Alexander College
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# CURRICULUM GUIDE: OFFICIAL COURSE OUTLINE

<table>
<tr><td>Course Code</td><td>PHYS 100</td><td>Course Title</td><td colspan="4">Introduction to Physics</td></tr>
<tr><td>Credit Value</td><td>4</td><td>Department</td><td colspan="4">Mathematics and Science</td></tr>
<tr><td rowspan="2">No. of weeks</td><td rowspan="2">14</td><td rowspan="2">Hrs. per week</td><td>Lecture</td><td>Tutorial</td><td>Laboratory</td><td>Total</td></tr>
<tr><td>3</td><td>0</td><td>3</td><td>6</td></tr>
<tr><td>Course Description</td><td colspan="6">Introductory physics including Newtonian mechanics, gravitation, electricity, and optics. This course is designed for non-science students. Not open to students with credit for Physics 12 or equivalent.</td></tr>
<tr><td>Prerequisite(s)</td><td colspan="6">ENGL 099, MATH 100 or equivalent (MATH 100 may be taken concurrently)</td></tr>
<tr><td rowspan="2">Initial Articulation Targets</td><td>UBC</td><td>SFU</td><td>UVic</td><td>UNBC</td><td colspan="2">TRU</td></tr>
<tr><td>PHYS_V 100 (3)</td><td>PHYS 100 (0), Exemption</td><td>PHYS 1XX (1.5)</td><td>PHYS 115 (4)</td><td colspan="2">No credit</td></tr>
<tr><td></td><td colspan="6">For updated information on the transferability of this course, please consult the BC Transfer Guide, www.bctransferguide.ca</td></tr>
<tr><td>Learning Outcomes</td><td colspan="6">Upon successful completion of this course, the student will be able to:<ul><li>Describe linear motion and circular motion through position, displacement, velocity, and acceleration in one, two, and three dimensions.</li><li>Draw free-body diagrams to determine the forces on an object. Forces include gravity, spring force, normal force, friction, tension, and electric force.</li><li>Predict the motion of an object using Newton’s laws, impulse-momentum theorem and conservation of momentum, and work-energy theorem and conservation of mechanical energy.</li><li>Explain how insulators and conductors are charged and their differences on an atomic scale.</li><li>Explain the ray optics of light and use the law of reflection and Snell’s laws to predict the path of light rays.</li><li>Set-up, record, and analyze data from experiments using significant figures and compare the results to theory.</li></ul></td></tr>
<tr><td>Content</td><td colspan="6">Core topics – all of the following will be covered:<ul><li>Units, Scalars, Vectors</li><li>Linear Motion</li><li>Circular Motion</li><li>Free-body Diagrams and Newton’s Laws of Motion</li><li>Impulse-Momentum Theorem and Conservation of Momentum</li><li>Work-Energy Theorem and Conservation of Mechanical Energy</li><li>Insulators, Conductors, Electrostatics</li><li>Ray Optics, Law of Reflection, Snell’s Law</li></ul></td></tr>
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**Alexander College**
Main Campus 4805 Kingsway, Burnaby, BC V5H 4T6
www.alexandercollege.ca

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<tr><td></td><td colspan="3">Additional topics may also be covered, at the discretion of the instructor.<br><br>Labs:<br>• Introduction to Uncertainty and Significant Figures<br>• Vectors<br>• Constant Velocity<br>• Constant Acceleration<br>• Projectile Motion<br>• Constant Force<br>• Cart and Pulley<br>• Impulse and Momentum<br>• Hooke’s Law<br>• Reflection and Refraction</td></tr>
<tr><td>Methods of Instruction</td><td colspan="3">Lectures, problem sessions, assignments, laboratory work, presentations, assigned reading, quizzes, exams</td></tr>
<tr><td>Required Textbook(s)</td><td colspan="3">The following textbook(s) is/are required, or approved equivalent(s).<br><br>Urone, Paul Peter, and Roger Hinrichs. College Physics. Houston, TX: OpenStax College, 2022.</td></tr>
<tr><td>Required Equipment and Technology</td><td colspan="3">Students are required to have a computer with internet access.<br>The following resources are provided by the College:<br>• Office 365<br>• Student email</td></tr>
<tr><td>Homework Hours</td><td colspan="3">At minimum, students can expect one hour of homework for every hour of instructional time.</td></tr>
<tr><td rowspan="5">Evaluation</td><td>Component</td><td colspan="2">% Value</td></tr>
<tr><td>Quizzes and assignments</td><td colspan="2">10-25%</td></tr>
<tr><td>Laboratory experiments and activities<br>• Weight divided over 10 labs</td><td colspan="2">10-20%</td></tr>
<tr><td>Midterm exam (1-2)</td><td colspan="2">20-40%</td></tr>
<tr><td>Comprehensive final exam</td><td colspan="2">30-35%</td></tr>
<tr><td>Completion Requirements</td><td colspan="3">The minimum grade to pass this course is D (50%). Unless otherwise stated, a minimum grade of C- (55%) is required for this course to fulfil a prerequisite.</td></tr>
<tr><td>Course Designer(s)</td><td>Michael Wortis, Ph.D., Professor Emeritus, Department of Physics, Simon Fraser University</td><td>Consultant(s), if applicable</td><td>Neil Alberding, Ph.D., Department of Physics, Simon Fraser University and other SFU faculty/staff</td></tr>
<tr><td>Dean’s Approval</td><td>Marv Westrom, Ph.D. Professor Emeritus, Faculty of Education, University of British Columbia</td><td>Dean’s Approval Date</td><td>February 3, 2010</td></tr>
<tr><td>Curriculum Committee Approval Date</td><td>February 3, 2010</td><td>First Term Offered</td><td>Fall 2011</td></tr>
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| Last Review Date | September 1, 2024 | Next Review Date | September 1, 2029 |
| Revision History | September 28, 2022-Minor revisions and updates by Kelly Cheung.<br><br>September 1, 2024 - Lab assignments and assessments detailed by Kelly Cheung. | | |