

**REPORT ON THE QUALITY ASSURANCE OF  
THE APRIL 2019 NATED REPORT 190/191  
N2 – N3 ENGINEERING STUDIES  
ASSESSMENT AND EXAMINATIONS**

**UMALUSI**



Council for Quality Assurance in  
General and Further Education and Training

REPORT ON THE  
QUALITY ASSURANCE OF THE  
APRIL 2019 NATED REPORT 190/191  
N2 – N3 ENGINEERING STUDIES ASSESSMENT  
AND EXAMINATIONS

---



Council for Quality Assurance in  
General and Further Education and Training

COPYRIGHT 2019  
UMALUSI COUNCIL FOR QUALITY ASSURANCE  
IN GENERAL AND FURTHER EDUCATION AND TRAINING.  
ALL RIGHTS RESERVED.

While all reasonable steps are taken to ensure the accuracy and integrity of the information contained herein, Umalusi accepts no liability or responsibility whatsoever if the information is, for whatsoever reason, incorrect, and Umalusi reserves its right to amend any incorrect information.

# CONTENTS

---

Introduction and Background	v
<b>CHAPTER 1    MODERATION OF QUESTION PAPERS</b>	<b>1</b>
1.1    Introduction	1
1.2    Scope and Approach	1
1.3    Summary of Findings	3
1.4    Areas of Compliance	13
1.5    Areas of Non-compliance	14
1.6    Directives for Compliance and Improvement	15
1.7    Conclusion	15
<b>CHAPTER 2    MODERATION OF INTERNAL CONTINUOUS ASSESSMENT</b>	<b>16</b>
2.1    Introduction	16
2.2    Scope and Approach	16
2.3    Summary of Findings	18
2.4    Areas of Compliance	29
2.5    Areas of Non-compliance	30
2.6    Directives for Compliance and Improvement	30
2.7    Conclusion	30
<b>CHAPTER 3    MONITORING OF THE WRITING OF EXAMINATIONS</b>	<b>31</b>
3.1    Introduction	31
3.2    Scope and Approach	31
3.3    Summary of Findings	33
3.4    Irregularities Identified by Umalusi Monitors	36
3.5    Areas of Compliance	36
3.6    Areas of Non-compliance	37
3.7    Directives for Compliance and Improvement	37
3.8    Conclusion	37
<b>CHAPTER 4    MONITORING OF THE MARKING OF EXAMINATIONS</b>	<b>38</b>
4.1    Introduction	38
4.2    Scope and Approach	38
4.3    Summary of Findings	38
4.4    Areas of Compliance	39
4.5    Areas of Non-compliance	40
4.6    Directives for Compliance and Improvement	40
4.7    Conclusion	40

<b>CHAPTER 5</b>	<b>STANDARDISATION OF MARKING GUIDELINES</b>	<b>41</b>
5.1	Introduction	41
5.2	Scope and Approach	41
5.3	Summary of Findings	43
5.4	Areas of Compliance	48
5.5	Areas of Non-compliance	48
5.6	Directives for Compliance and Improvement	48
5.7	Conclusion	48
<b>CHAPTER 6</b>	<b>VERIFICATION OF MARKING</b>	<b>49</b>
6.1	Introduction	49
6.2	Scope and Approach	49
6.3	Summary of Findings	50
6.4	Areas of Compliance	62
6.5	Areas of Non-compliance	63
6.6	Directives for Compliance and Improvement	63
6.7	Conclusion	63
<b>CHAPTER 7</b>	<b>STANDARDISATION AND RESULTING</b>	<b>64</b>
7.1	Introduction	64
7.2	Scope and Approach	64
7.3	Findings and Decisions	65
7.4	Areas of Compliance	66
7.5	Areas of Non-compliance	67
7.6	Directives for Compliance and Improvement	67
7.7	Conclusion	67

# INTRODUCTION AND BACKGROUND

---

The Report 190/191: Engineering Studies N2 and N3 examinations are administered and managed by the Department of Higher Education and Training (DHET) on a trimester basis in April, August and November of each year. Programmes for these examinations are offered by public Technical and Vocational Education and Training Colleges, private Further Education and Training Colleges, some correctional services centres and a few schools.

Umalusi as a Quality Council is mandated by the National Qualifications Framework and GENFETQA Act 190/191 to develop and implement policy and criteria for assessment of the qualifications on its sub-framework. The Report 190/191: Engineering Studies N1-N3 is registered by SAQA as a programme on the Umalusi sub-framework.

As the Quality Council for General and Further Education and Training, Umalusi:

- Must perform the external moderation of assessment of the different assessment bodies and education institutions;
- May adjust raw marks during the standardisation process;
- Must, with the concurrence of the Director-General and after consultation with the relevant assessment body or education institution, approve the publication of learners' results if the Council is satisfied that the assessment body or education institution has:
  - conducted the assessment free from any irregularity that might jeopardise the integrity of the assessment or its outcomes;
  - complied with the requirements prescribed by the Council for conducting assessments;
  - applied the standards prescribed by the Council to which a learner is required to comply, in order to obtain a certificate; and
  - complied with every other condition determined by the Council.

Umalusi is thus mandated to ensure that the NATED Report 190/191: Engineering Studies N2 and N3 examinations conducted each trimester are fair, valid and reliable. In order to perform this function, Umalusi is required to ensure that the quality and standard of all the assessment practices associated with the NATED Report 190/191: Engineering Studies examinations are set and maintained.

All question papers for the April 2019 examinations were set nationally. The DHET distributed question papers via courier to nodal points, from where the surrounding colleges/campuses collected them and to which they returned the answer scripts within 60 minutes of the stipulated end time of the examination session. The drawing subjects were written during the first week of the examination. All the April 2019 examinations were written as morning sessions, starting at 9:00.

As in previous examination sessions, the April 2019 NATED Report 190/2191 Engineering Studies N2-N3 examinations were conducted at various schools, correctional services centres, private colleges, public colleges, and some centres outside the republic.

No formal appointments of marking staff were made for this examination by the DHET. The marking centre management of the national and provincial marking centres were mandated to make use of the marking personnel who had performed this function during the November 2018 examinations.

The marking models followed were decentralised (provincial) marking for most N2 instructional offerings and centralised (national) for most of the N3 instructional offerings. The N2 marking guidelines were standardised by the marking panels of Gauteng, after which they were distributed electronically (via dropbox) to the other provincial marking centres.

As repeatedly reported in the past, the implementation of the Report 190/191: Engineering Studies programmes and examinations presents numerous challenges, including, but are not limited to:

- Outdated syllabi;
- No requirement that students be exposed to a practical component to develop skills;
- Lack of capacity for effective tuition;
- Candidates registered for examinations through other centres (i.e. not at the site of tuition);
- "Legacy" examination centres\* at colleges that are not accredited by Umalusi but where examinations are written; and
- High numbers of candidates who do not write the examinations (high dropout rate).

\*The number of legacy examination centres has dropped substantially since the introduction of a process to monitor these from the November 2017 examinations.

The purpose of this report is to provide feedback on the processes followed by Umalusi during the quality assurance of the 2019 April Report 190/191: Engineering Studies N2 to N3 examinations. The report also reflects the findings, areas of compliance in the management and administration of these examinations, as well as areas of non-compliance and directives for compliance and improvement. The findings are based on information obtained from the Umalusi moderation, monitoring, verification and standardisation processes, as well as from reports received from the DHET.

This report covers the following quality assurance processes implemented by Umalusi:

- Moderation of question papers from a sample of N2 and N3 instructional offerings;
- Moderation of internal assessments;
- Monitoring of the writing of examinations;
- Monitoring of the marking of examinations;
- Standardisation of marking guidelines; and
- Verification of marking.

# CHAPTER 1 MODERATION OF QUESTION PAPERS

---

## 1.1 Introduction

Umalusi conducts the external moderation of the NATED Report 190/191 Engineering Studies N2-N3 examination question papers to ensure that the required quality and standard are maintained across examination cycles.

The moderation of question papers is a critical part of the quality assurance process, and is designed to ensure that the examination question papers are relatively valid and reliable. The moderation process also ensures that the question papers have been collated with rigour and that they comply with Umalusi criteria and the assessment guideline documents of the assessment bodies.

Question papers are moderated by external moderators who are subject experts and experienced in the field of assessment.

The purpose of external moderation is to:

- Ensure that question papers of the required standard are presented;
- Ascertain that question papers cover a substantial amount of the syllabus;
- Ensure that the question papers are representative of relevant cognitive demands; and
- Highlight problems that may potentially compromise the quality of the question papers and to make recommendations for improvements to quality.

## 1.2 Scope and Approach

A total of 40 question papers, 24 at N3 level and 16 at N2 level, were moderated by Umalusi during the 2019 April Report 190/191: Engineering Studies examinations. This sample included the fundamental Engineering instructional offerings, Mathematics and Engineering Science. Umalusi verified the standard and quality of the question papers through a rigorous process of external moderation.

Table 1A indicates the instructional offerings for which question papers were moderated, per level:

**Table 1A: Instructional offerings included in the moderated sample of question papers**

Instructional offerings	Level
Aircraft Maintenance Theory	N3
Armature Winding	N2
Building and Civil Technology	N3
Building Drawing	N2 and N3
Building Science	N2 and N3
Diesel Trade Theory	N2 and N3
Electrical Trade Theory	N2 and N3
Electrotechnology	N3
Engineering Drawing	N2 and N3



Instructional offerings	Level
Engineering Science	N2 and N3
Fitting and Machining Theory	N2
Industrial Electronics	N2 and N3
Industrial Organisation and Planning	N3
Industrial Orientation	N3
Instrument Trade Theory	N3
Logic Systems	N3
Mathematics	N2 and N3
Mechanotechnology	N3
Motor Trade Theory	N2 and N3
Plant Operation Theory	N2 and N3
Platers' Theory	N2
Plating and Structural Steel Drawing	N2 and N3
Plumbing Theory	N2
Radio and Television Theory	N3
Refrigeration Trade Theory	N3
Supervision in Industry	N3
Waste-Water Treatment Practice	N3
Water and Waste-Water Treatment Practice	N2
Water Treatment Practice	N3

The model used in the moderation process was an off-site approach in which the question papers, marking guidelines, assessment frameworks and internal moderators' reports were forwarded electronically to external moderators. The external moderators prepared their own assessment frameworks with which to appraise the cognitive demand and weighting of the syllabi topics, and evaluated the question papers in terms of the specified criteria.

The question papers and marking guidelines were moderated according to nine criteria or detailed quality indicators, set by Umalusi, which are outlined in Table 1B below:

**Table 1B: Moderation criteria**

Criteria	Quality indicators
<b>Technical criteria</b>	The general layout, format and structure of the question paper, correct page numbering, mark allocation in the question paper, marking guidelines and the quality of illustrations, graphs, tables, etc.
<b>Internal moderation</b>	The quality, standard and relevance of the internal moderator's report and the extent to which the recommendations are addressed and implemented.
<b>Content coverage</b>	The extent to which the question papers cover the syllabus in terms of prescribed weighting, spread, linking and integration of different topics and the extent to which the examination questions represent the latest developments in the subject field(s).
<b>Types and quality of questions</b>	The variety and overall quality of questions, the correlation between mark allocation and level of difficulty and time allocation, the formulation of questions and instructions.

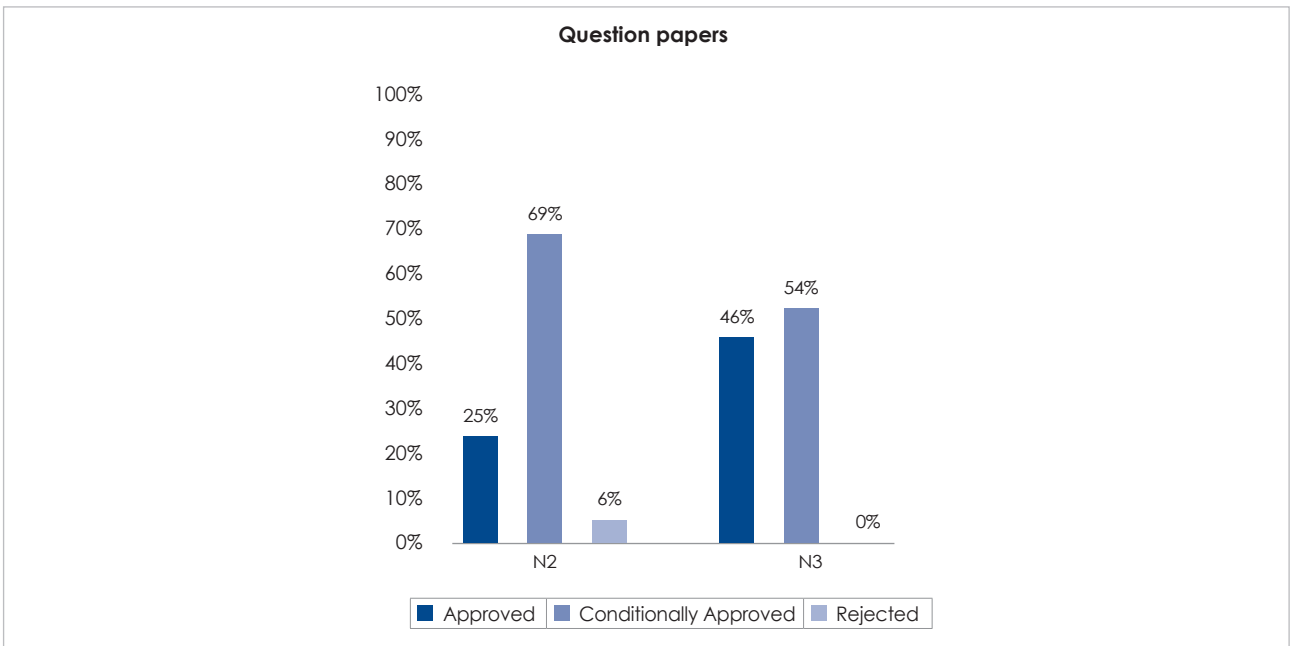
Criteria	Quality indicators
<b>Cognitive skills</b>	The distribution of questions in terms of cognitive levels (according to Bloom's Taxonomy, for example), the extent to which the question paper allows for the assessment of the candidate's ability to reason, communicate, translate from verbal to symbolic, compare and contrast, identify causal relationships and to express an argument clearly.
<b>Marking guidelines</b>	The overall layout of the marking guidelines, the correspondence between the marking guidelines and the question paper (in terms of questions and mark allocation), the accuracy of answers in the marking guidelines and the extent to which the marking guidelines will facilitate the marking process.
<b>Language and bias</b>	The correct use of instructional offering terminology, the use of the appropriate language register, the complexity of vocabulary in view of candidates' language ability, the use of grammatically correct language in both the question paper and the marking guidelines and the extent to which the question paper is free from stereotyping and bias when dealing with issues such as culture, gender, race, religion, etc.
<b>Predictability</b>	The degree of innovation in the question paper and the extent to which question repetition is avoided.
<b>Overall impression</b>	The degree to which the question paper aligns with the current syllabus, the extent to which the question paper assesses the outcomes of the syllabus, the extent to which the standard of the question paper compares to examinations from previous trimesters and the proportion of questions that assess skills, knowledge, attitudes, values and reasoning.

### 1.3 Summary of Findings

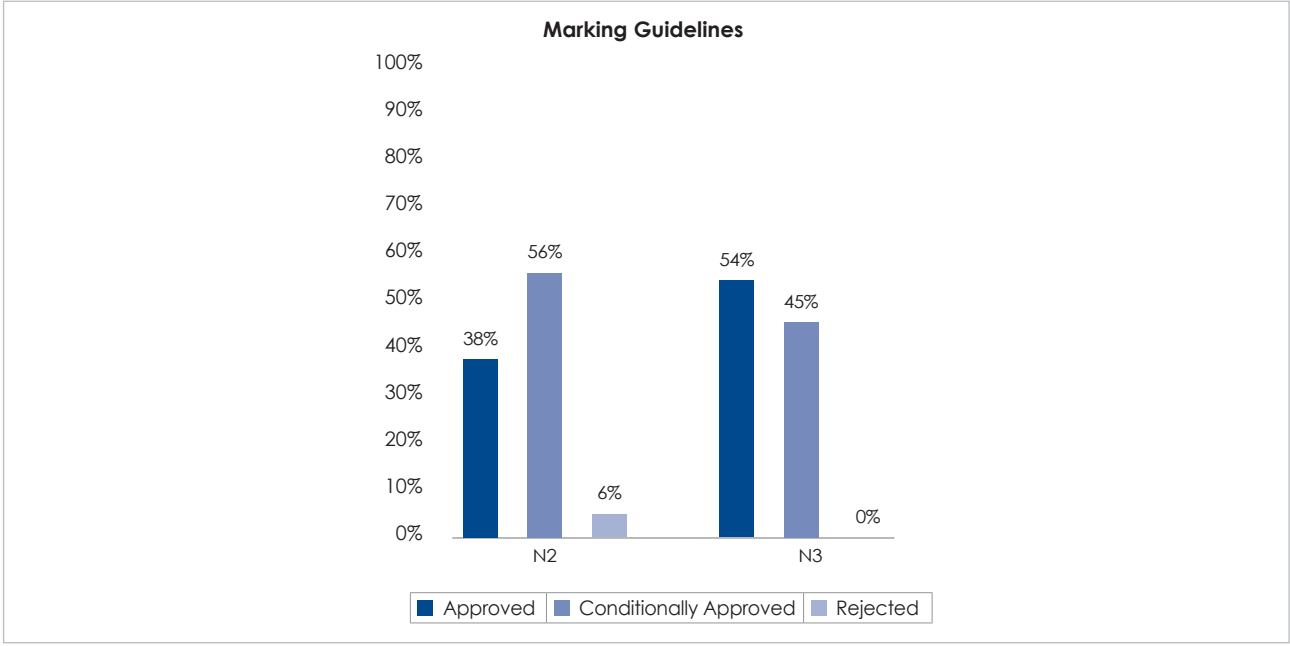
The initial moderation process of the 40 sampled question papers produced the following findings after initial external moderation:

- Three question papers were approved and print-ready;
- Twelve question papers were approved but required minor technical changes;
- Twenty-four question papers were approved conditionally as they required amendments such as the rephrasing or replacement of questions; and
- One question paper and marking guideline was rejected and needed to be reset and resubmitted for external moderation.

The graphs below provide a summary of the findings of the initial external moderation of the question papers and the marking guidelines, as captured from the external moderators' reports.



**Figure 1A: Approval Status of the NATED Report 190/191: Engineering Studies question papers after preliminary moderation**



**Figure 1B: Approval Status of the NATED Report 190/191: Engineering Studies marking guidelines after preliminary moderation**

Table 1C and 1D summarise the status of the NATED Report 190/191: Engineering Studies question papers and their marking guidelines after the preliminary moderation – i.e. prior to the external moderator making contact with the internal moderator.

