

An Undergraduate Degree Program at the University of Windsor for Students Interested in a Non- Academic Career in Medical Physics

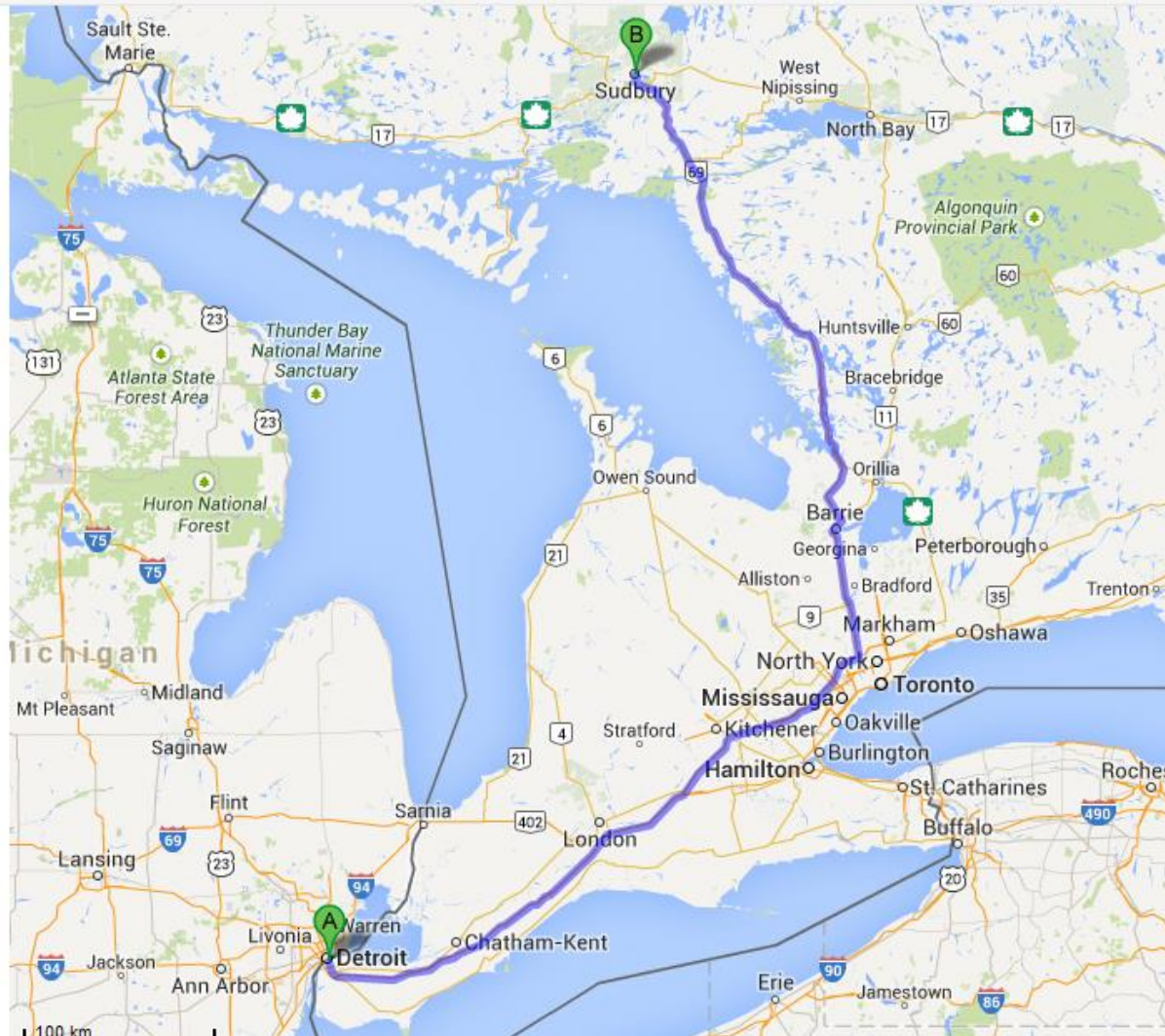
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Where is Windsor?



The University of Windsor

Our History

- In 1857, Assumption College welcomed its first students
- In 1963, it affiliated with Essex College, Canterbury College, Iona College and Holy Redeemer College to incorporate as the University of Windsor, a non-denominational, autonomous degree-granting institution.

