MSc Computational Physics

(1 Year Full Time)

Computational Physics is a basic specialisation that offers broad opportunities for future employment in research, development, data analytics and informatics-related industry sectors. At UCD, our MSc Programme in Computational Physics is developed in close connection with the more applied NanoBio and NanoTechnology specialties, offering you both a solid training in computational methods and a direct access to laboratory-based research projects.

Our Computational Physics MSc is aimed at students with a strong background in Physics or related Natural Sciences, who wish to learn how to convert a mathematical model of a physical system into accurate and robust computer programmes that can capture quantitatively its behaviour.

Course Content and Structure

| 90 credits taught masters | 45 credits taught modules + 45 credits research project | or | 60 credits taught modules + 30 credits research project |

Modules will be decided upon agreement with the Programme Director. Indicative modules available include:

- Applied Quantum Mechanics
- Computational Biophysics and Nanoscale Simulations
- Nanofluidics and Biosimulation
- Advanced Quantum Mechanics
- Biomimicry
- Advanced Statistical Physics
- Numerical Weather Prediction
- Numerical Algorithms
- Stochastic Models
- Time Series Analysis

Modules and topics shown are subject to change and are not guaranteed by UCD.

Entry Requirements

- This programme is intended for applicants who have a strong background in physics, chemistry, engineering, material sciences or a related discipline with a significant physics content. An upper second class honours or international equivalent is required. In special circumstances, students with a strong physics background and 2.2 class honours may be accepted.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent, such as TOEFL (iBT) score of 90 or PTE score of 63. Applicants with an IELTS score of at least 5.5 may apply for admission to the UCD Pre-Masters Pathway programme.

Graduate Profile

Associate Professor Nicolae-Viorel Buchete, UCD School of Physics & UCD Institute for Discovery

Ongoing research projects in his group at UCD are concerned with statistical mechanics and conformational dynamics of biomolecular systems, protein folding, amyloid aggregation, structural aspects of systems biology and bioinformatics, and with multiscale modelling of biomolecules and complex fluids.