



THE UNIVERSITY OF BRITISH COLUMBIA

Irving K. Barber Faculty of Science
Okanagan Campus

Department of Computer Science, Mathematics, Physics and Statistics

PHYS 200 001
Relativity and Quanta
2021-2022 Winter Term 2

Instructor:

Dr. John Hopkinson
Office: SCI 258 (mainly working off campus)
Phone: 250 807 9504
E-mail: john.hopkinson@ubc.ca

In person meetings:	Wednesday 8:00-9:20	EME 1153
	Friday 8:00-9:20	EME 1153
	Seminar: Friday 11:00-11:50	LIB L306
Office Hour:	TBA	Canvas Zoom (Main Course Shell)
Seminar Leader:	Sam Ruttiman	Message through Canvas

Course Description:

Special relativity: Lorentz transformation, dynamics, and conservation laws. Quantum physics: the experimental evidence for quantization; a qualitative discussion of the concepts of quantum mechanics and their application to simple systems of atoms and nuclei. [3-0-1]
Credits: 3

Pre-reqs: [MATH 101](#) and one of PHYS 102, [PHYS 121](#) or [PHYS 122](#).

Learning Outcomes: (Upon completion of this course, students will be able to:)

1. Understand the conceptual framework of modern physics: relativity and quantum mechanics.
2. Explain the crucial role of experiment in driving the development of new materials/ideas in physics and beyond.
3. Appreciate the amazing and surprising principles governing energy and matter.
4. Apply advanced problem-solving, written and verbal communication skills.
5. Have a taste of and some preparation for: Phys 215 Thermodynamics, Phys 304 Introduction to Quantum Mechanics, Phys 400 Introduction to Elementary Particles, Phys 401 Electromagnetic theory, Phys 403 Statistical Mechanics and Phys 474 Solid State physics

Passing Criteria: To pass this course you must achieve at least 50% overall, and receive a score of at least 40% on the final exam.



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Course Format/Mode of delivery:

This course will have in-person lectures with online office hours. The instructor will attempt to record and broadcast the in-person lectures on Zoom and encourages any students who do not feel healthy to stay home and participate virtually. If at any time the instructor does not feel healthy, lectures will transition to online. The first two weeks of lectures will be held online. All tests and the final exam will be in-person unless the University is forced to go online again.

List of Topics:

<i>Quantization:</i>	of charge, light, energy and the nuclear atom.	(6 lectures). K 37, 38, 42* (KJF 28-30, T 3, 4)
<i>Wave nature:</i>	of particles, uncertainty principle	(3 lectures) K 39, (KJF 28**, 29, T 5)
<i>Schrodinger equation:</i>	one-dimensional infinite and finite square well potentials, tunneling	(4 lectures) K 40, (KJF 28**, T 6)
<i>Atomic physics:</i>	three-dimensional infinite square well*, hydrogenic atom wavefunctions	(3 lectures) K 41, (KJF 29**, T 7)
<i>Special relativity:</i>	time dilation, length contraction, invariants, mass-energy conversion, Lorentz transformations, idea of general relativity*	(8 lectures) K36, (KJF 27, T1, 2)

“K” refers to the chapter in Knight’s text, “KJF” to Knight, Jones and Field’s text and “T” refers to the chapter in Tipler and Llewellyn’s book. *Items denoted with a single star are not covered in sufficient depth in Knight’s text and will only be covered as time permits.

Those with KJF will find that it lacks depth on wavefunctions and the Schrodinger equation and should ask for their copy to be exchanged by the publisher for K. A tentative schedule of topics covered by date is posted on Canvas, as is a calendar telling you when to expect to complete assignments, midterms, seminars and projects for this course. The tentative schedule includes chapters to be covered and suggested readings. **Prior to each lecture you should consult this schedule and **read** the suggested chapter readings corresponding to the date in question and/or complete the relevant video quizzes. In the event we are ahead of, or (more likely) behind, the tentative schedule you should read the material corresponding to the lecture following the material that we just covered. You are advised to view this list as required reading that will prepare you for lecture.

The number of lectures devoted to a particular topic are approximate.



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During lecture, I will try to present material in a clear and logical way, however you must take responsibility for your own learning. Please ensure you are prepared, **do the assigned readings**. Come to office hours, use the muddiest points and/or class time to *ask* questions, *ask* for clarification and *contribute* to discussions. The more active you are in the classroom, the more you will benefit from the lectures.