Academics

- The University of Windsor offers 190 undergraduates programs, 65 graduate programs and six professional programs.
- Faculty: 524, Student/faculty ratio: 26:1

Our Students

- Undergraduates: 14,088 (full and part time students)
- Graduate students: 2,004 (full and part time students)
- International students: 11 percent of student body from nearly 100 countries

Our Campus

- The University of Windsor is a safe, urban campus covering 51 hectares (125 acres) in Windsor, Ontario.

The University of Windsor is located on the banks of the Detroit River.



Who Am I?

- Assistant Professor of Physics
- Previously at Wayne State University (across river)
- Performing laser-based spectroscopic experiments since 1993 (LANL)
- Doing LIBS since 2005 (25 publications, a review, a book chapter). Focusing on rapid pathogenic bacterial identification (and biomedical applications)
- Developing/delivering all the new Medical Physics courses and recruiting new students.

<http://www1.uwindsor.ca/rehse/>

The screenshot shows the website for 'The Rehse Group at the University of Windsor'. The header includes the University of Windsor logo and navigation links: 'About the University', 'Academic Programs', 'Research', 'Admissions', 'Student Life', 'Giving', and 'International'. Below this is a blue bar with 'Gateways for:' and links to 'Future Students', 'Current Students', 'Faculty & Staff', and 'Alumni', along with a 'Log in to myUWindsor' link. The main content area features a large banner for 'The Rehse Group' with the subtitle 'at the University of Windsor' and the focus areas 'Biomedical Optics, AMO, & Medical Physics'. To the right of the banner is a 'Main Page' button. Below the banner is a 'Welcome!' section with a 'Home / Dr. Steven J. Rehse' breadcrumb. The 'Welcome!' section contains a paragraph: 'This site is dedicated to describing and supporting the activities of Dr. Steve Rehse, an Assistant Professor in the Department of Physics at the University of Windsor in Windsor, Ontario, Canada. Here you'll be able to find research descriptions, links to papers and presentations, ways to contact Dr. Rehse, and other resources. Enjoy.' Below this is a 'Latest Developments' section with a heading 'Rehse and Putnam Attend National Laser-Induced Breakdown Spectroscopy Conference in Milwaukee.' and a photograph of two men standing in front of a booth for 'SOIX 2013'. To the right of the 'Welcome!' section is a 'UWindsor Physics News' sidebar with several news items: 'Optical and nano-technology's impact on cancer treatment subject of guest lecture', 'Lecture to describe proof of quantum theory', 'Quantum corrals and the future of computers subject of public presentation', 'Brain research advances Ontario's leadership in neurosciences', 'Researchers collaborate with industry on innovations to benefit cognitive abilities for school-aged children and diagnostics for patients at risk of brain injury', 'High-end headphones exciting for draw winner', and 'Physics team lays groundwork for non-invasive tumour diagnosis technique'. A 'VIEW ALL' link is at the bottom of the sidebar.



Our Program(s)

PROGRAMS

Honours Physics (with/without Co-op)

Honours Physics with thesis (with/without Co-op)

Honours Physics (Physics and High Technology) (with/without Co-op)

Honours Physics (Physics and High Technology) with thesis (with/without Co-op)

Honours Physics (Medical Physics) (with/without Co-op)

Honours Physics (Medical Physics) with thesis (with/without Co-op)

Other Combined Honours Programs

Minor in Physics

Major and Minor Concentrations - Bachelor of Arts and Science



Our Enrolment

2013 (73)

Physics: including double majors (Physics and mathematics, Honours Chemistry and Physics), **31**

Medical Physics, **34**

PHT, **8**

2012 (79)

Physics: including double majors (Physics and mathematics, Honours Chemistry and Physics), **33**

Medical Physics, **34**

PHT, **12**



A History of the Medical Physics Program

- Approved by University Senate, 2008.
- I was hired 2011, first courses offered May 2011.
- First graduates, Spring 2012.



Medical Physicist

an expert in medical imaging and radiotherapy applied typically to the treatment of cancer – works in a hospital, cancer clinic, treatment facility

Calibration of
Machines

Dosimetry

Nuclear
Medicine

Research into
New Treatments

*Strong Scientific Knowledge
of Physics, Equipment,
Procedures, and Effects on
the Body*

Radiation
Safety

Treatment
Planning

Quality
Assurance

Apparatus
Installation /
Maintenance

Why Medical Physics?

