



**education**

Department:  
Education  
REPUBLIC OF SOUTH AFRICA

# **NATIONAL CERTIFICATES (VOCATIONAL)**

## **SUBJECT GUIDELINES**

**ROADS**

**NQF LEVEL 2**

September 2007



## INTRODUCTION

### **A. What is Roads?**

Roads provides students with training on the construction and maintenance of roads. This subject will enhance students' employability and career advancement in road construction and other related activities in building and civil construction.

### **B. Why is Roads important in the Building and Civil Construction programme?**

Activities in this specialised discipline play an important role in building and civil construction as it enables students to realise the need for roads in communities.

### **C. The link between Roads Learning Outcomes and the Critical and Developmental Outcomes**

Students will be able to identify the different activities carried out to construct and maintain roads. They will work actively with the team to interpret health and safety programmes, interpret drawings and sketches and calculate quantities required.

### **D. Factors that contribute towards achieving the Roads Learning Outcomes**

- Thorough preparation for teaching and learning activities
- An environment conducive to teaching and learning through effective learner support, motivation, commitment and a positive attitude
- An interest in Roads

# **ROADS – LEVEL 2**

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## 1 DURATION AND TUITION TIME

This is a one-year instructional programme comprising 200 teaching and learning hours. The subject may be offered on a part-time basis provided the student meets all the assessment requirements.

Students with special education needs (LSEN) must be catered for in a way that eliminates barriers to learning.

## 2 SUBJECT LEVEL FOCUS

The student will be able to:

- Adhere to health and safety requirements when working in a road construction environment.
- Interpret road construction drawings and calculate quantities required based on these drawings.
- Perform road construction activities.

## 3 ASSESSMENT REQUIREMENTS

### 3.1 Internal assessment (50 percent)

Internal assessment refers to continuous assessment which is college based. The achievement of Learning Outcomes counts towards the achievement of a qualification. All internal assessments must be finalised by an assessor who has been declared competent by an accredited service provider.

#### 3.1.1 Theoretical component

The theoretical component forms 70 percent of the internal assessment mark.

Internal assessment of the theoretical component in Roads Level 2 takes the form of observation, class questions, group work, informal group competitions with rewards, individual discussions with students, class, topic and semester tests and internal examinations. Lecturers can observe students when marking exercises from the previous day and asking class questions.

Assignments, case studies and tests can be completed at the end of a topic. Tests and internal examinations must form part of the internal assessment.

#### 3.1.2 Practical component

The practical component forms 30 percent of the internal assessment mark.

Practical components include applications and exercises. All practical components must be indicated in a Portfolio of Evidence (PoE).

Internal assessment of the practical component in Roads Level 2 takes the form of assignments, practical exercises, case studies and practical examinations in a simulated construction environment.

Students may complete practical exercises daily. Assignments and case studies can be completed at the end of a topic. Practical examinations can form part of internal practical assessment.

- **Some examples of practical assessments include, but are not limited to:**

- A. Presentations (lectures, demonstrations, group discussions and activities, practical work, observation, role-play, independent activity, synthesis and evaluation)
- B. Exhibitions by students
- C. Visits undertaken by students based on a structured assignment task
- D. Research
- E. Task performance in a “Structured Environment”

- **Definition of the term “Structured Environment”**

For the purposes of assessment, “Structured Environment” refers to a simulated workplace or workshop environment. Activities in the simulated workplace or environment must be documented in a logbook with a clear listing of the competencies to be assessed. The following information must be contained in the logbook:

- Nature of department or environment in which practical component was achieved
- Learning Outcomes
- Activities in the environment with which to achieve the Learning Outcomes
- Time spent on activities
- Signature of lecturer or supervisor and student

For the logbook to be regarded as valid evidence, it must be signed by an officially assigned supervisor.

#### • Evidence in practical assessments

All evidence pertaining to evaluation of practical work must be reflected in the students' Portfolio of Evidence (PoE). The tools and instruments constructed and used to conduct these assessments must be clear from the evidence contained in the Portfolio of Evidence (PoE).

#### 3.1.3 Processing of internal assessment mark for the year

A year mark out of 100 is calculated by adding the marks of the theoretical component (70 percent) and the practical component (30 percent) of the internal continuous assessment (ICASS).

#### 3.1.4 Moderation of internal assessment mark

Internal assessment is subjected to internal and external moderation procedures as set out in the *National Examinations Policy for FET College Programmes*.

### 3.2 External assessment (50 percent)

A National Examination is conducted annually in October or November by means of a paper(s) set and moderated externally. A practical component will also be assessed.

External assessment details and procedures are set out in the *Assessment Guidelines: Roads (Level 2)*.

