

Department of Physics

Current Faculty and Research Interests

Erik Jensen
(PhD, University of Cambridge)

Experimental Condensed Matter Physics

Research Interests: Dynamics of chemical processes on surfaces, mechanisms involved in chemical bond breaking/making, and how the various pathways can be altered by interactions with the surface.

Elie Korkmaz
(PhD, Indiana University)

Experimental Subatomic Physics

Research Interests: Chiral and charge symmetric properties of the strong nuclear force, nucleon structure, and precision tests of the standard electroweak model.

Matthew Reid
(PhD, University of Alberta)

Experimental and Theoretical Condensed Matter Physics

Research Interests: Ultrafast phenomena including: ultrafast spectroscopy, nonlinear optics, generation and detection of terahertz radiation, and industrial applications of terahertz radiation.

Mark Shegelski
(PhD, University of British Columbia)

Theoretical Condensed Matter Physics

Research Interests: Quantum mechanical tunnelling and quantum decay; quantum tunnelling of molecules; sliding and rolling cylinders.

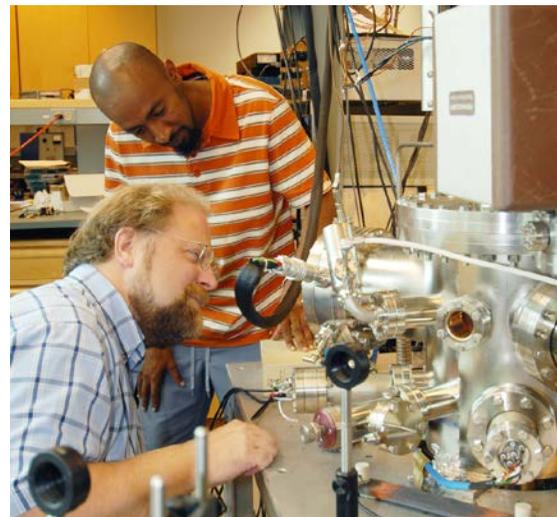
Ahmed Hussein
(PhD, University of Alberta)

Professor Emeritus, Physics

George Jones
Senior Laboratory Instructor
(PhD, University of Windsor)

General Relativity

Research Interest: Cosmology



Physics Professor Dr. Erik Jensen and student researcher Masresha Berhanu using an ultra-high vacuum chamber and UV lasers to study surface photochemical processes.

Contact Information

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Dr. Ian Hartley (Acting Chair)

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Marva Byfield

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<http://www.unbc.ca/physics>

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PHYSICS

**BACHELOR OF SCIENCE
DEGREE
AND
MASTER OF SCIENCE
DEGREE**

*The study and application of
nature at its most
fundamental level*

Physics BSc

Physics is the study of nature at its most fundamental level and is the science underlying all other sciences and technology. The study of Physics is appealing to those who want to understand how nature works. Since the application of Physics is possible in a wide variety of fields, a degree in Physics is ideal preparation not only for those who want to pursue further studies in Physics, but also for advanced study in fields such as photonics, optics, biophysics, medical physics, meteorology, astrophysics, engineering and computer science. The BSc Physics program at UNBC gives the student a solid foundation in the theory and application of physical laws and includes the study of topics in classical mechanics, electro-magnetism, thermodynamics, optics, quantum mechanics, relativity, nuclear physics and particle physics. Graduates of the UNBC Physics program have gone onto MSc and PhD studies in Physics and other disciplines, as well as working in a variety of technological and industrial settings.

What can you do with a Physics Degree?

Physics graduates are highly sought after employees. A physics education emphasizes problem solving and abstract thinking and this training makes physics graduates very desirable employees in a wide variety of areas including education, finance, car industry, printing, and journalism. These fundamental skills, as well as training in practical subjects such as optics, lasers, computer Interfacing, radiation detection, image processing and electronics, also make them very desirable employees in high tech companies.

Areas of Study

Solid State Physics – the study and design of materials. This includes the study of semiconductors, conductors, superconductors, magnetic materials and optical materials.

Photonics and Optics – the study of light, its generation and transmission and associated properties. This area includes both classical optics (lenses and imaging) as well as the new and exciting area of laser physics, optical fibers and new applications of optical technologies.

Theoretical Physics – the development of new theoretical approaches to describe and understand natural phenomena. Theoretical Physics uses the basic physical theories (for example Newton's Laws, Quantum mechanics, relativity, electromagnetic theory) as a starting point in understanding complex physical systems.

Nuclear Physics, Particle Physics, and Nuclear Astrophysics – the study of the fundamental particles and forces that make up our universe. This includes the study of the basic subatomic constituents of matter, their properties and their interactions, as well as the study of more complex systems and phenomena such as atomic nuclei and nuclear reactions underlying stellar evolution.

Major in Physics

The major in Physics requires that students complete 49 credit hours of Physics; 27 credit hours of these must be at the upper division level (300 and 400 level). The minimum requirement for completion of a Bachelor of Science degree with a major in Physics is 120 credit hours. Additional information is available at http://www.unbc.ca/calendar/undergraduate/undergraduate_programs/physics.html

Minor in Physics

The minor degree in Physics is intended for students having a principal interest in a degree program other than Physics but who want grounding in some of the basics of Physics theory and application. Students can elect to obtain a minor in Physics by completing 27 credit hours in Physics, of which 12 credit hours are at the upper division levels.

Joint Degrees in Physics

The joint major degree programs are designed for students interested in a combination of two related fields of study. Joint degrees are available in the disciplines of

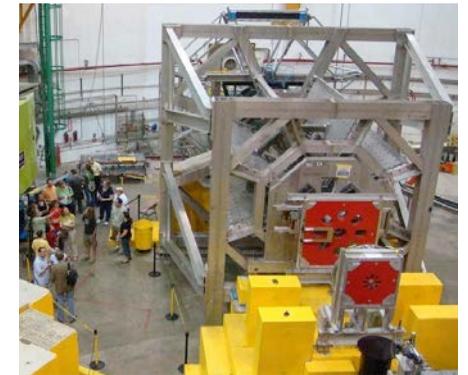
- *Physics and Chemistry*
- *Physics and Computer Science*
- *Physics and Mathematics*

Students interested in the requirements for the joint degrees should consult the Joint Major section of the UNBC calendar:

www.unbc.ca/calendar/undergraduate/physics

BSc Honours Physics

The Honours Program in Physics offers students a higher level of physics education and research experience for proceeding to postgraduate studies in physics or related fields. Honours students must complete the program requirements for the BSc degree in Physics (Major in Physics). In addition, they must complete PHYS 402 and submit for approval an undergraduate thesis or research project report under the supervision of a faculty member.



Graduate Studies

The Master of Science program involves a selection of graduate level Physics courses and the option of presenting a thesis or project. The thesis option normally involves the completion of a substantial research program, while the project option is designed to provide training across disciplines and is suitable for students with a well-defined career objective. More information is available at:

www.unbc.ca/graduateprograms