

**Report on the Quality Assurance  
of the August 2018 NATED Report  
190/191: Engineering Studies  
N2–N3 Examinations**

UMALUSI



Council for Quality Assurance in  
General and Further Education and Training

REPORT ON THE  
QUALITY ASSURANCE OF THE  
AUGUST 2018 NATED REPORT 190/191  
ENGINEERING STUDIES N2–N3  
EXAMINATIONS

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Council for Quality Assurance in  
General and Further Education and Training

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# INTRODUCTION AND BACKGROUND

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Public Technical and Vocational Education and Training (TVET) colleges, private Further Education and Training (FET) colleges, correctional services centres and some schools offer the NATED Report 190/191: Engineering Studies N2 and N3 trimester programmes. The Department of Higher Education and Training (DHET) administers and manages examinations, which are conducted in April, August and November annually.

The National Qualifications Framework (NQF) Act mandates Umalusi to develop and implement policy and criteria for the assessment of qualifications on its General and Further Education and Training Qualifications Sub-framework (GFETQSF). This is done through the General and Further Education and Training Quality Assurance (GENFETQA) Act (Act No. 58 of 2001, as amended in 2008). This ensures that the NATED Report 191/190: Engineering Studies N2 and N3 examinations that are conducted each trimester are fair, valid and reliable. To perform this function, Umalusi is required to ensure that the quality and standard, of all the assessment practices associated with the NATED Report 191/190: Engineering Studies N2-N3 examinations are maintained and improved.

Umalusi as the Quality Council for General and Further Education and Training:

- Must perform the external moderation of assessment of the different assessment bodies and education institutions;
- May adjust raw marks during the standardisation process; and
- Must, with the concurrence of the Director-General and, after consultation with the relevant Assessment Body or education institution, approve the publication of the results of learners if the Council is satisfied that the Assessment Body or education institution has:
  - conducted the assessment free from any irregularity that may 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 which a learner is required to comply with in order to obtain a certificate; and
  - complied with every other condition determined by the Council.

The purpose of this report is to give feedback on the processes Umalusi followed in the quality assurance of the 2018 August NATED Report 190/191: Engineering Studies N2-N3 examinations. The report also reflects on the findings, areas of non-compliance, areas of compliance and directives for compliance and improvement in the conduct, management and administration of these examinations. 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, for which a brief outline is given below, as implemented by Umalusi:

- Moderation of question papers from a sample of N2 and N3 subjects;
- Monitoring/moderation of internal assessment;
- Monitoring of the writing of examinations;
- Monitoring of the marking of examinations;
- Standardisation of marking guidelines;

- Verification of marking and
- Standardisation of examination results.

All the question papers for the August 2018 NATED Report 190/191: Engineering Studies N2-N3 examinations were set nationally by the DHET. For the August examination, DHET administered a total of 57 instructional offerings for N2 and N3 of which Umalusi sampled 40 for moderation. The DHET distributed question papers via courier to nodal points, from where the surrounding colleges/campuses collected them and had to return the answer scripts within 60 minutes after the stipulated finishing time of the examination session.

For the moderation of internal continuous assessment (ICASS), sixteen instructional offerings were moderated by the external moderators at ten public TVET, and five private FET colleges, as well as one correctional services centre. In addition to one instructional offering moderated, each moderator was also required to gather information on three additional instructional offerings whose names were only disclosed upon arrival at the sites to curb window dressing. To further strengthen the moderation of the ICASS process, four Umalusi officials each visited two colleges to verify the enrolments and progress for Sake Afrikaans N3 and Business English N3. Although candidates write the examination in November and only register in Trimester 3, these two instructional offerings need to be taught throughout the year.

Umalusi monitored 22 centres where the examinations for NATED Report 190/191 Engineering Studies N2-N3 were administered. Interviews were held with the invigilation personnel and observations were made during the writing sessions to gather information about how invigilation was carried out. The examination instructions and forms DHET issued were verified.

Umalusi did not monitor the appointment of marking personnel for this examination as the DHET used the services of the markers appointed for the 2017 examinations. They were also used to mark the April 2018 examinations. Initially the DHET had indicated that new selections would be made for the August and November 2018 examinations but this did not happen.

