PROGRAMME SPECIFICATION	

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	n/a
4	**Programme Title**	Science with Physics (Foundation Year) Physics (Foundation Year)
5	**UCAS/Programme Code**	F304, F305
6	**Programme Accreditation**	n/a
7	**QAA Subject Benchmark(s)**	
8	**FHEQ Level**	3
9	**Last updated**	May 2023

10 Programme Aims

To equip students with the knowledge and ability to enter the Physics degree programme.

11 Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes to enable successful study at stage I. Students will develop knowledge in most of the following areas, depending on module selection.

Knowledge and Understanding

On completing the programme students should :

A1 be able to demonstrate knowledge of maths methods and have knowledge & understanding of maths topics such as differential and integral calculus, including techniques of differentiation and of systematic integration; know the derivatives of some standard mathematical functions; understand why complex numbers were created.

A2 be able to demonstrate knowledge and understanding of materials, such as metals, ceramics and polymers on the atomic, micro-and macro-scales, and be able to demonstrate knowledge & understanding of the wide range of properties exhibited by materials and how to tailor these to advantage. They should be able to demonstrate knowledge & understanding of the mechanical properties of materials and how these are influenced by atomic bonding and microstructure.

A3 be able to understand key accounting concepts, different approaches to costing, and their implications, budgeting in organisations; key elements of financial management (where this module is selected).

A4 have knowledge of Kinematics and dynamics, displacement and rates of change, simple harmonic motion, Newton's laws, work and energy, kinetic and potential energy, power and efficiency, conservation of energy and momentum, friction.

A5 demonstrate knowledge of engineering units and the laws relating to quasistatic field phenomena; passive electrical components; simple DC, AC and digital circuit analysis and design. They will also have a qualitative grasp of transistor theory and understand the role of log-books.

A6 be able to understand the principles of data collection. They will also have a basic knowledge of data interpretation, data analysis and statistical inference.

A7 demonstrate knowledge of chemistry: manipulate formulae, equations and amounts; elements and the Periodic Table; atomic structure; the nature of acids and bases; energy changes involved in reactions; properties of gases; bonding and structure in organic and inorganic substances; functional groups in organic chemistry; trends in the reactivity of elements and their compounds.

A8 be able to describe the main components of computer systems, the functionality of a key set of applications, and build web pages discuss principles of computer programming.

A9 demonstrate knowledge and understanding of the elementary physics associated with: Forces, energy, the structure of the atom and the interaction of light with atoms, the structure of the nucleus and its stability, radioactivity and radioactive decay.

Teaching and Learning Methods

Lectures, seminars & tutorials. The primary means of imparting knowledge and understanding is lectures. These are supplemented by seminars which enable students to check their learning. Throughout the course students are encouraged to supplement taught material by independent reading, for which they are given extensive support and guidance on reading materials and how to use them.

Assessment Strategy

Written examinations & coursework

Intellectual Skills

On completing the programme students should be able to:-

B1 Use appropriate SI units for engineering and scientific calculations

B2 solve engineering problems involving algebraic manipulation, graphical techniques and arithmetical skills.

B3 select and process data to provide appropriate information for technical problems.

B4 differentiate mathematical functions from first principles, and to apply the usual rules for differentiation.

B5 Solve problems in chemistry, including equations.

B6 be able to present data in numerical, graphical and tabular form.

B7 prepare and interpret financial and management accounting reports

Teaching and Learning Methods

Lectures, seminars & tutorials. Intellectual skills are developed through seminars, and the project modules. Students are encouraged to acquire them through solving problems arising from these.

Assessment Strategy

Written Exams & coursework.

Practical Skills

On completing the programme students should be able to:
C1 predict, with reasons, why a particular material is suitable for a specific application.
C2 integrate taught theory and analytical methods with 'capability' skills in problem solving and practical work.
C3 carry out basic calculations in materials science, selecting and applying the relevant mathematical procedures.
C4 use the oscilloscope and both analogue and digital meters

Teaching and Learning Methods

Lab sessions, tutorials.
Practical skills are developed by laboratories and fieldwork. Students are encouraged to learn by doing, i.e. undertaking experiments for themselves as part of their modules.

Assessment Strategy

Transferable/Key Skills

On completing the programme students should be able to:
D1 use problem worksheets and lecture notes to study an engineering subject to degree level.

D2 carry out basic calculations in selecting and applying the relevant mathematical procedures.
D3 produce effective presentations: present data in numerical, graphical and tabular form.
D4 undertake project work and report writing.
D5 produce coursework
D6 manage their time
D7 participate in Groupwork
D8 use microsoft office
D9 select and process data to provide appropriate information for technical problems.
D10 be able to proficiently use a range of mathematical and physical concepts required in Stage 1 engineering modules, and be able to apply such skills to a range of problems arising in engineering systems.

Teaching and Learning Methods

Lectures, seminars and tutorials, handouts and lecture notes. Expertise in problem-solving is modelled in lectures and supported seminars. Communication and presentation skills are also developed in seminars. Student learning is supported by regular problem solving exercises, and formative coursework.

Assessment Strategy

Formative coursework, in-class tests and written examinations.

12 Programme Curriculum, Structure and Features

Basic structure of the programme

70 compulsory credits and 50 optional credits to be taken.

Key features of the programme (including what makes the programme distinctive)

It is Foundation Level, and has wide-ranging subject content in order to equip students to study in one of several streams.

Programme regulations (link to on-line version)

-RF304-F305.pdf (ncl.ac.uk)

13 Support for Student Learning

Generic information regarding University provision is available at the following link.
Generic Information

14 Methods for evaluating and improving the quality and standards of teaching and learning

Generic information regarding University provision is available at the following link.
Generic Information

Accreditation reports
n/a

Additional mechanisms

15 Regulation of assessment

Generic information regarding University provision is available at the following link.

Generic Information

In addition, information relating to the programme is provided in:

The University Prospectus: http://www.ncl.ac.uk/undergraduate/degrees/#subject

Degree Programme and University Regulations: http://www.ncl.ac.uk/regulations/docs/

Please note. This specification provides a concise summary of the main features of the programme and of the learning outcomes that a typical student might reasonably be expected to achieve if she/he takes full advantage of the learning opportunities provided.