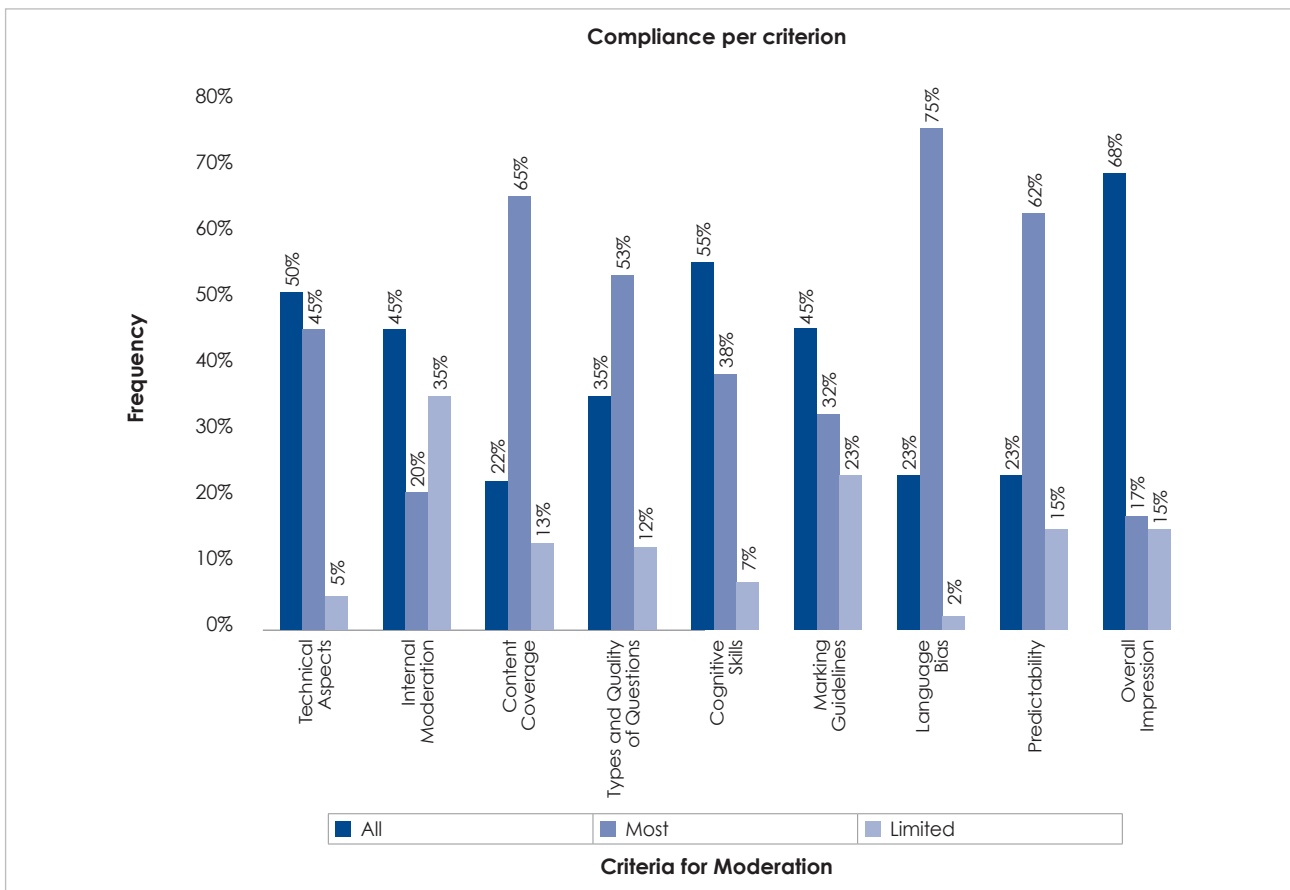
**Table 1C: Question paper approval status after initial moderation**

Judgement after preliminary moderation	Instructional offerings
<b>Approved:</b> <b>Print ready</b>	Building Drawing N3 Building Science N3 Platers' Theory N2
<b>Approved:</b> <b>Minor technical changes required.</b>	Aircraft Maintenance Theory N3 Building and Civil Technology N3 Diesel Trade Theory N2 Electrical Trade Theory N3 Electrotechnology N3 Engineering Science N3 Industrial Electronics N3 Logic Systems N3 Motor Trade Theory N2 Motor Trade Theory N3 Waste-Waste Treatment Practice N3 Water and Waste-Water Treatment Practice N2
<b>Conditionally approved:</b> <b>Question/s required restructuring/ rephrasing.</b>	Building Drawing N2 Building Science N2 Engineering Science N2 Industrial Electronics N2 Industrial Organisation and Planning N3 Mathematics N2 Water Treatment Practice N3
<b>Conditionally approved:</b> <b>Question/s to be replaced.</b>	Diesel Trade Theory N3 Industrial Orientation N3 Plating and Structural Steel Drawing N2 and N3 Plumbing Theory N2 Radio and Television Theory N3 Refrigeration Trade Theory N3
<b>Conditionally approved:</b> <b>Question/s to be restructured/ rephrased/ replaced.</b>	Engineering Drawing N2 Engineering Drawing N3 Fitting and Machining Theory N2 Instrument Trade Theory N3 Mathematics N3 Mechanotechnology N3 Plant Operation Theory N2 and N3 Supervision in Industry N3 Welders' Theory N2
<b>Rejected:</b> <b>Question paper to be reset and resubmitted for internal and external moderation</b>	Electrical Trade Theory N2

**Table 1D: Marking guidelines approval status after initial moderation**

Judgement after preliminary moderation	Instructional offering
<b>Approved: Print ready</b>	Building Drawing N3 Motor Trade Theory N2 Platers' Theory N2
<b>Approved: Minor technical changes</b>	Aircraft Maintenance Theory N3 Building and Civil Technology N3 Building Science N3 Diesel Trade Theory N2 Electrical Trade Theory N3 Electrotechnology N3 Engineering Science N3 Industrial Electronics N3 Logic Systems N3 Motor Trade Theory N3 Plating and Structural Steel Drawing N2 and N3 Plumbing Theory N2 Radio and Television Theory N3 Waste-Water Treatment Practice N3 Water and Waste-Water Treatment Practice N2
<b>Conditionally approved: Answer/s to be restructured/ rephrased</b>	Building Drawing N2 Building Science N2 Engineering Drawing N2 Engineering Science N2 Industrial Electronics N2 Industrial Organisation and Planning N3 Mathematics N2 and N3 Supervision in Industry N3 Welders' Theory N2
<b>Conditionally approved: Answer/s to be replaced</b>	Diesel Trade Theory N3 Engineering Drawing N3 Fitting and Machining Theory N2 Industrial Orientation N3 Instrument Trade Theory N3 Mechanotechnology N3 Plant Operation Theory N2 and N3 Refrigeration Trade Theory N3 Water Treatment Practice N3
<b>Rejected: Marking guidelines to be reset and resubmitted for internal and external moderation</b>	Electrical Trade Theory N2

Figure 1C shows a comparison of the compliance of each criterion after the initial moderation, in terms of the extent to which the quality indicators of each criterion were met (all, most or limited).



**Figure 1C: Compliance of initial moderation of Question Papers**

Table 1E provides a summary of the most significant findings from the moderation of the April 2019 question papers and marking guidelines, and challenges that arose. All the findings are indicated in terms of the moderated sample of instructional offerings (40).

**Table 1E: Judgement after preliminary moderation**

Criterion	Findings and challenges	Instructional offerings concerned
<b>Technical criteria</b>		
<b>Submission of supporting documents</b>	Question paper, marking guidelines, assessment grid and internal moderation report document had not been completed for nine (22%) question papers, compared to 6% in the April 2018 examinations.	Diesel Trade Theory N2 Electrical Trade Theory N2 Engineering Drawing N2 Fitting and Machining Theory N2 Industrial Electronics N3 Mathematics N2 Plant Operation Theory N2 Platers' Theory N2 Plating and Structural Steel Drawing N3 Supervision in Industry N3
	Two (5%) question papers were not received with relevant addenda. (This also occurred in the April 2018 examination.)	Industrial Electronics N3 Mathematics N2

Criterion	Findings and challenges	Instructional offerings concerned
<b>Omission of information and instructions</b>	The cover page for one (2%) question paper did not contain all the relevant details such as additional information, compared to 20% in April 2018 examination.	Mathematics N2
	In five (12%) question papers, some of the instructions to candidates were ambiguous or not clearly specified according to DHET specifications, compared to 13% in the April 2018 examination.	Building Drawing N2 Engineering Drawing N2 Engineering Drawing N3 Fitting and Machining Theory N2 Industrial Electronics N2
<b>Layout of the question paper</b>	In all the question papers, the layout was reader-friendly.	
	In one (2%) question paper, the pages were not correctly numbered, compared to 6% in the April 2018 examination.	Engineering Science N2
	In two (5%) question papers, the questions were not correctly numbered, compared to 11% in the April 2018 examination.	Electrical Trade Theory N2 Industrial Electronics N3
<b>Header and footer</b>	In two (5%) question papers, the headers and footers on each page were not consistent and did not adhere to the required format.	Diesel Trade Theory N3 Plating and Structural Steel Drawing N2
<b>Font type and size</b>	In one (2%) question paper, the fonts were not appropriate throughout the paper.	Diesel Trade Theory N3
<b>Mark and time allocation</b>	In three (7%) question papers, the mark allocations were not clearly indicated, compared to 3% in the April 2018 examination.	Aircraft Maintenance Theory N3 Diesel Trade Theory N3 Plating and Structural Steel Drawing N2
	All the question papers could be completed in the time allocated.	
	In five question papers, the mark allocation on the paper and in the marking guidelines differed.	Engineering Drawing N2 Electrical Trade Theory N2 Engineering Drawing N2 Plating and Structural Steel Drawing N2 and N3
<b>Quality of graphics and illustrations</b>	The quality of illustrations, graphs and tables was not appropriate, was not clear, contained errors and/or was not print-ready in 12 (32%) of the question papers, compared to 29% in the April 2018 examination.	Building and Civil Technology N3 Engineering Drawing N2 Electrical Trade Theory N2 and N3 Electrotechnology N3 Engineering Drawing N2 and N3 Engineering Science N3 Industrial Electronics N3 Mathematics N3 Mechanotechnology N3 Water Treatment Practice N3

Criterion	Findings and challenges	Instructional offerings concerned
<b>Internal moderation</b>		
<b>Incomplete moderator reports</b>	For 11 (29%) question papers, the internal moderation reports were incomplete or Umalusi did not receive the reports from the DHET. The percentage in the April 2018 examination was 23%.	Building Science N2 Diesel Trade Theory N2 Engineering Drawing N2 Electrical Trade Theory N2 Engineering Drawing N2 Fitting and Machining Theory N2 Mathematics N2 Plant Operation Theory N2 Plating and Structural Steel Drawing N3 Water and Waste-Water Treatment Practice N2 Welders' Theory N2
<b>Quality and standard of internal moderation</b>	The internal moderation reports for nine (26%) question papers were not of appropriate quality. (This figure was 33% in the April 2018 examination.)	Building Science N2 Engineering Drawing N2 Electrical Trade Theory N2 Engineering Drawing N2 Fitting and Machining Theory N2 Mathematics N3 Motor Trade Theory N2 Plating and Structural Steel Drawing N3 Welders' Theory N2
	The internal moderation reports for 11 (29%) question papers were not up to standard, compared to 36% in the April 2018 examination.)	Building Science N2 Engineering Drawing N2 Electrical Trade Theory N2 Engineering Drawing N2 and N3 Fitting and Machining Theory N2 Mathematics N3 Motor Trade Theory N2 Plating and Structural Steel Drawing N3 Welders' Theory N2
	For nine (26%) question papers, the internal moderator's report lacked relevance. (This figure was 20% the April 2018 examination).	Engineering Drawing N2 Electrical Trade Theory N2 Engineering Drawing N2 Fitting and Machining Theory N2 Industrial Electronics N3 Mathematics N3 Motor Trade Theory N2 Plating and Structural Steel Drawing N2 Plating and Structural Steel Drawing N3
<b>Recommendations and implementation of recommendations</b>	In 10 (33%) question papers, there was no evidence that the internal moderation recommendations had been implemented or addressed in any way, compared to 26% in the April 2018 examination.	Building Science N2 Engineering Drawing N2 Electrical Trade Theory N2 and N3 Engineering Drawing N2 Fitting and Machining Theory N2 Mathematics N3 Motor Trade Theory N2 and N3 Plating and Structural Steel Drawing N3



Criterion	Findings and challenges	Instructional offerings concerned
<b>Content coverage</b>		
<b>Coverage of the syllabi</b>	In four (10%) question papers, the syllabi were not covered adequately, compared to 14% in the April 2018 examination.	Industrial Organisation and Planning N3 Mathematics N2 and N3 Plant Operation Theory N3
	In two (5%) question papers, some questions did not fall within the scope of the syllabus. In the April 2018 examination this figure was 6%.	Fitting and Machining Theory N2 Industrial Organisation and Planning N3
	In two (5%) question papers, topics were not covered according to the prescribed weightings, compared to 20% in the April 2018 examination.	Mathematics N2 and N3
	In four (11%) question papers, the various topics were not appropriately linked or integrated.	Industrial Organisation and Planning N3 Mathematics N2 and N3 Motor Trade Theory N3
	Four (8%) question papers did not reflect the latest developments in the subject. This figure was 14% in the April 2018 examination.	Aircraft Maintenance Theory N3 Industrial Organisation and Planning N3 Mathematics N2 Motor Trade Theory N2
<b>Types of questions</b>	Two question papers (6%) did not have sufficient variety question types, such as multiple-choice, paragraph, data/source-based response, essay, real-life scenario and real-life problem-solving questions. This figure was 14% in the April 2018 examination.	Industrial Organisation and Planning N3 Plant Operation Theory N3
	In three questions papers (14%), no allowance was made for creative responses from candidates, compared to 6% in the April 2018 examination.	Electrical Trade Theory N3 Engineering Science N3 Mathematics N3
	There was no correlation between mark allocation, level of difficulty and time allocation in four (10%) question papers, compared to 9% in the April 2018 examination.	Electrical Trade Theory N3 Mathematics N2 and N3 Supervision in Industry N3
<b>Quality of questions</b>	In 2% of question papers, some of the questions did not relate to what was pertinent in the instructional offering. This figure was 6% in the April 2018 examination.	Industrial Organisation and Planning N3
	Seven question papers (17%) contained some vaguely defined problems, ambiguous wording, extraneous or irrelevant information, trivia and unintentional clues to the correct answers. This figure was 20% in the April 2018 examination.	Diesel Trade Theory N2 Engineering Science N2 Fitting and Machining Theory N2 Mechanotechnology N3 Plant Operation Theory N3 Supervision in Industry N3 Water Treatment Practice N3

Criterion	Findings and challenges	Instructional offerings concerned
<b>Quality of questions</b>	In five (12%) question papers, the questions did not contain sufficient information to elicit appropriate responses. This could be compared to the 14% in the April 2018 examination.	Diesel Trade Theory N2 Engineering Drawing N2 Engineering Science N3 Mathematics N2 Refrigeration Trade Theory N3
	Four (10%) question papers contained factual errors or misleading information. This figure was 14% in the April 2018 examination.	Building Science N2 Engineering Science N3 Industrial Organisation and Planning N3 Mechanotechnology N3
	In four question papers (11%) the quality of illustrations, graphs and tables was poor and not print ready, compared to 3% in the April 2018 examination.	Engineering Drawing N2 Mathematics N3 Motor Trade Theory N2 and N3
<b>Cognitive skills</b>		
<b>Analysis grid</b>	The analysis grid for seven question papers (19%) was not received with the question paper. This figure was 14% in the April 2018 examination.	Diesel Trade Theory N2 Electrical Trade Theory N2 Engineering Drawing N2 Industrial Electronics N3 Plant Operation Theory N2 Plating and Structural Steel Drawing N2 and N3
	In three question papers (8%), there was an inappropriate distribution of cognitive levels (Bloom's taxonomy or any other taxonomy that might have been used), compared to 20% in the April 2018 examination.	Diesel Trade Theory N3 Mathematics N3 Plant Operation Theory N3
<b>Assessment of latest developments</b>	Four (11%) question papers did not reflect the latest developments in the teaching of their respective knowledge fields, compared to 26% in the April 2018 examination.	Aircraft Maintenance Theory N3 Engineering Drawing N3 Industrial Organisation and Planning N3 Mathematics N2
<b>Marking guidelines</b>		
<b>Accuracy of marking guidelines</b>	In four (10%) marking guidelines, some answers did not correspond to the questions in the question papers, compared to 11% in the April 2018 examination.	Electrical Trade Theory N2 Plating and Structural Steel Drawing N2 and N3 Supervision in Industry N3
	Some of the answers in 39% of marking guidelines were inaccurate, compared to 46% in the April 2018 examination.	Building Science N2 Diesel Trade Theory N2 Electrical Trade Theory N2 and N3 Engineering Drawing N2 and N3 Industrial Electronics N2 Mechanotechnology N3 Plant Operation Theory N2 and N3 Plating and Structural Steel Drawing N2 and N3 Refrigeration Trade Theory N3 Supervision in Industry N3

Criterion	Findings and challenges	Instructional offerings concerned
<b>Accuracy of marking guidelines</b>	Eight (24%) marking guidelines did not allow for alternative responses, where these were possible. In the April 2018 examination this figure was 20%.	Diesel Trade Theory N2 Electrical Trade Theory N2 and N3 Industrial Electronics N3 Industrial Organisation and Planning N3 Refrigeration Trade Theory N3 Supervision in Industry N3 Water Treatment Practice N3
	Four (10%) marking guidelines were not laid out clearly, compared to 3% in the April 2018 examination.	Engineering Drawing N3 Plating and Structural Steel Drawing N2 and N3 Water Treatment Practice N3
	In 15% of question papers, the mark allocation for some questions in the marking guidelines did not correspond with the mark allocation on the question paper, compared to 6% in the April 2018 examination.	Diesel Trade Theory N3 Electrical Trade Theory N2 Engineering Drawing N2 Plating and Structural Steel Drawing N2 and N3 Water Treatment Practice N3
	A total of 11 (31%) of marking guidelines had incomplete mark allocation and mark distribution within questions, compared to 40% in the April 2018 examination.	Aircraft Maintenance Theory N3 Engineering Drawing N2 and N3 Fitting and Machining Theory N2 Industrial Electronics N2 Mechanotechnology N3 Plant Operation Theory N2 and N3 Plating and Structural Steel Drawing N2 and N3 Radio and Television Theory N3 Water Treatment Practice N3
<b>Facilitation of marking</b>	Eight (20%) marking guidelines would not have facilitated marking, compared to 17% in the April 2018 examination.	Aircraft Maintenance Theory N3 Building Science N2 Engineering Drawing N2 Mathematics N3 Mechanotechnology N3 Plating and Structural Steel Drawing N2 and N3 Supervision in Industry N3
<b>Language and bias</b>		
<b>Language register</b>	In two (5%) question papers, subject terminology was not used correctly. In the April 2018 examination there was 100% compliance.	Engineering Drawing N2 Supervision in Industry N3
<b>Grammar</b>	In 10% of the question papers, there were subtleties in grammar that had the potential to cause misunderstandings, compared to 14% in the April 2018 examination.	Electrical Trade Theory N3 Engineering Drawing N2 Fitting and Machining Theory N2 Water Treatment Practice N3
	There were grammatical errors in three question papers (7%), compared to 14% in the April 2018 examination.	Engineering Drawing N2 Plumbing Theory N2 Water Treatment Practice N3
	All question papers did not have complex syntax.	

Criterion	Findings and challenges	Instructional offerings concerned
<b>Predictability</b>		
<b>Reuse of questions from previous question papers</b>	Four (10%) question papers contained questions that could easily be spotted or predicted, compared to 20% in the April 2018 examination.	Electrical Trade Theory N3 Engineering Drawing N2 Mathematics N3 Plant Operation Theory N3
	Four (10%) question papers contained questions from the past three years' examination question papers, compared to 11% in the April 2018 examination.	Industrial Organisation and Planning N3 Instrument Trade Theory N3 Plant Operation Theory N2 and N3
<b>Innovation</b>	Six (16%) question papers lacked appropriate innovation, compared to 17% in the April 2018 examination.	Industrial Organisation and Planning N3 Mathematics N2 and N3 Motor Trade Theory N2 and N3 Plant Operation Theory N3
<b>Standard of question papers</b>	One (2%) question paper was not in keeping with the current syllabus.	Industrial Organisation and Planning N3
	Three (7%) question papers did not assess the outcomes of the curriculum/ syllabus as a whole.	Industrial Organisation and Planning N3 Mathematics N3 Fitting and Machining Theory N2
	Twenty percent of the question papers were not of the appropriate standard.	Engineering Drawing N2 Industrial Organisation and Planning N3 Fitting and Machining Theory N2 Mathematics N2 and N3 Mechanotechnology N3 Plant Operation Theory N3 Supervision in Industry N3
	Four question papers (10%) did not compare favourably to previous years' examination question papers.	Industrial Organisation and Planning N3 Fitting and Machining Theory N2 Mathematics N2 and N3
	Three (9%) question papers were not of the same standard as the question papers from the previous cycle.	Industrial Organisation and Planning N3 Mathematics N2 and N3
	In four question papers (10%) there was no balance between the assessment of skills, knowledge, attitudes, values and reasoning.	Electrical Trade Theory N3 Mathematics N2 and N3 Plant Operation Theory N3

## 1.4 Areas of Compliance

The following areas of compliance were observed:

- There was an improvement in the standard and quality of the April 2019 examination question papers. After the initial moderation, 60% of the question papers were conditionally approved, compared to 50% in the April 2018 examinations;
- The external moderator commended the examiner and internal moderator for the good work in the following instructional offerings: Logic Systems N3, Platers' Theory N2 and Waste-Water Treatment Practice N3.

## 1.5 Areas of Non-compliance

Umalusi reports revealed the areas of non-compliance listed below:

### 1.5.1 Technical aspects

- Twenty-nine percent of the question papers received were not accompanied by the required supporting documents or, where these had been included, they were incorrect or incomplete or did not correspond to the question paper; and
- In 32% of the question papers, the quality of illustrations, graphs, tables etc. was poor and not print ready for the following reasons:
  - There were missing dimensions. This is a perennial problem and students are thus forced to make assumptions. In order to correct this, the internal moderator sent a hand-drawn diagram as specific software for drawing was not available – Building Science N2;
  - Scanned drawings could not be edited - Plating and Structural Steel Drawing N2;
  - All the mathematical components of the paper were typed in the incorrect format - Mathematics N2; and
  - No sketches were drawn appropriately – Mathematics N3.