The marking models followed were decentralised (provincial) marking for N2 and centralised (nationally) for most of the N3 subjects. The N2 marking guidelines were standardised by the marking panels of Gauteng and the chief markers of Mpumalanga. After this was done they were distributed electronically (via Drop Box) to the other provincial marking centres. Umalusi sampled four marking centres to determine their level of preparedness to undertake the marking of the August 2018 NATED Report 190/191 Engineering Studies N2-N3 answer scripts. For marking guidelines standardisation, fourteen moderators attended seven N3 and five N2 marking guideline discussions at two marking centres.

On-site verification of marking happened in eight provinces whereby external moderators verified the marking of 14 N2 and N3 instructional offerings.

As repeatedly reported in the past, the implementation of the NATED Report 190/191: Engineering Studies programmes and examinations are marred by:

- Outdated and underspecified syllabi;
- Lack of requirement for exposure to practical component to develop skills;
- Lack of capacity for effective tuition;
- Candidates who are registered for examinations through other centres (i.e. not at the site of tuition); and
- A high percentage of candidates who do not write the examinations, implying high drop-out rates.

# CHAPTER 1 MODERATION OF QUESTION PAPERS

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## 1.1 Introduction

Umalusi externally moderates question papers that are set nationally by the DHET. Umalusi conducts the external moderation of examination question papers and marking guidelines to ensure that the quality standards are maintained in all examination cycles for the NATED Report 190/191 Engineering Studies N2-N3.

The moderation of question papers is a critical part of the quality assurance process, to ensure that the examination question papers are relatively valid and reliable. The moderation process also ensures that the question papers have been assembled with rigour as well as complying with the Umalusi criteria and the curriculum documents of the assessment bodies.

The outdated and underspecified syllabi present challenges in the moderation of question papers. Thus incorporating questions reflecting the latest development in the industry and education assessment trends is a challenge.

The DHET is expected to appoint examiners and internal moderators with the requisite instructional offering content knowledge for setting and internally moderating the question papers before they are presented to Umalusi for external moderation.

To maintain public confidence in the national examination system, the question papers must be seen to be relatively:

- Fair;
- Reliable;
- Representative of an adequate sample of the curriculum;
- Representative of relevant conceptual domains; and
- Representative of relevant levels of cognitive demand.

The question papers and marking guidelines are expected to be print-ready when submitted to Umalusi for external moderation. It therefore remains the fundamental responsibility of the internal moderator to ensure that the question papers and marking guidelines are of an acceptable standard.

## 1.2 Scope and Approach

Umalusi moderated and approved a total of 40 question papers and marking guidelines for the August 2018 NATED Report 190/191 Engineering Studies N2-N3 examinations. The majority, 69%, of the question papers were submitted at N3 level, while N2 made up 31% of the sample. Umalusi sampled 36 instructional offerings for 2017/2018 and for the current financial year the number increased by four. The table below provides a list of instructional offerings and levels moderated by Umalusi.

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

Instructional offering	Level
Aircraft Maintenance Theory	N3
Armature Winding Theory	N2
Building and Civil Technology	N3
Building Drawing	N2, N3
Building Science	N2, N3
Diesel Trade Theory	N2, N3
Electrical Trade Theory	N2, N3
Electrotechnology	N3
Engineering Drawing	N2, N3
Engineering Science	N2, N3
Fitting and Machining Theory	N2
Industrial Electronics	N2, N3
Industrial Organisation and Planning	N3
Industrial Orientation	N3
Instrument Trade Theory	N3
Logic Systems	N3
Mathematics	N2, N3
Mechanotechnology	N3
Motor Trade Theory	N2, N3
Plant Operation Theory	N2, N3
Platers' Theory	N2
Plating and Structural Steel Drawing	N2, N3
Plumbing Theory	N2
Radio and Television Theory	N3
Refrigeration Trade Theory	N3
Supervision in Industry	N3
Wastewater Treatment Practice	N3
Water and Wastewater Treatment Practice	N2
Water Treatment Practice	N3

For the August examination, DHET administered a total of 57 instructional offerings for N2 and N3. The table below gives an indication on the number of instructional offerings moderated by Umalusi per level and their percentages.

