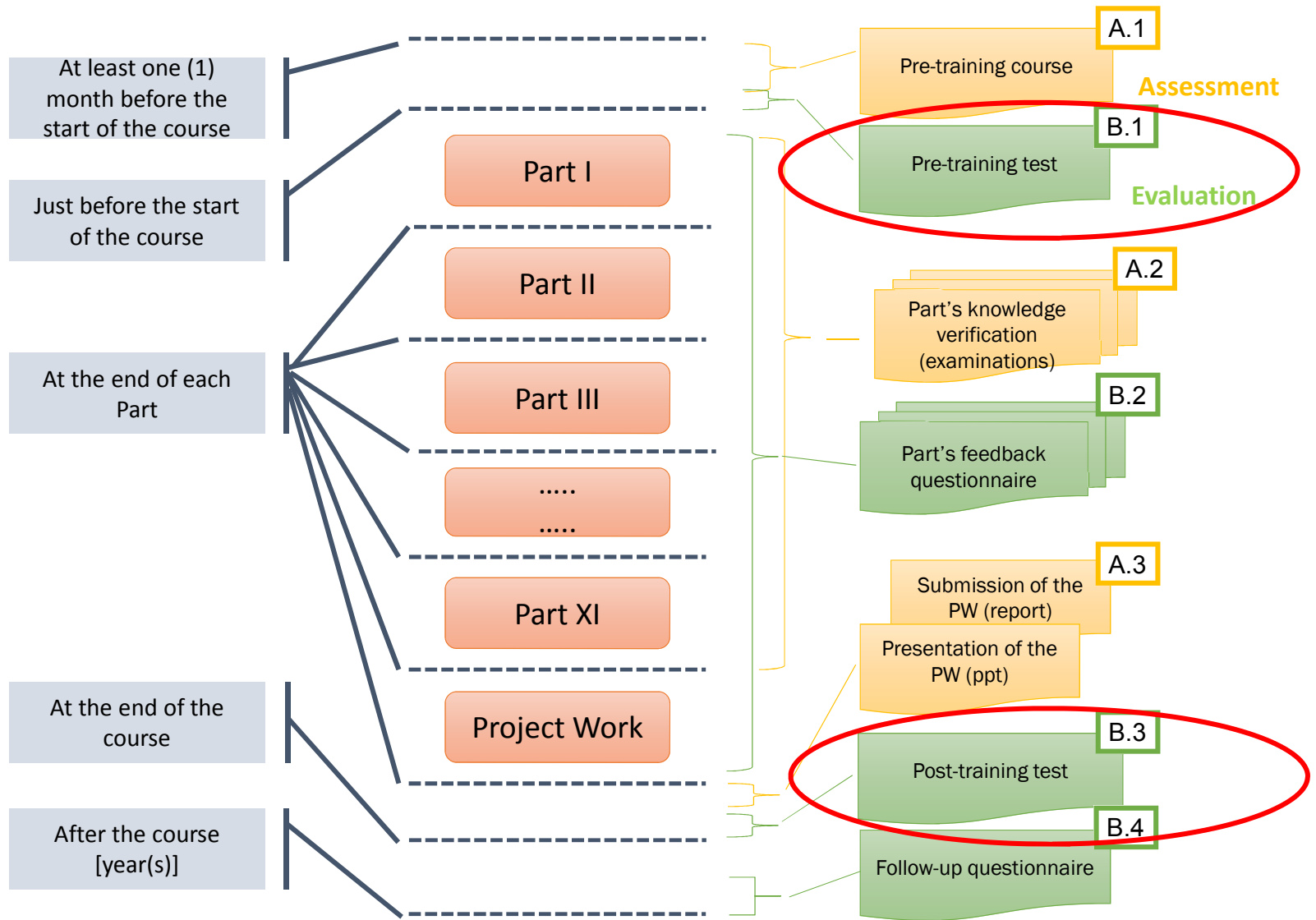
Pre-training course

A.1

The screenshot shows the IAEA-PLMS Instructor-led Learning Management System interface. The main content area is titled "Interactions" and includes a sub-section "Charged Particle Interactions" with a sub-item "1. Ionization". Below this, there is a diagram of an atom with an electron being ejected, labeled "Ionization Removal of an electron". The text below the diagram states: "An electron is ejected from an atom by the passage of a charged particle." Another sub-section "2. Excitation" is visible, with a diagram of an atom and the text "Excitation Raising an electron in...". A navigation menu on the left includes "Site news", "LMS Manual (EN)", "LMS Manual (ES)", "Registration form", "Student feedback form", "Contact us", and "Disclaimer". A "Test on 'Health Physics'" button is also present.