Required reading: A tentative schedule of topics covered by week is posted on main course shell (PHYS 200 001 2021W2 Relativity and Quanta) in Canvas. This includes chapters to be covered, suggested readings, and homework dates. You should consult this schedule and read the suggested chapter readings corresponding to the date in question. In the event we are ahead of, or behind, the tentative schedule you should read the material corresponding to the material that we just covered. You are advised to view this list as required reading that will prepare you for lecture or add depth to the lecture you have participated in. When you read, do not read to try to absorb the knowledge, but read to *understand* the material, you should continually ask the question, “*why* is this true?”

Office hours: My office hour is TBA. All office hours will take place with Zoom, and can be accessed through the main course shell (PHYS 200 001 2021W2) in Canvas. You are encouraged to use your camera and/or screen share, when asking questions, but it is not required.

Required Materials:

Required Textbook: An e-Text of this textbook (“*Physics for Scientists and Engineers with Modern Physics*”, Vol. 3 ISBN 9780134110653 4th edition by Randall D. Knight (2017).) for this course can be purchased from the bookstore (<https://bookstore.ubc.ca/textbooks>) if you do not already have access to it from having taken first year physics here. (Contact me if you have previously used “University Physics for the Life Sciences”, Update edition by Knight, Jones and Field (2010) to see if we can exchange your code for one for this similar text by the same first author.)

General Technology: In order to engage fully with office hours for this course, students are requested to have a laptop or desktop computer with an attached camera, and a stable Internet connection. Students are encouraged to check out this link: <https://keeplearning.ubc.ca/setting-up/> I will also try to use the new in-lecture cameras to record lectures through Zoom in case students need to self-isolate.

Other resources: If you are looking for another perspective on a physics concept you could also try looking at texts available in our library: (out of print, but available in the library at QC21.3 .T56 2012, denoted T below--good for space-time diagrams, quantum concepts, and project extensions) “*Modern Physics*”, 6th edition by Paul A. Tipler and Ralph A. Llewellyn (2012).



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Required Homework: You are required to purchase access to a Mastering Physics account (Knight), where your online homework will be given. The e-text for this course comes with Mastering Physics included in the cost as discussed above. If you took a previous physics course, and still have access to Mastering Physics for either: the same text (your code should still work), or a different text published by Pearson, please contact me to attempt to exchange your code rather than purchasing a new one.

Course Evaluation:

Lecture Component:

Group Problem Solving	12%
Muddiest Point	1% (bonus)
Clickers and Video Quizzes	7%
Assignments	12%
Presentation	9%
First term test: (Feb. 11)	12.5%
Second term test: (Mar. 11)	12.5%

Examination component:

Final exam (TBA)	35%
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To pass this course you must achieve at least 50% in the class, and receive a score of at least 40% on the final exam. You cannot receive more than 100% (i.e. 65/65) on the Lecture Component. The final exam period this year will take place Thurs. Apr. 14 and Tuesday April 19 through Fri. Apr. 29 inclusive this year, including Saturdays and Sundays, (note that the University is closed on Fri. Apr. 15, Sat. Apr. 16, Sun. Apr. 17, and Mon. Apr. 18).

Note: Any requests for changes to final exam times must be sent to the office of the Associate Dean of students (fos.reception.ubco@ubc.ca)

Final grades will be based on the evaluations listed above and the final grade will be assigned according to the standardized grading system outlined in the UBC Okanagan Calendar.

Expectations:

Group Problem Solving: Most weeks the seminar (Fri. 11:00-11:50 am, LIB L306) will be used to practice your ability to solve problems or carry out derivations relevant to the material that we are covering in class. You will be expected to discuss each of the assigned problems as a group, discussing possible methods of attack, before writing up a solution in your own words. If you are unable to attend the seminar, please talk to me about it. I will be posting tutorial assignments ahead of time and you will be able to complete them and hand them in if you have a class conflict but you must be registered in the seminar. If we are forced to go online, the seminar would become a Zoom meeting each week.