## 4 WEIGHTED VALUES OF TOPICS

TOPICS	WEIGHTED VALUE
1. Introduction to Roads	30
2. Installation and Maintenance of Road Furniture	10
3. Erection and Maintenance of Guardrails	25
4. Painting of Road Symbols	5
5. Installation of Erosion Protection Products	20
6. Installation of Road Studs	5
7. Erection of Anti-dazzle Screen	5
<b>TOTAL</b>	<b>100</b>

## 5 CALCULATION OF FINAL MARK

Internal assessment mark: Student's mark/100 x 50 = a mark out of 50 (a)

Examination mark: Student's mark/100 x 50 = a mark out of 50 (b)

**Final mark: (a) + (b) = a mark out of 100**

All marks are systematically processed and accurately recorded to be available as hard copy evidence for, amongst others, reporting, moderation and verification purposes.

## 6 PASS REQUIREMENTS

The student must obtain at least fifty (50) percent in ICASS and fifty (50) percent in the examination.

## 7 SUBJECT AND LEARNING OUTCOMES

On the completion of Roads Level 2, the student should have covered the following topics:

Topic 1: Introduction to Roads

Topic 2: Installation and Maintenance of Road Furniture

- Topic 3: Erection and Maintenance of Guardrails
- Topic 4: Painting of Road Symbols
- Topic 5: Installation of Erosion Protection Products
- Topic 6: Installation of Road Studs
- Topic 7: Erection of Anti-dazzle Screen

### 7.1 Topic 1: Introduction to Roads

**Subject Outcome 1:** Describe different concepts concerning roads.

**Learning Outcomes:**

The student should be able to:

- Describe earthwork activities.
- Describe different road layers and surfaces.
- Explain the role of drainage in roads

**Subject Outcome 2:** Describe various materials used in road construction.

**Learning Outcome:**

The student should be able to:

- Explain characteristics and functions of various materials used in different layers of road construction.  
*Range: Natural materials, concrete, asphalt and bitumen*

**Subject Outcome 3:** Explain relevant road furniture.

**Learning Outcomes:**

The student should be able to:

- Explain road furniture concepts.  
*Range: Guardrails, road signs, anti-dazzle screens, road markings and studs*
- Describe health and safety regulations concerning road works.

### 7.2 Topic 2: Installation and Maintenance of Road Furniture

**Subject Outcome 1:** Explain technology used to install and maintain road furniture and install guardrails coorrectly.

**Learning Outcomes:**

The student should be able to:

- Explain the technology used to install road furniture.
- Explain the technology used to maintain road furniture.
- Install guardrails in accordance to safety precautions.

**Subject Outcome 2:** Identify and procure tools and plant.

**Learning Outcomes:**

The student should be able to:

- Identify tools and minor plant for installing and maintaining road furniture.
- Set out road furniture according to drawing details.

### 7.3 Topic 3: Erection and Maintenance of Guardrails

**Subject Outcome:** Explain the technology used to erect and maintain guardrails.

**Learning Outcomes:**

The student should be able to:

- Explain the technology used to erect and maintain guardrails.
- Identify and procure resources required for guardrail installation and maintenance.
- Install guardrails in accordance to safety precautions.

#### 7.4 Topic 4: Painting of Road Symbols

**Subject Outcome:** Paint road symbols.

**Learning Outcomes:**

The student should be able to:

- Prepare the area to be painted.
- Calculate material quantities from drawings.
- Identify and procure protective clothing.
- Paint road symbols using a spray gun.
- Record how much material was used.
- Control traffic during painting operations.

#### 7.5 Topic 5: Installation of Erosion Protection Products

**Subject Outcome:** Explain the installation of erosion protection products.

**Learning Outcomes:**

The student should be able to:

- Describe different erosion protection products and give reasons for the use of these products.  
*Range: Gabion baskets and other erosion protection products*
- Explain the technology used to install gabion baskets.
- Prepare bedding to receive gabion baskets.
- Identify tools, equipment and personal protective clothing needed.
- Anchor assembled gabion basket in position according to site requirements.

#### 7.6 Topic 6: Installation of Road Studs

**Subject Outcome:** Plan and perform installation of road studs.

**Learning Outcomes:**

The student should be able to:

- Identify and procure types of hand tools required.
- Identify road signs and traffic control devices to comply with site requirements.
- Calculate material quantities and procure and store these materials until they are needed.
- Install road studs in a cost-effective and safe manner.

#### 7.7 Topic 7: Erection of Anti-dazzle Screen

**Subject Outcome 1:** Inspect and prepare area to be screened.

**Learning Outcome:**

The student should be able to:

- Identify tools and protective clothing to be used.

**Subject Outcome 2:** Set out anti-dazzle screen and remove hazards.

**Learning Outcomes:**

The student should be able to:

- Set out the anti-dazzle screen to project specifications and requirements.
- Identify and remove hazards or obstructions.

### 8 RESOURCE NEEDS FOR THE TEACHING OF ROAD CONSTRUCTION – LEVEL 2

#### 8.1 Physical resources

- Building infrastructure
- Fixtures and networks
- Plant, workshops and machinery
- Power tools and survey instruments
- Lecturer and student teaching and learning material and teaching and learning aids, etc.

## **8.2 Human resources**

The lecturer should have an acceptable NQF level qualification and should preferably be a registered assessor. The lecturer should be committed to continually improving and expanding his or her knowledge and skills.

## **8.3 Other resources**

- Budget
- Consumables