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

Level	Number of instructional offerings offered	Number of instructional offerings moderated	Percentage of instructional offerings moderated
<b>N2</b>	31*	16	52%
<b>N3</b>	26*	24	92%
<b>Total</b>	<b>57*</b>	<b>40</b>	<b>70%</b>

\*according to DHET timetable

Table 1C and 1D indicate enrolments of the instructional offerings not moderated by Umalusi that are included on the DHET timetable for August 2018. It also shows the enrolments for April compared with August and whether the enrolments have increased or decreased.

**Table 1C: Enrolments for N2 instructional offerings not moderated by Umalusi**

Instructional offering	April enrolments	August enrolments	Increase/Decrease in enrolments
Aircraft Maintenance Theory	66	52	-14
Aircraft Metalwork Theory	0	4	-
Bricklaying and Plastering Theory	1 550	2 306*	+756
Carpentry and Roofing Theory	327	524*	-197
Industrial Orientation	52	41	-11
Instrument Trade Theory	730	631*	-99
Logic Systems	293	420*	+127
Motor Bodywork Theory	26	30	+4
Motor Electrical Theory	68	95*	+27
Radio and Television Theory	61	95*	+34
Radio Theory	0	12	-
Refrigeration Trade Theory	53	45	-8
Rigging Theory	197	152*	-45
Toolmaker's Theory	6	16	+10
Welders' Theory	552	345*	+207

**Table 1D: Enrolments for N3 instructional offerings not moderated by Umalusi**

Instructional offering	April enrolments	August enrolments	Increase/Decrease in enrolments
Aircraft Metalwork Theory	0	16	-
Radio Theory	5	5	0

\*Although these had close to 100 enrolments in two and more than 100 enrolments in six instructional offerings, they were not included in the sample. Reasons for non-inclusion are: budget constraints and non-availability of external moderators for particular instructional offerings. The focus was more on N3 instructional offerings because it is certified by Umalusi as an exit level.

The criteria according to which the question papers were moderated covered the following aspects:

- Technical details related to the presentation of the question paper and marking guidelines;
- Internal moderation and its effectiveness in assuring quality;
- Adherence to the relevant syllabus;

- The consistency and appropriateness of mark distribution and allocation according to cognitive levels and question types;
- The relevance and accuracy of the marking guidelines and their facilitation of consistent marking;
- The use of language and its appropriateness to the language level of the candidates;
- The adherence of the question papers to language rules and the use of unbiased content;
- The predictability and/or the degree of innovation in questions;
- The progression between instructional offering levels and paring between standard of the April, August and November question papers and those from previous years; and
- An overall evaluation of the papers by external moderators regarding validity, reliability, fairness and suitability to the level being assessed.

After the initial external moderation, question papers were approved, conditionally approved or rejected, depending on the extent to which they complied with the criteria. The external moderators proposed changes for the improvement of the question papers, if necessary. The external and internal moderators engaged in discussions to improve the standard and quality of the question paper and marking guidelines. Once an agreement was reached, and the changes implemented, the question paper and marking guidelines were returned to DHET for formatting. Finally, question papers and marking guidelines were returned to the external moderator to check the content and technicalities of the paper and to sign the papers off. In cases where a question paper was rejected, the external moderator sent it, the marking guidelines and the report with initial findings to the DHET. The examiner and internal moderator then adjusted the question paper and the marking guidelines, taking into consideration the recommended changes or gaps in the paper, as indicated by the external moderator. The paper was then sent to the moderator again for external moderation.

