

**PHYS 025, Physics 025***6 credits, 6 hours lecture*

Main topics include triangle trigonometry, vector and vector diagrams, space body diagrams, relative velocity, uniform acceleration, Newton's Three Laws, inclined planes, pulley systems, friction, work, power, energy, circular motion, interaction between bodies, and an introduction to waves.

Alberta Education Course Equivalency: Science 10 (Physics) and Physics 20

Prerequisite: Math 10C or equivalent or permission from program chair.

**Instructor**

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**Office Hours**

Tuesday	12 to 12:50 pm
Wednesday	12 to 1:50 pm
Thursday	12 to 12:50 pm
Friday	12 to 12:50 pm

**Hours of Instruction**

Monday	1:00 - 2:50 pm	Room CC 225
Tuesday	1:00 - 2:50 pm	Room CC 225
Thursday	1:00 - 2:50 pm	Room CC 225

**Required Resources**

Physics 20 "Notes and Problems"- Castle Rock  
Scientific calculator  
Ruler  
Graph paper

**Course Outcomes**

Upon successful completion of Physics25, students will have acquired a level of competency with the following:

**Math Review**

- Identify the number of significant digits in the given data.
- Round the number to the required number of significant digits.

- Apply the rules of addition/subtraction and multiplication /division.
- Represent the number in scientific notation with the correct number of significant digits.
- Apply factor unit method in conversion of units within SI system and from SI to imperial system.
- Isolation of a variable in the given equation.
- Solve a right triangle.

#### Vectors

- Define Vectors and Scalars.
- Compare and contrast scalar and vector quantities.
- Represent a vector in RCS and using 'of' notation.
- Determine the horizontal and vertical components of a vector.
- Perform addition of vectors using tail to tip method and component method.
- Calculating Average Speed and Average Velocity.
- Interpret the motion of one object relative to another.
- Solving relative velocity problems.

#### Kinematics

- Define speed, distance, position, displacement, velocity and acceleration
- Define and analyze uniform motion and uniform accelerated motion
- Explain a two-dimensional motion and analysis
- Analysis of freely falling objects
- Analysis of objects thrown upwards, downwards and dropped
- Analysis of projectiles thrown horizontally and thrown at an angle

#### Dynamics

- Explain Newton's laws of motion
- Explain that a non- zero net force causes a change in velocity and analysis
- Apply the laws to solve motion problems
- Explain free Body diagram of objects on a horizontal surface and on an incline
- Describe work as transfer of energy
- Solve Work, Power, Potential energy and Kinetic energy problems
- Explain law of conservation of mechanical energy and solve related problems
- Explain work - energy theorem for net force and solve related problems

#### Circular motion & Universal Gravitation

- Define uniform circular motion.
- Solve speed, centripetal acceleration, centripetal force of objects in a circular path.
- Explain and apply Newton's Universal law of gravitation.

#### Evaluation

Assignments	10%
Quiz	20%
Mid Term	30%
Final Exam	40%
Total	100%

*The minimum pre-requisite for progression is 1.7 (refer to grading system below)*

### Grading System

Descriptor	4.0 Scale	Percent
Excellent	4.0	96 – 100
	4.0	90 – 95
	3.7	85 – 89
Good	3.3	81 – 84
	3.0	77 – 80
	2.7	73 – 76
Satisfactory	2.3	69 – 72
	2.0	65 – 68
<b>Minimum Prerequisite</b>	1.7	60 – 64
Poor	1.3	55 – 59
Minimum Pass	1.0	50 – 54
Failure	0.0	0 – 49

### Performance Requirements and Student Services

#### Student Responsibilities

As a student, it is your responsibility to contact the Office of the Registrar to complete the required forms, including the Withdraw Course or Program or a Change of Registration form. Please refer to the important dates listed in the Academic Schedule in the [Keyano College credit calendar](#). The Keyano College credit calendar also has information about Student Rights and the Code of Conduct. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and the Code of Conduct Policies.

#### Student Attendance

Class attendance is helpful for two reasons: First, class attendance maximizes a student's learning experience. Second, attending class is an excellent way to keep informed of matters relating to the course administration (e.g., the timing of assignments and exams). Ultimately, you are responsible for your learning and performance in this course. It is the responsibility of each student to be prepared for all classes. Absent students are responsible for the material covered in those classes, and students must ensure they are ready for their next class, including completing any missed assignments and notes.