All indications are that the demand for Medical Physicists will continue to rise:

- a) Aging population
- b) Trend: non-invasive procedures
- c) Technological advances
- d) Continued world-wide shortage of trained physicists



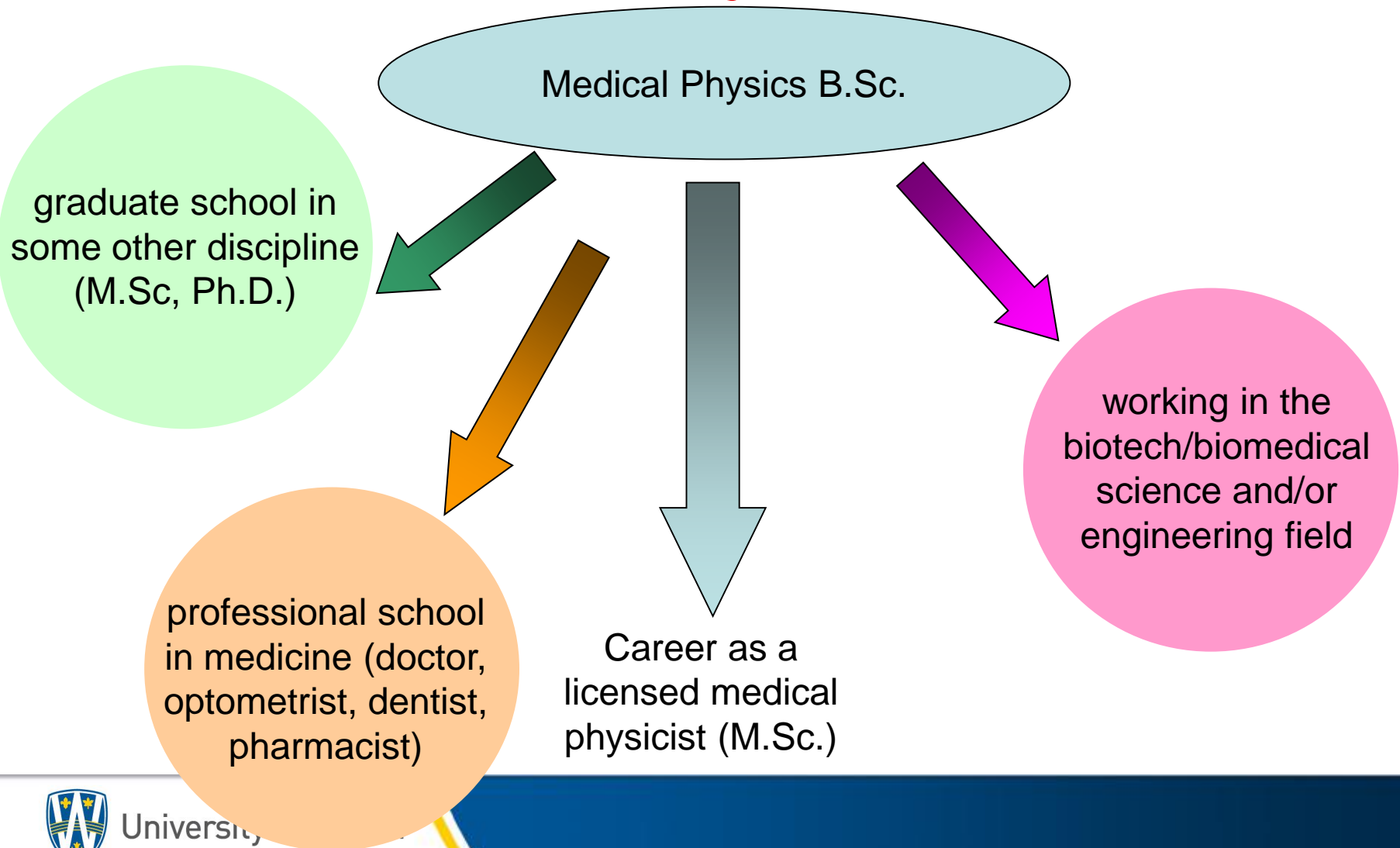
Why Medical Physics?

Program has been designed, and courses are taught, to prepare students for a career as a practicing clinical medical physicist