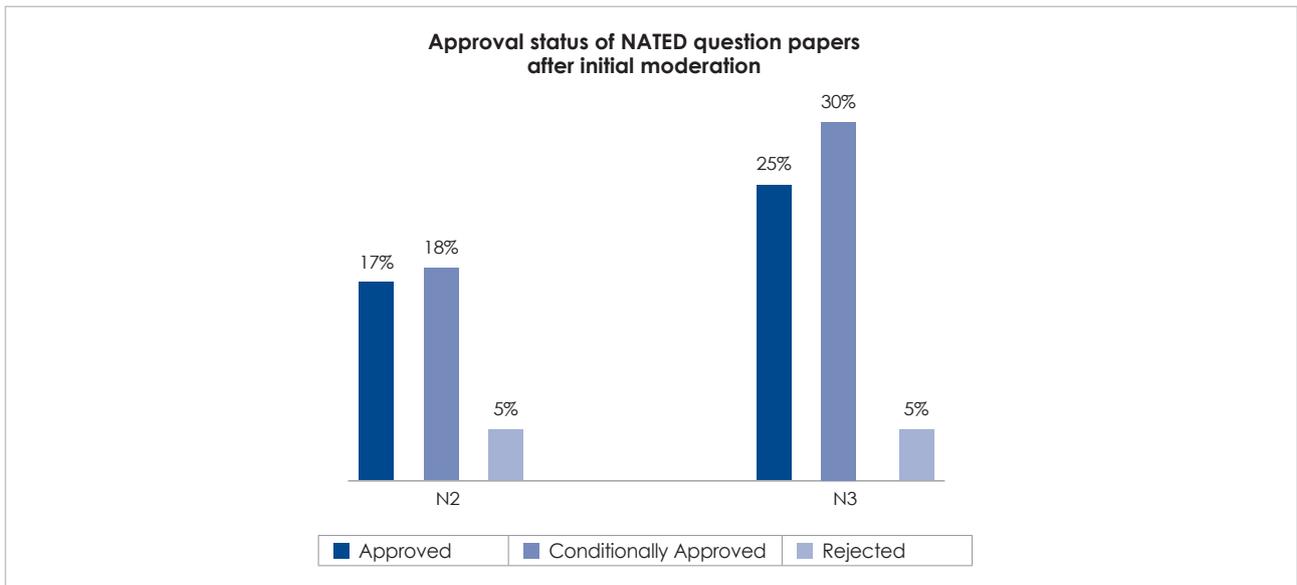
### **1.3 Summary of Findings**

After the initial moderation by the external moderators, 17% of N2 and 25% of N3 question papers, did not need any conceptual changes and these papers were approved. Those conditionally approved that required replacement, rephrasing or restructuring, respectively comprised 25% of the N2 and 30% of the N3 question papers. The remaining 5% for both N2 and N3 were rejected as they either did not relate to their corresponding syllabi or had substantial conceptual problems. These question papers were returned to DHET for resetting.

Engineering Drawing N2 underwent a second moderation by the internal moderator, and the external moderator observed evidence of moderation. However, there were numerous errors and corrections that needed to be made and some figures were taken directly from the textbook. It must be noted that the time it takes for rejected question papers and marking guidelines to be concluded delays the delivery of the approved question papers to DHET.

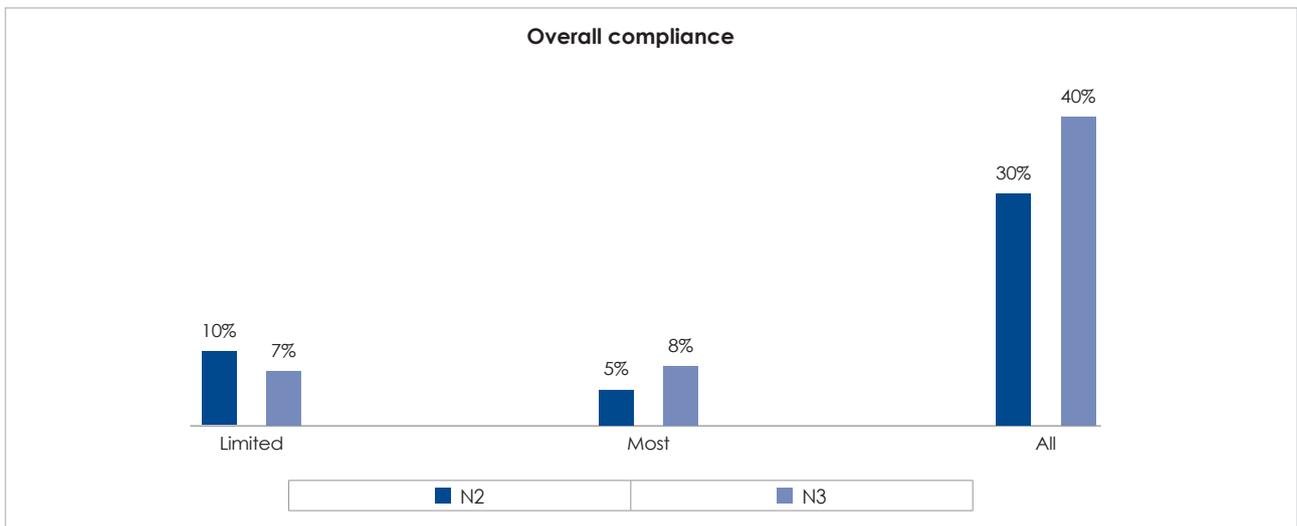
Some instructional offerings do not indicate the weighting of topics therefore it is a challenge to determine the weightings per question.