#### Academic Misconduct

Students are considered responsible adults and should adhere to the principles of intellectual integrity. Intellectual dishonesty takes many forms:

- Plagiarism or the submission of another person's work as their own,
- The use of unauthorized aids in assignments or examinations (cheating),
- Collusion or the unauthorized collaboration with others in preparing work,
- The deliberate misrepresentation of qualifications,
- The willful distortion of results or data,
- Substitution in an examination by another person,
- Submitting unchanged work for another assignment, and
- Breach of confidentiality.

The consequences for academic misconduct range from a verbal reprimand to expulsion from the College. More specific descriptions and details are found in the Student Rights and Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Code of Conduct Policies. To ensure your understanding of plagiarism, you may be required to complete the online [Understanding Plagiarism tutorial](#) and submit the certificate of completion.

**Online Learning**

Technology and internet connectivity will impact your online learning experience. You may be required to watch online videos, take online quizzes, or participate in live online classes. Live/virtual courses will be hosted in Microsoft Teams or Zoom. For all course delivery types, you will access your course resources on Keyano's learning management system: Moodle (iLearn). Login in using your [Keyano username and password](#). Keyano College operates in a Windows-based environment and having access to the correct tools for online learning is essential. Here's a list of recommended system requirements.

**Internet Speed**

Minimum download and upload speeds of 10 Mbps. Recommended download speeds of 25 Mbps and upload speeds of 10 Mbps (if you are sharing your internet at home). You can check your internet speed with [Speedtest by Ookla](#).

**Computer System Requirements**

Microsoft Windows	Apple (Mac)
<p><b>Minimum Requirements:</b></p> <ol style="list-style-type: none"> <li>1. Windows 10 Operating System or above</li> <li>2. 4GB of RAM</li> <li>3. 10GB available hard drive storage space                             <ol style="list-style-type: none"> <li>a. Install the Microsoft Office 365 suite (~3GB) *</li> </ol> </li> <li>4. Microphone, webcam, and speakers (All modern laptops have these three accessories built-in.)</li> <li>5. Windows has built-in anti-virus/malware software. It is essential to install system updates to keep your device secured regularly.</li> </ol> <p>*<a href="#">Microsoft Office 365</a> is free to Keyano students.</p>	<p><b>Minimum Requirements:</b></p> <ol style="list-style-type: none"> <li>1. Mac Operating System 10.14 (Monterey) or above</li> <li>2. 4GB of RAM</li> <li>3. 10GB available hard drive storage space                             <ol style="list-style-type: none"> <li>a. Install the Microsoft Office 365 suite (~3GB) *</li> </ol> </li> <li>4. Microphone, webcam, and speakers (All modern laptops have these three accessories built-in.)</li> <li>5. Mac has built-in anti-virus/malware software. It is important to install system updates to keep your device secured regularly.</li> </ol> <p>*<a href="#">Microsoft office 365</a> is free to Keyano students.</p>
<p><b>Recommended Upgrades</b></p> <ul style="list-style-type: none"> <li>• 8GB of RAM</li> <li>• Regularly back up or synchronize your files, locally or with a cloud-based storage option.</li> </ul> <p>OneDrive is the cloud-based storage option free to students after the setup of KeyanoMail and Microsoft 365.</p>	<p><b>Recommended Upgrades</b></p> <ul style="list-style-type: none"> <li>• 8GB of RAM</li> <li>• Regularly back up or synchronize your files locally or with a cloud-based storage option.</li> </ul> <p>OneDrive is the cloud-based storage option free to students after the setup of KeyanoMail and Microsoft 365.</p>
<p>Tablets, iPads, and Chromebooks are <b>not</b> recommended: they may not be compatible with the testing lockdown browsers and Microsoft Office 365.</p>	

**Computer Software**

Students have access to Microsoft Office 365 and Read&Write for free using Keyano credentials.

**Recording of Lectures and Intellectual Property**

Students may only record a lecture if explicit permission is provided by the instructor or Accessibility Services. Even if students have permission to record a lecture or lecture materials, students may not share, distribute, or publish any of the lectures or course materials; this includes any recordings, slides, instructor notes, etc., on any platform. Thus, no student is allowed to share, distribute, publish or sell course-related content without permission. It is important to recognize that the Canadian Copyright Act contains provisions for intellectual property. The [Academic Integrity Policy](#) provides additional information on Keyano College's expectations from students as members of the intellectual community.

