

The logo consists of the letters 'N5' in a large, bold, white font, set against a solid purple square background.

National 5  
Course Assessment  
Specification



---

# National 5 Practical Electronics Course Assessment Specification (C760 75)

**Valid from August 2013**

First edition: April 2012  
Revised: June 2013, version 1.1

This specification may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged. Additional copies of this Course Assessment Specification can be downloaded from SQA's website: [www.sqa.org.uk](http://www.sqa.org.uk).

Please refer to the note of changes at the end of this Course Assessment Specification for details of changes from previous version (where applicable).

© Scottish Qualifications Authority 2013

## Course outline

<b>Course title:</b>	Practical Electronics (National 5)
<b>SCQF level:</b>	5 (24 SCQF credit points)
<b>Course code:</b>	C760 75
<b>Course assessment code:</b>	X760 75

The purpose of the Course Assessment Specification is to ensure consistent and transparent assessment year on year. It describes the structure of the Course assessment and the mandatory skills, knowledge and understanding that will be assessed.

### Course assessment structure

Component 1 — practical activity	80 marks
<b>Total marks</b>	<b>80 marks</b>

This Course includes six SCQF credit points to allow additional time for Course assessment. The Course assessment covers the added value of the Course.

### Equality and inclusion

This Course Assessment Specification has been designed to ensure that there are no unnecessary barriers to assessment. Assessments have been designed to promote equal opportunities while maintaining the integrity of the qualification.

For guidance on assessment arrangements for disabled learners and/or those with additional support needs, please follow the link to the Assessment Arrangements web page: [www.sqa.org.uk/sqa/14977.html](http://www.sqa.org.uk/sqa/14977.html).

Guidance on inclusive approaches to delivery and assessment of this Course is provided in the *Course Support Notes*.

# Assessment

To gain the award of the Course, the learner must pass all of the Units as well as the Course assessment. Course assessment will provide the basis for grading attainment in the Course award.

## Course assessment

SQA will produce and give instructions for the production and conduct of Course assessments based on the information provided in this document.

## Added value

The purpose of the Course assessment is to assess added value of the Course as well as confirming attainment in the Course and providing a grade. The added value for the Course will address the key purposes and aims of the Course, as defined in the Course Rationale. It will do this by addressing one or more of breadth, challenge, or application.

In this Course assessment, added value will focus on the following:

- ◆ challenge — requiring greater depth or extension of knowledge and/or skills
- ◆ application — requiring application of knowledge and/or skills in practical or theoretical contexts as appropriate

Through the Units, learners will develop practical electronic skills, and knowledge and understanding of key electronic concepts.

This added value consists of the following:

To achieve success in the Course, learners must show that they can **apply** the knowledge and skills developed through the Course, through a practical activity which requires learners to solve an appropriately challenging practical electronics problem.

## Grading

Course assessment will provide the basis for grading attainment in the Course award.

The Course assessment is graded A–D. The grade is determined on the basis of the total mark for all Course assessments together.

A learner's overall grade will be determined by their performance across the Course assessment.

### Grade description for C

For the award of Grade C, learners will have demonstrated successful performance in all of the Units of the Course. In the Course assessment, learners will typically have demonstrated successful performance in relation to the mandatory skills, knowledge and understanding for the Course.

**Grade description for A**

For the award of Grade A, learners will have demonstrated successful performance in all of the Units of the Course. In the Course assessment, learners will typically have demonstrated a consistently high level of performance in relation to the mandatory skills, knowledge and understanding for the Course.

**Credit**

To take account of the extended range of learning and teaching approaches, remediation, consolidation of learning and integration needed for preparation for external assessment, six SCQF credit points are available in Courses at National 5 and Higher, and eight SCQF credit points in Courses at Advanced Higher. These points will be awarded when a grade D or better is achieved.

## **Structure and coverage of the Course assessment**

The Course assessment will consist of one Component: a practical activity.

### **Practical activity**

The purpose of the practical activity is to assess learners' ability to apply electronic knowledge and skills to solve an appropriately challenging practical problem.

The practical activity will give learners an opportunity to demonstrate the following skills, knowledge and understanding:

- ◆ analysing a problem
- ◆ designing an electronic solution to the problem
- ◆ simulating a solution to the problem
- ◆ constructing a solution to the problem
- ◆ applying safe working practices
- ◆ testing and reporting on that solution

The practical activity will have 80 marks (100% of the total mark).