### 1.5.2 Internal moderation

- In 29% of the question papers the internal moderation reports were incomplete or Umalusi did not receive the reports from the DHET. In some instances, there was a mismatch between the question paper and the internal moderator's report;
- In 33% of the internal moderators' reports, there was little or no evidence that the moderator had made recommendations or that these had been addressed or implemented; and
- The internal moderator for Electrical Trade Theory N3 failed to take heed of the corrections previously suggested by the external moderator, i.e. weight calculation. This was brought to the attention of the internal moderator by means of the external moderation report on several occasions, but the problem persisted.

### 1.5.3 Content coverage

- In 10% of the question papers, some questions went beyond the scope of the syllabus:
  - Some questions in the Industrial Orientation N3 question paper were included in Industrial Organisational and Planning N3;
  - Seventeen percent of the questions were beyond the scope of the syllabus - Fitting and Machining Theory N2; and
  - Not all the topics were covered: 46 marks came from Topic 3 with Topic 6 not covered at all - Plant Operation Theory N3.
- Twenty one percent of the questions were of a low standard – Mathematics N3.

### 1.5.4 Predictability

- Ten percent of the question papers contained questions that could easily have been spotted or predicted by the candidates. In the Electrical Trade Theory N3 question paper, there are only a few possible calculations and as a result these calculations are anticipated by candidates. This is the result of a curriculum of limited scope, which requires revision;
- In 10% of the question papers, some questions had been taken verbatim from previous examination papers:
  - Thirty-seven percent of the questions for Electrical Trade Theory N2 comprised verbatim repetition of questions from the last three years' examinations;

- The questions were repetitive and similar to the November 2018 question paper. The examiner set a predictable question paper that did not adequately measure the ability of the students – Mathematics N2;
- Thirty-four percent of the content of the question paper was predictable and assessed the same spread as question papers from past examinations – Mathematics N3; and
- Twenty-one percent of the question papers reused questions verbatim from examinations from the last three years. This is becoming a pattern despite being discussed with the internal moderator in the previous moderation cycle - Plant Operation Theory N3.

### **1.5.5 Marking guidelines**

- Some of the answers in 39% of marking guidelines were inaccurate:
  - Sixteen percent of the answers in the marking guidelines were incorrect - Mathematics N3;
- Eight (24%) marking guidelines did not allow for alternative responses, where these were possible;
- A total of eleven (31%) marking guidelines were incomplete with regard to mark allocation and distribution within each question.
- Eight (20%) marking guidelines would not have facilitated marking.

## **1.6 Directives for Compliance and Improvement**

In order to improve the quality and standard of question papers, the DHET must ensure that:

- Question papers submitted to Umalusi meet all the prescribed technical requirements and are submitted with all the required supporting documents;
- The appropriate software is used for graphics, diagrams, equations, etcetera;
- All questions are set within the scope of the syllabi;
- Examiners are more creative and innovative in the formulation of the questions;
- Internal moderation of question papers is thorough; and
- No adjustments are made to the question papers and marking guidelines (figures or layout) once signed off by Umalusi.

## **1.7 Conclusion**

Poor quality and the absence of internal moderation, marking guidelines and an analysis grid were once again common in this examination cycle. It is important that examiners and moderators adhere strictly to mandatory procedures and that they ensure that question papers of good quality are produced. The quality and standard of the marking guidelines require improvement.

After the initial moderation, 38% of the question papers were approved, 60% were conditionally approved and 2% required resetting. One question paper had to be reset because of verbatim reuse of questions from past papers. It is vital that the assessment framework is compiled correctly, as this serves as the foundation on which the question paper is constructed. Examiners and internal moderators should apply more creative strategies to limit the predictable questions.

The external moderators worked very hard to ensure that all externally moderated question papers were of an acceptable standard.

# CHAPTER 2 MODERATION OF INTERNAL CONTINUOUS ASSESSMENT

---

## 2.1 Introduction

The internal continuous assessment (term mark) contributes 40% towards the final mark for each instructional offering in the NATED Report 190/191 Engineering Studies N2-N3 programme. It is thus imperative that the implementation of internal continuous assessment (ICASS) is quality assured. Umalusi moderators have been moderating the internal assessments of selected Report 190/191: Engineering Studies N2 and N3 instructional offerings every trimester since 2012.

Umalusi moderated the ICASS of the Engineering Studies to verify the quality and standard of work done by students and by the lecturers responsible for the N2 and N3 instructional offerings of the Department of Higher Education and Training (DHET).

The main objectives of external moderation of the ICASS were to:

- Verify whether the lecturer's portfolio of assessment (PoA) adhered to the DHET ICASS instructions;
- Ascertain the appropriateness and standard of the assessment tasks;
- Ensure that tasks had been administered and that evidence had been collected and documented in accordance with ICASS instructions; and
- Ensure that the quality assurance of the ICASS component had been effectively implemented.

## 2.2 Scope and Approach

Moderators were sent to seven of the nine provinces on 27, 28, 29 and 30 March 2019 to moderate the ICASS of N2 and N3 students and the portfolios of lecturers of a selected sample of Report 190/191 instructional offerings. The external moderators drafted reports on their findings at the sampled sites. The table below indicates the sites and the instructional offerings included in the process. Fifteen instructional offerings (two instructional offerings were each moderated at two different sites) were moderated at seven private and nine public colleges (18 were moderated in 2018).

Table 2A provides information on the instructional offerings, sites and provinces that were included in the moderation of Report 190/191 ICASS during March 2019.

**Table 2A: Moderation of Report 190/191 internal continuous assessment**

Instructional offering	College and Type	Site/Campus	Province
Building Drawing N3	Vuselela Public	Potchefstroom	North West
Electrotechnology N3	Adequate Technical Private		Limpopo
Electrotechnology N3	Nkangala Public	Middelburg	Mpumalanga
Engineering Drawing N3	Northlink Public	Wingfield	Western Cape
Engineering Science N2	Shakaland Technical Private		KwaZulu-Natal
Engineering Science N3	Tekmation Private		KwaZulu-Natal
Fitting and Machining Theory N2	Maluti Public	Itemoheleng	Free State
Instrument Trade Theory N3	Tshwane South Public	Pretoria West	Gauteng
Mathematics N2	College of Cape Town Public	Gugulethu	Western Cape
Mathematics N3	Taletso Public	Lichtenburg	North West
Mechanotechnology N3	Orbit Public	Brits	North West
Motor Trade Theory N3	Academy of Business and Computer Studies Private	Johannesburg	Gauteng
Platers' Theory N2	Thibela Technical Private		Mpumalanga
Supervision in Industry N3	Tshwane City Private		Gauteng
Water and Waste-Water Treatment Practice N2	Gateway City Private		KwaZulu-Natal
Water Treatment Practice N3	Capricorn Public	Seshego	Limpopo

In addition, moderators were requested to gather information on three additional instructional offerings at each site. The colleges/campuses were informed prior to the visits of this additional monitoring of specific instructional offerings, but did not know which instructional offerings would be included in the sample. This prevented window dressing to present a favourable impression of the tasks and all accompanying documents. One site, Adequate Technical College, was monitored by an Umalusi official as well as by DHET officials. The delegation verified a number of instructional offerings.

Table 2B provides information on the sites and additional sampled instructional offerings that were included in the moderation of Report 190/191 ICASS during March 2019.



**Table 2B: Additional instructional offerings moderated**

Sites	Mathematics N2	Engineering Science N3	Industrial Electronics N3	Engineering Drawing N3
Academy of Business and Computer Studies				
Brits				
Gateway City				
Gugulethu	(N3)			
Itemoheleng				
Lichtenburg				
Middelburg		(N2)		
Potchefstroom	(N1)			
Pretoria West		(N2)		
Seshego				
Shakaland Technical				
Tekmation				
Thibela Technical				
Tshwane City				
Wingfield				

## 2.3 Summary of Findings

The section below presents the findings of the monitoring of the implementation of internal assessment as reported by the external moderators for the Engineering Studies instructional offerings. Shortcomings that are noted may have hampered the effective delivery of the NATED N1 – N3 programmes.

### 2.3.1 Enrolments

Enrolment figures were provided by the DHET and when these were compared with the actual numbers of enrolled students on site, it was found that at 15 of the 16 sites (compared to nine of the 18 sites in 2018) these figures did not correspond. It was difficult to verify actual enrolments. Only 83% of the sites could provide a register and a record of attendance.

The following table indicates the numbers enrolled according to the DHET and according to the colleges' records:

**Table 2C: Comparison of DHET and site enrolments**

Instructional offering	College	Site/Campus	DHET	Site
Building Drawing N3	Vuselela	Potchefstroom	N1 – 20 N3 – 1	N1 – 46 (46)* N3 – 18 (18)*
Electrotechnology N3	Adequate Technical		N3 – 26	N3 – 34 (6)*
Electrotechnology N3	Nkangala	Middelburg	N3 – 12	N3 – 57
Engineering Drawing N3	Northlink	Wingfield	N1 – 75 N2 – 121 N3 – 157	N1 – 182 N2 – 168 N3 – 93
Engineering Science N2	Shakaland Technical		N1 – 1 N2 – 1 N3 – 3	N1 – 43 N2 – 34 (21)* N3 – 20 (13)*
Engineering Science N3	Tekmation		N1 – 8 N2 – 2 N3 – 17	N1 – 4 N2 – 19 N3 – 5 (1)*
Fitting and Machining Theory N2	Maluti	Itemoheleng	N1 – 51 N2 – 20	N2 – 40
Instrument Trade Theory N3	Tshwane South	Pretoria West	N2 – 62 N3 – 182	N2 – 68 N3 – 31
Mathematics N2	College of Cape Town	Gugulethu	N1 – 97 N2 – 59 N3 – 50	N1 – 103 (1)* N2 – 69 N3 – 50
Mathematics N3	Taletso	Lichtenburg	N1 – 4 N2 – 18 N3 – 58	N1 – 58 N2 – 14 N3 – 21
Mechanotechnology N3	Orbit	Brits	N3 – 42	N3 – 44
Motor Trade Theory N3	Academy of Business and Computer Studies	Johannesburg	N1 – 1 N2 – 9 N3 – 66	N1 – 0 N2 – 0 N3 – 0
Platers' Theory N2	Thibela Technical		N2 – 12	N2 – 16 (7)*
Supervision in Industry N3	Tshwane City		N3 – 78	N2 – 78 (16)* N3 – 32 (9)*
Water and Waste-Water Treatment Practice N2	Gateway City		N1 – 9 N2 – 2 N3 – 7	N1 – 4 N2 – 2 N3 – 1 (1)*
Water Treatment Practice N3	Capricorn	Seshego	N1 – 42 N2 – 32 N3 – 1	N3 – 17

\* The number in brackets indicates students in employment.

### 2.3.2 Tuition time

Tuition time varied from three to seven hours per week. One subject, Water and Waste-Water Treatment Practice N2 offered at Gateway City College (Pty) Ltd was apparently taught on Saturdays but no evidence could be provided to prove this. The tuition times for part-time (PT) and full-time (FT) and distance learning (DL) tuition are indicated in the following table:

**Table 2D: Contact time allocated to instructional offerings**

Instructional offering	College	Site/Campus	Hours/week
Building Drawing N3	Vuselela	Potchefstroom	PT – 0 FT – 4,5 DL – 0
Electrotechnology N3	Adequate Technical		PT – 3 FT – 3 DL – 0
Electrotechnology N3	Nkangala	Middelburg	PT – 3 FT – 5 DL – 0
Engineering Drawing N3	Northlink	Wingfield	PT – 0 FT – 7 DL – 0
Engineering Science N2	Shakaland Technical		PT – 2 FT – 5 DL – 0
Engineering Science N3	Tekmation		PT – 0 FT – 0 DL – 0
Fitting and Machining Theory N2	Maluti	Itemoheleng	FT – 4hrs 50 min
Instrument Trade Theory N3	Tshwane South	Pretoria West	FT – 5
Mathematics N2	College of Cape Town	Gugulethu	FT – 5hrs 50 min DL – 0
Mathematics N3	Taletso	Lichtenburg	PT – 3
Mechanotechnology N3	Orbit	Brits	FT – 6
Motor Trade Theory N3	Academy of Business and Computer Studies	Johannesburg	FT – 5
Platers' Theory N2	Thibela Technical		FT – 6
Supervision in Industry N3	Tshwane City		PT – 3 FT – 3
Water and Waste-Water Treatment Practice N2	Gateway City		No evidence
Water Treatment Practice N3	Capricorn	Seshego	FT – 5

As is evident from the table, tuition time varied for full-time and part-time students. No provision was made for contact time with distance learning students.

It was assumed that students in employment attended part-time classes. Employed students were enrolled at eight of the 16 sites, compared to four of the 18 campuses in 2018. The majority of the students were unemployed.

Not all the sites allocated enough tuition time according to the requirements of each instructional offering, as can be seen in the following table:

**Table 2E: Not enough contact time allocated to instructional offerings**

Insufficient tuition time	College	Site/Campus	Instructional offering
The Engineering studies programme taught students in employment between 16:00 to 19:00 four times a week. This amounts to 21 hours, far less than is prescribed in the syllabus.	Taletso	Lichtenburg	Mathematics N3
There were no formal contact sessions with students. Tuition was not made provision for in the timetable. Students were enrolled to write examinations only; they completed two assignments at home. The marks for these comprised a student's semester mark. This was not what was prescribed in the guidelines from the DHET.	Tekmation		Engineering Science N3

Thirty-eight per cent of the students (the same figure as in 2018) were given support before enrolment. The support ranged from PACE tests at Northlink TVET College, Wingfield Campus, a helpdesk to advise students based on their academic performance and their aptitude and interests at Shakaland Technical College (Pty) Ltd, and a student profiler available on the college website at Tshwane South College, Pretoria West Campus. A "Student Services Support" manual was used at Gateway City College (Pty) Ltd to orientate and guide students. Aptitude tests were conducted at Orbit TVET College, Brits Campus, to determine the interests and aptitude of prospective students.

The following seven colleges did not offer any pre-enrolment support:

**Table 2F: No pre-enrolment support for students**

Instructional offering	College	Site
Building Drawing N3	Vuselela	Potchefstroom
Electrotechnology N3	Adequate Technical	
Engineering Science N3	Tekmation	
Fitting and Machining Theory N2	Maluti	Itemoheleng
Mathematics N2	College of Cape Town	Gugulethu
Mathematics N3	Taletso	Lichtenburg
Motor Trade Theory N3	Academy of Business and Computer Studies	Johannesburg
Platers' Theory N2	Thibela Technical	
Supervision in Industry N3	Tshwane City	
Water Treatment Practice N3	Capricorn	Seshego

### 2.3.3 Physical and other resources

Since the majority of enrolled students were not in employment, the ideal situation was that all colleges would take responsibility for exposing learners to the practical component.

Only 44% of the sites (17% in 2018) exposed their students to the practical application of the subject at the college: namely Maluti TVET College, Itemoheleng Campus; Northlink TVET College, Wingfield Campus; Orbit TVET College, Brits Campus; Shakaland Technical College (Pty) Ltd, Stanger; Tekmation (PTY) Ltd, Durban; Tshwane South TVET College, Pretoria West Campus; Vuselela TVET College, Potchefstroom Campus.

At 88% of sites, the facilities available were adequate. This was a slight decline from the 92% in the previous year. Students had access to computers and printers at 81% of the sites (compared to 67% in 2018) and 69% had access to the Internet. Even though the textbooks were available at 94% of the sites when classes commenced, too few textbooks were available when classes commenced at Adequate Technical College in Lephalale and Tshwane City College in Pretoria. The quality of the textbooks ranged from average to good at 94% of the sites.

Additional teaching material was used at only 69% of the sites, but this was a great improvement on the 50% of 2018. At the Capricorn TVET College in Seshego Campus, a WhatsApp group was sometimes used to communicate with students and assist them.

The site in the following table had inadequate physical resources:

**Table 2G: Inadequate physical resources**

Inadequate physical resources	College	Site	Instructional offering
<b>Extension cords linking the electricity supply to the neon lights next to the whiteboard posed a health and safety risk. Moreover, these were the only lights in the classroom, and they were inadequate at night when evening classes were held.</b>	Taletso	Lichtenburg	Mathematics N3

The available facilities for the instructional offering, Water and Waste-Water Treatment Practice N2, offered at Gateway City College (Pty) Ltd in Durban were adequate. However, concerns were raised about the inadequacy of the facilities for the presentation of all instructional offerings in the programme: Engineering Studies.

Tekmation (Pty) Ltd's primary focus is on training and development. This college has enrolled Learnership students and apprentices in various trades such as fitter, electrician, plumbing and civil. Tekmation is an accredited trade test centre.

### 2.3.4 Human resources

Most lecturers had teacher training and industry experience but it was not always clear whether they were qualified to do the work that they were doing at the particular site since not all lecturers had provided details of their qualifications in their portfolios. Some lecturers did not appear to be qualified to teach the instructional offering.

At 50% of the sites, versus 61% in 2018, there was a process for identifying training needs and at 63% of sites there was a training plan for staff development. Forty-four per cent of these sites had a training manual to ensure that lecturers were trained to teach and assess their instructional offering, compared to 28% in 2018. Seventy-five per cent of the lecturers indicated that they needed further training in teaching their instructional offering, assessment principles and methods, such as the setting of tasks using an analysis grid, marking guides and internal moderation.

At the College of Cape Town, Gugulethu Campus, subject lecturers demonstrated a commendable work ethic when it came to ensuring that all fundamental processes had been completed and all assessments had been moderated for all groups. It was also evident that only competent and qualified lecturers were employed to teach this instructional offering.

Fifty per cent of the lecturers had experience in the workplace, compared to 28% in 2018.

### 2.3.5 Internal assessment policies and systems

Of the sites visited, 88%, as opposed to 72% in the previous year, could produce an up-to-date college assessment policy. The various aspects of the assessment policy provided for the following: planning for assessment (88% compared with 67% in 2018), monitoring and moderation of assessments at college or campus level (75% compared with 67% in 2018), appeals procedure (88% compared to 78% in 2018), absenteeism (81% compared with 67% in 2018), late or non-submission of tasks (63% compared with 67% in 2018), learners with barriers (56% compared to 28% in 2018), conditions for re-assessment (88% compared with 72% in 2018) and irregularities (56% compared with 67% in 2018). This reflected a vast improvement in virtually all aspects of the assessment policies compared to the assessment policies of 2018.

The following table provides general findings in terms of the shortcomings in policies and systems at these colleges:

**Table 2H: Policies and procedures**

Policies and procedures	College	Site	Instructional offering
<b>The analysis grid was not completed at the campus owing to a decision taken by the College board.</b>	Taletso	Lichtenburg	Mathematics N3
<b>The documentation in the college assessment policy was fragmented and difficult to access.</b>	Gateway City		Water and Waste-Water Treatment Practice N2

The following two colleges had no assessment policy:

- Adequate Technical College (Lephalale); and
- Tekmation (Pty) Ltd (Durban).

### 2.3.6 Monitoring

The monitoring of assessment practices was not taken seriously at all sites. At 63% of the sites, compared with 50% in 2018, there was evidence of a monitoring plan. The plan had been implemented at 50% of the sites, which was an improvement on the 44% in 2018. Evidence of a report to the DHET or the academic board could be found at 31% of the sites. In 50% of instances, compared to 44% in 2018, there was evidence of a subject monitoring report and in 56% of instances a pre- and post-assessment monitoring report could be produced.

### 2.3.7 Task development plan

The development of tasks had been planned at 81% of the sites, which is a considerable increase on the 61% of 2018. The following had been planned:

- The tasks had been determined (81%);
- The person setting the tasks had been identified (75%);
- The moderator had been identified (63%);
- The content to be covered was finalised (63%);

- The duration of the task and mark allocation had been determined (69%);
- The timeframes were indicated (75%); and
- The task had been developed according to the plan (63%).

In 75% of sites (61% in 2018), there were systems in place for checking that the tasks were of an acceptable standard. At 63% of the sites, compared to 22% in 2018, there were examples of additional supporting tasks.

At Orbit TVET College, Brits Campus, the college staff had embarked on a standard common assessment for both test 1 and 2, rotating the setting of these tests among the three Campuses, i.e. N1 and N2, N3 and N4, and N5 and N6. The examiners of tests were officially appointed.

### **2.3.8 Irregularities register**

Although 69% of sites had irregularity registers (44% in 2018), only 31% of these sites had recorded irregularities in internal assessments (22% in 2018).

### **2.3.9 Lecturers' files**

#### **a) Lecturers' assessment files (PoA)**

Sixty-nine per cent of the sites had all the required documents available in the PoA. These colleges were: Academy of Business and Computer Studies; Northlink TVET College, Wingfield Campus; Orbit TVET College, Brits Campus; Shakaland Technical College (Pty) Ltd; Taletso TVET College, Lichtenburg Campus; Tshwane South TVET College, Pretoria West Campus. These colleges are to be congratulated on making the effort to comply fully. At Taletso TVET College, Lichtenburg Campus, files were neat, well organised and it was easy to find the documents in these files.