**ITS Helpdesk**

If you have issues with your student account, you can contact the ITS Helpdesk by emailing [its.helpdesk@keyano.ca](mailto:its.helpdesk@keyano.ca) or calling 780-791-4965.

**COVID-19** We are subject to provincial, and municipal bylaws, and policies. These decisions may change pending further direction from the Alberta Chief Medical Officer, Alberta Health Services, and other provincial guidelines. To protect yourself and others, get immunized, wash your hands, wear a mask, keep your distance (2m/6 ft) and remain home when feeling unwell. For the most recent COVID-19 information, please refer to [albertahealthservices.ca/COVID](http://albertahealthservices.ca/COVID).

**Specialized Supports** The Student Services Department is committed to Keyano students and their academic success. There is a variety of student support available at Keyano. All student services are available during Keyano business hours: Monday to Friday, 8:30 a.m. to 4:30 p.m. The College is closed on statutory holidays. If you require support outside of regular business hours, please inform the support service team, and they will do their best to accommodate your needs.

**Accessibility Services** provides accommodations for students living with disabilities. Students with documented disabilities or who suspect a disability can meet with an Access Strategist to discuss their current learning barriers and possible accommodations. Students who have accessed accommodations in the past are encouraged to contact the department to request accommodations for the following semester. Please note that requesting accommodations is a process and requires time to arrange. Contact the department as soon as you know you may require accommodations. For accessibility supports and disability-based funding, please book an appointment by emailing us at: [accessibility.services@keyano.ca](mailto:accessibility.services@keyano.ca).

Accessibility Services also provides individual and group learning strategy instruction for all students and technology training and support to enhance learning. You can meet with an Access Strategist to learn studying and test-taking strategies. In addition, you can schedule an appointment with the Assistive Technology Specialist to explore technology tools for learning. Book an appointment today by emailing: [accessibility.services@keyano.ca](mailto:accessibility.services@keyano.ca)

**Wellness Services** offers a caring, inclusive, and respectful environment where students can access free group and individual support to meet academic and life challenges. Mental Health Coordinators provide a safe and confidential environment for you to seek help with personal concerns. Our Wellness Navigator offers support with basic needs such as housing, financial and nutritional support, and outside referrals when needed. Wellness Services welcomes students to participate in group sessions that address topics including mindfulness and test anxiety throughout the academic year. Individual appointments can be made by emailing [wellness.services@keyano.ca](mailto:wellness.services@keyano.ca).

**Library Services:** provides students with research, information, and education technology supports as they engage in their studies. Library staff are available to help you online and in person throughout the semester. Librarians offer individual and small group appointments booked using the online [Book A](#)

[Librarian calendar](#). The Library also provides research and subject guides to help you with your studies. To view a subject or course-specific guide, check out the complete list of online [Subject Guides](#). To start your research and access citation guides (APA, MLA, Chicago, or IEEE), visit the [Research Help page](#). The Library's collections (including print and online materials) are searchable using [OneSearch](#). The Library offers a Loanable Technology collection to support students accessing and using technology. For an up-to-date list of technology available for borrowing, visit the Library's [Loanable Technology webpage](#). For a detailed list of library resources and services, go to [www.keyano.ca/library](http://www.keyano.ca/library). For all inquiries, please email [askthelibrary@keyano.ca](mailto:askthelibrary@keyano.ca) or [chat with us online](#).

**Academic Success Centre:** The Academic Success Centre at Keyano College (CC-119) provides **free** academic support services to registered students, such as tutoring, writing support, facilitated study groups, workshops, and study space. Academic Content Specialists are available in Mathematics, Science, Trades, Power Engineering, Upgrading/College Prep, Human Services, English, Humanities, and more. Students are encouraged to visit the Academic Success Centre to discuss study strategies and academic concerns. For additional information, please email [Academic.Success@keyano.ca](mailto:Academic.Success@keyano.ca).

**Academic Success Coach:** The Academic Success Coach is located in the Academic Success Centre and works with students to develop academic success plans, time management skills, study strategies, and homework plans. For additional information, please email [Academic.Success@keyano.ca](mailto:Academic.Success@keyano.ca).