The screenshot shows the IAEA-PLMS Instructor-led Learning Management System interface displaying test results for a "Test on 'Health Physics'". The test was completed on Wednesday, 26 November 2014, at 12:40 PM, with a time taken of 29 minutes and 13 seconds. The marks were 7.00 out of 23.00, and the grade was 30.43 out of 100.00. The test results are shown in a table with columns for question numbers 1 through 23. Questions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, and 23 are all marked as correct. The interface also shows a "QUESTION NAVIGATION" section with a "Start a new preview" button. Below the test results, there are three questions displayed: "Question 1: What positively charges particles are found in the nucleus of an atom?" with the correct answer "b. protons"; "Question 2: Binding energy for the innermost electron shells is higher than for the outermost electron shells." with the correct answer "True"; and "Question 3: What is the radioactive isotope of hydrogen?" with the correct answer "a. ³H".

Assessment and Evaluation Mechanisms



Pre-training test **B.1**

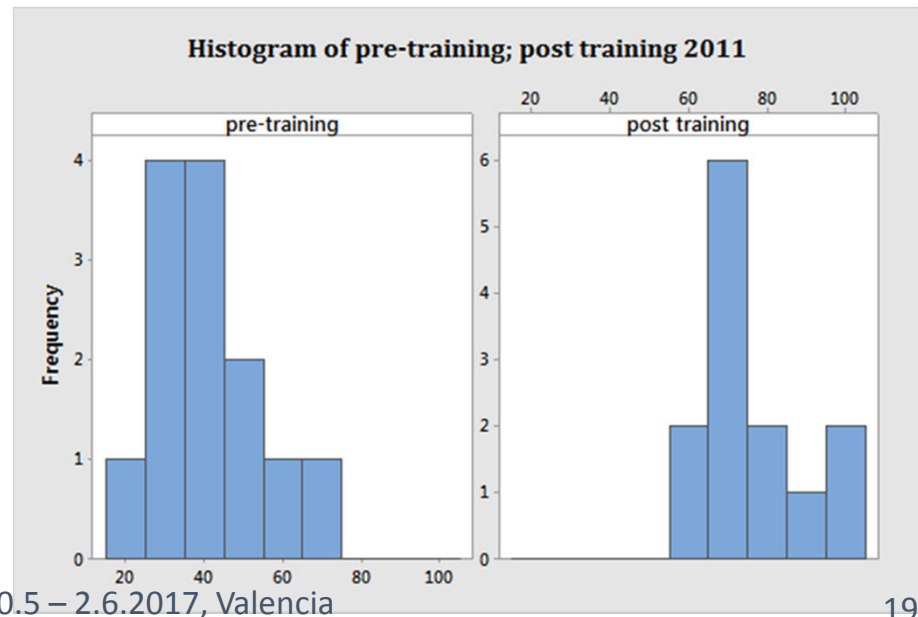
Post-training test **B.3**

Aims

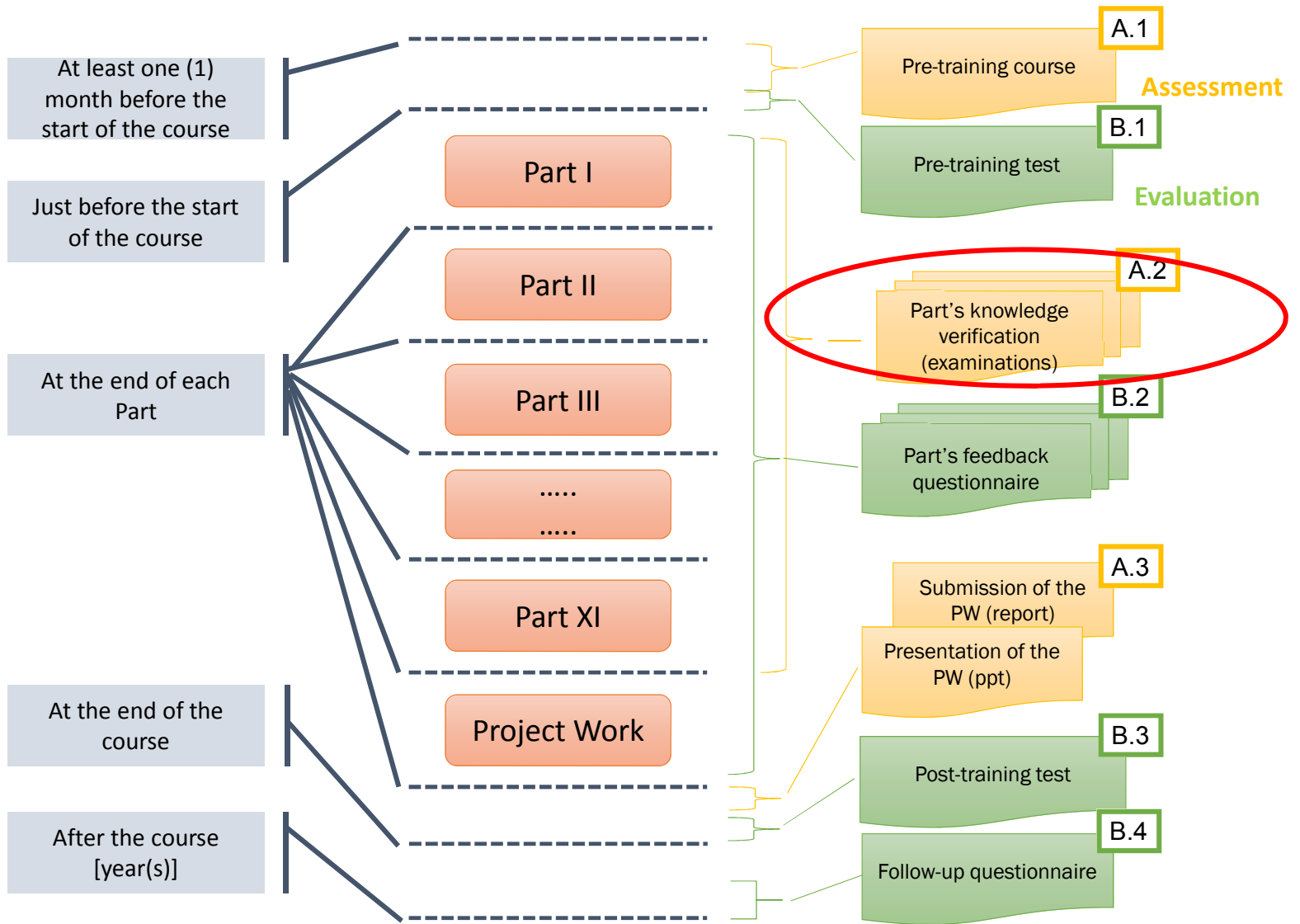
To have an overall evaluation of the gain of knowledge

Delivery

At the Regional Training Centres through printed test



Assessment and Evaluation Mechanisms



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A.2

Part's knowledge verification (exams)

Aims

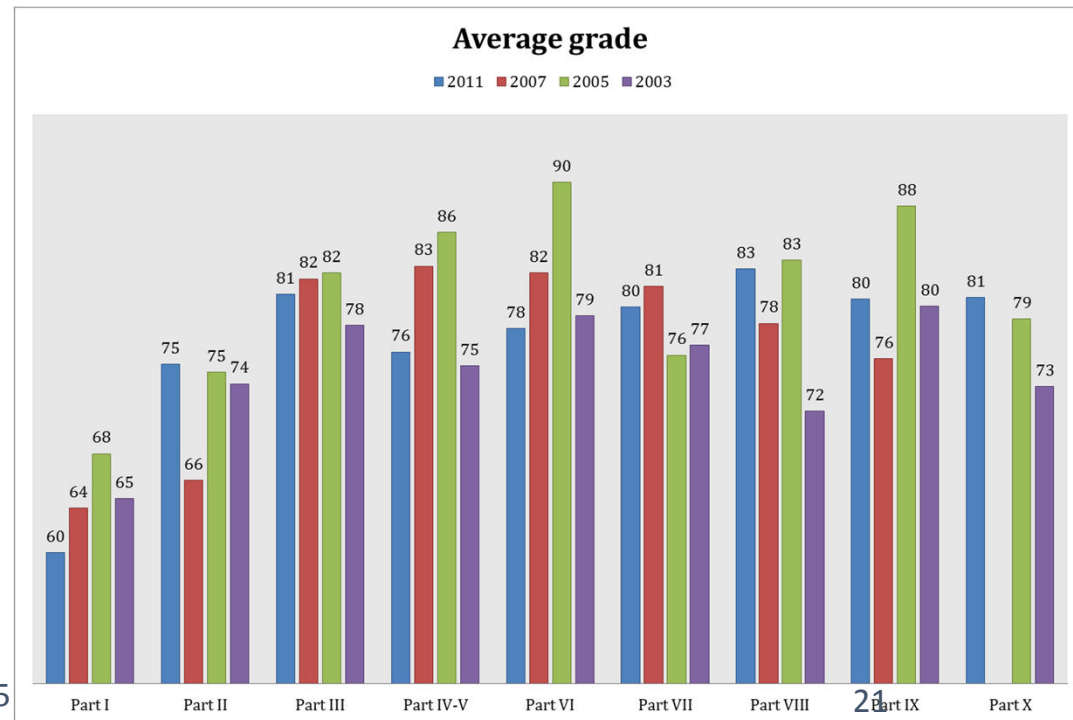
To **evaluate participants' knowledge and understating** of the subject presented in each Part

