



NATIONAL CERTIFICATES (VOCATIONAL)

SUBJECT GUIDELINES

MASONRY

NQF Level 3

April 2008

MASONRY - LEVEL 3

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INTRODUCTION

A. What is Masonry about?

Masonry is one of the most common forms of construction used by industrialised nations, and the most common mode of construction of domestic housing in South Africa. The subject Masonry provides students with a focus on construction masonry and tiling activities in the construction industry. Successful study of the subject equips students with practical knowledge and skills that will allow them to make a useful contribution to the work done on a building site. .

B. Why is Masonry important in the Construction learning programme?

The subject Masonry focuses on one of the key trade areas in the construction industry, and is one of the optional subjects in the Construction learning programme.

C. The link between Masonry Learning Outcomes and the Critical and Developmental Outcomes

Students will be able to perform masonry activities related to civil construction. They will work effectively with the other team members to complete plastering and tiling activities. Masonry also prepares students to communicate understanding through the identification and use of machines, tools, methods and processes used to perform masonry and tiling activities.

D. Factors that contribute to achieving Learning Outcomes

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

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

To equip learners with the practical knowledge and skills needed to set out and build masonry walls using solid and hollow units in all parts of South Africa including coastal areas that require cavity wall construction

3 ASSESSMENT REQUIREMENTS

3.1 Internal assessment (50 percent)

3.1.1 Theoretical component

The theoretical component forms 40 percent of the internal assessment mark.

Internal assessment of the theoretical component in Masonry Level 3 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 Masonry Level 3 takes the form of assignments, practical exercises, case studies and practical examinations in a simulated business 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 facilitator 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. The assessment instruments used for the purpose of conducting these assessments must be part of the evidence contained in the 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 and the practical component 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: Masonry Level 3*

4 WEIGHTED VALUES OF TOPICS

TOPICS	WEIGHTED VALUE
1. Cavity wall construction	35%
2. Basic masonry wall construction with hollow units	30%
3. Advanced masonry wall construction	35%
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

A student must obtain at least 50 percent in ICASS and 50 percent in the examination to achieve a pass in this subject.

7 SUBJECT AND LEARNING OUTCOMES

On completion of Masonry Level 3, the student should have covered the following topics:

- Topic 1: Cavity wall construction
- Topic 2: Basic masonry wall construction with hollow units
- Topic 3: Advanced masonry wall construction

7.1 Topic 1: Cavity wall construction

7.1.1 Subject Outcome 1: Explain and construct cavity walls

Learning Outcomes

The student should be able to:

- Explain the philosophy of cavity wall construction.
- Build cavity wall foundation brickwork with cavities filled with concrete.
- Describe the building of cavity walls including intersections with internal walls and returns.
- Build superstructure cavity walls on damp proof course (DPC) according to specifications and details and according to the minimum criteria laid down by regulated national standards.
- Discuss techniques to prevent mortar droppings and debris falling into the cavity and forming moisture bridges.
- Explain techniques to remove droppings and debris that inevitably fall to the bottom of cavities.
- Explain and install steel or timber door and window frames with DPC.
- Build a lintel with pre-stressed concrete units over a cavity wall opening with DPC, weep-holes and roof anchors.
- Build a reinforced concrete perimeter ring-beam over multiple cavity wall openings (and inside the cavity) using bond blocks with parts of webs cut and knocked out.

7.2 Topic 2: Basic masonry wall construction with hollow units

7.2.1 Subject Outcome 1: Explain and build straight walls using hollow masonry units

Learning Outcomes

The student should be able to:

- Identify different sizes and types of hollow units and describe the function and purpose of each.
- Gauge and mark profiles at 200mm intervals.
- Measure and correct if necessary the foundation footing to ensure it is truly horizontal and flat.
- Check the variance of the mortar bed not to exceed the permissible deviations of prescribed regulated national standards.
- Mark out the base of the wall with a chalk-line and mark the position of each unit on the concrete footing.
- Explain and demonstrate how to lay units correctly on shell beddings to prevent ingress of water.
- Identify and discard mortar that has stiffened excessively and will no longer accommodate bedding down of units.
- Explain why it is not common to reinforce hollow masonry-work with conventional brick-force/or bed-joint reinforcing.
- Define the concept “thumbprint hard” mortar.
- Explain and demonstrate tooling of vertical and horizontal joints.
- If necessary, clean finished masonry with clean water and a fibre brush only.
- Protect new masonry from rain by covering with waterproof sheeting.

7.3 Topic 3: Advanced masonry wall construction

7.3.1 Subject Outcome 1: Build a “small house” using hollow masonry units and install window and door frames

Learning Outcomes

The student should be able to:

- Build a return wall with shell bedding paying particular attention to the maintenance of the shells at the corners.
- Tie intersecting/cross walls into structural walls using expanded metal or galvanised hoop iron Z-Bars every second course.
- Install and build-in steel door and window frames so that the tops of frames are aligned and level.
- Install a recessed electrical plug box and conduit into a hollow unit in accordance with a specification.
- Build a cast in situ reinforced concrete lintel (in accordance with a detailed drawing) over openings using lintel blocks and reinforcing rods.
- Build in galvanized hoop iron roof anchors using hooked 30 x 1.6mm strapping embedded in concrete infill that is supported internally by expanded metal closures.
- Tool vertical and horizontal joints, clean up and protect new masonry from rain by covering with waterproof sheeting.

7.3.2 Subject Outcome 2: Construct masonry structures in face brick including symmetrical arches

Learning Outcomes

The student should be able to:

- Use a detailed design to set out and construct symmetrical face brick arches.
- Construct bed joint reinforced lintels ensuring even spacing of brickwork and level soffits.
- Rake out and rule bed joints while the mortar is still thumbprint hard.
- Rank different joint profiles for external walls subject to weather according to their efficiency in shedding rainwater.
- Clean masonry with water and a scrubbing brush at the end of each day.
- Explain and demonstrate how to clean hardened mortar droppings and smears off exposed clay brick masonry, without scratching the bricks.
- Clean hardened mortar droppings and smears off exposed concrete masonry, without scratching the units.

8 RESOURCE NEEDS FOR THE TEACHING OF MASONRY – LEVEL 3

8.1 Physical resources

Masonry workshop, tools, and machines, teaching aids and pre-designed models, work tables, chairs, chalkboards.

8.2 Human resources

- Minimum educator qualifications in masonry and civil construction
- Competent assessor, and
- On-going top-up training and up-skilling requirements

8.3 Other resources

- Overhead projector,
- Chalkboard,
- Pre-designed models,
- Tools and equipment requirements,
- Teaching and learning materials/resources.
- Budget according to Masonry requirements.