

## Preparing ABR Part 2 for Diagnostic Medical Physics

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## Disclaimer

- These are my opinions.
- I am not affiliated with the ABR.

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## Eligibility (Part 2)

- If you applied for certification after **July 1, 2013**
  - Passed the Medical Physics Part 1 examination (General and Clinical)
  - Completed a CAMPEP residency by August 31 of the year in which the Part 2 exam is to be taken.

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## Eligibility (Part 2)

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- If you applied for certification prior to **October 31, 2012**
  - Passed the Medical Physics Part 1 examination (General and Clinical)
  - If you used enrollment in a **CAMPEP-accredited degree** program for Part 1, you must complete the CAMPEP-accredited degree.
    - (You are allowed to switch to a CAMPEP-accredited residency, if you have at least a MS degree in medical physics or a related field, and you must complete the CAMPEP-accredited residency)
  - If you used enrollment in a **CAMPEP residency** for Part 1, you must complete the residency.

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## Eligibility (Part 2)

(for those who are not enrolled in CAMPEP degree or residency program)

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- If you applied for certification prior to **October 31, 2012**
  - Passed the Medical Physics Part 1 examination (General and Clinical)
  - You must hold a master's or doctoral degree from an approved institution, or an equivalent foreign degree, in medical physics or relevant physical science or engineering discipline.

AND

You must have had at least 36 months of full-time equivalent clinical experience under the supervision of a certified medical physicist (by *August 31 of the year* in which the Part 2 exam is to be taken).

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## Introduction on Part 2 Exam

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- Computer based exam at Pearson VUE Test Centers
- Two types of questions (80 in total)
  - Simple, short questions (53)
  - Complex, long questions (27)
- Exam time: 237 minutes

**Spend you time strategically!**

- Don't get stuck on one question for too long.
- Give yourself sufficient time on long questions.
- Look ALL questions at least once.

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## Scope of the Exam

- Radiation physics
- Diagnostic imaging modalities
  - Radiography (CR,DR)
  - Mammography
  - Fluoroscopy
  - Computed Tomography
  - MRI
  - Ultrasound
- Radiation safety/Patient dose
- Medical informatics

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## Scope of Examination

- Radiation Physics
  - X-ray attenuation physics and its association with clinical application
  - Different dose related quantities
  - Physics in image quality

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## Scope of Examination

- Radiography/Mammography/Fluoroscopy
  - X-ray tube
  - Different type of detectors (pros vs. cons)
  - Scanning geometry
  - Operating modes of each modality
  - Factors Affecting Image Quality
  - QC procedures (MQSA, fluoroscopy dose limits)

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## Scope of Examination

- Computed Tomography
  - Components of a typical CT scanner
  - CT scanning modes (e.g. axial, helical, pitch)
  - Image reconstruction (e.g. kernel vs. spatial res.)
  - CT Dose metrics (e.g. CTDI, DLP)
  - CT Dose reduction techniques

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## Scope of Examination

- MRI / Ultrasound
  - The basic physics of two modalities
  - Common scanning modes:
    - T1, T2, PD;
    - A-mode, B-mode, Doppler
  - Recognize the types of images
  - Safety

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## Scope of Examination

- Radiation Safety/Patient Dose
  - Radiation protection
  - Shielding design and survey
  - Relevant regulations
  - Personnel monitoring
  - Patient dose estimation of different imaging modalities
  - Radiation effects

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## Scope of Examination

- Medical Informatics
  - Picture archiving and communication systems
  - DICOM Standard for Modality Configuration
  - Image display (monitor calibration)

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## Study Resources

- The Essential Physics of Medical Imaging, *Bushberg et al.*
- Physics of Radiology, *Walbarst and Cooke*
- Review of Radiologic Physics, *Huda and Sloane*
- AAPM/RSNA Physics Tutorials for Residents
- AAPM reports
  - Report 60: QC instruments
  - Report 74: General diagnostic
  - Report 93: CR QC procedures
  - Report 96: CT dose
  - Report 116: Exposure index in DR
  - Report 204: Size Specific Does Estimates (SSDE)

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## Study Resources (cont.)

- NCRP Report 147
- ACR QC testing manuals (CT, Mammo, MRI)
- For mammography, read the QC manual (Physicist part) from a vendor
- RAPHEX exams
- Sample questions on ABR website
- Google...

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## (not) The End

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- For those of you who will take Part 2 in about two weeks:
  - Stay calm and Keep reading!
- For those of you who will take Part 2 in 2015:
  - Start early and Get hands-on experience!

*Good Luck!*

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