PoA at 75% of the sites contained copies of the lecturers' qualifications. Fifty per cent of the lecturers were registered with SACE and 81% of them had teaching qualifications. Seventy-five per cent of lecturers had work experience; half of them had more than five years' experience. Seventy-five per cent of the PoA contained a class register and record of attendance. Managing the attendance registers for distance learners presented a challenge as no contact time was provided for. The syllabus was included in 63% of the files, which is a decrease compared to the 72% in 2018. There was also a pacesetter in 69% of the files, but evidence that the pacesetter had been used as a planning document could only be found in 44% of instances.

Assessment schedules were included in 81% of the PoA, with 94% of the files containing two tests with their marking guidelines. This is a noticeable improvement on the 61% of 2018. Pre- and post-moderation had been done in 81% of instances. Mark sheets could be found in 88% of the files, but moderation reports and checklists were included in only 75% of cases. The marks captured electronically had been verified at 88% of sites and the assessment scores were recorded, transcribed and converted accurately 81% of the time, in comparison to the 78% in 2018. There was evidence that the syllabus and the DHET NATED ICASS Guidelines 2019 had been used in 75% and 69% of cases respectively. Learner performance for each task had been analysed 50% of the time, versus 44% in 2018. There was thus evidence of an improvement since 2018.

#### **b) Lecturers' subject files**

Subject files containing lesson plans and teaching resources were found at 63% of the sites (this figure was 17% in 2018). There was evidence of additional supporting tasks as required by policy in 44% of these files. In 38% of instances, compared to 6% in 2018, there was evidence that the tasks had been reviewed and in 63% of these files (17% in 2018) the files included minutes of meetings. There was thus

a considerable improvement in the contents of the subject files. At Maluti TVET College, Itemoheleng Campus, the class registers had been well maintained.

The following table reflects other findings concerning the content of the lecturers' subject files at the sites visited:

**Table 21: Content of the lecturers' subject files**

Content of lecturers' subject files	College	Site	Instructional offering
<b>The assigned internal moderator was not a subject matter expert.</b>	Vuselela	Potchefstroom	Building Drawing N3
<b>The college do not institute measures to comply with all prescribed DHET NATED ICASS Guidelines 2019.</b>	Tekmation		Engineering Science N3
<b>The analysis grid was not used: there was no measuring of the scope, mark allocation and conceptual level of test.</b>	Taletso	Lichtenburg	Mathematics N3
<b>The original syllabi were not being used at these sites.</b>	Thibela Technical		Platers' Theory N2
	Gateway City		Water and Waste-Water Treatment Practice N2

### 2.3.10 The assessment tasks

Seventy-five per cent of the sites, 3% more than in 2018, had used previous question papers as tasks and tests. All the sites had covered a substantial amount of the syllabus in the tasks and tests. Eighty-one per cent had ensured that the weighting and spread, where applicable, were appropriate. The mark allocation was correct in 94% of instances. Ninety-four per cent of the tasks contained questions that were in line with the content.

With regard to the cognitive demand, 94% of the sites pitched questions at the right level (78% in 2018), varying the questions in terms of difficulty at 81% of the sites and assessing a variety of knowledge and skills at 94% of the sites. Eighty-one per cent of the question papers comprised a combination of short, medium and extended questions, in comparison with 78% in the previous year. Eighty-eight per cent of the question papers, compared to 72% in 2018, reflected the latest developments in the subject and 81% allowed creative responses where appropriate.

### 2.3.11 Technical aspects

As far as the technical aspects of the tasks were concerned, 75% of the tests, as opposed to 83% in 2018, were neatly typed, contained all the relevant information and had an appropriate time allocation. Fifty per cent of the sites had covered the content correctly and 88% of the tasks were numbered correctly, with 75% containing the date. Although only 81% of the sites included general instructions, these were clear and unambiguous 88% of the time. The language and terminology were appropriate and relevant 94% of the time, compared to 89% in 2018. The marks had been clearly allocated for each question and the marks for the marking guidelines were the same as for the test at 94% of the sites, compared with 83% in 2018.

### 2.3.12 Marking tools

The marking tools were relevant and appropriate at 63% of the sites, compared with 67% in 2018. Ninety-four per cent of the tools (a significant improvement on the 50% of 2018) were clear and neatly typed. At 75% of the sites, the tools allowed for alternative responses and at 81% of the sites,



the marks had been appropriately distributed within questions. Seventy-five per cent of the tools were easy to use and would have facilitated marking.

### 2.3.13 Internal moderation of tasks

Although the quality of internal moderation at the sites visited showed a marked improvement on the previous year, qualitative moderation remained a neglected area as mentioned earlier. Even though an internal moderator's checklist for checking the task was used at 75% of the sites (67% in 2018), in only 50% (61% in 2018) of instances was the standard of this checklist appropriate. This implied that at a number of sites, this was done merely in the name of compliance. Nineteen per cent of the sites, compared to 17% in 2018, provided the lecturer with qualitative feedback about the task. If any recommendations were made, only 6% of lecturers had reacted (22% in 2018).

With regard to the post moderation, 81% of the internal moderators had moderated 10% of the tasks, as required by the ICASS instructions, with 63% of the sample containing the full range of student performance. However, qualitative feedback to the examiner was provided in only 13% of cases. Thirteen per cent of examiners followed up on the recommendations, if any. This still remains an area that requires attention.

The following table reflects other findings from the moderation of tasks at the sites visited:

**Table 2J: Moderation of tasks**

Moderation of tasks	College	Site	Instructional offering
<b>Using past papers verbatim as assessments.</b>	Shakaland Technical		Engineering Science N2
	Northlink	Wingfield	Engineering Drawing N3
	Tekmation		Engineering Science N3
	Orbit	Brits	Mechanotechnology N3
<b>The failure to use the analysis grid when drafting a test had a negative impact on the spread of weightings and the balance of questions. The standard of the paper was affected.</b>	Taletso	Lichtenburg	Mathematics N3

### 2.3.14 Compliance check of additional instructional offerings

As indicated earlier in this report, the external moderators were also requested to do a compliance check on documents pertaining to other instructional offerings at the sites visited. They found that there was often a discrepancy between the numbers registered with the DHET for these instructional offerings and the numbers registered at the colleges at the following sites:

**Table 2K: Numbers enrolled with DHET and registered at the site**

College	Site	Instructional offering	DHET	Mark sheet
Vuselela	Potchefstroom	Mathematics N1	193	195
		Engineering Science N3	1	53
		Industrial Electronics N3	12	39
Nkangala	Middelburg	Mathematics N2	109	71
		Engineering Science N2	14	76
		Engineering Drawing N3	36	35
Northlink	Wingfield	Engineering Science N3	276	91
		Industrial Electronics N3	88	75
Shakaland Technical		Mathematics N2	33	28
		Industrial Electronics N3	2	10
		Engineering Drawing N3	10	4
Tekmation		Mathematics N2	4	4
		Industrial Electronics N3	3	10
		Engineering Drawing N3	16	14
Maluti	Itemoheleng	Mathematics N2	78	117
		Industrial Electronics N3	14	43
		Engineering Drawing N3	27	24
Tshwane South	Pretoria West	Mathematics N2	183	170
		Engineering Science N2	26	38
		Industrial Electronics N3	9	36
College of Cape Town	Gugulethu	Mathematics N3	50	50
		Engineering Science N3	59	59
		Industrial Electronics N3	59	59
Taletso	Lichtenburg	Mathematics N2	18	18
		Engineering Science N3	27	24
		Industrial Electronics N3	1	28
Orbit	Brits	Mathematics N2	79	83
		Engineering Science N3	17	50
		Industrial Electronics N3	35	34
Academy of Business and Computer Studies	Johannesburg	Mathematics N2	211	57
		Industrial Electronics N3	19	19
		Engineering Drawing N3	62	21
Thibela Technical		Mathematics N2	100	180
		Industrial Electronics N3	10	46
		Engineering Drawing N3	2	45
Tshwane City		Mathematics N2	34	68
		Industrial Electronics N3	13	8
		Engineering Drawing N3	9	6

College	Site	Instructional offering	DHET	Mark sheet
Gateway City		Mathematics N2	30	85
		Engineering Science N3	3	30
		Engineering Drawing N3	7	9
Capricorn TVET	Seshego	Engineering Drawing N3	137	20

As is evident from the table, there were major discrepancies in the enrolments at certain sites.

**Please note:**

Eighty-one per cent of the sites had a record of class attendance and 44% had implemented the 80% class attendance rule. There was evidence at all sites that Test 1 and 2 in at least one instructional offering had been performed.

The sites were requested to provide evidence of the marked tests of the additional instructional offerings. The status of these sites with regard to compliance with the ICASS requirements as stated in the DHET ICASS Instructions 2019 is listed in the following table:

**Table 2L: Evidence of one or both tests accompanied by the marksheet**

Site	Instructional offering	Test 1	Test 2	Marksheet available
Potchefstroom	Mathematics N1	Y	Y	Y
	Engineering Science N3	Y	Y	Y
	Industrial Electronics N3	Y	Y	Y
Middelburg	Mathematics N2	Y	Y	Y
	Engineering Science N2	Y	Y	Y
	Engineering Drawing N3	Y	Y	Y
Wingfield	Engineering Science N3	Y	Y	Y
	Industrial Electronics N3	Y	Y	Y
	Engineering Drawing N3	Y	Y	Y
Shakaland Technical	Mathematics N2	Y	Y	Y
	Industrial Electronics N3	Y	Y	Y
	Engineering Drawing N3	Y	Y	Y
Tekmation	Mathematics N2	Y	Y	Y
	Industrial Electronics N3	Y	Y	Y
	Engineering Drawing N3	Y	Y	Y
Itemoheleng	Mathematics N2	Y	Y	Y
	Industrial Electronics N3	Y	Y	Y
	Engineering Drawing N3	Y	Y	Y
Pretoria West	Mathematics N2	Y	Y	Y
	Engineering Science N3	Y	Y	Y
	Industrial Electronics N3	Y	Y	Y

Site	Instructional offering	Test 1	Test 2	Marksheet available
Gugulethu	Mathematics N3	Y	Y	Y
	Engineering Science N3	Y	Y	Y
	Industrial Electronics N3	Y	Y	Y
Lichtenburg	Mathematics N2	Y	Y	Y
	Engineering Science N3	Y	Y	Y
	Industrial Electronics N3	Y	Y	Y
Brits	Mathematics N2	Y	Y	Y
	Engineering Science N3	Y	Y	Y
	Industrial Electronics N3	Y	Y	Y
Academy of Business and Computer Studies	Mathematics N2	Y	Y	Y
	Industrial Electronics N3	N	N	N
	Engineering Drawing N3	N	N	N
Thibela Technical	Mathematics N2	Y	Y	Y
	Industrial Electronics N3	Y	Y	Y
	Engineering Drawing N3	Y	Y	Y
Tshwane City	Mathematics N2	Y	Y	Y
	Industrial Electronics N3	Y	N	N
	Engineering Drawing N3	Y	Y	N
Gateway City	Mathematics N2	Y	N	N
	Engineering Science N3	N	N	Y
	Engineering Drawing N3	Only one of nine candidates	Only one of nine candidates	N
Seshego	Engineering Drawing N3	Y	Y	Y

## 2.4 Areas of Compliance

Small pockets of compliance were observed at some sites as indicated below:

- At the Capricorn TVET College in Seshego Campus, a WhatsApp group is sometimes used to communicate with and assist learners;
- Eighty-eight per cent of the sites visited had an up-to-date college assessment policy;
- The development of tasks had been planned at 81% of the sites;
- Eighty-one per cent of the PoA contained assessment schedules with 94% of the files containing two tests with their marking guidelines;
- All sites had covered a substantial amount of the syllabus in the tasks and tests;
- At Maluti TVET College, Itemoheleng Campus, the class registers were well maintained;
- At the College of Cape Town, Gugulethu Campus, the lecturers demonstrated a good work ethic when it came to ensuring all fundamental processes were completed and all assessments were moderated for all groups. It was also evident that only competent and qualified lecturers were teaching this instructional offering;
- At Taletso TVET College, Lichtenburg Campus, files were neat, well organised and it was easy to find documents in the files; and

- At Orbit TVET College, Brits Campus, the college embarked on a standard common assessment for both test 1 and 2, rotating the setting of these tests among the three Campuses i.e. N1 and N2; N3 and N4; N5 and N6. The examiners of tests were officially appointed.

## **2.5 Areas of Non-compliance**

Unfortunately, there were also a number of concerns raised. These concerns are listed as follows:

- Out of date syllabi;
- Discrepancies in enrolment statistics. The available resources were not always adequate to cope with enrolments;
- Some sites allocated insufficient tuition time, according to the instructional offering's requirements;
- Lecturers who appeared to be unqualified to teach the instructional offering;
- Very few irregularities concerning internal assessments were recorded in the registers;
- Failure to use the analysis grid during the drafting of tests; and
- A lack of qualitative moderation.

## **2.6 Directives for Compliance and Improvement**

The DHET must address the following directives for compliance and improvement to ensure the effective teaching and learning of the Engineering Studies instructional offerings at colleges:

- Enrolments match resources at the sites of teaching and learning;
- Colleges adhere to the ICASS instructions and policy – including sufficient teaching time and the use of analysis grids;
- Internal moderation is of acceptable quality; and
- Internal continuous assessment irregularities are recorded.

## **2.7 Conclusion**

The internal assessments that are conducted at the sites of teaching and learning should reflect the knowledge, skills and aptitudes of the learners. They also serve as preparation for the final examination at the end of the trimester. The assessments should furthermore contribute to developing the learner holistically and preparing the learner for the challenges of the workplace. Some colleges excelled in assessing their students in a valid and fair way. It is however a concern that practices at many colleges were such that students were not being properly prepared for the world of work.

# CHAPTER 3 MONITORING OF THE WRITING OF EXAMINATIONS

## 3.1 Introduction

Umalusi monitored the writing of the Report 190/191 Engineering Studies N2-N3 April 2019 examinations conducted by the Department of Higher Education (DHET).

The purpose of this monitoring was to verify the adherence by the examination centres to the policies for the conduct, administration and management of the examinations.

This chapter reports on the findings from the monitoring of a sample of examination centres from eight provinces between 28 March and 11 April 2019.

## 3.2 Scope and Approach

A sample of 24 examination centres from eight (8) provinces was monitored and reports were compiled based on data collected from verifications, observations and interviews on the conduct, management and administration of examinations. The details of the monitored examination centres are provided in the following table:

**Table 3A: Examination centres monitored during the writing of examinations**

No.	Name and Type of College	Site/Campus	Province	Instructional offering	Date	Candidates registered/ actual number Wrote
1	Advisory Progressive Private	Emalahleni	Mpumalanga	Mathematics N2	28/3/19	105/80
2	Bhekubanzi Business Enterprise Private	Kwadlangezwa	KwaZulu-Natal	Electrotechnology N3	11/4/19	14/12
				Engineering Drawing N2		68/54
3	Central Technical Private	Braamfontein	Gauteng	Mathematics N2	28/3/19	14/12
				Industrial Orientation N2		5/2
				Industrial Orientation N3		15/5
4	Central Technical Private	Cape Town	Western Cape	Industrial Orientation N3	28/3/19	10/6
5	Damelin Private	East London	Eastern Cape	Mathematics N3	2/4/19	6/4
				Engineering Science N2		1/0
6	Growth Path Projects	Middelburg	Mpumalanga	Supervision in Industry N3	10/4/19	11/7
7	Heidelberg Correctional Services	Heidelberg	Gauteng	Mathematics N2	28/3/19	4/2
				Industrial Orientation N2		1/1

No.	Name and Type of College	Site/Campus	Province	Instructional offering	Date	Candidates registered/ actual number Wrote
8	Johannesburg Institute of Engineering Private	Braamfontein	Gauteng	Industrial Electronics N3	29/3/19	16/9
9	Motheo Public	Hillside View	Free State	Building and Civil Technology N3	9/4/19	58/46
				Diesel Trade Theory N3		31/29
10	Orbit Public	Rustenburg	North West	Mechanotechnology N3	4/4/19	72/63
11	Professional Technical Private	Thohoyandou	Limpopo	Electrical Trade Theory N2	8/4/19	15/8
12	Rostec Technical Private	Polokwane	Limpopo	Industrial Electronics N3	29/3/19	50/50
13	Rostec Technical Private	Pretoria	Gauteng	Industrial Organisation and Planning N3	12/4/19	2/0
14	Sakhikamva Private	Mthatha	Eastern Cape	Building Science N3	1/4/19	12/11
				Engineering Science N3		15/10
15	Sandton Technical Private	Pretoria	Gauteng	Industrial Orientation N3	28/3/19	24/2
16	Sedibeng Public	Vereeniging	Gauteng	Mathematics N3	2/4/19	30/30
17	Sharpeville Technical Private	Vereeniging	Gauteng	Mathematics N2	28/3/19	38/21
18	Springfield Private	Klerksdorp	Gauteng	Supervision in Industry N3	10/4/19	90/11
19	Tshwane Institute of Technology Private	Pretoria	Gauteng	Building Drawing N3	5/4/19	8/2
20	Vaal Technical Institute Private	Vereeniging	Gauteng	Industrial Organisation and Planning N3	12/4/19	51/18
21	Varsity Institute of Science and Technology Private	Braamfontein	Gauteng	Mathematics N2	28/3/19	12/11
22	Watersrand Computer and Business Private	Johannesburg	Gauteng	Mathematics N2	28/3/19	24/14
23	Witbank Correctional Services Correctional	Witbank	Mpumalanga	Engineering Drawing N2	11/4/19	5/5
24	Zurel Bros SA Private	Polokwane	Limpopo	Engineering Drawing N3	8/4/19	97/73

### 3.3 Summary of Findings

The findings of the monitoring process are addressed below, according to the criteria in Umalusi's monitoring of the writing of examinations instrument.

Table 3B indicates the general findings on the level of compliance with criteria at the 24 centres monitored by Umalusi.

