OCR FOUNDATION PART ONE GNVQ IN ENGINEERING (7903)

INTERMEDIATE PART ONE GNVQ IN ENGINEERING (7923)

FOREWORD

This pack contains OCR's Foundation and Intermediate Part One GNVQ specifications for teaching from September 2000.

The first year of certification is 2001.

These specifications are approved by QCA, ACCAC and CCEA as National Foundation and Intermediate level qualifications respectively.

NOTE: This pack consists of two separate specifications.

The Foundation specification is followed by the Intermediate.

Contents – Foundation Part One GNVQ

Specification Summary

SCHEME OF ASSESSMENT

Candidates will study the following three mandatory units.

Unit	Title	Type of Assessment	Entry Code
A	Design and graphical communication	Portfolio and test	6257
B	Application of new technology in engineering	Portfolio and test	6258
C	Make engineered products	Portfolio and test	6259

Each test will comprise a series of short questions. The test for unit A will be $1^1/_2$ hours in length and the tests for units A and C will each be 1 hour. Each unit will be available for assessment in June.

All candidates should be entered under the relevant unit entry code with one of the following option codes.

Option Code	Component to be taken	
X	01	Test
	02	Portfolio
Y	01	Test
	82	Carry forward portfolio mark
Z	02	Portfolio
	81	Carry forward test mark.

Candidates should enter option X the first time they enter the unit.

1 Introduction

1.1 RATIONALE

This specification leads to a GNVQ in Engineering at Foundation level in the National Qualifications Framework. Candidates study three units for a Part One qualification.

The specification builds upon the broad educational framework set out in the GNVQ Criteria of the Qualifications and Curriculum Authority. GNVQs are broad based vocational qualifications designed to allow candidates flexible progression routes moving on to higher level GNVQs, Vocational Certificates of Education (VCEs), further education or further training for employment.

The GNVQ in Engineering has been designed to form a qualification which provides knowledge and understanding of this vocational area. It is an ideal qualification for those candidates who want a broad background in Engineering which will allow them to progress to further education, training or employment. The course is intended to support the development of Key Skills at level 1. It is designed to be delivered in full-time or part-time education.

The course of study prescribed by these specifications can reasonably be undertaken by candidates entering this vocational area for the first time. Progression through Foundation level Part One will provide a suitable basis for further study in this subject, either at Foundation or Intermediate level or for related courses in further education. Units such as Unit A*: Design and graphical communication*, Unit B: *Application of new technology in engineering* and Unit C: *Make engineered products* provide a broad introduction to many vocational aspects of engineering.

The content of units A, B and C is almost identical to that of units 1, 2 and 3 of the six-unit Foundation GNVQ in Engineering and grades on any or all of these units may be transferred and used as credit towards this award.

There is no requirement to formally demonstrate Key Skills, but Key Skills are integral to the specification and opportunities to provide evidence for the separate Key Skills Qualification are signposted.

The fundamental philosophy of this specification is that, in order to understand the nature of engineering, candidates must actively experience an engineering environment.

A variety of approaches including work experience, links with local employers, case studies and using a workshop is recommended. This will enhance the candidates' appreciation of the role of engineering in society.

Assessment is designed to give credit for what candidates can do as well as what they know. It is based both on portfolio evidence and external assessments, which are set and marked by OCR.

This specification has been developed in consultation with a range of professional institutes and further and higher education institutions.

1.2 CERTIFICATION TITLE

This specification will be shown on a certificate as OCR Foundation Part One GNVQ in Engineering.

1.3 LEVEL OF QUALIFICATION

This qualification is approved by QCA as a National Foundation level qualification. It is of a standard which is broadly equivalent to GCSE grades D to G or NVQ Level 1.

A Foundation Part One GNVQ may be considered as equivalent to two GCSEs grade D to G.

