



QQI

Quality and Qualifications Ireland
Dearbhú Cáilíochta agus Cáilíochtaí Éireann

Component Specification NFQ Level 5

Engineering Drawing 5N1607

1. Component Details

| | |
|---------------------------|--|
| Title | Engineering Drawing |
| Teideal as Gaeilge | Líníocht Innealtóireachta |
| Award Type | Minor |
| Code | 5N1607 |
| Level | 5 |
| Credit Value | 15 |
| Purpose | The purpose of this award is to equip the learner with the knowledge, skill and competence to use engineering drawing as a means of accurately communicating ideas, information and instructions. |
| Learning Outcomes | Learners will be able to: <ol style="list-style-type: none">1 Examine the roles and responsibilities of a range of stakeholders within the architecture and engineering drawing sector to include representative organisations and regulatory bodies2 Summarise the key principles and terminology associated with Loci, orthographic, isometric, oblique, auxiliary projection and perspective drawing3 Apply best practice in relation to drawing office administration4 Analyse the characteristics of engineering materials and components5 Interpret scaled drawings |

- 6 Assess the influence of proportion on a sketch
- 7 Analyse the principle design features and uses of various cams and cam followers
- 8 Employ standard conventions to create a range of drawings that include lettering, numerals, lines, dimensions and symbols
- 9 Employ a range of projection techniques to produce pictorial drawings including one, two and three point perspective, isometric and oblique projection
- 10 Sketch a variety of objects in perspective projection, using the construction-box method
- 11 Employ freehand techniques to create sketches of shapes, lines and objects
- 12 Produce a range of orthographic assembly drawings to include pumps, valves, engine components and couplings
- 13 Produce a range of drawings to include illustrations of linkages, involutes, spirals, cycloids, helices and plotting of loci
- 14 Produce follower displacement diagrams, to illustrate, uniform velocity, dwell, simple harmonic motion, uniform acceleration and retardation
- 15 Produce a range of drawings in relation to gear teeth, to include illustrations of the involute, single and meshing spur
- 16 Produce a range of drawings to include illustrations of helical springs, thread types, rack and pinion systems
- 17 Produce a range of drawings in relation to surface development and true length, including, prisms, pyramids, cones, cylinders cut by plane and curved surfaces
- 18 Produce a range of drawings to include use of first and third angle projection, hatching, full and steeped sections.

Assessment

General Information

All assessment should be planned in accordance with the programme assessment strategy developed as part of the programme submission for validation. See **Policies and Criteria**

for Validation of Programmes. Assessment should be undertaken consistently and reflect current assessment guidelines. See www.qqi.ie.

All FET assessment is criterion referenced. Successful achievement of the award is based on learners attaining the required standards of knowledge, skill or competence consistent with the **minimum intended programme learning outcomes**.

The techniques set out below are considered the optimum approach to assessment for this component. In exceptional circumstances providers may identify alternative assessment techniques through the provider's application for programme validation which are reliable and valid but which are more appropriate to their context.

Assessment of a number of components may be integrated across programmes for delivery, provided that the learning outcomes of each minor award are assessed.

Group or team work may form part of the assessment, provided each learner's achievement is separately assessed.

All providers are required to submit an assessment plan as part of their application for programme validation. Assessment Plans will include information relating to scheduling and integration of assessment. See current FET validation guidelines at www.qqi.ie.

Assessment Techniques

In order to demonstrate that they have reached the standards of knowledge, skill and competence identified in all the learning outcomes, learners are required to complete the assessment(s) below.

The assessor is responsible for devising assessment instruments (e.g. project and assignment briefs, examination papers), assessment criteria and mark sheets, consistent with the techniques identified below and QQI's assessment requirements.

Programme validation will require providers to map each learning outcome to its associated assessment technique. All learning outcomes **must** be assessed and achieved in accordance with the **minimum intended module learning outcomes** set out in the validated programme.

| | |
|--------------------------------|-----|
| Portfolio / Collection of Work | 60% |
| Examination - Theory | 40% |

Description

Portfolio / Collection of Work

A portfolio or collection of work is a collection and/or selection of pieces of work produced by the learner over a period of time that demonstrates achievement of a range of learning outcomes. The collection may be self-generated or may be generated in response to a particular brief or tasks/activities devised by the assessor.

Examination - Theory

An examination provides a means of assessing a learner's ability to recall and apply knowledge, skills and understanding within a set period of time and under clearly specified conditions.

A theory-based examination assesses the ability to recall, apply and understand specific theory and knowledge.