**Table 3B: Findings at sites monitored by Umalusi monitors**

Criteria	Findings/Challenges	Implicated centres/sites
<b>Preparation for the examination</b>	It was evident that 17 of the examination centres had complied fully with the criteria concerning preparation for the examination. <ul style="list-style-type: none"> <li>The official timetable was made available.</li> <li>The assessment body conducted the state of readiness of the examination centre.</li> <li>All candidates were registered.</li> <li>Adequate room space and appropriate furniture was available.</li> <li>Examination scripts were either collected from the nodal point or couriered to the examination centre.</li> <li>Strong room facilities were available at the examination centres.</li> </ul>	<ul style="list-style-type: none"> <li>Advisor Progressive</li> <li>Central Technical (Braamfontein)</li> <li>Central Technical (Cape Town)</li> <li>Damelin (East London)</li> <li>Hillside View</li> <li>Johannesburg Institute of Engineering</li> <li>Professional Technical</li> <li>Rostec Technical (Pretoria)</li> <li>Rostec Technical (Polokwane)</li> <li>Rustenburg</li> <li>Sakhikamva</li> <li>Sandton Technical</li> <li>Sharpeville Technical</li> <li>Varsity Institute of Science and Technology</li> <li>Watersrand Computer and Business College</li> <li>Witbank Correctional Services</li> <li>Zurel Bros SA</li> </ul>
	<ul style="list-style-type: none"> <li>One examination centre did not have the appropriate drawing boards for Engineering Drawing.</li> </ul>	<ul style="list-style-type: none"> <li>Bhekubanzi Business Enterprise</li> </ul>
	<ul style="list-style-type: none"> <li>At four examination centres, the lighting was poor and student seating was cramped.</li> </ul>	<ul style="list-style-type: none"> <li>Growth Path Projects</li> <li>Tshwane Institute of Technology</li> <li>Springfield (Klerksdorp)</li> <li>Vaal Technical Institute</li> </ul>
	<ul style="list-style-type: none"> <li>There was no evidence that the assessment body had conducted the state of readiness at one examination centre</li> </ul>	<ul style="list-style-type: none"> <li>Heidelberg Correctional Services</li> </ul>
	<ul style="list-style-type: none"> <li>At two examination centres, the noise level was very high.</li> </ul>	<ul style="list-style-type: none"> <li>Vereeniging</li> <li>Tshwane Institute of Technology</li> </ul>



Criteria	Findings/Challenges	Implicated centres/sites
<b>Invigilators and their training</b>	Fourteen of the 24 monitored centres complied fully with the criteria regarding invigilators and their training. <ul style="list-style-type: none"> <li>The appointment letters of the chief invigilators and invigilators were available.</li> <li>The chief invigilators attended DHET training.</li> <li>Evidence of invigilator training was made available.</li> </ul>	<ul style="list-style-type: none"> <li>Advisor Progressive</li> <li>Bhekubanzi Business Enterprise</li> <li>Central Technical (Braamfontein)</li> <li>Central Technical (Cape Town)</li> <li>Heidelberg Correctional Services</li> <li>Johannesburg Institute of Engineering</li> <li>Rostec Technical</li> <li>Sakhikamva</li> <li>Sandton Technical</li> <li>Vereeniging</li> <li>Springfield (Klerksdorp)</li> <li>Varsity Institute of Science and Technology</li> <li>Watersrand Computer and Business College</li> <li>Witbank Correctional Services</li> </ul>
	<ul style="list-style-type: none"> <li>Six examination centres could not provide appointment letters for the chief invigilators.</li> </ul>	<ul style="list-style-type: none"> <li>Growth Path Projects</li> <li>Professional Technical</li> <li>Rostec Technical (Pretoria)</li> <li>Rustenburg</li> <li>Tshwane Institute of Technology</li> <li>Zurel Bros SA</li> </ul>
	<ul style="list-style-type: none"> <li>At three examination centres, there was no record that the chief invigilator had been trained by the assessment body.</li> </ul>	<ul style="list-style-type: none"> <li>Growth Path Projects</li> <li>Rustenburg</li> <li>Sharpeville Technical</li> </ul>
	<ul style="list-style-type: none"> <li>There was no record of training of invigilators at one examination centre.</li> </ul>	<ul style="list-style-type: none"> <li>Damelin (East London)</li> <li>Hillside View</li> </ul>
<b>Preparations for writing of examinations</b>	Only 17 of the monitored centres complied fully with the criteria for the preparation for writing and the examination venues. <ul style="list-style-type: none"> <li>The identity documents and examination permits were checked at the door.</li> <li>Invigilators were punctual and vigilant at all times.</li> <li>Candidates sat according to the seating plan.</li> <li>The examination files contained all the relevant documents.</li> </ul>	<ul style="list-style-type: none"> <li>Advisor Progressive</li> <li>Central Technical (Braamfontein)</li> <li>Central Technical (Cape Town)</li> <li>Damelin (East London)</li> <li>Heidelberg Correctional Services</li> <li>Hillside View</li> <li>Johannesburg Institute of Engineering</li> <li>Rostec Technical (Pretoria)</li> <li>Rustenburg</li> <li>Sakhikamva</li> <li>Sandton Technical</li> <li>Vereeniging</li> <li>Tshwane Institute of Technology</li> <li>Varsity Institute of Science and Technology</li> <li>Watersrand Computer and Business College</li> <li>Witbank Correctional Services</li> <li>Zurel Bros SA</li> </ul>
	There was no record of a seating plan at three monitored colleges.	<ul style="list-style-type: none"> <li>Bhekubanzi Business Enterprise</li> <li>Springfield (Klerksdorp)</li> <li>Vaal Technical Institute</li> </ul>
	Six monitored colleges presented unstructured examination files.	<ul style="list-style-type: none"> <li>Bhekubanzi Business Enterprise</li> <li>Growth Path Projects</li> <li>Professional Technical</li> <li>Rostec Technical (Polokwane)</li> <li>Sharpeville Technical</li> <li>Vaal Technical Institute</li> </ul>

Criteria	Findings/Challenges	Implicated centres/sites
<b>Preparations for writing of examinations</b>	One college had no invigilator timetable.	<ul style="list-style-type: none"> <li>Professional Technical</li> </ul>
	One college did not announce to candidates that cell phones were not allowed in the examination room.	<ul style="list-style-type: none"> <li>Growth Path Projects</li> </ul>
<b>Time management</b>	<p>Of the 24 examination centres monitored, 17 complied fully with the management of time for all the writing processes.</p> <ul style="list-style-type: none"> <li>All candidates were punctual.</li> <li>Candidates signed the attendance register.</li> <li>The question papers were distributed in good time.</li> <li>The invigilators checked the question paper for technical accuracy.</li> </ul>	<ul style="list-style-type: none"> <li>Advisor Progressive</li> <li>Central Technical (Braamfontein)</li> <li>Central Technical (Cape Town)</li> <li>Damelin (East London)</li> <li>Heidelberg Correctional Services</li> <li>Hillside View</li> <li>Johannesburg Institute of Engineering</li> <li>Rostec Technical (Pretoria)</li> <li>Rustenburg</li> <li>Sakhikamva</li> <li>Sandton Technical</li> <li>Sharpeville Technical</li> <li>Tshwane Institute of Technology</li> <li>Varsity Institute of Science and Technology</li> <li>Watersrand Computer and Business College</li> <li>Witbank Correctional Services</li> <li>Zurel Bros SA</li> </ul>
	<ul style="list-style-type: none"> <li>The invigilator did not check the technical accuracy of the question paper.</li> </ul>	<ul style="list-style-type: none"> <li>Bhekubanzi Business Enterprise</li> <li>Growth Path Projects</li> <li>Professional Technical</li> <li>Rostec Technical (Polokwane)</li> <li>Springfield (Klerksdorp)</li> <li>Vaal Technical Institute</li> </ul>
	At two colleges candidates were not given any reading time.	<ul style="list-style-type: none"> <li>Professional Technical</li> <li>Rostec Technical (Polokwane)</li> </ul>
	At one centre, time was not managed effectively.	<ul style="list-style-type: none"> <li>Growth Path Projects</li> </ul>
<b>Activities during writing</b>	<p>This segment of the examination process was conducted competently and 20 centres complied fully.</p> <ul style="list-style-type: none"> <li>There were no unauthorised persons in the examination rooms.</li> <li>No candidates were allowed to leave in the last 15 minutes of the examination session.</li> <li>Invigilators were vigilant and focused at all times.</li> <li>There were no errata on the question papers.</li> </ul>	<ul style="list-style-type: none"> <li>Advisor Progressive</li> <li>Bhekubanzi Business Enterprise</li> <li>Central Technical (Braamfontein)</li> <li>Central Technical (Cape Town)</li> <li>Damelin (East London)</li> <li>Heidelberg Correctional Services</li> <li>Johannesburg Institute of Engineering</li> <li>Professional Technical</li> <li>Rostec Technical (Pretoria)</li> <li>Rustenburg</li> <li>Sakhikamva</li> <li>Sandton Technical</li> <li>Sharpeville Technical</li> <li>Springfield (Klerksdorp)</li> <li>Tshwane Institute of Technology</li> <li>Vaal Technical Institute</li> <li>Varsity Institute of Science and Technology</li> <li>Watersrand Computer and Business college</li> <li>Witbank Correctional Services</li> <li>Zurel Bros SA</li> </ul>

Criteria	Findings/Challenges	Implicated centres/sites
<b>Activities during writing</b>	At two examination centres, candidates were not accompanied by invigilators when they went to the toilet.	<ul style="list-style-type: none"> <li>• Growth Path Projects</li> <li>• Rostec Technical (Polokwane)</li> </ul>
	At one college, a student was caught trying to access the internet on his cell phone.	<ul style="list-style-type: none"> <li>• Vereeniging</li> </ul>
	There were candidates who were found with cell phones and one with scribbled notes.	<ul style="list-style-type: none"> <li>• Hillside View</li> </ul>
<b>Packaging and transmission of scripts after writing</b>	<p>Nineteen of the monitored centres were found to have complied fully with the packing and transport of scripts criteria.</p> <ul style="list-style-type: none"> <li>• All scripts were counted and checked against the attendance register.</li> <li>• No unauthorised person was present whilst scripts were counted and packed.</li> <li>• All scripts were sealed in the official satchel provided by the assessment body.</li> <li>• Scripts were sealed in the presence of the Umalusi monitors.</li> </ul>	<ul style="list-style-type: none"> <li>• Bhekubanzi Business Enterprise</li> <li>• Central Technical (Braamfontein)</li> <li>• Central Technical (Cape Town)</li> <li>• Damelin (East London)</li> <li>• Growth Path Projects</li> <li>• Heidelberg Correctional Services</li> <li>• Hillside View</li> <li>• Johannesburg Institute of Engineering</li> <li>• Professional Technical</li> <li>• Rostec Technical (Pretoria)</li> <li>• Rostec Technical (Polokwane)</li> <li>• Sakhikamva</li> <li>• Sandton Technical</li> <li>• Vereeniging</li> <li>• Springfield (Klerksdorp)</li> <li>• Tshwane Institute of Technology</li> <li>• Varsity Institute of Science and Technology</li> <li>• Watersrand Computer and Business College</li> <li>• Witbank Correctional Services</li> </ul>
	At five examination centres, the chief invigilators failed to complete the daily situational report.	<ul style="list-style-type: none"> <li>• Advisor Progressive</li> <li>• Rustenburg</li> <li>• Sharpeville Technical</li> <li>• Vaal Technical Institute</li> <li>• Zurel Bros SA</li> </ul>
<b>Monitoring by the assessment body</b>	There was no evidence of monitoring by the assessment body at the time of Umalusi's visits.	All 24 centres monitored.

### 3.4 Irregularities Identified by Umalusi Monitors

The monitors highlighted the following irregularities:

- Candidates were caught with cell phones; one candidate was trying to access the internet on his cell phone.
- One candidate was found with notes.

### 3.5 Areas of Compliance

Table 3B above indicates that the writing process of the examination was well managed. There was a high level of observance of almost all the criteria. The following areas of compliance were observed:

- The official timetables were made available;
- The assessment body conducted the state of readiness of the examination centres;
- All candidates were registered; and
- Adequate space and appropriate furniture was available.

### **3.6 Areas of Non-compliance**

The following areas of non-compliance were observed:

- Poor lighting in the examination rooms;
- High noise levels at two centres;
- The technical accuracy of question papers was not checked at six centres;
- There were no seating plans displayed at three centres;
- Ten minutes' reading time was not observed at two centres; and
- The evidence of the training of chief invigilators and/or invigilators was not available at five centres.

### **3.7 Directives for Compliance and Improvement**

The DHET must ensure that:

- They strengthen the chief invigilator and invigilators training.

### **3.8 Conclusion**

Evidence presented in this report indicates that minor incidents of failure to comply with policy were observed at some of the monitored centres. There were a few sites at which a number of areas of non-compliance were observed and the conduct, administration and management of examinations at these sites should be closely monitored during the August 2019 examinations.

# CHAPTER 4 MONITORING OF THE MARKING OF EXAMINATIONS

## 4.1 Introduction

Umalusi verified the systems in place at the marking centres for the April 2019 NATED Report 190/191 examinations conducted by the Department of Higher Education and Training (DHET) on 23 April 2019.

The marking model followed by the DHET for the April 2019 examinations stipulated decentralised (provincial) marking for most N2 and centralised (national) marking for most N3 instructional offerings.

The purpose of monitoring was to determine whether marking undertaken by the DHET had been conducted in accordance with the policies and marking instructions issued by the assessment body.

## 4.2 Scope and Approach

The marking of the April 2019 Report 190/191: Engineering Studies N2-N3 was conducted at eight marking centres. Umalusi monitored two marking venues to verify the DHET marking processes.

Data used to compile this report were gathered from the on-site monitoring of the marking centres and from interviews and observations conducted by Umalusi, using an instrument designed for this purpose.

Table 4A below lists the dates on which the marking centres were visited, the centre names and the province in which they are situated.

**Table 4A: Marking centres monitored by Umalusi**

	Province	Marking centre	Date
1	Mpumalanga	Mpondozankomo Campus	23/04/2019
2	Gauteng	Pretoria West Campus	23/04/2019

## 4.3 Summary of Findings

Table 4B below reflects Umalusi monitors' observations on their visits to the marking venues.

**Table 4B: Summary of the findings**

Criteria	Findings
<b>Preparation and planning for marking</b>	<p>Marking centres were in possession of the marking management plan. Marking centres kept registers for all the instructional offerings being marked. All marking personnel arrived as per plan and the marking was conducted according to a staggered plan, from 6–7 April and 13–14 April, with combined marking starting from 17 April 2019. A comprehensive list of all chief markers, internal moderators, markers and examination assistants was available at both centres.</p> <p>Marking commenced daily at 07:00 and ended at 19:00. The DHET national office sent the question papers and marking guidelines via email and these were received on time at the marking centres.</p> <p>Marking personnel were trained on the first day by the centre management.</p>

Criteria	Findings
<b>Marking centre resources</b>	<p>Marking centres and rooms accommodated the number of markers and instructional offerings marked at the centres quite adequately. Communication infrastructure was excellent. All furniture required for marking was available at the centres. Control rooms were big enough to accommodate all scripts marked at the venue.</p> <p>All Occupational Health and Safety requirements were complied with.</p> <p>Accommodation was not provided and markers were required to make their own arrangements.</p>
<b>Security measures provided</b>	<p>Security guards were present at the entrance to the marking centre and marking rooms to control access. Security personnel accompanied the examination assistants when scripts were taken from the script control room to the marking venue and vice versa.</p> <p>All visitors were escorted to the marking centre manager for verification. All authorised personnel were issued with identification cards.</p> <p>All scripts from the nodal points were transported to the relevant marking centres by courier service. On receipt of scripts, the number of scripts was verified against the control register and mark sheets were scanned. Progress with the marking i.e. numbers of scripts marked and still to be marked were tallied on a daily basis by the examination assistants.</p>
<b>Handling of irregularities</b>	<p>The identification and handling of examination irregularities was discussed by the marking centre management team during the training session and also forms part of the training manual. The chief markers and internal moderators then discussed the procedures with markers during the marking guideline discussions.</p> <p>The process of identifying and handling irregularities was uniform as per national guidelines. A marker identifying an irregularity discussed it immediately with the chief marker. The chief marker, with the help of the internal moderator, evaluated the validity of the irregularity. If there was substantive evidence, the matter was escalated to the marking centre manager and the irregularity committee. The irregularity committee forwarded a report together with all the evidence, such as the candidate's script, the irregularity report, seating plan and a copy of the mark sheet, and the minutes of deliberations concerning the irregularity to the DHET. The marking centre kept an irregularity file at the centre, although no irregularities had been reported at the time of monitoring.</p> <p>Mpondozankomo marking centre did not have an established strategy to deal with irregularities or measures to deal with missing scripts.</p>
<b>Monitoring by assessment body</b>	<p>Umalusi monitors were unable to establish whether monitoring by the assessment body had taken place.</p>

## 4.4 Areas of Compliance

Umalusi observed the following areas of compliance:

- The marking management plans were very detailed;
- Marking venues were well equipped with regard to infrastructure, communication facilities, security and space;
- Comprehensive procedures to deal with irregularities were in place;
- All mark sheets were scanned upon receipt for security and control purposes;
- Adequate security measures had been taken;
- The flow of scripts was strictly monitored; and
- Both marking centres had adequate facilities and complied with the minimum Occupational Health and Safety requirements.

## **4.5 Areas of Non-compliance**

Umalusi raised the following concerns:

- Mpondozankomo marking centre had no established structure to deal with irregularities; and
- No measures had been taken to deal with missing scripts.

## **4.6 Directives for Compliance and Improvement**

The assessment body must ensure the following:

- Marking venues should establish structured irregularity committees; and
- Clear measures to deal with missing scripts should be established.

## **4.7 Conclusion**

The marking centres were well organised and activities were executed according to the marking management plan. Marking personnel performed their duties in a professional manner. The assessment body should note the directives provided in the report to enhance the good practices that are mentioned in this report.

# CHAPTER 5 STANDARDISATION OF MARKING GUIDELINES

---

## 5.1 Introduction

Umalusi moderators attend the standardisation and approval of the final marking guidelines in preparation for the marking process to ensure that markers uphold appropriate standards and maintain the required quality of marking.

The purpose of this process is to report on the standard of the marking guidelines and the preparedness of the marking panel. Furthermore, this process aims to ensure that all possible alternative responses are included in the final marking guidelines before they are implemented.

Meetings to finalise the N2 marking guidelines were held on three consecutive Saturdays. The marking guidelines for N2 and N3 were finalised by chief markers, internal moderators and markers appointed to the Gauteng marking centres.

Umalusi participates in the finalisation of the marking guidelines to ensure that justice is done and reports on the:

- Preparedness of markers, chief markers and internal moderators for the marking guideline discussions;
- Rigour of marking guideline discussions;
- Conduct of sample marking;
- Consistency and fairness of sample marking;
- Effectiveness and quality of internal moderation of sample marking;
- Allocation of questions to markers.

## 5.2 Scope and Approach

Eight moderators from Umalusi attended a sample of the N3 (four) and N2 (four) marking guideline discussions (as listed below) on 30 March, 6, 13 and 17 April 2019 at the Iqhayiya and Pretoria West marking centres. Seven moderators were sent to Tshwane South TVET College, Pretoria West, and one moderator attended marking guideline discussions in Port Elizabeth at the Iqhayiya Campus.

**Table 5A: N2 marking guideline discussions attended**

No.	Instructional offering	Date	Marking centre
1.	Diesel Trade Theory N2	17 April 2019	Iqhayiya
2.	Industrial Electronics N2	6 April 2019	Pretoria West
3.	Mathematics N2	30 March 2019	
4.	Platers' Theory N2	13 April 2019	



**Table 5B: N3 marking guideline discussions attended**

No.	Instructional offering	Date	Marking centre
1.	Electrical Trade Theory N3	6 April 2019	Pretoria West
2.	Engineering Drawing N3	13 April 2019	
3.	Instrument Trade Theory N3	6 April 2019	
4.	Water- Waste Treatment Practice N3	13 April 2019	

Table 5C indicates the criteria and quality indicators that were used during the evaluation of the marking process for the N2 and N3 instructional offerings.

**Table 5C: Evaluation criteria and quality indicators for marking guideline discussions**

Criterion	Quality indicator
<b>Staff attendance</b>	The appointed marker(s), chief marker and internal moderator attended the marking guideline discussion. All participants arrived on time for the training session.
<b>Appointment of marking staff</b>	The marker, chief marker, and the internal moderator were appointed on time. Marking personnel received their appointment letters before the marking guideline discussions.
<b>External moderation</b>	Recommended changes were made to the question papers and the marking guidelines.
<b>Sample marking</b>	The chief marker or the internal moderator marked a sample of examination scripts before the marking guideline discussions.
<b>Adjustments to the marking guidelines</b>	The chief marker and/or the internal moderator made appropriate adjustments to the marking guidelines before the marking guideline discussions.
<b>Chairperson of the marking guideline discussion meeting</b>	Management of the marking guideline discussion meeting.
<b>Participants' preparedness for the marking guideline discussions</b>	The chief marker, internal moderator and all the markers arrived prepared at the marking guideline discussions.
<b>Adjustments to the marking guidelines during the marking guideline discussions</b>	There were indications of adjustments to the marking guidelines during the marking guideline discussions.
<b>Justification for changes to the marking guidelines</b>	Changes made to the marking guidelines were justified.
<b>Influence of changes to the marking guidelines on the cognitive level of the answers/responses</b>	Signs of whether changes to the marking guidelines influenced the cognitive level of the answers/responses required from candidates.
<b>Role of the external moderator in the marking guideline discussions</b>	Role played by the external moderator during the marking guideline discussions.
<b>Sample marking of examinations scripts</b>	Markers received examination scripts to mark after the marking guideline discussion: <ul style="list-style-type: none"> <li>• Markers marked a copy of the same examination script; and</li> <li>• Markers marked a sample of scripts from a range of examination centres.</li> </ul>
<b>Guidance and/or training during the sample marking</b>	Guidance or training was provided to markers during the sample marking.

Criterion	Quality indicator
<b>Adherence to marking guidelines during sample marking</b>	The marking guidelines were adhered to during the sample marking.
<b>Performance of markers and internal moderators during sample marking</b>	The performance of the markers and internal moderators during sample marking was rated as poor, average, good or excellent.
<b>Measures to address during sample marking</b>	Measures to address inconsistencies in marking or calculation errors identified during the sample marking process.
<b>Adjustments to the marking guidelines</b>	Adjustments were made to the marking guidelines after sample marking.
<b>General conduct of internal moderators, chief markers and markers</b>	Problems experienced with regard to the general conduct of internal moderators, chief markers and markers.
<b>Signing off of the marking guidelines</b>	The external moderator signed off the marking guidelines.
<b>Translated marking guidelines</b>	Measures were in place to ensure that translated marking guidelines were equivalent to the originals.
<b>Fairness of the question paper</b>	Complaints concerning: Questions that were ambiguous. Questions that went beyond the scope of the syllabus. Questions that were above the level of the candidates.
<b>Minutes of marking guideline discussions</b>	Minutes of the marking guideline discussions were submitted to the marking centre manager.
<b>Submission of adjusted marking guidelines</b>	A copy of the adjusted marking guidelines was submitted to the marking centre manager.
<b>Comments and recommendations</b>	Comments and recommendations on the outcome of the marking guideline discussions.

### 5.3 Summary of Findings

Marking guideline discussions for the sampled instructional offerings were attended by the chief markers, internal moderators, markers and the Umalusi external moderators. The external moderators reported that there was enough time for rigorous discussion and the finalisation of the marking guidelines. The markers were trained thoroughly in terms of understanding and knowledge of mark allocation.