1.4 SPECIFICATION AIMS

The aims of this specification are to encourage candidates to:

- develop an understanding of production planning and product engineering;
- develop an awareness of how industry applies new technology in all sectors of engineering;
- learn about the basic principles of automation in engineering;
- develop a knowledge of the application of computers in engineering;
- develop an understanding of employment possibilities in engineering;

To this end, the specification encourages courses which will:

- provide a broad background of understanding and core knowledge whilst allowing some scope for candidates to focus on a particular interest area;
- encourage a student-centred approach to learning together with the opportunity to apply knowledge of the engineering industry in a practical way;
- provide the opportunity for Centres to forge links with local industries;
- foster cross-sector themes and approaches so that candidates can gain an insight into related sectors such as manufacturing, construction and business.

1.5 SPECIFICATION OBJECTIVES

Candidates for this qualification will be expected to:

- demonstrate an ability to undertake the tasks required by the units;
- demonstrate knowledge and understanding of the content specified in the units;
- explain a range of issues related to the content of the units;
- make comparisons where appropriate;
- evaluate a range of issues related to engineering, as described in the assessment objectives of the units.

1.6 RECOMMENDED PRIOR LEARNING

Students entering this course should have achieved a general educational level equivalent to Entry Level 3 in the National Qualifications Framework or Level 3 of the National Curriculum. Skills in Numeracy/Mathematics and Literacy/English will be particularly relevant.

There is however no prior knowledge required for this specification.

1.7 PROGRESSION

1.7.1 Progression into Employment

This specification is designed to enable students to enter employment at operative level within a wide range of engineering contexts. Such students would normally enter employment through a work-related training programme.

The engineering sector is an important area of employment. Well developed personal skills (e.g. initiative, teamwork, problem-solving) combined with work-related knowledge gained within the Foundation Part One GNVQ mean that candidates are particularly suitable for recruitment in a range of employment categories e.g. in motor vehicle, mechanical, electrical/electronic engineering.

1.7.2 Progression to Further Qualifications

Candidates who achieve this qualification may wish to continue and complete the six-unit Foundation GNVQ award or, if suitably qualified in other areas, could progress to a course leading to the Intermediate GNVQ in Engineering.

A Foundation Part One GNVQ may also be considered as equivalent to two GCSEs grade D to G for the purposes of admission to other Intermediate level courses within the National Qualifications Framework, including GNVQs in other vocational areas.

1.8 RELATED QUALIFICATIONS

1.8.1 GCSE/GNVQ

There is overlap with the OCR Design and Technology GCSEs in D&T: Automotive Studies, D&T: Electronic Products, D&T: Industrial Production and D&T: Systems and Control, although it is expected that the teaching and assessment methods will be significantly different.

The content of units A, B and C is almost identical to that of units 1, 2 and 3 of the six-unit Foundation GNVQ in Engineering and grades on any or all of the Part One units may be transferred and used as credit towards this award. However, grades on units 1, 2 and 3 of the six-unit award may not be transferred to the Part One award. Portfolio work for these units may however be resubmitted for assessment towards the Part One award.

1.8.2 Relationship to NVQs

This specification contributes to a broad understanding and some of the underpinning knowledge for NVQ units within level 1 NVQ in Joining Materials by Welding, although the assessment methods are not designed to guarantee occupational competence.

1.8.3 Exclusions

Candidates who enter for this Foundation Part One GNVQ **may not** also enter for any other Foundation GNVQ, including the six-unit award, with the same certification title in the same examination series.

Candidates who enter for this Foundation Part One GNVQ **may** however also enter for any GCSE or GCE specification, including combined courses, with the same or related certification titles in the same examination series. They may also enter for any NVQ.

1.9 SPIRITUAL, MORAL, ETHICAL, SOCIAL AND CULTURAL ISSUES

Engineering offers a range of opportunities for the exploration of spiritual, moral, ethical, social and cultural issues.

Within this qualification it is hoped that candidates will gain a greater awareness of the effect of engineering principles applied through technological innovation on all aspects of life. Candidates are encouraged to understand and discuss the implications of new technology that may influence communities, populations and individuals.

During their studies candidates will be introduced to how trends in engineering have implications for employment and related changes in the working environment.

1.10 ENVIRONMENTAL ISSUES

OCR has taken account of the 1988 Resolution of the Council of the European Community and the Report *Environmental Responsibility: An Agenda for Further and Higher Education*, 1993 in preparing this specification and associated specimen assessments.