Delivery

At the RTCs through:

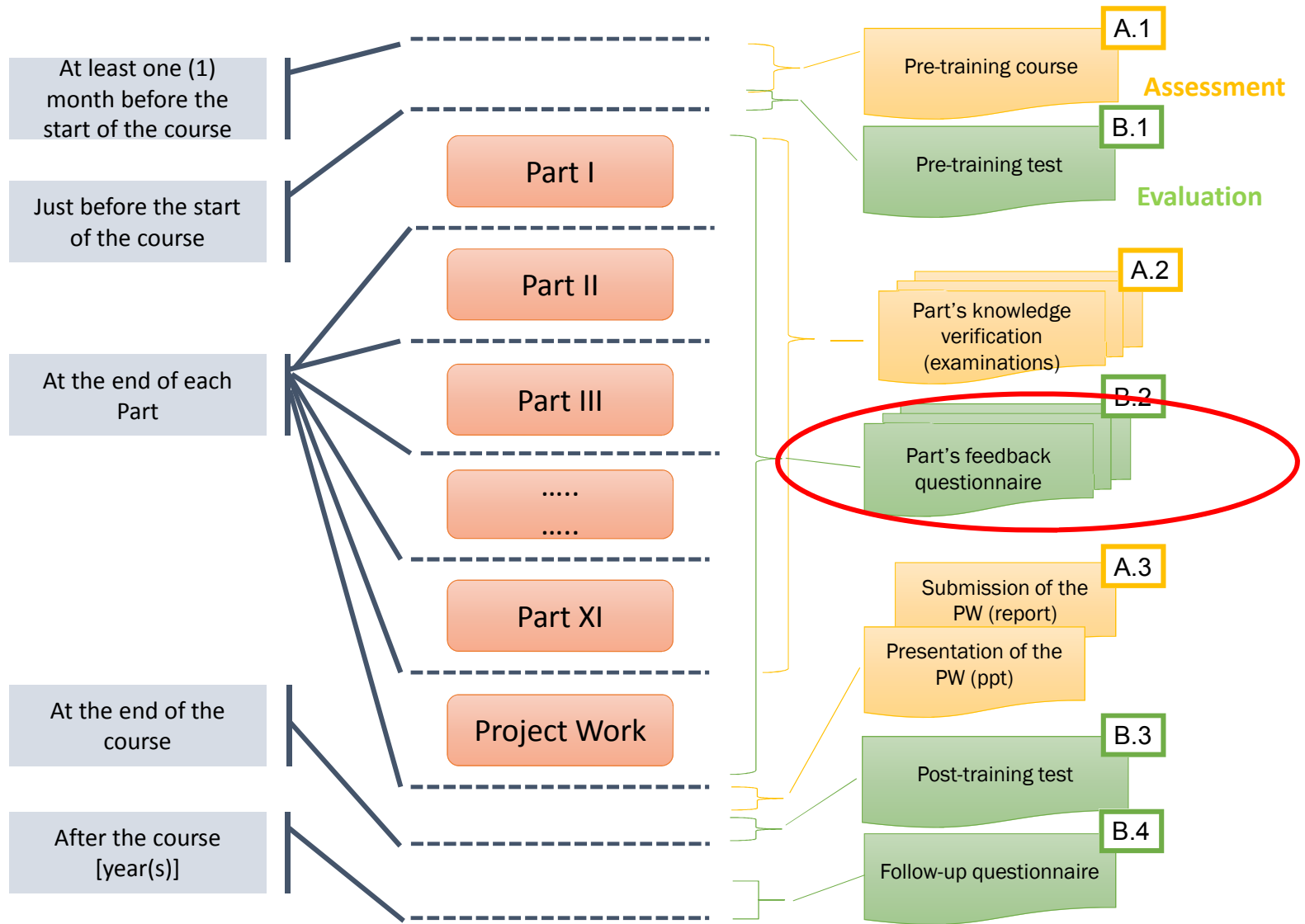
- Printed test
 - Multiple choice questions
 - Open questions
 - Numerical problems

ETRAP 2017, 30.5



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Assessment and Evaluation Mechanisms