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i>Clicker Cloud: We will use the i>Clicker Cloud system during every meeting. You can earn points through participation in clicker questions over the course of the term. To earn clicker marks you must set up your i>Clicker through Canvas (<https://lthub.ubc.ca/guides/iclicker-cloud-student-guide/>). Please do this as early as possible! You should frequently check that your i>Clicker scores are non-zero in Canvas (Grades) to ensure that you are correctly operating your i>Clicker Cloud system.

The use of clickers is one way that we encourage your active participation. Educational research has repeatedly demonstrated that active learners are more effective learners. I will also use clickers to motivate some of our discussion topics. I want to hear what you are thinking about material as we cover it. The clickers will also let me (and you) know in real time if I have gone too quickly over a difficult concept and helps us to focus on how we address these difficulties.

You will gain clicker points for participation on all questions, and additional points for correct answers on most problems for which we have covered the relevant material. I generally encourage you to discuss clicker questions in groups or through chat prior to submitting your answers, unless I specifically ask for individual work. Under no circumstances should you be clicking for another person in the class, this is a form of academic misconduct that will not be tolerated.

If you are unable to attend any classes due to illness and cannot connect to Zoom on those days/remotely do clickers, please **let me know** and your clicker scores will be dropped for those days.

In the event that we need to transition to online learning, we may employ Video Quizzes if videos are made rather than live lectures. Otherwise, we would continue to use clickers for live lectures online.

Muddiest point: Each Friday following lecture you'll be invited to fill out a survey asking you to describe in one sentence what you found to be the most confusing (or muddiest point) from the past week's lectures, and what you found to be the most interesting point. **The survey will be open for 48 hours, and will close Sunday at 15:30.** This is a metacognitive activity, presenting you with an opportunity for you to reflect on which concepts you understand and which concepts you have not yet fully grasped. Such activities can help you to become a more effective self-regulated learner in any discipline according to education research. As time permits I may show you a few common comments from each question. These could be used as a starting point for discussions, clarifications and explanatory group problem solving clicker questions. To earn one percent on your grade you are asked to fill out the muddiest point survey for at least three different weeks.

Assignments: You are encouraged to discuss concepts and approaches to assignment problems with your classmates, as this will benefit both you and the people you have discussions with. However, **all work that you submit for grading must be your own.** Copying answers to assignment questions from online solution manuals or paid solution services, or providing such solutions to other students is a misrepresentation of your own work and falls under the category of academic misconduct and will be dealt with following the policy on Academic Integrity shown later in this syllabus.



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When you log on to Mastering Physics (<https://www.pearsonmylabandmastering.com/northamerica/>) you will need to enter the Course ID: hopkinson71678 in addition to your enrolment code from purchasing access), you will see that we will have an online assignment assigned every Friday at 10:00 am, and due the following Friday at 5:00 pm PST. As this is a US-hosted website, you will not be required to provide Mastering Physics with personally identifiable information about yourself. If you choose to use a coded name for yourself, please let me know how to identify your work in Mastering Physics.

In addition to these assignments, there is a Practice Assignment to introduce you to how to approach different problem types created by Mastering Physics.

For the online assignments you are strongly recommended to sketch answers to each homework question on a sheet of paper, keeping your answers in terms of variables until the last moment. Don't try to solve the problems in your head or using only a calculator, you will learn and retain far more by writing out your solutions in detail. Keep your written solutions as a study reference, and they can also aid in the discussion with me of any unresolved questions you have.

Video presentation: You will be asked to create (with a partner) a short video presentation about some topic in physics that interests you that is an extension of something that we study in this class.

These videos will be uploaded on Canvas for the class to learn about several different interesting extensions of the course content. You will be asked to view (at least) three other presentation videos and ask questions of the other presenters (likely on a discussion platform available on Canvas). You will be graded on the clarity of your discussion, your ability to respond to questions and the quality of the questions that you ask the other presenters.

Peer evaluation will comprise a component of the presentation grade. You will be asked to sign up to watch and grade (anonymously) three (and only three) other presentations. You will be encouraged to provide constructive criticism of your peers, and graded on your ability to evaluate others (3%), as well as on your presentation skills as evaluated by your peers (3%) and your instructor (3%). You will sign up for your topic by Feb. 4, submit your presentation by Mar. 4, sign up for peer evaluation by Mar. 11 and complete your peer evaluations by Mar. 25.