1.11 THE EUROPEAN DIMENSION

OCR has taken account of the 1988 Resolution of the Council of the European Community in preparing this specification and associated specimen assessments. European examples should be used where appropriate in the delivery of the subject content. Relevant European legislation is identified within the specification where applicable.

1.13 HEALTH AND SAFETY

Candidates are introduced to health and safety issues addressed in the context of this sector and should be made aware of the significance of safe working practices.

1.13 STATUS IN WALES AND NORTHERN IRELAND

This specification has been approved by ACCAC for use by Centres in Wales and by CCEA for use by Centres in Northern Ireland.

Candidates in Wales or Northern Ireland should not be disadvantaged by terms, legislation or aspects of government that are different from those in England. Where such situations might occur, including in the external assessment, the terms used have been selected as neutral, so that candidates may apply whatever is appropriate to their own situation.

OCR will provide specifications, assessments and supporting documentation in English.

Further information concerning the provision of assessment materials in Welsh and Irish may be obtained from the Product Development Team at OCR (telephone 01223 553103).

2 Scheme of Assessment

2.1 NATURE OF ASSESSMENT

The assessment will be conducted in accordance with the GNVQ Code of Practice which will be revised for this specification. Each unit will be assessed by a combination of portfolio and test. Two thirds of the points for the units will be awarded for portfolio work and one third for performance in the test. All internal assessment will be moderated by OCR.

2.2 UNIT TITLES

The content of each unit, together with detailed assessment evidence requirements, is described in Section 5.

Candidates will study the following three mandatory units.

Unit	Title	Type of Assessment	Entry Code
A	Design and graphical communication	Portfolio and test	6257
B	Application of new technology in engineering	Portfolio and test	6258
C	Make engineered products	Portfolio and test	6259

All candidates should be entered under the relevant unit entry code with one of the following option codes.

Option Code	Component to be taken	
X	01	Test
	02	Portfolio
Y	01	Test
	82	Carry forward portfolio mark
Z	02	Portfolio
	81	Carry forward test mark.

Candidates should enter option X the first time they enter the unit.

2.3 VOCATIONAL PATHWAYS

This qualification provides a general background to engineering and specific vocational pathways have not been identified at this level.

2.4 SUGGESTIONS FOR TEACHING

Specific guidance for teaching each unit occurs within the guidance in Section 5.

The following pairs of units show development from Foundation level to Intermediate level and therefore provide opportunities for co-teaching. Centres should note that, in some cases, co-teaching may place restrictions on the forms of delivery that may be used.

Foundation Part One		Intermediate Part One	
Unit	**Title**	**Unit**	**Title**
A	Design and graphical communication	A	Design and graphical communication
B	Application of new technology in engineering	B	Application of new technology in engineering
C	Make engineered products	C	Make engineered products

2.5 PORTFOLIO ASSESSMENT

2.5.1 Internal Assessment

Detailed arrangements for portfolio assessment will be forwarded to Centres before the start of the course.

Centres are required to carry out internal assessment of portfolios using the unit assessment grids and in accordance with OCR procedures. OCR will provide Centres with forms on which to record their assessments.

The Centre must be able to verify that the work submitted for assessment is the candidate's own work. This does not prevent groups of candidates working together in the initial stages, but it is important to ensure that the individual work of a candidate is clearly identified separately from that of any group in which they work.

Points will be awarded for the portfolio of work for each unit (see Section 2.8.1).

All portfolios must be internally standardised by the Centre prior to the submission of points to OCR.

2.5.2 Moderation

The portfolio is internally marked by the teacher and marking must be internally standardised by the Centre. Marks are then submitted to OCR by a specified date, after which moderation takes place in accordance with OCR procedures.

Detailed arrangements for moderation will be forwarded to Centres before the start of the course.

2.6 EXTERNAL ASSESSMENT

Each unit will be available for assessment in June.

Unit	Title	Type of Assessment	Length
A	Design and graphical communication	Short test	$1^1/_2$ hours
B	Application of new technology in engineering	Short test	1 hour
C	Make engineered products	Short test	1 hour

Units A, B and C are also internally assessed by portfolio.