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B.2

Part's feedback
questionnaire

Aims

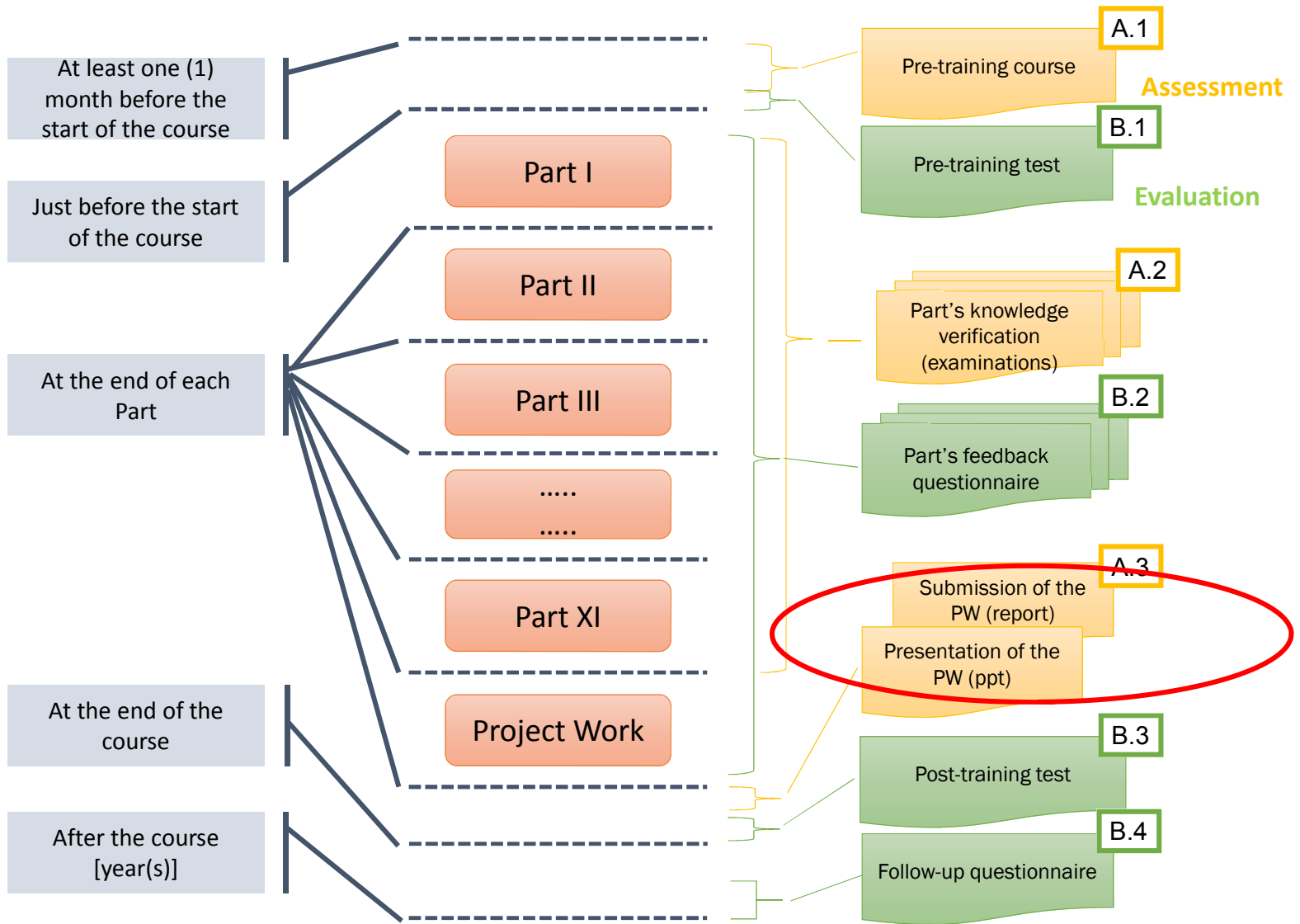
To collect **participants' (and lecturers') feedback** on the delivery of the Parts and on Lecturers' performance

Delivery

At the RTCs through questionnaire

- Closed type questions regarding: the scope of the Part; its structure and duration; quality of the presentations / practicals, pedagogical methods
- Adequacy and quality of the facilities
- Strengths, weaknesses, suggestions ...