Term tests: Individual tests will be scheduled in-person on Feb. 11 and Mar. 11 during our lecture time (8:00 - 9:20 am). We will use two-stage testing during our tests. In two-stage testing you are given a 45-minute individual test followed by a 30-minute group test. This encourages you to actively think about challenging questions, and come to a group consensus on the correct answer. Once everyone has handed



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in the individual test you will be asked to form into groups of 3-4 students and work on a common paper. This self-reflection or metacognitive exercise helps you to think about what it is that you know, and how it is that you know what you know in addition to practicing your verbal reasoning skills. If we are unable to continue meeting in-person then this may be modified. A non-graphical scientific calculator will be permitted. While you are encouraged to prepare for exams by studying with fellow students, no form of communication between students will be allowed during the individual exam period, and multiple versions of tests may be used to discourage copying. A formula sheet will be provided for all tests and exams. Uploading to or checking Chegg.com or any other web pages during tests is academic misconduct.

Final Exam (During Exam period, TBA)

Technical Issues

There are a number of supports on campus to assist students with technical issues. Students are encouraged to familiarize themselves with the software required for their courses. For example, the Student Learning Hub's technical support [<https://students.ok.ubc.ca/academic-success/learning-hub/tech-support-for-online-learning/>].

Late Policy/Missed Assignments and Exams

Homework: If you feel that you have a legitimate reason for missing ONE assignment deadline, send me an email prior to the deadline, and complete the assignment as soon as possible even if I don't respond immediately. However, the bonus marks and assignments are there in to account for you missing a few things, because life happens, and in part because I don't expect you to answer every question correctly. You are strongly encouraged to complete all of the assignments.

Midterms: There will not be make-up midterms. If you miss a midterm for a legitimate reason, email me with documentation that explains your absence (a doctor's note or a UBC declaration of absence due to illness or injury (https://students.cms.ok.ubc.ca/wp-content/uploads/sites/90/2019/06/student_declaration_of_absence_due_to_illness_201861804.pdf), explaining that illness or injury prevented you from completing the midterm for example). In this event, your missing midterm score will be replaced with an average of your scores on your other midterms and your score on the final exam. Please do not write any test if you are feeling unwell the day of the test.

In the event that we end up online, for all assessments, examinations, and tests it is the responsibility of the student to ensure that any technical issues are reported to the instructor immediately. If you cannot connect with the instructor, please document the issue or technical concern via a screenshot. This is the only circumstance in which it is appropriate to document (i.e., screenshot) exam material. Failing to report technical issues in a timely manner, may result in the issue not being resolved and may negatively impact your grade.

From UBC Okanagan Academic Calendar/Policies and Regulations/Academic Concession



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“Students who, because of unforeseen events, are absent during the term and are unable to complete tests or other graded work, should normally discuss with their instructors how they can make up for missed work, according to **written guidelines given to them at the start of the course**. Instructors are not required to make allowance for any missed test or incomplete work that is not satisfactorily accounted for. If ill health is an issue, students are encouraged to seek attention from a health professional. Campus Health and Counselling will normally provide documentation only to students who have been seen previously at these offices for treatment or counselling specific to conditions associated with their academic difficulties. Students who feel that requests for consideration have not been dealt with fairly by their instructors may take their concerns first to the Head of the discipline, and if not resolved, to the Office of the Dean. Further information can be found at: <http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,48,0,0>.

Tutorials: Late tutorial assignment sheets will not be accepted for any reason.

Common courtesy

We are experiencing a mass transition to in-person masked learning that is new to everyone, so expect norms to change. In general, please be kind to each other. When participating in group oral discussion online, have your web cam on and mute yourself when you aren't talking. Written and oral communication, must be respectful, and free of vulgarity.

Video and online content is provided to help you learn the material, the rights to the material is retained by the University, the instructor or our textbook. Where material found on the website has been posted by a student, he or she may be in violation of article 4.2.2 of the [Discipline for Non-Academic Misconduct: Student Code of Conduct policy](#).

I need extra help where do I go to get it?