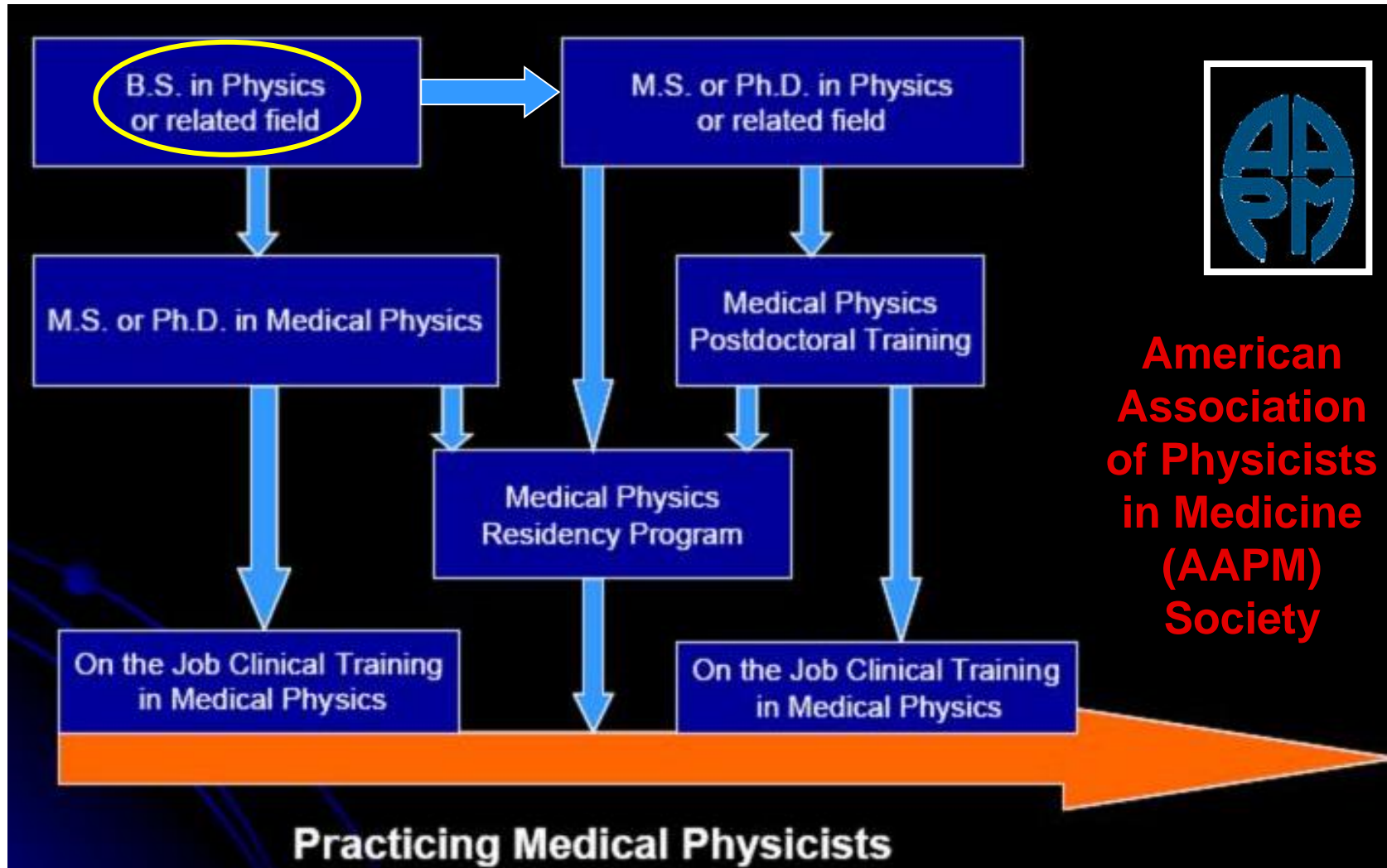
- significant input from practicing medical physicists
- labs stress practical applications and experience with current technology rather than proof of previously established results (i.e. Millikan)
- clinical labs offered through Windsor Regional Cancer Centre
- students graduating from this program will eventually go on to work in hospital diagnostic imaging departments, cancer treatment facilities, or hospital-based research establishments.



Alternate Career Pathways with a Medical Physics B.Sc.



Pathways to Medical Physics Career



**American
Association
of Physicists
in Medicine
(AAPM)
Society**



Fate of Graduates

Female 4	U of Ottawa, Physics
Female 3	Taking a year off
Female 2	WSU, Medical physics
Male 8	Western, Medical School
Male 7	WSU, Medical physics
Female 1	Western, Medical physics
Male 6	U of T, Physics
Male 5	McGill, Medical physics
Male 4	Western, Medical physics
Male 3	WSU, Medical physics
Male 2	WSU, Medical physics
Male 1	Windsor, Physics

7 of 12 to medical physics careers

3 of 12 to physics

1 of 12 to medical school



Conclusions

- Long term non-academic fate of graduates remains to be seen
- Early evidence shows that our preparation of them for this career is appropriate
- Preparation must be flexible enough to allow diversity of outcomes, including a switch to an academic career
- Inclusion of non-academic professionals (employers?) in curriculum development is a must