Assessment and Evaluation Mechanisms



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A.3

Submission of the
PW (report and ppt)

Aims

- To **evaluate participants' capability** to make use of the knowledge gained in the course to address a specific issue of radiation protection, relevant to the national / organisational contest
- To provide an opportunity to evaluate participants' knowledge and understanding of the subject presented in the Module '**Train-the-Trainers (TTT)**'

Delivery

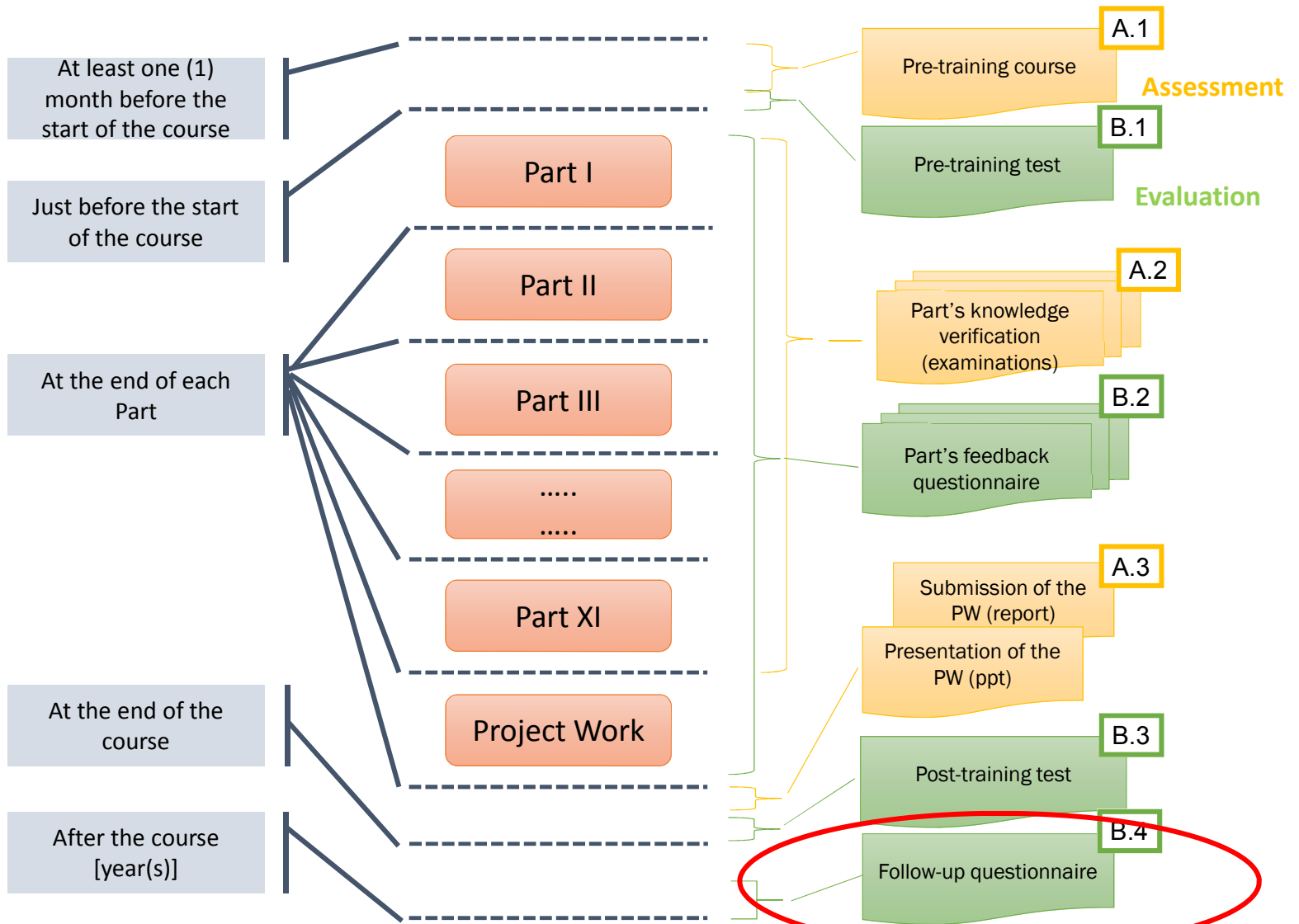
At the Regional Training Centres through:

- Provision by the participant of a **written report** on the work project
- **Presentation** of the work project

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Assessment and Evaluation Mechanisms