An essential part of learning is struggling with ideas. If you are never confused about anything in a class, you might ask yourself if you are learning anything new in that class. When you need to discuss a concept, how to approach a question, how to access online materials or how to handle the chaos of life as a university student, here are some places to turn. In this class we have several options. I will be present in my 'office' online during my office hour, and during that time I strongly encourage you to come and discuss any questions that you have. There are no “dumb questions”! If you have a question that's bothering you, there are likely 10 other people asking the same question who haven't yet come forward to ask. I am here to help you learn and want you to succeed, and I will generally try to ask you questions that will lead you to discover the answer to the question that you are answering, or help you discover the resources you can use to discover the answers yourself. Students who attend office hours are more likely to feel more comfortable asking their professor to write a reference letter on their behalf. I am also happy to receive questions by email and will generally respond within one working day to emails if not sooner. If



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you prefer more anonymity and can wait for the muddiest point each week, this will be another opportunity, (although I do not answer most of the questions received in this manner).

Another useful starting point for help is the Learning Support Centre, or the Hub. It is also found online at <https://students.ok.ubc.ca/academic-success/learning-support/math-science-centre/>.

They offer back to basics sessions on math skills, workshops on success strategies for first year students, online resources, links to counselling resources, and drop in free tutoring. Schedules will be posted on the website for specific subject area tutors, and this can also be simply a quiet place for you to study for the few of you on campus. If you do find that a “physics” tutor is unable to help with your questions don’t give up! Some of the tutors have different physics backgrounds than others--those from engineering backgrounds generally see different types of problems and notations than we do. Finally, you are also encouraged to seek out classmates to discuss concepts, questions and problems with the material. Teaching someone how to approach a problem allows you the opportunity to learn that material from many different angles, and in greater depth, broadening your knowledge. Learning from a peer helps you to understand how someone with a background similar to you thinks about the ideas that we are discussing. There is a rich diversity of backgrounds in this class that should make peer learning even more helpful!

Official Policies

Grading Practices

Faculties, departments, and schools reserve the right to scale grades in order to maintain equity among sections and conformity to University, faculty, department, or school norms. Students should therefore note that an unofficial grade given by an instructor might be changed by the faculty, department, or school. Grades are not official until they appear on a student's academic record.

<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,90,1014>

Final Examinations

The examination period runs from Apr. 14 to Apr. 29. Except in the case of examination clashes and hardships (three or more formal examinations scheduled within a 24-hour period) or unforeseen events, students will be permitted to apply for out-of-time final examinations only if they are representing the University, the province, or the country in a competition or performance; serving in the Canadian military; observing a religious rite; working to support themselves or their family; or caring for a family member. Unforeseen events include (but may not be limited to) the following: ill health or other personal challenges that arise during a term and changes in the requirements of an ongoing job.

Further information on **Academic Concession** can be found under **Policies and Regulation in the Okanagan Academic Calendar** <http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,48,0,0>

Academic Integrity



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The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President's Advisory Committee on Student Discipline. Careful records are kept to monitor and prevent recidivism.

A more detailed description of academic integrity, including the University's policies and procedures, may be found in the Academic Calendar at:

<http://okanagan.students.ubc.ca/calendar/index.cfm?tree=3,54,111,0>. If you have any questions about how academic integrity applies to this course, please consult with your professor.

Cooperation vs. Cheating

Working with others on assignments is a good way to learn the material and we encourage it. However, there are limits to the degree of cooperation that we will permit. Any level of cooperation beyond what is permitted is considered cheating.

When working on assignments, you must work only with others whose understanding of the material is approximately equal to yours. In this situation, working together to find a good approach for solving a problem is cooperation; listening while someone dictates a solution is cheating. You must limit collaboration to a high-level discussion of solution strategies, and stop short of actually writing down a group answer. Anything that you hand in, whether it is a written problem or a computer program, must be written by you, from scratch, in your own words. If you base your solution on any other written solution, you are cheating. If you provide your solution for others to use, you are also cheating.

Copyright Disclaimer Diagrams and figures included in lecture presentations adhere to Copyright Guidelines for UBC Faculty, Staff and Students <http://copyright.ubc.ca/requirements/copyright-guidelines/> and UBC Fair Dealing Requirements for Faculty and Staff <http://copyright.ubc.ca/requirements/fair-dealing/>. Some of these figures and images are subject to copyright and will not be posted to **Canvas**. All material uploaded to **Canvas** that contain diagrams and figures are used with permission of the publisher; are in the public domain; are licensed by Creative Commons; meet the permitted terms of use of UBC's library license agreements for electronic items; and/or adhere to the UBC Fair Dealing Requirements for Faculty and Staff. Access to the **Canvas** course site is limited to students currently registered in this course. Under no circumstance are students permitted to provide any other person with means to access this material. Anyone violating these



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restrictions may be subject to legal action. Permission to electronically record any course materials must be granted by the instructor. Distribution of this material to a third party is forbidden.