OCR has designed external assessments which allow candidates to demonstrate the knowledge and understanding they have gained from teacher-designed activities and assignments based on the 'What you need to learn' section of the units. Each test will comprise a series of short answer questions.

Detailed arrangements for the administration of external assessment will be forwarded to Centres before the start of the course.

2.7 RE-SITS

Candidates will be permitted to re-sit each unit once only. Regulations regarding re-sits will be forwarded to Centres before the start of the course.

2.8 AWARDING AND REPORTING

2.8.1 Unit Grades

Each unit will be awarded a grade of Pass, Merit or Distinction. The evidence required to support the award of each grade is given in each detailed unit specification in Section 5.

Points for each unit will be awarded on a scale of 0-16, with 7-9 being awarded for a Pass, 10-12 for a Merit and 13-16 for a Distinction. Candidates who fail to achieve the standard for a Pass will be awarded points in the range 0-6.

2.8.2 Overall Grade

Results for the qualification will be awarded as a grade of Pass, Merit or Distinction. The points awarded for each unit will be aggregated and compared to preset boundaries.

QCA, ACCAC and CCEA will develop a Code of Practice for awarding and reporting for the year 2000 in consultation with the GNVQ awarding bodies. OCR will comply with this Code of Practice.

2.9 SPECIAL ARRANGEMENTS

Candidates with special or individual needs may need to present forms of portfolio and externally assessed evidence appropriate to their needs. For these candidates, or those whose performance may be adversely affected through no fault of their own, teachers should consult the *Inter-Board Regulations and Guidance Booklet for Special Arrangements and Special Consideration*. The Awarding Bodies will update these regulations for the year 2000.

In such cases, advice should be sought from the OCR Special Requirements team (telephone 01223 552505) as early as possible during the course.

2.10 RESULTS ENQUIRIES AND APPEALS

Under certain circumstances, a Centre may wish to query the grade available to one or more candidates or to submit an appeal against the outcome of such an enquiry.

For procedures relating to enquiries on results and appeals, Centres should consult the Handbook for Centres and the document *Enquiries about Results and Appeals – Information and Guidance for Centres* produced by the Joint Council. Further copies of the most recent edition of this paper can be obtained from OCR.

3 Further Information and Training for Teachers

To support teachers using this specification, OCR will make the following materials and services available:

- a full programme of In-Service Training meetings arranged by its Training and Customer Support Division (telephone 01223 552950);
- a dedicated subject-specific telephone number (01223 552732);
- a website that will include materials to assist with delivery;
- teacher support material;
- exemplar student work;
- student guides;
- specimen assessments and assignments;
- past assessments and assignments;
- a report on the examination, compiled by senior examining personnel after each examination session;
- individual feedback to each Centre on the moderation of portfolios.

All publications may be obtained by fax from OCR's Publications department (fax 01223 552930).

The OCR website address is www.ocr.org.uk

The website contains copies of the specification, example assessments, support materials and current information of relevance to Centres.

4 Key Skills Guidance

Key Skills are central to successful employment and underpin future success in learning independently. Whilst they are certificated separately, the Key Skills guidance for this qualification has been designed to support the teaching, learning and assessment of the vocational content, as well as that of the Key Skills. Opportunities for developing the generic Key Skills of Communication, Application of Number and Information Technology are indicated within each unit. The wider Key Skills of Working with Others, Problem Solving and Improving Own Learning and Performance should also be developed through the teaching programmes associated with the specification.

Key Skills and vocational achievement are interdependent. This guidance has been developed to show how vocational and Key Skills achievement can be successfully combined. External moderation of the GNVQ will monitor this aspect of the qualification.

There is no requirement to formally demonstrate Key Skills, but Key Skills are integral to the specification and opportunities to provide evidence for the separate Key Skills Qualification are signposted.

The guidance has been split into two sections: Keys to Attainment and Signposts. The two sections should be used in conjunction with and are intended to complement each other.