Follow-up
questionnaire

B.4

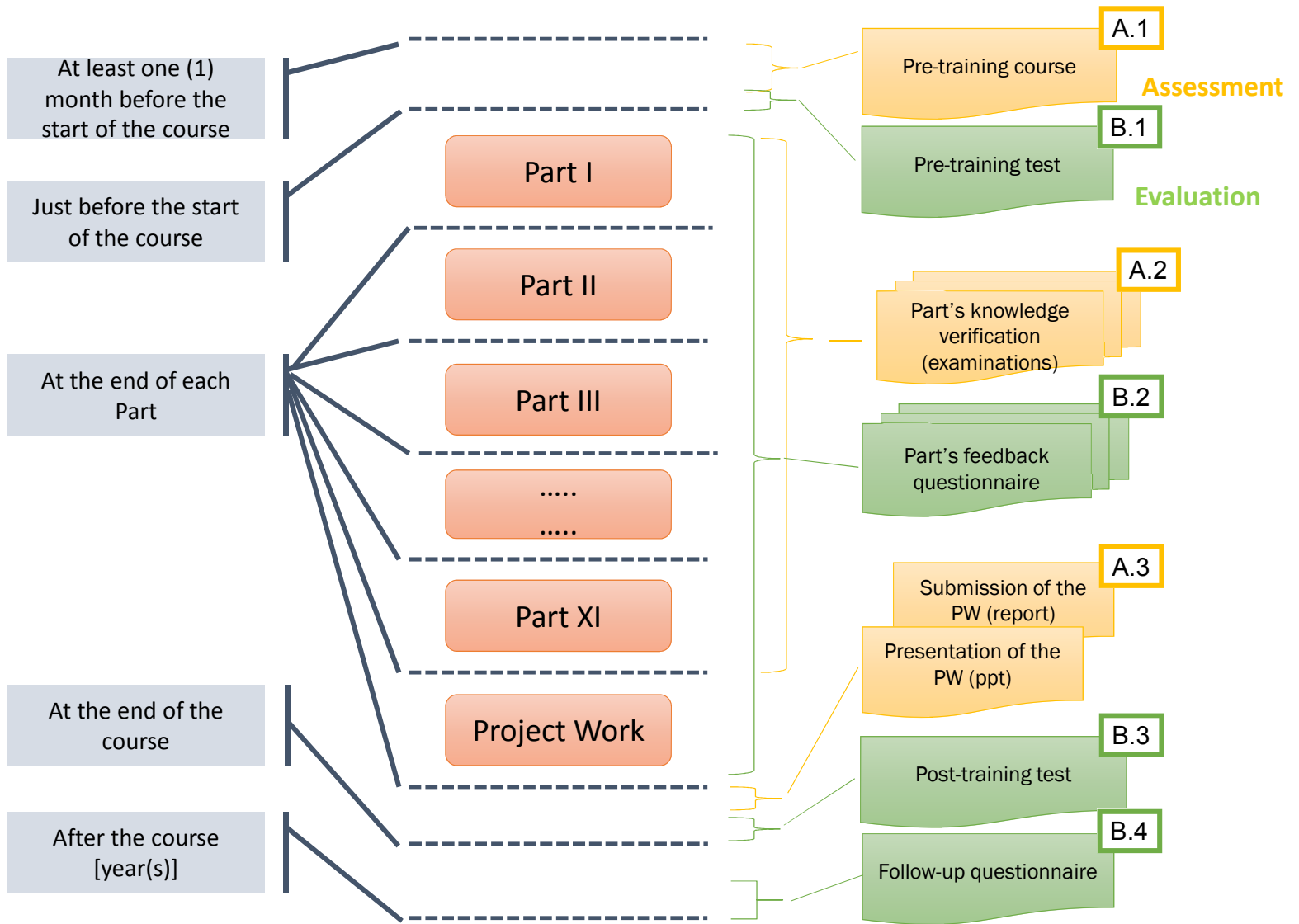
Aims

- To evaluate the long-term impact of the course (*cold assessment*)

Reference

A. Luciani, J. Wheatly S. Ticevic, **Impact evaluation of the postgraduate educational course in radiation protection and the safety of radiation sources (PGEC), ETRAP 2017**

Assessment and Evaluation Mechanisms



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Assessment and Evaluation Mechanisms

Status March 2017

	A.1	B.1	A.2	B.2	A.3	B.3	B.4	QMS
Morocco	✓	✓	✓	✓	✓	✓	✓	Procedures are in place, internal accreditation – Engineering School provides a certificate
Algeria	✓	✓	✓	✓	✓	✓	✓	Not a systematic accreditation
Ghana	✓	✓	✓	✓	✓	✓	✓	Accreditation from the National Accreditation Board - Certificate to participants from the university of Ghana
Syria		✓	✓	✓	✓	✓		All elements are in place but not under a MS
Malaysia	✓	✓	✓	✓	✓	✓	✓	QMS(ISO 9001)
Belarus	✓	✓	✓	✓	✓	✓	✓	The MS is in place with accordance to the national legislation - ISO 9001
Greece	✓	✓	✓	✓	✓	✓	✓	QMS (ISO 29990)
Argentina		✓	✓	✓	✓	✓		QMS(ISO 9001) and accreditation of the PGEC
Brazil			✓	✓	✓		✓	MS in place for the PGEC. A Commission is reviewing the system

