

# PHYSICS (PHYS)

This is a list of the Physics (PHYS) courses available at Kwantlen.

## **PHYS 1100 CR-4** **Introductory Physics**

Students in this survey course will study kinematics and dynamics in one and two dimensions, energy and momentum conservation, electricity and magnetism, waves, and geometric optics. In the lab students will also study basic techniques of measurement, including the use of computers and report writing.

Note: This is a preparatory course for students who have not passed Principles of Physics 12

*Prerequisites: Strongly recommended: PHYQ 1098 or ABEP 0011 or PHYP 1011 or Principles of Physics 11 or Applications of Physics 12.*

*Co-requisites: MATH 1112 Note: No corequisite is required if a student has completed Principles of Mathematics 12 with a C Transferable (refer to transfer guide)*

## **PHYS 1101 CR-4** **Physics for Life Sciences I**

Students will learn about translational and rotational kinematics and dynamics; simple harmonic motion, waves and sound; work, power, energy, and momentum with linear, rotational and oscillatory motion; fluids; and heat. They will use computers extensively in the lab for data collection and analysis.

*Prerequisites: PHYS 1100 or Principles of Physics 12 (with a P)*

*Co-requisites: MATH 1120 or 1130 or 1140 Transferable (refer to transfer guide)*

## **PHYS 1102 CR-4** **Physics for Life Sciences II**

Students will learn about electrostatic forces and fields; magnetic forces, fields, and induction; AC circuits; wave optics; quantum and atomic physics; and radioactivity. They will use computers extensively in the lab for data collection and analysis.

*Prerequisites: PHYS 1101 or PHYS 1120*

*Co-requisites: MATH 1220 or 1230 or 1240 Transferable (refer to transfer guide)*

## **PHYS 1112 CR-3**

### **Reel Physics**

Students will study a wide range of physical concepts in the context of popular culture. They will investigate the often-incorrect portrayal of basic physics in varied source material (movies, television, and print media). Students will critically view source materials and determine when the physics has been correctly or incorrectly portrayed.

NOTE: This is an introductory course in physics intended for students not specializing in science or applied science, but will utilize basic arithmetic skills. No prior study of physics is required.

*Transferable (refer to transfer guide)*

## **PHYS 1120 CR-4** **Physics for Physical and Applied Sciences I**

Students will learn about statics, dynamics, oscillations, mechanical waves and sound. They will use computers extensively in the lab for data collection and analysis.

*Prerequisites: PHYS 1100 or Principles of Physics 12 (with a C)*

*Co-requisites: MATH 1120 or 1130*

*Transferable (refer to transfer guide)*

## **PHYS 1170 CR-3** **Mechanics I**

Students will study the statics, kinematics and dynamics of particles and rigid bodies. They will apply vector analysis to three-dimensional static-equilibrium problems, and differential and integral calculus to dynamics problems, as well as make use of Newton's laws and the concepts of impulse, momentum, work and energy. Students will focus on the analysis of practical mechanics problems in two and three dimensions.

Note: This is an Applied Science (Engineering) course.

*Prerequisites: PHYS 1120*

*Co-requisites: MATH 1220 MATH 1220*

*Transferable (refer to transfer guide)*

## **PHYS 1220 CR-4** **Physics for Physical and Applied Sciences II**

Students will learn about optics, modern physics, electricity and magnetism. They will use computers extensively in the lab for data collection and analysis.

Note: Students who intend to go on in the physical or applied sciences must take MATH 1220 to ensure transfer credit

*Prerequisites: PHYS 1120 or 1101*

*Co-requisites: MATH 1220 or 1230*

*Transferable (refer to transfer guide)*

**PHYS 2101 CR-2.5****Experimental Physics I**

Students will learn how physical principles are applied in designing experiments and analyzing their results. They will learn the electronic skills necessary to work in a modern physics laboratory. Students will perform experiments in basic analogue and digital electronics, learn the use of standard electronic instrumentation, and use the computer for data analysis.

*Prerequisites: PHYS 1220*

*Co-requisites: MATH 2321 or 2232 or 2233*

*Transferable (refer to transfer guide)*

**PHYS 2201 CR-2.5****Experimental Physics II**

Students will learn how physical principles are applied in designing experiments and analyzing their results. They will use analogue and digital electronics, electronic instrumentation and computers, in the acquisition of experimental data. Students will perform experiments in thermodynamics, electronics, and modern physics, and will use computers in modelling, data analysis, and in writing reports.

*Prerequisites: PHYS 2101*

*Transferable (refer to transfer guide)*

**PHYS 2330 CR-3****Intermediate Mechanics**

This course extends the concepts covered in PHYS 1120. Students will study the general motion of particles and rigid bodies, inertial and non-inertial frames of reference, the harmonic oscillator, and central forces.

*Prerequisites: PHYS 1120 or (PHYS 1101 with a B or better)*

*Co-requisites: MATH 2321*

*Transferable (refer to transfer guide)*

**PHYS 2420 CR-3****Intermediate Electricity and Magnetism**

Students will learn the principles of electricity and magnetism at an intermediate level. Topics covered are: electrostatic forces and fields, electric potential, capacitance and dielectrics, DC and AC circuits, magnetic fields, magnetic properties of materials, and introduction to semi-conductor devices and Maxwell's equations.

*Prerequisites: PHYS 1220 or (1102 with a B or better)*

*Co-requisites: MATH 2321 (MATH 3322 is strongly recommended) MATH 2321 (MATH 3322 is strongly recommended)*

*Transferable (refer to transfer guide)*

**PHYS 2421 CR-2****Laboratory in Electric Circuits**

Students will learn about: measuring voltage, frequency and phase angle using an oscilloscope; charging and discharging of a capacitor; RC, RL and LCR circuits; resonance and oscillations; rectification and filter circuits; transistor characteristics and amplification; and operational amplifiers.

*Prerequisites: PHYS 1220 or (1102 with a B or better.)*

*Co-requisites: MATH 2321 and PHYS 2420*

*Transferable (refer to transfer guide)*

**PHYS 2424 CR-3****Relativity and Quanta**

Students will study special relativity and quantum physics at an intermediate level. They will examine aspects and applications of Lorentz transformation, dynamics and conservation laws. Students will also review the experimental evidence for quantization and conduct a qualitative discussion of quantum mechanics and their application to simple systems of atoms and nuclei.

*Prerequisites: (PHYS 1102 or 1220) and (MATH 1220 or 1230)*

**PHYS 3202 CR-3****Biophysics**

Students will study the biomechanics of the skeletal system, the strength of materials as it applies to the human body, the fluid dynamics of the circulatory system, diffusion and Brownian motion, thermoregulation of the body, the optics and neurophysics of vision, the acoustics of the ear and the human voice, electrical models of nerve conduction, and radiation dosimetry.

*Prerequisites: (PHYS 1101 or 1120) and (MATH 1120 or 1130) Note: PHYS 1220 is recommended*

*Co-requisites: BIOL 1210*

*Transferable (refer to transfer guide)*