



education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATES (VOCATIONAL)

SUBJECT GUIDELINES

CONSTRUCTION PLANT AND EQUIPMENT

NQF LEVEL 2

September 2007

INTRODUCTION

A. What is Construction Plant and Equipment?

Construction Plant and Equipment trains students to identify, operate, use and maintain building and civil construction machinery equipment. It also informs students on the health and safety regulations designed for each of the various machines.

B. Why is Construction Plant and Equipment important in the Building and Civil Construction programme?

Construction Plant and Equipment equips students with the skills to perform various activities, especially those that require practical components, in the building and civil construction field. Students learn to use and maintain the equipment needed for the day-to-day operations of a construction plant.

C. The link between the Construction Plant and Equipment Learning Outcomes and the Critical and Developmental Outcomes

Students will be able to identify and describe different types of tools, equipment, machinery and plant used in building and civil construction. They will work effectively in teams to interpret health and safety programmes and use technology appropriately according to requirements of Construction Plant and Equipment.

D. Factors that contribute to achieving the Construction Plant and Equipment 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
- Safety awareness and an interest in Construction Plant and Equipment

CONSTRUCTION PLANT AND EQUIPMENT – 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:

- Describe machinery and plant used in building and civil construction.
- Perform building and civil construction activities using different plants.
- Explain and apply health and safety procedures and practices.

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 40 percent of the internal assessment mark.

Internal assessment of the theoretical component in Construction Plant and Equipment 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 60 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 Construction Plant and Equipment Level 2 takes the form of assignments, practical exercises, case studies and practical examinations in a simulated building 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 (40 percent) and the practical component (60 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: Construction Plant and Equipment (Level 2)*.

4 WEIGHTED VALUES OF TOPICS

| TOPICS | WEIGHTED VALUE |
|-------------------------------|----------------|
| 1. General or Common Tools | 10 |
| 2. Power Tools | 25 |
| 3. Small Compaction Tools | 15 |
| 4. Small Concrete Mixers | 15 |
| 5. Mobile Equipment – Dumpers | 15 |
| 6. Access Equipment | 20 |
| TOTAL | 100 |

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 Construction Plant and Equipment Level 2, the student should have covered the following topics:

- Topic 1: General or Common Tools
Topic 2: Power Tools
Topic 3: Small Compaction Tools
Topic 4: Small Concrete Mixers
Topic 5: Mobile Equipment – Dumpers
Topic 6: Access Equipment

7.1 Topic 1: General or Common tools

Subject Outcome: Describe, use and maintain common tools correctly in various specialised fields of building and civil construction.

Learning Outcomes:

The student should be able to:

- List and describe various tools used in a specialised field.
- Explain the use and maintenance of various tools in a specialised field.
- Use various tools correctly in a specialised field.

Range: Specialised fields include carpentry, masonry, tiling, plumbing, concrete structures and roads.

7.2 Topic 2: Power Tools

Subject Outcome: List, describe, use and maintain power tools.

Learning Outcomes:

The student should be able to:

- List and describe power tools.
- Explain the use and maintenance of power tools.
- Demonstrate the ability to correctly use and maintain power tools.

7.3 Topic 3: Small Compaction Tools

Subject Outcome: Describe and use small compaction tools correctly.

Learning Outcome:

The student should be able to:

- Describe how to use small compaction tools correctly and perform compaction.

7.4 Topic 4: Small Concrete Mixers

Subject Outcome: Describe and use small concrete mixers correctly.

Learning Outcomes:

The student should be able to:

- Describe small concrete mixers.
- Explain the operation and use of small concrete mixers.
- Demonstrate how to use small concrete mixers correctly.
- Adhere to health and safety standards when using small concrete mixers.

7.5 Topic 5: Mobile Equipment – Dumpers

Subject Outcome: Describe and use dumpers correctly.

Learning Outcomes:

The student should be able to:

- Describe a dumper.
- Explain the purpose or function of a dumper.
- Demonstrate the ability to correctly use dumpers.
- Apply health and safety standards when using dumpers.

7.6 Topic 6: Access Equipment

Subject Outcome 1: Identify and explain the types and importance of scaffolding in general construction.

Learning Outcomes:

The student should be able to:

- Explain the use and importance of scaffolding as access equipment to remote workplaces in construction.
- Identify and explain different types of scaffolding.

Range: System scaffold with ladder access, steel trestle, extension ladder and step ladders

- Explain and demonstrate the correct use and maintenance of a step ladder.
- Describe appropriate materials and equipment needed to erect scaffolding.

Range: Jacks, horizontal components, boards, supports and couplings

Subject Outcome 2: Demonstrate the ability to erect and dismantle scaffolding with ladder access.

Learning Outcomes:

The student should be able to:

- Erect system scaffolding with ladder access correctly.
- Dismantle system scaffolding with ladder access in the correct sequence and stack the components safely and correctly.
- Describe appropriate materials and equipment needed to erect a trestle scaffold.

Range: Steel trestles, scaffold planks and pins

Subject Outcome 3: Demonstrate the ability to erect and dismantle a trestle scaffold.

Learning Outcomes:

The student should be able to:

- Erect a steel trestle scaffold correctly.
- Dismantle a steel trestle scaffold in the correct sequence and stack the components safely and correctly.

Subject Outcome 4: Demonstrate the ability to erect and dismantle an extension ladder.

Learning Outcomes:

The student should be able to:

- Select the appropriate type of ladder to safely and correctly erect an extension ladder.
- Explain and demonstrate how to safely dismantle an extension ladder in the correct sequence.
- Adhere to safety standards during operations.

8 RESOURCE NEEDS FOR THE TEACHING AND LEARNING OF CONSTRUCTION PLANT AND EQUIPMENT – LEVEL 2

8.1 Physical resources

- Accredited workshop for use: Machines and Equipment
- Teaching aids and pre-designed models and structures
- Work tables, work area, chairs and chalkboards
- Overhead projector

8.2 Human resources

The lecturer should have an acceptable NQF level qualification in Building and Civil Construction 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 according to Construction Plant and Equipment requirements