

<b>PROGRAMME SPECIFICATION</b>	 <b>Newcastle</b> <b>University</b>
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<b>1 Awarding Institution</b>	Newcastle University
<b>2 Teaching Institution</b>	Newcastle University
<b>3 Final Award</b>	MSc
<b>4 Programme Title</b>	Communications and Signal Processing Electronic Engineering (exit award)
<b>5 UCAS/Programme Code</b>	5066F 5468F (exit award)
<b>6 Programme Accreditation</b>	
<b>7 QAA Subject Benchmark(s)</b>	N/A
<b>8 FHEQ Level</b>	7
<b>9 Date written/revised</b>	May 2023

#### **10 Programme Aims**

The programme aims:

- To gain advanced knowledge and understanding of specialist topics in Communications and Signal Processing;
- To develop transferable skills in research and knowledge acquisition;
- To satisfy the professional development needs of the individual and his/her employers; providing relevant training to engineering graduates who wish to pursue a career as design and development engineers in the area of telecommunications and digital signal processing;
- To provide a foundation for further postgraduate studies.

#### **11 Learning Outcomes**

The programme provides opportunities for students to develop and demonstrate knowledge, understanding, skills and other attributes associated with the theme of Communications and Signal Processing.

##### **Knowledge and Understanding**

A successful student will have gained and be able to demonstrate:

- A1 Knowledge and understanding of a total of 6 advanced topics in the field of Communications and Signal Processing selected from: Intelligent Signal Processing, Wireless Communication Systems, Wired and Wireless Network Technologies and Security, Information Theory , Image Processing and Computer Vision, Internet of Things and Wireless Sensor Network Project, Communications and Signal Processing (Coursework)
- A2 The technical expertise that underpins informed project planning, design and decision making in the area of Communications and Signal Processing
- A3 Computer aided design and analysis techniques appropriate to Communications and Signal Processing, for example the use of software packages such as MATLAB, MPLAB-X, VisualDSP++, C/C++, CST, COMSOL, SPICE.
- A4 A particular topic connected with Communications and Signal Processing studied in-depth as part of a research project

<b>Teaching and Learning Methods</b>
Acquisition of A1 to A4 is through a combination of lectures, tutorials, student centred learning, coursework and project work.
<b>Assessment Strategy</b>
<p>Formative assessment in particular areas occurs through tutorial exercises (computer based and written) and coursework. The primary means of assessing factual knowledge is through closed book written examination. This is supported through assessed coursework and case studies.</p> <p>In depth individual learning forms part of the research project, which is assessed by a literature survey, a presentation exercise, dissertation and <i>viva-voce</i> examination.</p>
<b>Intellectual Skills</b>
<p>On completing the programme students should be able to:</p> <p>B1 Select and apply appropriate methods for modelling and analysing problems in Communications and Signal Processing.</p> <p>B2 Use scientific principles in the modelling and analysis of engineering systems, processes and products.</p> <p>B4 Select and apply appropriate methods for developing Communications and Signal Processing solutions to practical problems.</p> <p>B5 Produce engineering solutions to problems through the application of knowledge and understanding in Communications and Signal Processing.</p> <p>B6 Create new designs in Communications and Signal Processing through synthesis of ideas from a wide range of sources.</p> <p>B7 Develop ideas and opinions through the critical appraisal of information from a wide range of sources.</p>
<b>Teaching and Learning Methods</b>
Acquisition of B1 to B7 is through a combination of lectures, tutorials, coursework and project work.
<b>Assessment Strategy</b>
<p><i>Intellectual</i> abilities are assessed through a mixture of written examinations, coursework assignments. The research project, which is assessed by dissertation and <i>viva voce</i> examination, provides evidence of the ability to carry out a research project</p>
<b>Practical Skills</b>
<p>On completing the programme students should be able to:</p> <p>C1 Use relevant test and measurement equipment.</p> <p>C2 Use software packages relevant to Communications and Signal Processing.</p> <p>C3 Plan, execute and report a research project.</p> <p>C4 Design a system or component in selected areas of Communications and Signal Processing.</p> <p>C5 Search for and retrieve information from a wide range of sources.</p>

<b>Teaching and Learning Methods</b>
Acquisition of C1 to C5 is through a combination of distance learning, intensive residential courses, coursework and project work.
<b>Assessment Strategy</b>
C1 to C5 are not explicitly assessed but are necessary for successful completion of coursework and project.
<b>Transferable/Key Skills</b>
<p>A successful student will be able to:</p> <p>D1 Communicate effectively.</p> <p>D2 Critically appraise information from a wide range of sources.</p> <p>D3 Create and innovate in problem solving.</p> <p>D4 Use general IT tools such as word processors, spreadsheets.</p> <p>D5 Manage time and resources.</p>
<b>Teaching and Learning Methods</b>
D1 to D5 are introduced and developed via a combination of tutorial examples, coursework and project work.
<b>Assessment Strategy</b>
<p>Skills 1 to D3 are necessary to complete examinations and assignments to a satisfactory standard</p> <p>Skills D4 and D5 are essential for satisfactory completion of the project.</p>

<b>12 Programme Curriculum, Structure and Features</b>
<b>Basic structure of the programme</b>
The course comprises 70 taught credits, plus 50 credits of laboratory based coursework. MSc students also complete an individual project with dissertation (60 credits).
The course is offered once per year in a three semester structure with all lectured material and the coursework based modules being in semesters 1 and 2. The project will take place in Semester 3.
<b>Key features of the programme</b>
<p>This programme is aimed at students who wish to pursue advanced studies in the area of Communications and Signal Processing.</p> <p>Advanced knowledge and understanding (A1 to A3) of specialist topics in Communications and Signal Processing are gained primarily through the selected modules. This is reinforced through tutorial exercises and coursework assignments.</p> <p>Intellectual abilities (B1 to B7) are introduced through the chosen modules and are reinforced through tutorial exercises and coursework assignments. Tutorial exercises and coursework assignments also develop practical skills (C1, C2, C4, C5) and transferable skills (D1 to D5).</p> <p>The research project involves individual acquisition of knowledge and abilities (A2 to A4, B1 to</p>

B5), project abilities (B1 to B6) are introduced through the chosen modules and are reinforced through tutorial exercises, coursework assignments. Tutorial exercises and coursework assignments also develop practical skills (C1, C2, C4, C5) and transferable skills (D1 to D5) planning and execution (C3). Experience is also gained of practical skills (C1 to C5). Satisfactory completion of the dissertation and examination requires command of the transferable skills (D1 to D5).

**Programme regulations (link to on-line version)**

[-R5066F.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*

*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: <https://www.ncl.ac.uk/postgraduate/>

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.

