HONOURS CERTIFICATE IN PHYSICS
SUPPLEMENTARY INFORMATION FORM – DESCRIPTION OF REQUIRED PRE-REQUISITE KNOWLEDGE

Students must have prerequisite knowledge equivalent to University of Windsor courses PHYS-2210 (Modern Physics); PHYS-2500 (Intermediate Classical Mechanics); MATH-2780 (Vector Calculus); Math-2790 (Differential Equations); and MATH-3550 (Special Functions).

Please consider your academic history carefully and identify in which courses from your transcript the following knowledge has been obtained. Your success in this program depends upon your familiarity and knowledge of the standard physics topics and techniques described below.

This form does not need to be submitted. It is a worksheet that allows you to reflect on your academic background and preparation for participation in this Certificate.

Required prerequisite knowledge	Obtained in
PHYS-2210 Modern Physics A calculus-based physics course that includes an introduction to the special theory of relativity – relativistic transformations, mass-energy conservation, relativistic collisions; quantum mechanics in 1-dimension; nuclear physics – structure, decays, reactions; particle physics – fundamental particles, interactions, and conservation laws; and Standard Model of Physics.	
PHYS-2500 Intermediate Classical Mechanics Galilean invariance, conservation theorems, applications to rectilinear motion and motion in two/three dimensions; introduction to non-inertial reference frames, particularly in rectilinear motion; driven oscillators with damping; central forces, the Kepler problem; dynamics of rigid bodies – planar motion; special relativity – Lorentz transformations, relativistic kinematics, and dynamics.	
MATH-2780 Vector Calculus This course will cover quadric surfaces, vector differential calculus, functions of several variables, maximum and minimum problems, multiple integrals, vector differential operators, line and surface integrals, Green's theorem, Stokes' theorem and Gauss' theorem.	
MATH-2790. Differential Equations This course will cover first-order ordinary differential equations (ODEs), higher-order ODEs with constant coefficients, Cauchy-Euler equations, systems of linear ODEs, Laplace transforms, and applications to science and engineering.	
MATH-3550. Introduction to Fourier Series and Special Functions This course will cover Fourier series, Sturm- Liouville problems, heat and wave equations, Laplace equation, weighted L2 -spaces and orthogonal bases, Gamma function, Bessel functions, Legendre polynomials and hypergeometric functions.	