> **Keys to Attainment**, where appropriate, are identified Key Skills or aspects of Key Skills which are central to vocational achievement. If a candidate has met the indicated vocational requirements of the unit, the specified Key to Attainment shows that the relevant aspect of the Key Skill has also been achieved. A Key to Attainment does not negate the need for candidates to develop and practise the Key Skill during teaching and learning.
>
> **Signposts** are naturally occurring opportunities for the development of Key Skills during teaching, learning and assessment. Candidates will not necessarily achieve the signposted Key Skill through the related vocational evidence.

Aspects of Key Skills are distributed throughout the units, usually as Signposts but sometimes as Keys to Attainment. This may appear repetitive, but occurs because some Key Skills may be achieved in several different ways (multiple Signposts), but others are genuinely key to the achievement of the vocational aspect (Keys to Attainment). For example, IT1.1 - 'find, explore and develop information for **two** different purposes', will appear more than once in any GNVQ because the Key skill needs to be achieved in two different contexts. Another example of where a Key Skill may be split between units is C1.1 - 'take part in a **one-to-one** discussion and a **group** discussion...', because the two discussions can be completely independent of each other.

The mandatory units in each GNVQ should allow candidates to cover the Key Skills, but there may be more opportunities in the optional units. Conversely, optional units may assume that candidates have already covered much of the Key Skills, but further opportunities exist to consolidate the Key Skills in the optional units.

The wider Key Skills of **Working with Others** (WO), **Improving Own Learning and Performance** (LP) and **Problem Solving** (PS) can make an effective contribution to candidate learning and performance. Opportunities exist for candidates to develop vocational and Key Skills alongside each other and generate valid evidence for assessment.

Improving Own Learning and Performance has been explicitly signposted in certain units within the qualification. However, it is strongly recommended that the learning for, and the application of, this skill be used to underpin all candidates' vocational work at qualification level. It is anticipated that evidence of this skill will be drawn from the whole qualification and its application will be seen within and between each unit.

The skill of **Working with Others** requires candidates to work with an individual as well as within a team. In units where co-operative and collaborative working is required individual learning programmes will be expected to signpost the most appropriate approach i.e. whether it is one-to-one or group work, though sometimes both could be appropriate.

Problem Solving also requires a specific approach to learning and evidence generation. Candidates are required to show how they have bridged the gap between current and desired solutions. In normal circumstances a learning programme will not be seen as a 'problem' as at this level activities are clearly mapped out. Problem solving is most appropriate to those units offering candidates greater autonomy and freedom.

Below is a map of the Key Skills found in the Foundation Part One GNVQ in Engineering

K = Keys to Attainment

S = Signposts

Key Skill ref	C1.1	C1.2	C1.3	IT1.1	IT1.2	N1.1	N1.2	N1.3
Unit A	S	S	S	S	S	S	S	S
Unit B	S	S	S	S	S	S	S	S
Unit C		S	S	S		S	S	

Key Skill ref	WO2.1	WO2.2	WO2.3	LP2.1	LP2.2	LP2.3	PS2.1	PS2.2	PS2.3
Unit A							S	S	S
Unit B	S	S	S	S	S	S			
Unit C	S	S	S				S	S	S

5 Specification Units

All units have the following sections:

About this unit — This summarises the unit's main focus and identifies links with other units in the GNVQ and with other qualifications.

What you need to learn — This specifies the underpinning knowledge, skills and understanding candidates need to apply in order to meet the formal assessment requirements of the unit.

Assessment evidence — This specifies the evidence candidates need to produce in order to meet the requirements of the unit. It is divided into the following parts:

1. '**You need to produce'** – this banner heading sets the context for providing the evidence, e.g. a report, an investigation, etc;

2. **'To achieve a Pass…'** – this describes the quality and scope of the evidence needed for candidates to achieve the unit;

3. **'To achieve a Merit/Distinction you must also…'** – this defines the qualities and scope of the evidence needed to achieve these grades.

Guidance for teachers — This provides advice on teaching and assessment strategies. It identifies links between units and any opportunities for integrated teaching, learning and assessment

There may also be advice on:

- ways to emphasise the vocational context of the unit;
- exploiting local opportunities (e.g. information sources, events, work experience);
- resources;
- evidence requirements;
- interpreting assessment criteria.

Key Skills guidance — This signposts opportunities for developing and assessing Key Skills within the unit.