The following graph provides a summary of the findings of the initial moderation of question papers, as captured in the external moderators' reports.



**Graph 1A: Approval status of NATED Report 190/191 Engineering Studies N2-N3 question papers after initial moderation**

The graph below indicates the analysis of the moderation reports to assess the levels of overall compliance of the question papers and marking guidelines after the initial moderation. The graph illustrates that forty percent of the N3 and only 30% of the N2 question papers and marking guidelines complied with all the criteria used for the moderation of question papers.



**Graph 1B: Overall compliance of NATED Report 190/191 Engineering Studies N2-N3 question papers after initial moderation**

The levels of compliance according to the different criteria varied. Table 1E indicates percentage of compliance of question paper and marking guidelines.

**Table 1E: Percentage compliance of question papers and marking guidelines**

Criteria	Level of compliance per criterion (%)			
	All aspects	Most aspects	Limited aspects	No compliance
Technical quality	45	50	5	0
Internal moderation	27	27	33	13
Content coverage	58	32	10	0
Quality of questions	45	43	12	0
Cognitive skills	45	43	12	0
Marking guidelines	30	52	18	0
Language and bias	75	22	3	0
Predictability	68	15	17	0

Table 1F provides a summary of the findings as captured in the external moderators' reports.

**Table 1F: Findings: Moderation of August 2018 question papers**

Criteria	Findings and challenges
<b>Criterion 1: Technical quality</b>	
<b>Submission of supporting documents</b>	All the question papers received by Umalusi were accompanied by the required supporting documents (it was 100% in 2017 August examination).
<b>Instructions to candidates</b>	The instructions to candidates were not clearly expressed in 5% of the question papers (a decrease from 8% for August examination).
<b>Header and footer</b>	The headers and footers in 3% of the question papers required attention (a decrease from 11% from the previous August examination).
<b>Information on the cover page</b>	Ninety-eight percent of the question papers had relevant information on the cover page i.e. the date of the examination and examination duration (an increase from 92% of the August 2017 examination).
<b>Layout of the question paper</b>	The layout of 5% of the question paper was not user-friendly (compared to 8% of the August 2017 examination).
	The pages of the question paper were not correctly numbered. (5% of the question papers compared to 8% from the August 2017 examination).
	The questions were not correctly numbered in 5% of the question papers.
<b>Font type and size</b>	The standard font was used consistently in 98% of the question papers.
<b>Mark and time allocation</b>	Mark allocations were correctly indicated in 93% of the instructional offerings. (Compared with 92% for the August 2017 examination).
<b>Quality of graphics and illustrations</b>	The external moderators reported on the poor quality of illustrations, figures, graphs and tables in 18 (45%) of the question papers (compared with 33% for August 2017 examination).
<b>Criterion 2: Internal moderation</b>	
<b>Internal moderator reports</b>	There were 11 instructional offerings (27%) in which problems with the internal moderators' reports were reported. The reports were either incomplete or Umalusi did not receive the reports from the DHET.
<b>Quality and standard of internal moderator reports</b>	Eighteen internal moderators' reports (45%) did not meet the required standard and quality (a sharp increase of 20% as compared with August 2017 examination).