Time will be required for:

- ◆ preparation for the practical activity, which could include considering exemplars and practising required skills
- ◆ carrying out the stages of the practical activity, with assessor guidance and support
- ◆ assessing the process and completed solution

The practical activity should clearly demonstrate application of knowledge and skills from across the Course (as defined in the 'Further mandatory information' section of this document).

Guidelines for the activity will include questions/tasks/prompts which will lead learners through the task in clear stages.

Marks will be awarded for:

- ◆ Analysis and design
- ◆ Simulating a solution
- ◆ Construction using safe working practices
- ◆ Testing the solution
- ◆ Reporting on the solution

Evidence should include:

- ◆ the completed solution
- ◆ a record of progress through the activity (such as an informal log or blog produced by the learner)
- ◆ a short report on the testing of the solution (in written, electronic or oral form)

For further details of the Course requirements, please see the 'Further mandatory information on Course coverage' section.

## Setting, conducting and marking of assessment

### Controlled assessment — practical activity

This practical activity is:

- ◆ set by SQA
- ◆ conducted under some supervision and control

Evidence will be internally marked by centre staff in line with SQA marking instructions

All marking will be quality assured by SQA.

### Setting the assessment

Set by SQA.

A bank of practical activities will be provided, and there will be choice from this bank.

### Conducting the assessment

Conducted under some supervision and control.

- ◆ The practical activity will be carried out under open book conditions, but supervised to ensure that the work presented is the learner's own work.
- ◆ The assessor may give learners support and guidance to help them progress through each stage of the activity; where any significant amount of support is provided, this should be reflected in the marks awarded.
- ◆ The practical activity is designed to discriminate between learners, and therefore would be expected to provide a wide range of marks. Stronger learners should be able to complete the activity successfully with minimal support and guidance. Weaker learners may not be able to complete all aspects of the activity within a reasonable time, or may require significant assistance, and so would achieve a lower total mark.
- ◆ Once the activity has been completed and assessed, it should **not** be returned to the learner for further work to improve their mark.

## Further mandatory information on Course coverage

The following gives details of mandatory skills, knowledge and understanding for the Practical Electronics (National 5) Course. Course assessment will involve sampling the skills, knowledge and understanding. This list of skills, knowledge and understanding also provides the basis for the assessment of Units of the Course.

Practical activity	
The Course assessment (practical activity) will require learners to draw on and apply knowledge of any of the concepts listed below.	

Components and concepts	
Concepts	current, voltage and resistance analogue/digital resistor networks capacitance magnetic effect of current
Components	power supplies resistors (including variable) LEDs, diodes, lamps capacitors, transistors, switches connectors and wires ICs (logic gates, 555 timer, 741 op-amp, 7400 series or equivalent) Op-amp circuits
Combinational logic	AND, OR, NOT, NAND, XOR and NOR
Devices	<b>Input devices</b> , including LDR, thermistor, switch, optical and IR detector  <b>Process devices</b> , including transistor switch, logic gates, counter, and amplifier  <b>Output devices</b> , including lamp, LED, motor, buzzer, relay, speaker and solenoid  Voltage dividers
Circuit complexity	Multiple inputs, more than one output
Impact on society and environment	recycling pathways social, environmental, economic impact miniaturisation

<b>Circuit construction</b>	
Construction methods	<p>Use of prototype board, strip board and PCB</p> <p>Awareness of other types of construction, including tripad and surface mount technology</p> <p>Uses of cable types, including single strand, multi-strand, ribbon, twisted pair, co-axial cable and fibre optic cable</p>
Wiring and assembly techniques	<p>crimp connections, terminal block</p> <p>heat shrink, spiral wrap</p> <p>cable ties, markers</p> <p>stripping and connecting</p> <p>bundling and fixing</p>
Safe working practices	<p>safe use of tools including soldering irons</p> <p>eye protection</p> <p>COSHH sheets</p>

# Administrative information

---

**Published:** June 2013 (version 1.1)

---

## History of changes to Course Assessment Specification

Course details	Version	Description of change	Authorised by	Date
	1.1	Further information and clarification on scope and structure of the practical activity given in the 'Structure and coverage of Course assessment' section; 'Further mandatory information' section restructured and further information added	Qualifications Development Manager	June 2013

This specification may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged. Additional copies of this specification can be downloaded from SQA's website at [www.sqa.org.uk](http://www.sqa.org.uk).

Note: You are advised to check SQA's website ([www.sqa.org.uk](http://www.sqa.org.uk)) to ensure you are using the most up-to-date version of the Course Assessment Specification.

© Scottish Qualifications Authority 2013