#### 5.3.1 Appointment of markers

The markers' appointments were carried over from the 2018 examination cycle. Markers' appointments were confirmed via email or by short message service (sms).

#### 5.3.2 Status of the marking guidelines and amendments

The marking guidelines were generally up to the required standard; however, corrections were made to some answers to the following question papers:

- Electrical Trade Theory N3
- Waste-Water Treatment Practice N3
- Mathematics N2

In other instructional offerings, alternative answers were added to the marking guidelines. The purpose of the discussion was to clarify answers as well as to include more possible answers. The amendments or additions were intended to promote consistency in marking and to accommodate the widest range of correct responses as possible.

### 5.3.3 Training after sample marking

On completion of sample marking, marks were compared and further discussions were held with markers. Questions were discussed, corrections were made and questions that still had issues such as ambiguity or inconsistencies were clarified.

Table 5D presents the findings from the process of standardisation for the marking guidelines, as reported by Umalusi's external moderators.

**Table 5D: Findings from the standardisation of marking guidelines of NATED N2 and N3 instructional offerings**

Evaluation criteria	Findings and challenges	Sampled instructional offerings involved
<b>Attendance absenteeism of participants</b>	All (100%) chief markers of the sampled instructional offerings were present at the marking guideline discussions, compared to 92% in the April 2018 examinations.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
	All (100%) the markers who had been appointed were present, compared to 92% in the April 2018 examinations.  No marker had been appointed for Diesel Trade Theory as there were only a few scripts to be marked.	Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
	All (100%) the internal moderators were present at the marking guideline discussions, compared to 92% in the April 2018 examinations.  There was no internal moderator appointed for Diesel Trade Theory due to few scripts available for marking.	Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
	Some participants for two instructional offerings (25%), were not on time and the marking guideline discussion meetings started without them (this figure was 42% in the April 2018 examinations).	Engineering Drawing N3 Mathematics N2

Evaluation criteria	Findings and challenges	Sampled instructional offerings involved
<b>Appointment of marking staff</b>	All (100%) participants were notified of their appointment before the marking guideline discussions. In only one (25%) instructional offering, the participants did not receive their appointment letters but were notified by short message service (sms). This can be compared to 92% and 50% respectively in the April 2018 examinations.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
<b>Sample marking</b>	In two (25%) instructional offerings the chief markers and internal moderators marked a sample of the scripts before the marking guideline discussions.	Diesel Trade Theory N2 Platers' Theory N2
<b>Adjustments to the marking guidelines</b>	In all instructional offerings, the chief marker and internal moderator made no adjustments to the marking guidelines before the marking guideline discussion. This can be compared to 83% in the April 2018 examinations.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
<b>Participants' preparedness for the marking guideline discussions</b>	All (100%) the participants arrived at the marking guideline discussions with their own marking guidelines prepared.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
<b>Adjustments to the marking guidelines during the marking guideline discussions</b>	In all (100%) instructional offerings, adjustments were made to the marking guidelines during the marking guideline discussions. Adjustments were made to include alternative answers and corrections were made (compared to 75% in the April 2018 examinations).	Diesel Trade Theory N2 Industrial Electronics N2 Mathematics N2 Platers' Theory N2 Electrical Trade Theory N3 Instrument Trade Theory N3 Waste-Water Treatment Practice N3
<b>Justification for changes to the marking guidelines</b>	In all the instructional offerings, the changes made to the marking guidelines were justified. These included clarifications and additional, alternative responses to questions. This was also the case in the April 2018 examinations.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
<b>Influence of changes to the marking guideline on the cognitive level of the answers/responses</b>	In all (100%) the marking guidelines of the sampled instructional offerings the changes made to the marking guidelines had no effect on the cognitive level of the answers/responses to the questions.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3

Evaluation criteria	Findings and challenges	Sampled instructional offerings involved
<b>Role of the external moderator in the marking guideline discussions</b>	The external moderators from all (100%) the Instructional offerings played the role of observer but assisted when clarification was required – It was also the case in the April 2018 examinations.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
<b>Sample marking of examinations scripts</b>	In seven (88%) instructional offerings the markers received scripts to mark after the marking guideline discussion. The markers marked a copy of the same script to determine their consistency in marking. This figure was 92% in the April 2018 examinations.	Diesel Trade Theory N2 Industrial Electronics N2 Mathematics N2 Platers' Theory N2 Electrical Trade Theory N3 Instrument Trade Theory N3 Waste-Water Treatment Practice N3
	In 88% of the instructional offerings the markers received a sample of scripts to mark from a range of examination centres in order to determine whether alternative answers should be added. This figure was 75% in the April 2018 examinations.	Diesel Trade Theory N2 Industrial Electronics N2 Mathematics N2 Platers' Theory N2 Electrical Trade Theory N3 Instrument Trade Theory N3 Waste-Water Treatment Practice N3
<b>Guidance and/or training during the sample marking</b>	In eight (100%) of the instructional offerings for which sample marking took place, there was continuous assistance and interaction between the internal moderators, chief markers and markers to guide markers and monitor consistency of their marking.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
<b>Adherence to marking guidelines during sample marking</b>	All the participants (100%) present at the marking guideline discussion meetings adhered to the marking guidelines as discussed. No inconsistencies were reported. This was also the case in the November 2017 examinations and in the April 2018 examinations.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
<b>Performance of markers and internal moderators during sample marking</b>	The performance of markers of six (75%) instructional offerings was good.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2
	The performance of markers of one (12.5%) instructional offering was average.	Industrial Electronics N2
	Markers' performance was rated excellent in one (12.5%) instructional offering.	Waste-Water Treatment Practice N3

Evaluation criteria	Findings and challenges	Sampled instructional offerings involved
<b>Performance of markers and internal moderators during sample marking</b>	The performance of internal moderation was excellent for five (62.5%) instructional offerings.	Industrial Electronics N2 Mathematics N2 Platers' Theory N2 Engineering Drawing N3 Waste-Water Treatment Practice N3
	The performance of internal moderators was excellent in two (25%) instructional offerings.	Electrical Trade Theory N3 Instrument Trade Theory N3
	In one (12.5%) instructional offering the internal moderation was not done.	Diesel Trade Theory N2
<b>Measures to address inconsistencies in marking or calculation errors during sample marking</b>	Scripts marked during sample marking were moderated by chief markers and/or internal moderators and inconsistencies were discussed with the marker concerned.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
<b>Adjustments to the marking guidelines</b>	No adjustments were made to the marking guidelines after the sample marking in eight (100%) instructional offerings.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
<b>Signing off of the marking guidelines</b>	Marking guidelines for all (100%) sampled instructional offerings were signed-off and submitted to the marking centre manager. In the April 2018 examination this figure was 92%.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
<b>Translated marking guidelines</b>	Translated marking guidelines were not received for any of the sampled instructional offerings.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
<b>Submission of adjusted marking guidelines</b>	The adjusted marking guidelines for all sampled instructional offerings were submitted to the marking centre manager.	Diesel Trade Theory N2 Electrical Trade Theory N3 Engineering Drawing N3 Industrial Electronics N2 Instrument Trade Theory N3 Mathematics N2 Platers' Theory N2 Waste-Water Treatment Practice N3
<b>Comments</b>	Although all markers prepared and submitted their own marking guidelines, some markers were identified who did not take this part of the process seriously.	Engineering Drawing N3

## **5.4 Areas of Compliance**

The following areas of compliance were observed during the marking guideline discussions:

- In all the instructional offerings, the full complement of appointed individuals, that is the internal moderator, chief marker and markers attended the marking guideline discussions; and
- All (100%) the participants arrived at the marking guideline discussions having prepared their own marking guidelines. There were still some markers who did not take this part of the process seriously, however.

## **5.5 Areas of Non-compliance**

Based on the findings from the external moderators' reports, the following areas of concern were noted:

- Sample marking before the marking guideline discussion was neglected. In 25% of the instructional offerings, the internal moderator and/or chief marker had done no sample marking before the marking guideline discussion; and
- Markers for Engineering Drawing N3 and Mathematics N2 arrived late for their marking guideline discussion.

## **5.6 Directives for Compliance and Improvement**

The DHET must ensure that:

- Sample marking of scripts by chief markers and internal moderators takes place before the marking guideline discussions with markers; and
- Markers arrive on time and participate actively in the marking guideline discussions.

## **5.7 Conclusion**

The reappointment of the same markers who had marked the examinations the previous year brought experience to the marking process. These experienced markers were able to pass knowledge and experience on to the novice markers.

A high level of compliance with the criteria for standardisation of the marking guidelines was observed. Nonetheless, sample marking should be given the necessary attention by all subject markers to prevent candidates being disadvantaged during the marking process.



# CHAPTER 6 VERIFICATION OF MARKING

---

## 6.1 Introduction

Eight marking centres were used for the marking of the April 2019 NATED Report 190/191 examinations. Umalusi conducted the verification of the marking at two of these marking centres. During this process, Umalusi verified the standard and quality of marking. During a verification process, Umalusi external moderators are sent to various marking centres in the nine provinces to verify the marking, the moderation and the administration of selected instructional offerings. The primary aim of the verification of marking process is to verify the conduct of the marking process at marking centres with the aim of ensuring consistency and accuracy in marking, and to establish that both marking and internal moderation are conducted according to the agreed and established practices and standards.

Umalusi verified the marking of a sample of NATED Report 190/191 Engineering Studies N2-N3 April 2019 examination scripts from a range of examination centres and provinces.

The purpose of the verification process was to monitor and report on:

- The standard and quality of the marking and internal moderation; and
- The reliability and viability of the systems, processes and procedures as planned and implemented by the marking centres.

## 6.2 Scope and Approach

Umalusi conducted on-site verification of marking from 14 April to 22 April 2019 at marking centres in two provinces. Twelve moderators were sent to verify the marking of a sample of 12 N2 and N3 instructional offerings at Pretoria West (10 instructional offerings) and Thornton (two instructional offerings). Umalusi planned to moderate a sample of 20 scripts per instructional offering, using contracted external moderators. Each moderator verified the marking of an instructional offering at one marking centre.

Verification of marking for the following instructional offerings was conducted:

**Table 6A: Verification of marking**

No.	Instructional offering	Date	Marking centre
1.	Building Science N3	17/04/2019	Pretoria West
2.	Electrotechnology N3	19/04/2019	Pretoria West
3.	Engineering Drawing N3	18/04/2019	Pretoria West
4.	Engineering Science N2	18/04/2019	Pretoria West
5.	Engineering Science N3	22/04/2019	Pretoria West
6.	Instrument Trade Theory N3	14/04/2019	Pretoria West
7.	Mathematics N3	18/04/2019	Pretoria West
8.	Mechanotechnology N3	22/04/2019	Pretoria West



No.	Instructional offering	Date	Marking centre
9.	Motor Trade Theory N2	22/04/2019	Thornton
10.	Plating and Structural Steel Drawing N3	14/04/2019	Pretoria West
11.	Plumbing Theory N2	17/04/2019	Pretoria West
12.	Welders' Theory N2	22/04/2019	Thornton

Moderators were instructed to sample at least 20 scripts from across the provinces and examination centres that had been marked at the specific marking centre. The number of marking centres and the provinces included in the sample per instructional offering are indicated in the table below.

**Table 6B: Verification of marking N2 and N3 instructional offerings, number of provinces and number of sites per province**

Instructional offering	Number of Provinces	Western Cape	Northern Cape	Free State	Eastern Cape	KwaZulu-Natal	Mpumalanga	Limpopo	Gauteng	North West	Province 10*
Building Science N3	9	1	-	1	1	1	1	1	1	1	1
Electrotechnology N3	3	-	-	-	-	-	-	3	3	1	-
Engineering Drawing N3	9	-	1	2	2	2	3	2	3	2	2
Engineering Science N2	2	-	-	-	-	-	-	-	8	2	-
Engineering Science N3	3	-	-	-	-	-	-	-	9	7	4
Instrument Trade Theory N3	6	-	1	-	1	1	3	1	2	-	-
Mathematics N3	3	-	-	-	-	-	-	-	7	5	2
Mechanotechnology N3	9	-	2	2	2	2	2	2	2	2	2
Motor Trade Theory N2	1	15	-	-	-	-	-	-	-	-	-
Plating and Structural Steel Drawing N3	6	2	-	-	-	4	1	3	3	-	5
Plumbing Theory N2	3	-	-	-	-	-	1	1	4	-	-
Welders' Theory N2	1	1	-	-	-	-	-	-	-	-	-

\* Examination centres outside the borders of South Africa

### 6.3 Summary of Findings

The table below captures the most important findings from the 12 sampled instructional offerings as reported by the external moderators.

**Table 6C: Findings – Verification of marking N2 and N3**

Evaluation criteria	Findings and challenges	Instructional offerings
<p><b>Amendments to the marking guidelines</b></p>	<p>Changes were made to the marking guidelines for 42% of the instructional offerings at the marking guideline discussion meetings. This was a decrease of 37% from 79% in April 2018.</p>	<p>Building Science N3 Engineering Science N3 Instrument Trade Theory N3 Mathematics N3 Mechanotechnology N3</p>
	<p>No changes were made to the marking guidelines for 52% of the instructional offerings at the marking guideline discussion meetings.</p>	<p>Electrotechnology N3 Engineering Drawing N3 Engineering Science N2 Motor Trade Theory N2 Plating and Structural Steel Drawing N3 Plumbing Theory N2 Welders' Theory N2</p>
	<p>Additions were made to the marking guidelines for 8% of the instructional offerings during the marking process.</p>	<p>Electrotechnology N3</p>
	<p>No additions were made to the marking guidelines of 92% of the instructional offerings during the marking process.</p>	<p>Building Science N3 Engineering Drawing N3 Engineering Science N2 Engineering Science N3 Instrument Trade Theory N3 Mathematics N3 Mechanotechnology N3 Motor Trade Theory N2 Plating and Structural Steel Drawing N3 Plumbing Theory N2 Welders' Theory N2</p>
<p><b>Availability of answer scripts for marking and moderation</b></p>	<p>Thirty-three percent of the instructional offerings' anticipated examination scripts had been received by the time external moderation took place. This was an improvement of 19% on the 14% of April 2018.</p>	<p>Electrotechnology N3 Motor Trade Theory N2 Plumbing Theory N2 Welders' Theory N2</p>
<p><b>Training for marking</b></p>	<p>It was evident that marking training had been conducted for all the instructional offerings, as in the April 2018 examinations.</p>	<p>All twelve instructional offerings</p>
<p><b>Marking approach</b></p>	<p>A whole script marking approach was used in 17% of the instructional offerings.</p>	<p>Instrument Trade Theory N3 Motor Trade Theory N2</p>
	<p>A marking per question approach was followed in 83% of the instructional offerings, an increase of 4% on the 79% of the April 2018 examinations.</p>	<p>Building Science N3 Electrotechnology N3 Engineering Drawing N3 Engineering Science N2 Engineering Science N3 Mathematics N3 Mechanotechnology N3 Plating and Structural Steel Drawing N3 Plumbing Theory N2 Welders' Theory N2</p>

Evaluation criteria	Findings and challenges	Instructional offerings
<b>Adherence to the marking guidelines</b>	Adherence to marking guidelines was rated as poor in 8% of the instructional offerings, a decline of 8% from the April 2018 examinations.	Mathematics N3
	Adherence to marking guidelines was rated as average in 17% of the instructional offerings.	Engineering Drawing N3 Mechanotechnology N3
	Adherence to marking guidelines was rated as good in 75% of the instructional offerings. This was a slight improvement of 4% on the April 2018 examinations.	Building Science N3 Electrotechnology N3 Engineering Science N2 Engineering Science N3 Instrument Trade Theory N3 Motor Trade Theory N2 Plating and Structural Steel Drawing N3 Plumbing Theory N2 Welders' Theory N2
<b>Standard of marking</b>	The standard of marking was rated as average in 25% of the instructional offerings.	Engineering Drawing N3 Mathematics N3 Mechanotechnology N3
	The standard of marking was rated as good in 75% of the instructional offerings, a drop of 4% from the April 2018 examinations.	Building Science N3 Electrotechnology N3 Engineering Science N2 Engineering Science N3 Instrument Trade Theory N3 Motor Trade Theory N2 Plating and Structural Steel Drawing N3 Plumbing Theory N2 Welders' Theory N2
<b>Administration</b>	The prescribed administrative procedure for mark allocation was followed in all instructional offerings verified, as in the April 2018 examinations.	All twelve instructional offerings
	Marks were indicated per question in all the instructional offerings.	All twelve instructional offerings
	In all the instructional offerings, mistakes were clearly indicated. This was an improvement of 8% compared to the April 2018 examinations.	All twelve instructional offerings
	In 92% of the instructional offerings, marks were transferred correctly to the cover page and mark sheet. This was a slight drop of 1% from the April 2018 examinations.	Building Science N3 Electrotechnology N3 Engineering Science N2 Engineering Science N3 Instrument Trade Theory N3 Mathematics N3 Mechanotechnology N3 Motor Trade Theory N2 Plating and Structural Steel Drawing N3 Plumbing Theory N2 Welders' Theory N2

Evaluation criteria	Findings and challenges	Instructional offerings
<b>Administration</b>	In one (8%) instructional offering, marks had not all been transferred correctly to the cover page and mark sheet.	Engineering Drawing N3
	Mark sheets were correctly completed for all instructional offerings. This was an increase of 7 % from 93% in the April 2018 examinations.	All twelve instructional offerings
	Notes were kept throughout the marking period in all instructional offerings. This was an improvement of 36% from 64% in the April 2018 examinations.	All twelve instructional offerings
	The code/name of the marker was indicated in red ink on the cover page next to the number of the question marked in 92% of the instructional offerings (a drop of 8% from the April 2018 examinations).	Building Science N3 Electrotechnology N3 Engineering Science N2 Engineering Science N3 Instrument Trade Theory N3 Mathematics N3 Mechanotechnology N3 Motor Trade Theory N2 Plating and Structural Steel Drawing N3 Plumbing Theory N2 Welders' Theory N2
	The name of the internal moderator was clearly indicated in 90% of the 10 instructional offerings that were internally moderated, an improvement of 5% from the April 2018 examinations.	Building Science N3 Electrotechnology N3 Engineering Drawing N3 Engineering Science N2 Engineering Science N3 Instrument Trade Theory N3 Mathematics N3 Mechanotechnology N3 Plating and Structural Steel Drawing N3 Plumbing Theory N2
<b>Internal moderation</b>	In the 12 instructional offerings that were verified, two were not internally moderated, as the number of expected scripts was very low, viz. Motor Trade Theory N2 and Welders' Theory N2.  There was evidence of moderation throughout the marking process for all the other 10 instructional offerings.	Building Science N3 Electrotechnology N3 Engineering Drawing N3 Engineering Science N2 Engineering Science N3 Instrument Trade Theory N3 Mathematics N3 Mechanotechnology N3 Plating and Structural Steel Drawing N3 Plumbing Theory N2
	In 90% of the 10 instructional offerings, examination scripts from all the examination centres had been moderated. This was an improvement of 5% on the April 2018 examinations.	Building Science N3 Electrotechnology N3 Engineering Drawing N3 Engineering Science N2 Engineering Science N3 Instrument Trade Theory N3 Mathematics N3 Mechanotechnology N3 Plating and Structural Steel Drawing N3

Evaluation criteria	Findings and challenges	Instructional offerings
<b>Internal moderation</b>	Not all the examination centres were included in the moderation process in one (10%) of the 10 instructional offerings.	Plumbing Theory N2
	The internal moderator moderated all the questions in a script (whole script moderation) in all the 10 instructional offerings, an increase of 23% from the 77% of the April 2018 examinations.	Building Science N3 Electrotechnology N3 Engineering Drawing N3 Engineering Science N2 Engineering Science N3 Instrument Trade Theory N3 Mathematics N3 Mechanotechnology N3 Plating and Structural Steel Drawing N3 Plumbing Theory N2
	The standard of internal moderation was rated as average in one (10%) of the 10 instructional offerings that were moderated.	Mechanotechnology N3
	The standard of internal moderation was rated as good in 90% of the 10 instructional offerings moderated. This was an improvement of 28% on the 62% of the April 2018 examinations.	Building Science N3 Electrotechnology N3 Engineering Drawing N3 Engineering Science N2 Engineering Science N3 Instrument Trade Theory N3 Mathematics N3 Plating and Structural Steel Drawing N3 Plumbing Theory N2
<b>Response to the examination question paper</b>	The candidates' performance was in line with predictions in 75% of the instructional offerings, an improvement of 46% on the 29% of the April 2018 examinations.	Electrotechnology N3 Engineering Science N2 Engineering Science N3 Instrument Trade Theory N3 Mathematics N3 Motor Trade Theory N2 Plating and Structural Steel Drawing N3 Plumbing Theory N2 Welders' Theory N2
	Candidates in 83% of instructional offerings found the question paper fair. (An increase of 33% on the 50% of the April 2018 examinations.)	Electrotechnology N3 Engineering Drawing N3 Engineering Science N2 Engineering Science N3 Instrument Trade Theory N3 Mechanotechnology N3 Motor Trade Theory N2 Plating and Structural Steel Drawing N3 Plumbing Theory N2 Welders' Theory N2
	Candidates in two (17%) instructional offerings found the question paper difficult.	Building Science N3 Mathematics N3

