

Teaching ideas for Option I, *Medical physics*

Questions

A number of worksheets are provided for this Option:

- support questions examine the very basic concepts of the syllabus
- extended questions delve deeper and are equivalent to exam level questions.

Teaching ideas

- It is a good idea to attempt to understand the frequency of sound at which the ear is most sensitive in terms of standing waves in the ear canal.
- A good deal of this option deals with X-rays. The site <http://web.lemoyne.edu/~giunta/roentgen.html> contains an English translation of the original paper by Wilhelm Röntgen on the discovery of X-rays. It is very interesting reading and students can have a very instructive time comparing the writing of this paper with the IB IA criteria!
- The site <http://www.colorado.edu/physics/2000/index.pl> has interesting material on CAT scans, X-rays and lasers.
- MRI is described very well at <http://www.cis.rit.edu/htbooks/mri/chap-1/chap-1.htm>
- A good PowerPoint presentation on our IB medical physics option has been uploaded by fellow teacher Tone Tapei in the resources section for Physics on the OCC.

Practical activities/ICT

- Various images that can be shown to students in class can be found at <http://www.gehealthcare.com/uken/>

Common problems

- Students often have problems with calculations involving sound intensity levels and so need a lot of practice with this type of question.

Theory of knowledge (TOK)

- It is interesting to observe that it took quite a bit of time for researchers to appreciate the dangers and risks of radiation in treatment. Some very early applications of radiation exposed patients as well as medical staff to some unusually high risks.