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PGEC Directors Meeting

Ensuring the Quality and Sustainability of the Course

The purpose of the meeting is to **share experiences and good practices** in the conduction of the PGEC

Annual Meeting of the PGEC Directors



To **provide advice** to the Secretariat with respect to the implementation of the IAEA Strategic Approach 2011–2020

Annual Meeting of the IAEA Steering Committee on E&T in RTWS

PGEC Directors Meeting

Ensuring the Quality and Sustainability of the Course

Working on

- the **harmonization of the PGEC** among the RTCs:
 - Evaluation and assessment questionnaires and methods
 - Practical exercises
 - Project works
- the **blended learning approach**
 - CLP4NET platform
- The **national strategies on E&T** for radiation protection



Meeting of PGEC Directors

Minutes

4-6 August 2015, IAEA, Vienna



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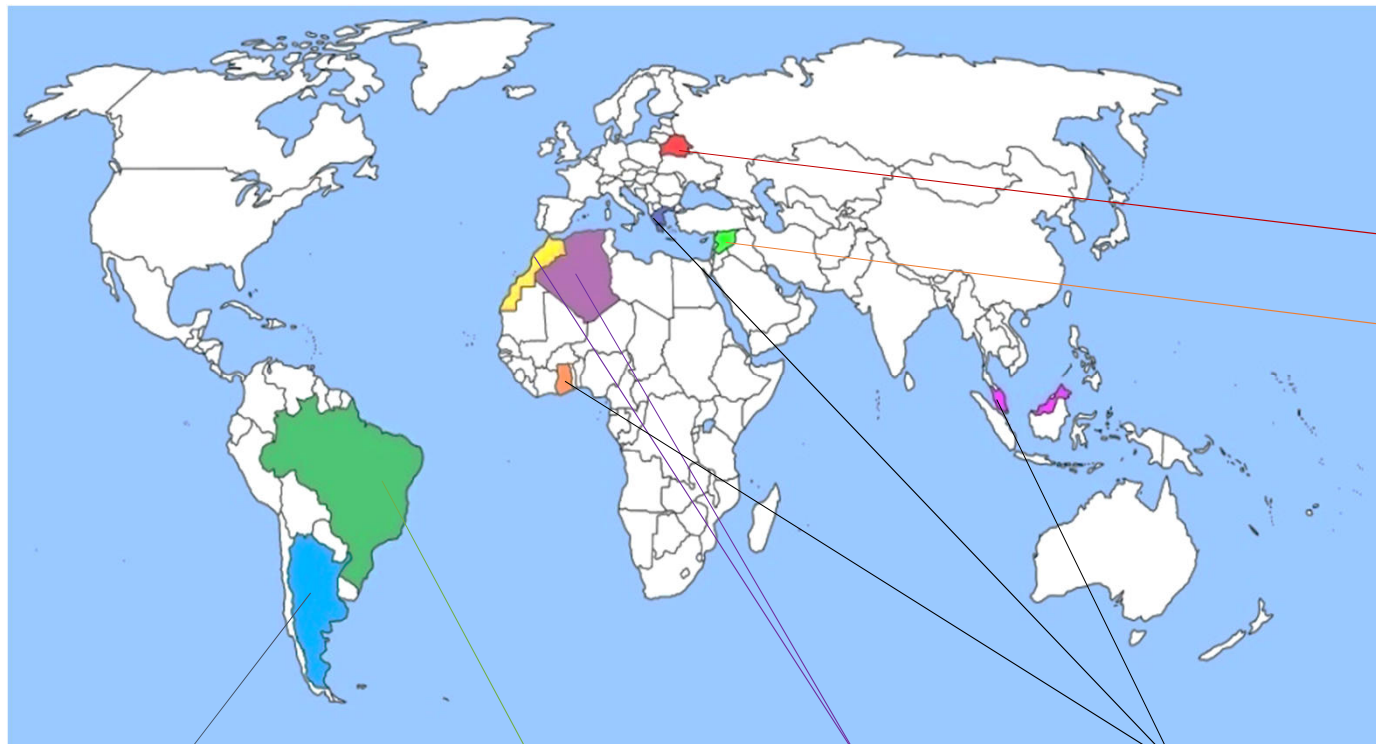
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Conclusions

- The PGEC is **systematically monitored and evaluated** by both the RTCs and the IAEA
- Further **harmonization** on the assessment and evaluation mechanisms among the RTCs is needed.
- The more effective use of the **blended learning approach** is desirable

Thank you very much for your attention!



Большое спасибо!

شكرا جزيلا

¡Muchas gracias!

Muito obrigado!

Merci beaucoup!

Thank you very much!