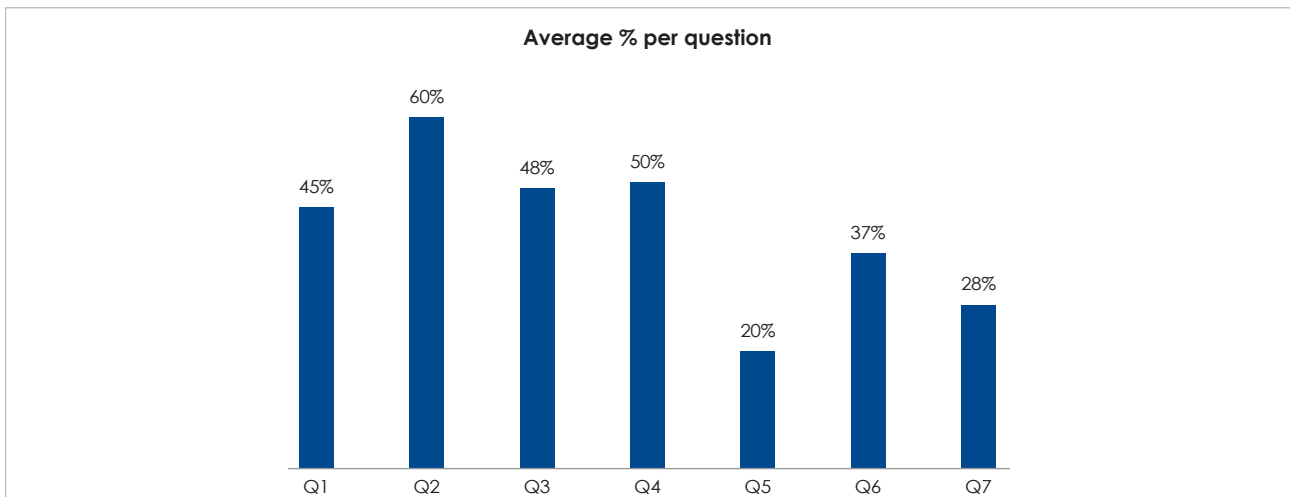
Evaluation criteria	Findings and challenges	Instructional offerings
<b>Prevention and handling of irregularities</b>	Irregularities were reported to the marking centre manager and handled according to established marking practices (67% of instructional offerings). This was an increase of 24% on the 43% of the April 2018 examinations.	Building Science N3 Electrotechnology N3 Engineering Drawing N3 Engineering Science N2 Engineering Science N3 Instrument Trade Theory N3 Mathematics N3 Mechanotechnology N3
	No irregularities had been identified or reported in 33% of the instructional offerings by the time of external moderation.	Motor Trade Theory N2 Plating and Structural Steel Drawing N3 Plumbing Theory N2 Welders' Theory N2
<b>Conduct at the marking centre</b>	Markers for all the instructional offerings were disciplined, professional, punctual and committed. Their cell phones were switched off and the attendance register was signed. This was an improvement of 7% from the April 2018 examinations.	Building Science N3 Electrotechnology N3 Engineering Drawing N3 Engineering Science N2 Engineering Science N3 Instrument Trade Theory N3 Mathematics N3 Mechanotechnology N3 Motor Trade Theory N2 Plating and Structural Steel Drawing N3 Plumbing Theory N2 Welders' Theory N2
<b>Comments on improvement in teaching and learning</b>	From the discussions with the marking personnel it was evident that: <ul style="list-style-type: none"> <li>• The analysis and interpretation of the learner performance per question should be communicated to colleges and lecturers to emphasise the shortcomings of learners. Poor performance per specific questions was highlighted. Lecturers should be able to identify problem areas and take steps to addressing them. These areas of weakness could form part of academic support provided to students;</li> <li>• Theory should be linked to practice. A review of the current curriculum is crucial. Practical components should be included in the curriculum;</li> <li>• Candidates require more time and practice in topics, especially in drawing subjects. This is a practical subject that requires several hours (weeks) of teaching and practice time if students are to develop their drawing skills;</li> </ul>	

Evaluation criteria	Findings and challenges	Instructional offerings
<b>Comments on improvement in teaching and learning</b>	<ul style="list-style-type: none"> <li>Teaching and learning is hampered by the strikes, which take time from teaching and learning. One centre had to withdraw all candidates because there was simply not enough time to teach or learn as a result of strikes;</li> <li>Where learning takes place in a simulated environment that is well equipped with tools and components for demonstration it makes the subject matter realistic for learners who have very little or no exposure to industry. Additional learning material and resources are vital in exposing learners to relevant information; and</li> <li>There is a definite need for intervention from subject advisors.</li> </ul>	

### 6.3.2 Performance of candidates

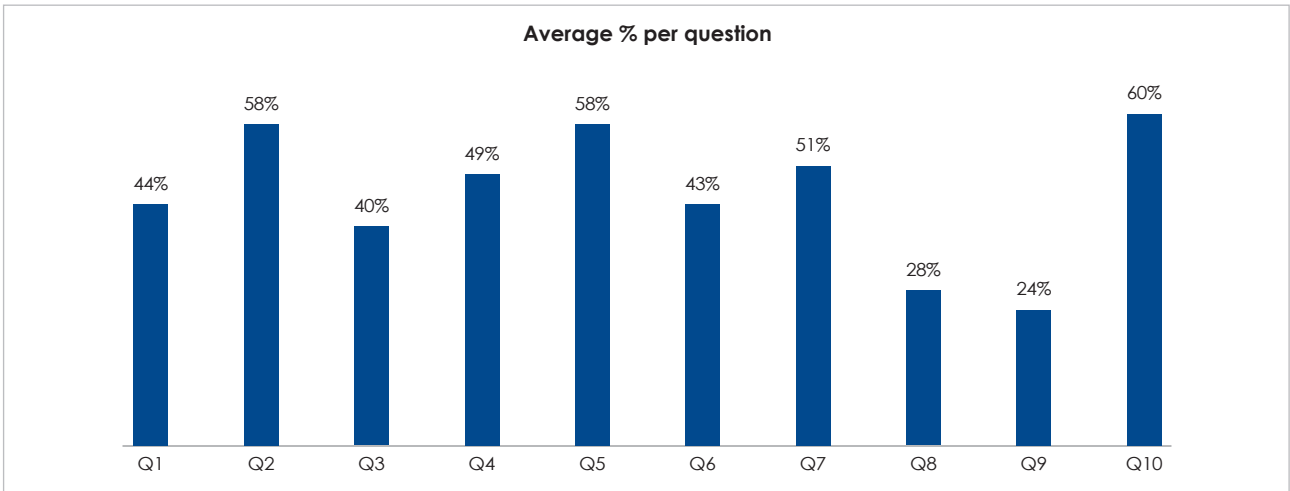
The figures and distribution tables given below show the performance and the mark distribution of candidates, per question per instructional offering. The figures and distribution tables in this section are based on the samples moderated by Umalusi.

#### 6.3.2.1 Building Science N3



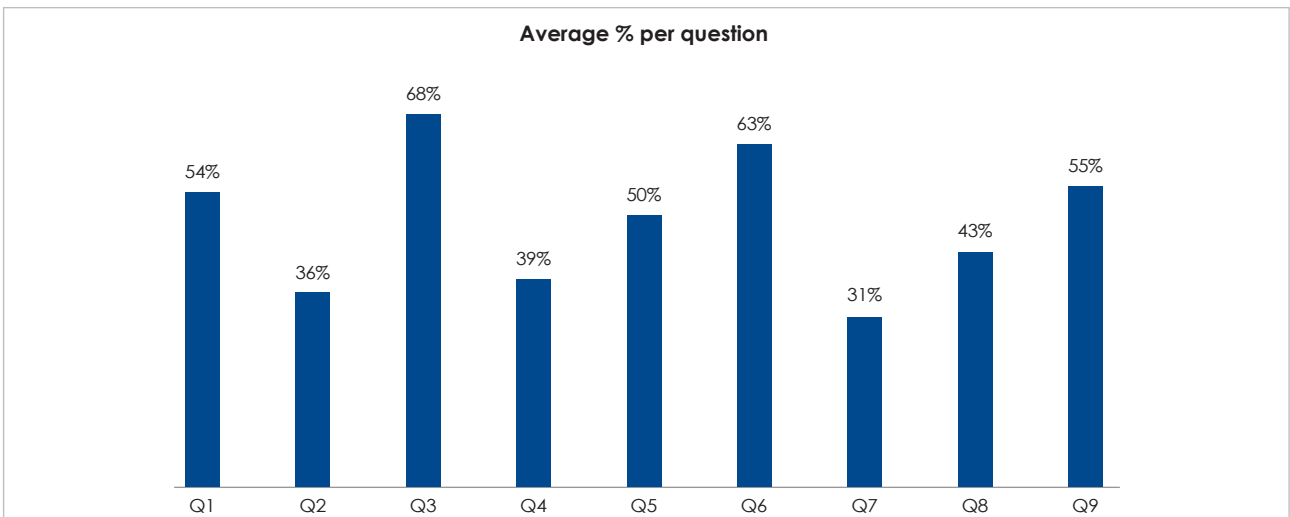
MARK DISTRIBUTION (PERCENTAGE)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
1	2	3	3	3	4	3	1	0	0

### 6.3.2.2 Electrotechnology N3



MARK DISTRIBUTION (PERCENTAGE)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
0	1	4	2	6	2	4	1	0	0

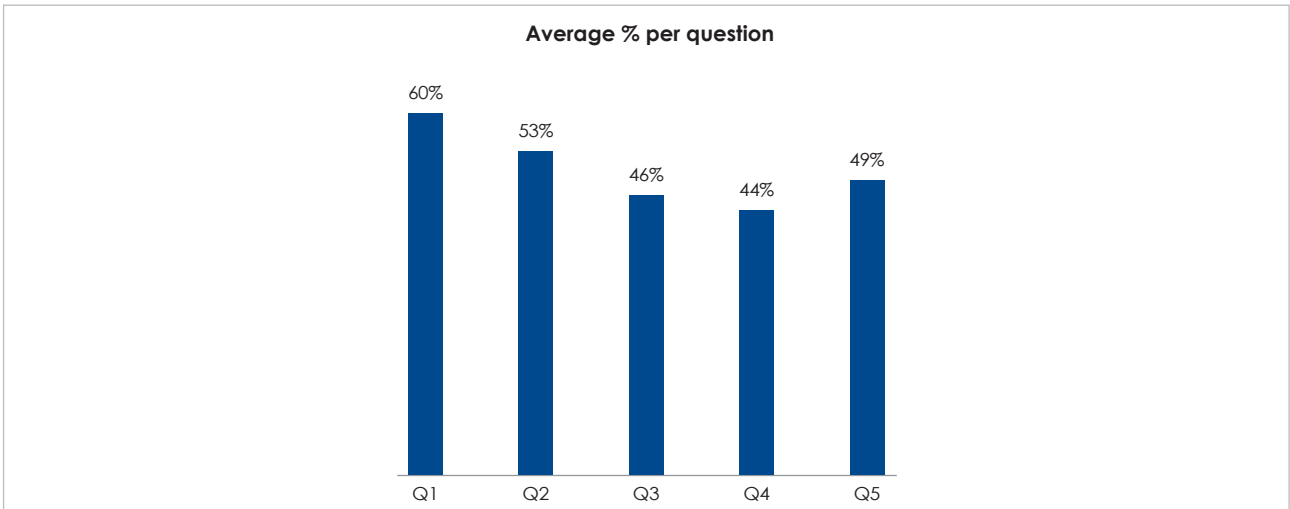
### 6.3.2.3 Engineering Science N2



MARK DISTRIBUTION (PERCENTAGE)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
2	2	2	4	5	3	2	1	0	0

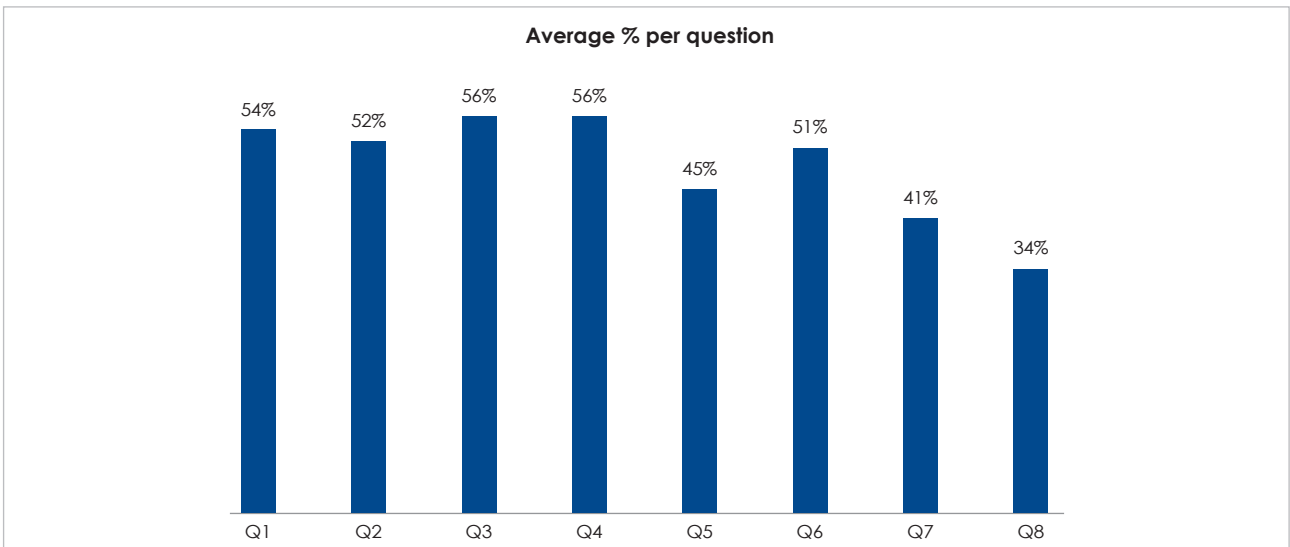


### 6.3.2.4 Engineering Drawing N3



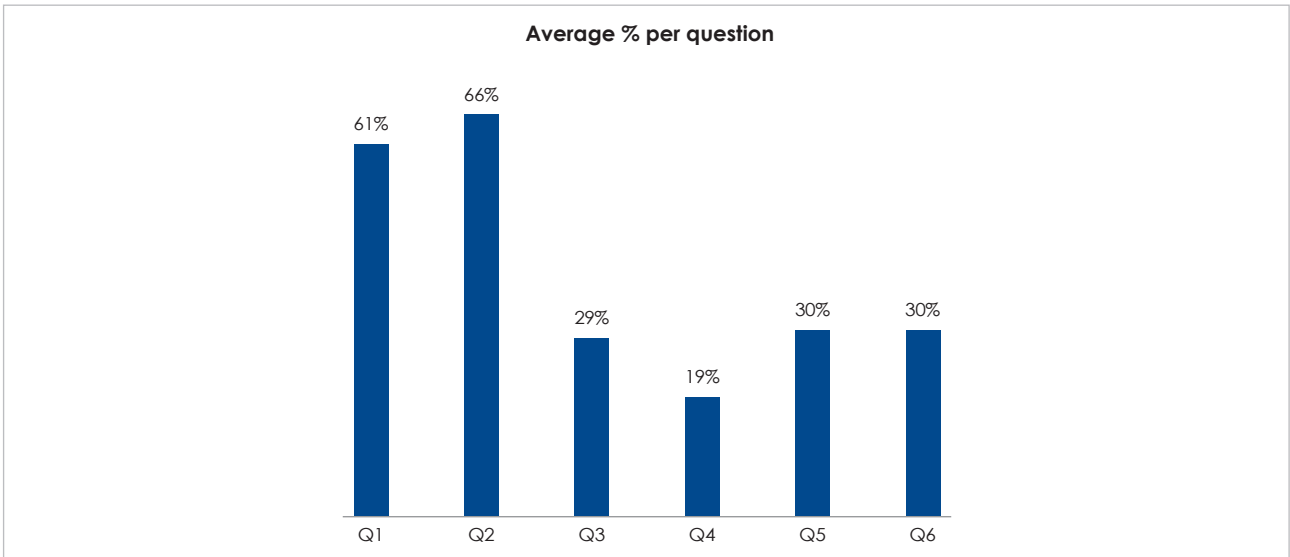
MARK DISTRIBUTION (PERCENTAGE)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
1	1	1	6	4	4	1	1	1	0

### 6.3.2.5 Engineering Science N3



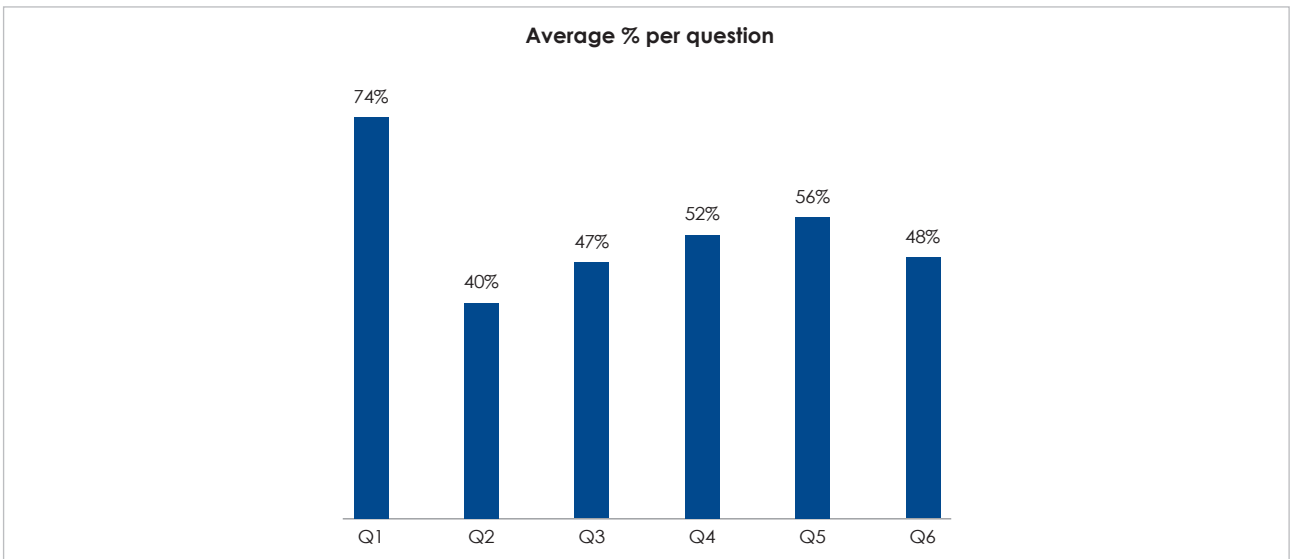
MARK DISTRIBUTION (PERCENTAGE)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
0	1	3	2	4	4	2	2	2	0

### 6.3.2.6 Instrument Trade Theory N3



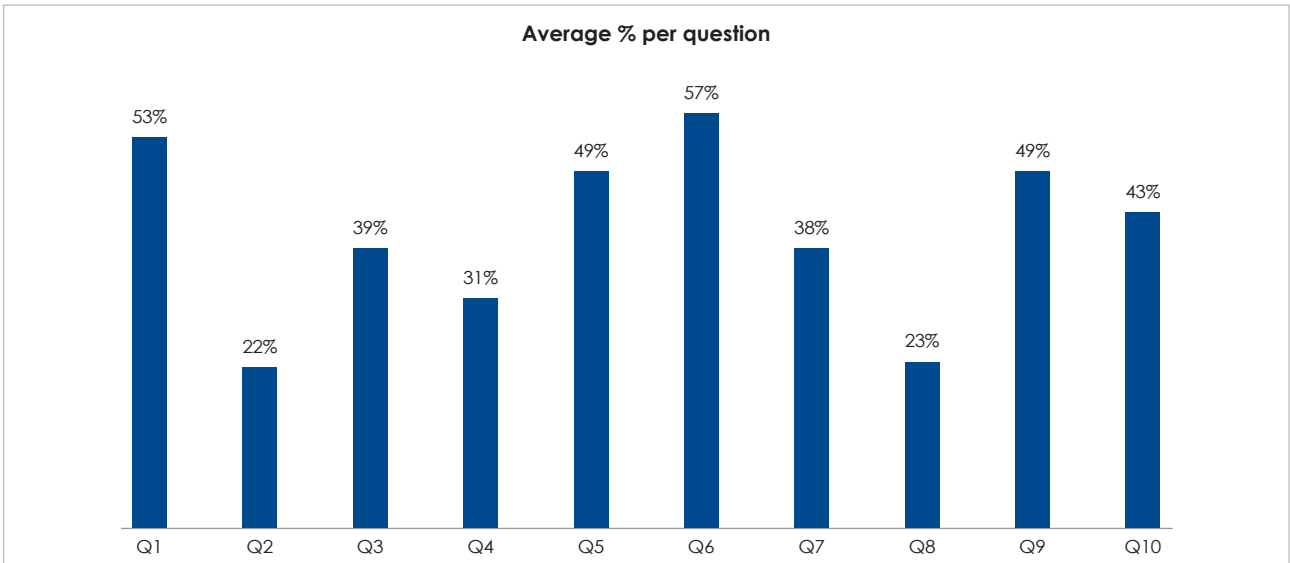
MARK DISTRIBUTION (PERCENTAGE)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
4	4	3	3	5	0	0	1	0	0