Grievances and Complaints Procedures

A student who has a complaint related to this course should follow the procedures summarized below:

- The student should attempt to resolve the matter with the instructor first. Students may talk first to someone other than the instructor if they do not feel, for whatever reason, that they can directly approach the instructor.
- If the complaint is not resolved to the student's satisfaction, the student should email the Associate Head of Physics, Dr. Jake Bobowski at jake.bobowski@ubc.ca or the Department Head Dr. John Braun at john.braun@ubc.ca.

Student Service Resources

Disability Assistance

The Disability Resource Centre ensures educational equity for students with disabilities, injuries or illness. If you are disabled, have an injury or illness and require academic accommodations to meet the course objectives, visit our website for more information.

Web: <http://students.ok.ubc.ca/drc/welcome.html> **E-mail DRC at:** drc.questions@ubc.ca

Equity, Human Rights, Discrimination and Harassment

UBC Okanagan is a place where every student, staff and faculty member should be able to study and work in an environment that is free from human rights-based discrimination and harassment. If you require assistance related to an issue of equity, discrimination or harassment, please contact the Equity Office, your administrative head of unit, and/or your unit's equity representative.

UBC Okanagan Equity Advisor: ph. 250-807-9291;

E-mail: equity.ubco@ubc.ca

Web: <https://equity.ok.ubc.ca/>

Reach out and ask for help if you need it

University students often encounter setbacks from time to time that can impact academic performance. If you run into difficulties and need assistance, I encourage you to contact me by email or phone during my office hours, before or after class, or by scheduling an appointment to meet on Zoom. I will do my best to support your success during the term. This includes identifying concerns I may have about your academic progress or well-being through Early Alert. With Early Alert, faculty members can connect you with advisors who offer students support and assistance getting back on track to success. Only specialized UBC advisors are able to access any concerns I may identify, and Early Alert does not affect your academic record.



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For more information about Early Alert, visit <https://facultystaff.students.ubc.ca/systems-tools/early-alert/information-students>

Health & Wellness - UNC 337

At UBC Okanagan health services to students are provided by Health and Wellness. Nurses, physicians and counsellors provide health care and counselling related to physical health, emotional/mental health and sexual/reproductive health concerns. As well, health promotion, education and research activities are provided to the campus community. If you require assistance with your health, please contact Health and Wellness for more information or to book an appointment.

Web: www.students.ok.ubc.ca/health-wellness

Email: healthwellness.okanagan@ubc.ca

Sexual Violence Prevention and Response Office (SVPRO)

A safe and confidential place for UBC students, staff and faculty who have experienced sexual violence regardless of when or where it took place. Just want to talk? We are here to listen and help you explore your options. We can help you find a safe place to stay, explain your reporting options (UBC or police), accompany you to the hospital, or support you with academic accommodations. You have the right to choose what happens next. We support your decision, whatever you decide. Visit svpro.ok.ubc.ca or call us at 250.807.9640

Independent Investigations Office (IIO)

If you or someone you know has experienced sexual assault or some other form of sexual misconduct by a UBC community member and you want the Independent Investigations Office (IIO) at UBC to investigate, please contact the IIO. Investigations are conducted in a trauma informed, confidential and respectful manner in accordance with the principles of procedural fairness. You can report your experience directly to the IIO by calling 604-827-2060.

Web: <https://investigationoffice.ubc.ca/>

E-mail: director.of.investigations@ubc.ca

The Hub

The Student Learning Hub (LIB 237) is your go-to resource for free math, science, writing, and language learning support. The Hub welcomes undergraduate students from all disciplines and year levels to access a range of supports that include **tutoring in math, sciences, languages, and writing, as well as help with study skills and learning strategies.** **Web:** (<https://students.ok.ubc.ca/student-learning-hub/>)
Ph: 250-807-9185.

SAFEWALK - Download the UBC SAFE – Okanagan app.

Don't want to walk alone at night? Not too sure how to get somewhere on campus?

Call Safewalk at 250-807-8076 For more information: <https://security.ok.ubc.ca/safewalk/>