Recognition of Prior Learning (RPL)

To support the development and implementation of RPL with regard to access, granting credit/exemptions and achievement of awards/parts of awards, providers should refer to **QQI's Statutory Guidelines for Quality Assurance**, the **Policies and Criteria for Validation of Programmes** and the **Principles and Operational Guidelines for the Recognition of Prior Learning in Further and Higher Education and Training** available at www.qqi.ie

Grading

| | |
|-------------|------------|
| Pass | 50% - 64% |
| Merit | 65% - 79% |
| Distinction | 80% - 100% |

Specific Validation Requirements

There are no specific validation requirements for this award

Supporting Documentation

None

Access

To access programmes leading to this award the learner should have reached the standards of knowledge, skill and competence associated with the preceding level of the National Framework of Qualifications. This may have been achieved through a formal qualification or through relevant life and work experience.

Transfer

Successful completion of this component award enables the learner to transfer to programmes leading to other certificates where this component is a mandatory or an elective requirement.

2. FET Award Standards

QQI award standards are determined within the National Framework of Qualifications (NFQ), <http://www.nfq-qqi.com>. QQI determines standards for the education and training awards that it makes itself and that are made by providers to whom it has delegated authority to make an award. Providers offering programmes leading to QQI awards **must** have their programme(s) validated in accordance with current validation policy (see www.qqi.ie).

Award standards are designed to be consistent with the NFQ's award classes i.e. major, special purpose, supplemental and minor awards. They are expressed in terms of **learning outcomes** i.e. concise statements of what the learner is expected to know or be able to do in order to achieve a particular award. Learning outcomes for FET awards are contained within the associated specifications:

| AWARD CLASS | STANDARDS | AWARDS |
|--------------------|--------------------------------|---|
| Major Award | Certificate Specification | Certificate (Levels 1 to 5) Advanced Certificate (Level 6) |
| Supplemental Award | Supplemental Specification | Supplemental Certificate (Level 3 to 6) |
| Special Purpose | Specific Purpose Specification | Specific Purpose Certificate (Levels 3 to 6) |
| Minor Award | Component Specification | Component Certificate (Levels 1 to 6) |

Award standards are thresholds, they describe standards of knowledge, skill or competence to be acquired, and where appropriate, demonstrated, by a learner before an award may be made.

Award standards will be reviewed from time to time as necessary. Minor changes may be made by the QQI executive outside the review cycle where necessary. Changes to standards are published on QQI's website. Providers with validated programmes and providers with delegated authority to make awards are responsible for monitoring relevant standards and making necessary responses to changes.

3. FET Credit

Every FET certificate and component specification includes an FET credit value (Table 1). FET credit is quantified in multiples of 5 FET credits (up to 50 hours of learner effort). Learner effort is based on the time taken by typical learners at the level of the award to achieve the learning outcomes for the award. It includes all learning time involved including: guided learning hours, self-directed learning and assessment.

Table 1: FET Credit Values

| NFQ Level | Major Awards Credit Values | Default Credit Values Minor Awards | Other Permitted Minor Award Credit Values | Special Purpose and Supplemental Award Credit Value Ranges |
|-----------|----------------------------|------------------------------------|---|--|
| 1 | 20 | 5 | 10 | |
| 2 | 30 | 5 | 10 | |
| 3 | 60 | 10 | 5,20 | >5 and<60 |

| | | | | |
|---|-----|----|---------|-------------|
| 4 | 90 | 10 | 5,15,20 | >5 and <90 |
| 5 | 120 | 15 | 5,10,30 | >5 and <120 |
| 6 | 120 | 15 | 5,10,30 | >5 and <120 |

Guide to Level

Learning outcomes at this level include a broad range of skills that require some theoretical understanding. The outcomes may relate to engaging in a specific activity, with the capacity to use the instruments and techniques relating to an occupation. They are associated with work being undertaken independently, subject to general direction.

| Strand | Sub-strand | Nature of learning |
|------------------|-------------------|---|
| Knowledge | Breadth | Broad range of knowledge |
| | Kind | Some theoretical concepts and abstract thinking, with significant depth in some areas. Some underpinning theory |
| Know How & Skill | Range | Demonstrate a broad range of specialised skills and tools |
| | Selectivity | Evaluate and use information to plan and develop investigative strategies and to determine solutions to varied unfamiliar problems |
| Competence | Context | Act in a range of varied and specific contexts, taking responsibility for the nature and quality of outputs; identify and apply skill and knowledge to a wide variety of contexts |
| | Role | Exercise some initiative and independence in carrying out defined activities; join and function within multiple, complex and heterogeneous groups |
| | Learning to Learn | Learn to take responsibility for own learning within a managed environment |
| | Insight | Assume full responsibility for consistency of self- understanding and behaviour |

Extract from 'Determinations for the Outline National Framework of Qualifications': NQAI