### 6.3.2.7 Mathematics N3



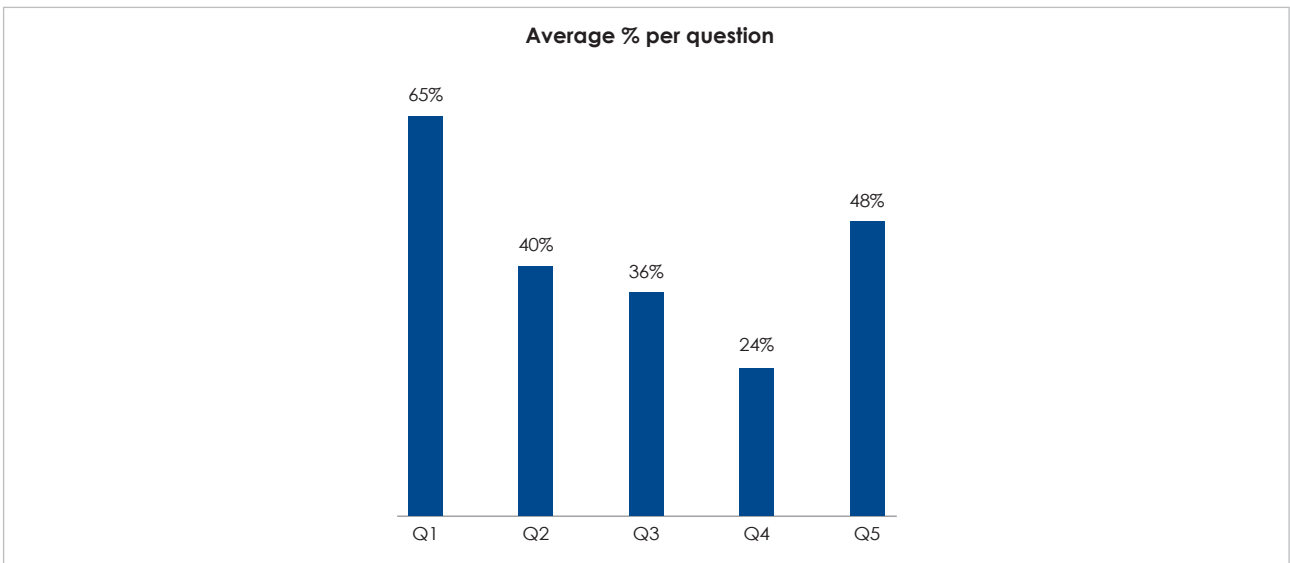
MARK DISTRIBUTION (PERCENTAGE)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
0	0	1	5	3	5	3	1	2	0

### 6.3.2.8 Mechanotechnology N3



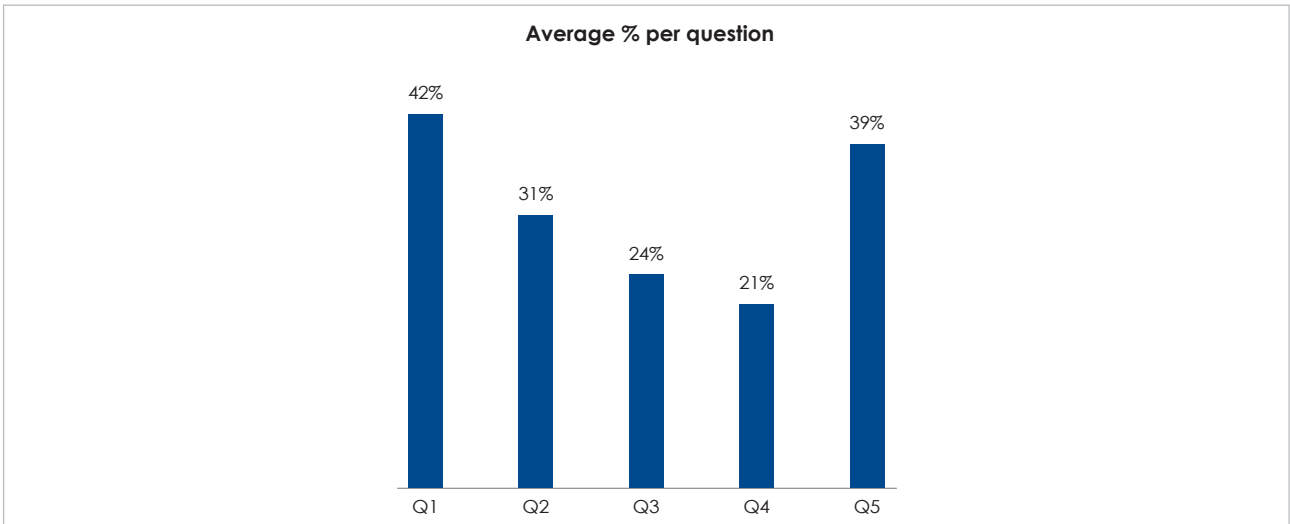
MARK DISTRIBUTION (PERCENTAGE)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
0	1	1	5	10	3	0	0	0	0

### 6.3.2.9 Motor Trade Theory N2



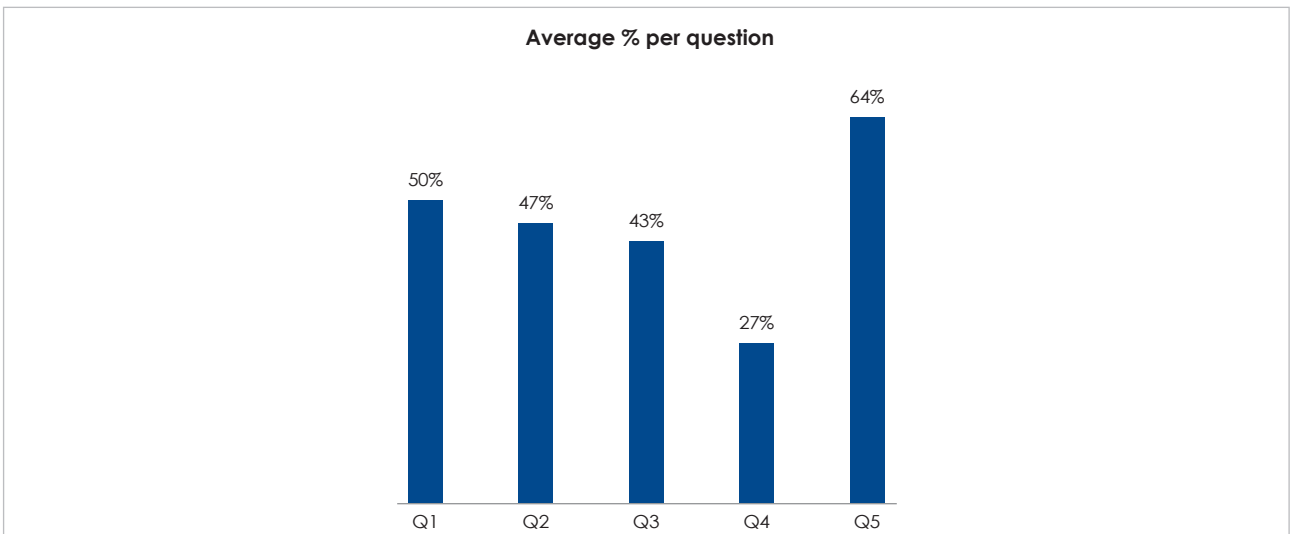
MARK DISTRIBUTION (PERCENTAGE)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
5	1	2	4	4	2	1	1	0	0

### 6.3.2.10 Plating and Structural Steel Drawing N3



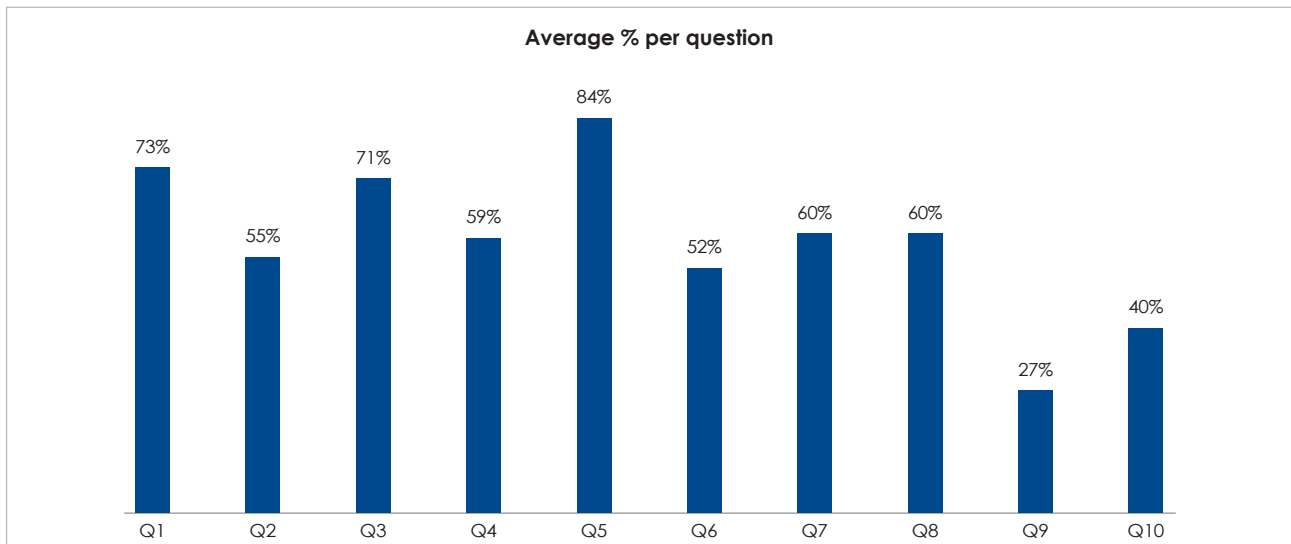
MARK DISTRIBUTION (PERCENTAGE)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
1	2	8	6	3	0	0	0	0	0

### 6.3.2.11 Plumbing Theory N2



MARK DISTRIBUTION (PERCENTAGE)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
0	1	1	6	6	2	2	2	0	0

### 6.3.2.12 Welders' Theory N2



MARK DISTRIBUTION (PERCENTAGE)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
0	0	0	1	4	3	10	2	0	0

## 6.4 Areas of Compliance

- Adherence to marking guidelines was rated as good in 75% of the instructional offerings. This was a slight improvement of 4% from April 2018;
- A marking per question approach was followed in 83% of the instructional offerings, an increase of 4% on the 79% in April 2018;
- Notes were kept throughout the marking period in all the instructional offerings, an improvement of 36% on the 64% in April 2018;
- In 90% of the 10 instructional offerings for which marking was moderated, examination scripts from all the examination centres were moderated. This is an improvement of 5% on April 2018;
- The internal moderator moderated all the questions in a script (whole script moderation) in all the 10 instructional offerings, an increase of 23% on the 77% of April 2018;
- The standard of internal moderation was rated as good in 90% of the 10 moderated instructional offerings, an improvement of 28% on 62% in April 2018;
- The candidates' performance was in line with predictions in 75% of the instructional offerings, an improvement of 46% on the 29% of April 2018;
- Candidates in 83% of instructional offerings found the question paper fair. This was an increase of 33% on the 50% of April 2018; and
- In all of the instructional offerings, markers were disciplined, professional, punctual and committed. They kept their cell phones switched off, and signed the attendance register. This represented an improvement of 7% on April 2018.

## **6.5 Areas of Non-compliance**

The following are cause for concern:

- Only 33% of the instructional offerings' anticipated examination scripts had been received by the time external moderation took place. This is an improvement of 19% on the 14% of April 2018, however; and
- The standard of marking was rated as good in 75% of the instructional offerings, but this is a decline of 4% from April 2018.

## **6.6 Directives for Compliance and Improvement**

The DHET must:

- Ensure timeous delivery of answer scripts to marking centres;
- Implement mechanisms to reduce the number of administrative and technical irregularities; and
- Ensure that the standard of marking, including the accurate completion of mark sheets are continuously improved.

## **6.7 Conclusion**

The findings from the verification of marking at the two marking centres revealed consistency in marking and adherence to the established marking practices in the majority of instructional offerings. The marking personnel at the two marking centres demonstrated professionalism in their administration and management of the marking processes. Umalusi is satisfied that the quality of marking and internal moderation continues to improve.

# CHAPTER 7 STANDARDISATION AND RESULTING

---

## 7.1 Introduction

Standardisation is a process that is informed by evidence presented in the form of qualitative and quantitative reports. Its primary aim is to achieve an optimum degree of uniformity in a given context by considering possible sources of variability other than candidates' ability and knowledge. In general, variability may be a result of the standard of question papers, the quality of marking or other related factors. It is for this reason that examination results are standardised to control their variability from one examination session to the next.

Section 17A (4) of the GENFETQA Act of 2001 as amended in 2008 states that the Council may adjust raw marks during the standardisation process. In broad terms, standardisation involves the verification of subject structures, mark capturing and the computer system used by an assessment body. It includes the development and verification of norms and the production and verification of standardisation booklets in preparation for the standardisation meetings. During standardisation, qualitative input from external moderators, internal moderators, monitoring reports and the principles of standardisation are used to inform decisions. The process is concluded by the approval of mark adjustments per instructional offering, statistical moderation and the resulting process.

## 7.2 Scope and Approach

The Department of Higher Education and Training (DHET) presented 54 instructional offerings for the standardisation of the April 2019 NATED Report 190/191 Engineering Studies N2 and N3 Examination. Umalusi verified the historical averages, the standardisation datasets and electronic booklets. After the standardisation meeting, the approved adjustments were processed and the statistical moderation carried out.

### 7.2.1 Calculation of the historical averages

Historical averages are calculated using the previous six examination sessions. Once this has been done, the DHET submits historical averages or norms to Umalusi for verification, as per policy requirements. Where a distribution contains outliers, the historical average is calculated excluding data from the outlying examination session. Finally, Umalusi takes into account historical averages during the standardisation process.

### 7.2.2 Capturing of marks

Umalusi did not monitor the capturing of marks for the April 2019 examination.

### 7.2.3 Verification of datasets and standardisation booklets

The DHET submitted standardisation datasets and electronic booklets according to the Umalusi management plan. The datasets were verified and approved. Final standardisation booklets were then printed.

## 7.2.4 Pre-standardisation and standardisation

The pre-standardisation and standardisation meetings for the April 2019 NATED Report 190/191 Engineering Studies N2–N3 examinations were held on 2 May 2019. Umalusi was guided by several factors in reaching its standardisation decisions, including qualitative and quantitative information. Qualitative input included reports from Umalusi's external moderators and monitors on the conduct, administration and management of examinations, as well as reports received from the DHET. As far as quantitative information was concerned, Umalusi considered historical averages and pairs analysis, together with standardisation principles.

## 7.2.5 Post-standardisation

Once the standardisation meetings had been concluded, the DHET submitted the final adjustments and candidates' resulting files for verification and final approval.

## 7.3 Findings and Decisions

### 7.3.1 Calculation of historical averages

As explained in the paragraphs above, the historical averages for NATED Report 190/191 Engineering Studies N2–N3 examinations were calculated using the previous six examination sessions. In order to do this, the DHET was required to submit the historical averages for verification in accordance with the Umalusi management plan. Where outliers were found, the principle of exclusion was applied and, as a result, the norm was calculated using five examination sittings. Table 7A indicates instructional offerings with outliers.

**Table 7A: Instructional offerings with outliers**

Level	Code	Instructional offering	Examination sessions excluded
N2	11022192	Carpentry and Roofing Theory	201708
	11041872	Electrical Trade Theory	201704
	15070402	Engineering Science	201704
N3	4090113	Industrial Organisation and Planning	201704
	11040673	Motor Trade Theory	201708

### 7.3.2 Capturing of marks

Umalusi did not conduct the verification of the capturing of marks for the April 2019 NATED N2–N3 examination.

### 7.3.3 Verification of datasets and standardisation booklets

The standardisation datasets and electronic booklets submitted for the April 2019 NATED Report 190/191 Engineering Studies N2–N3 examinations adhered to the requirements as spelled out in the *Requirements and Specifications for Standardisation, Statistical Moderation and Resulting Policy*. The standardisation and electronic booklets were submitted and approved during the first submission.

### 7.3.4 Pre-standardisation and standardisation

Standardisation decisions were informed by qualitative reports from external moderators, examination monitors, chief markers and internal moderators reports.



As already indicated, the DHET presented 54 instructional offerings for the standardisation of the NATED Report 190/191 Engineering Studies N2–N3 Examinations. The decisions for the April 2019 NATED examinations were informed by trends in student performance, the qualitative input, the historical averages and pairs analysis. Eventually, all instructional offerings and instructional offerings that had been presented were standardised.

The impact of the implementation of the new subminimum rule – that students have to obtain a minimum term mark of 40% to qualify to sit the examinations – was not particularly evident in the examinations results. At least 45% of the candidates had a failure rate of more than 60%. Contrary to the expectation of the Assessment Standards Committee (ASC), performance did not seem to have improved in most instructional offerings following the implementation of the subminimum requirement, as the ASC observed a downward trend in performance. The ASC also observed that in Waste-Water Treatment Practice N2, no candidates were observed at 39%, while a large number of candidates was recorded at the 40% mark.

Furthermore the ASC observed that Industrial Organisation N3 had been adjusted upwards for the past five years. This is an issue that the DHET is required to investigate in order to establish any problems that may have occurred. The ASC also observed the poor performance in Mathematics N3 and the extraordinarily good performance in Welders' Theory N2, and stressed the need for investigation into this performance.

Table 7B indicates a summary of the standardisation decisions.

**Table 7B: Standardisation decisions NATED Report 190/191: Engineering Studies N2 and N3**

Description	Total
Number of instructional offerings presented	54
Raw marks accepted	31
Adjustments (mainly upwards)	18
Adjustments (mainly downwards)	5
Number of instructional offerings standardised	54

### 7.3.5 Post standardisation

The N2 and N3 adjustments were approved during the first submission. The statistical moderation and resulting datasets for N2 and N3 were approved during the first and second submissions respectively.

## 7.4 Areas of Compliance

The following areas of compliance were observed:

- The historical averages, the standardisation datasets and electronic booklets were approved at first moderation.
- The DHET submitted the adjustments, statistical moderation and resulting datasets within the stipulated timeframes.

## **7.5 Areas of Non-compliance**

The following areas of concern were raised:

- The lack of improvement in candidates' performance in most instructional offerings, despite the implementation of the subminimum requirement;
- The tampering with marks at 40% by markers in Waste-Water Treatment Practice N2;
- The inclusion of Installation Rules in the standardisation booklets;
- The need for continuous upward adjustments in certain instructional offerings e.g. Industrial Organisation and Planning N3; and
- The misrepresentation of information by the chief marker for Logic Systems N2.

## **7.6 Directives for Compliance and Improvement**

The DHET must ensure:

- That markers adhere strictly to the marking guidelines and refrain from tampering with marks of 40%;
- Teaching and learning interventions are put in place to improve candidates' performance;
- Installation Rule Paper 1 and 2 are not presented in the standardisation booklet submitted to Umalusi; and
- That quality assured chief marker and internal moderator of marking reports are submitted to Umalusi.

## **7.7 Conclusion**

The standardisation process was conducted in a systematic, objective and transparent manner. The decisions taken on whether to accept the raw marks or to perform slight upward or downward adjustments were based on sound educational reasoning. The majority of the DHET proposals corresponded with those of Umalusi.



ISBN 978-1-928445-29-6



37 General Van Ryneveld Street, Persequor Technopark, Pretoria

Tel: +27 12 349 1510 Fax: +27 12 349 1511

E-mail: [Info@umalusi.org.za](mailto:Info@umalusi.org.za) Web: [www.umalusi.org.za](http://www.umalusi.org.za)

 UmalusiSA |  @UmalusiSA

**UMALUSI**



Council for Quality Assurance in  
General and Further Education and Training