Criteria	Findings and challenges
<b>Relevance of the internal moderators' reports</b>	In 17(43%) of the internal moderators' reports, some information was irrelevant or some relevant information had not been included (compared with 22% in August 2017 examination).
<b>Recommendations implementations</b>	There was no evidence that the internal moderators' recommendations had been addressed or implemented in 17 instructional offerings (45%) (Compared with 36% in the August 2017 examination).
<b>Criterion 3: Content coverage</b>	
<b>Coverage of the syllabus</b>	Ninety percent of the question papers covered the syllabus adequately (compared with 86% in the August 2017 examination).
<b>Spread and weighting of the topics</b>	Two N2 and two N3 question papers (10 %) did not meet the criteria for content coverage as far as the prescribed weighting was concerned.
	Four question papers (10 %) did not cover all the topics.
	Twelve percent of the question papers failed to provide questions covering the latest developments in the subjects.
<b>Criterion 4: Types and quality of questions</b>	
<b>Types of questions</b>	Eighty-eight percent of the question papers included a variety of question types (compared with 92% in the August 2017 examination).
	In 12% of the question papers, allowance was not made for creative responses from candidates.
<b>Correlation between difficulty level and mark allocation</b>	There was no relationship between mark allocation, level of difficulty and time allocation in some questions in 17% of the question papers. (Compared with 11% in the August 2017 examination).
<b>Quality of questions</b>	Only three question papers (7%) contained questions that did not relate to what was important to the instructional offerings. (Compared with 8% in August 2017 examination).
	Twenty-two percent of the question papers contained vaguely defined problems, ambiguous wording, extraneous or irrelevant information, trivia and unintentional clues to correct answers. (Compared 19% with August 2017 examination).
	In 10% of the question papers, some of the questions did not provide clear instructional key words/verbs (compared to 11% of the August 2017 examination).
	Seven question papers (17%) contained questions that did not provide sufficient information to elicit an appropriate response from candidates (compared with 11% in August 2017 examination).
	Six question papers (15%) contained factual errors or misleading information.
	References to visuals, drawings, illustrations, tables or graphs in three question papers (7%) were irrelevant or incorrect.
<b>Criterion 5: Cognitive skills</b>	
<b>Assessment grids</b>	In seven question papers (17%), the assessment grids did not clearly indicate the level of each question and/or sub-question (compared with 19% in August 2017 examination).
<b>Distribution of cognitive skills</b>	Eighty-five percent of the question papers showed an appropriate distribution of marks across cognitive levels (compared with 81% of the August 2017 examination).
<b>Assessment of latest developments</b>	In 15% of the question papers, some questions were not representative of the latest developments in the teaching of this knowledge field (compare with 16% in the August 2017 examination).

Criteria	Findings and challenges
<b>Criterion 6: Marking guidelines</b>	
<b>Accuracy of marking guidelines</b>	In 10% of the marking guidelines, some answers did not correspond to the questions.
	Some answers in 42% of the marking guidelines were incomplete/incorrect/inaccurate.
	Twenty-five percent of the marking guidelines did not allow for alternative responses where applicable, and where provided these were not exhaustive.
	The marking guidelines of three instructional offerings was not set out clearly.
	In 7% of the question papers, the mark allocation on the marking guidelines did not correspond with the mark allocation on the question paper.
	In 37% of the marking guidelines, the mark allocations or mark distributions within questions had been omitted.
<b>Facilitation of marking</b>	Twenty-two percent of the marking guidelines would not have facilitated accurate marking.
<b>Criterion 7: Language and bias</b>	
<b>Terminology</b>	Subject terminology/data was used correctly in 95% of the question papers.
<b>Language register</b>	The language register was appropriate to the level of the candidates in all instructional offerings.
<b>Grammar</b>	In 12% of the question papers, there were subtleties in the grammar that might have caused misunderstanding.
	The language in the marking guidelines was grammatically correct in all question papers.
<b>Bias</b>	Not all question papers were free of evidence of bias in some form or another such as being related to culture, gender, language, political, race, religion, stereotype, province or region.
<b>Criterion 8: Predictability</b>	
<b>Repetition of questions from previous question papers</b>	Twelve percent of the question papers contained questions that could have been easily anticipated or predicted (compared with 14% in the 2017 examination).
	12% of the question papers contained a question(s) taken verbatim from past question papers (compared with 19% in August 2017 examination).
<b>Innovation</b>	There was a lack of innovation in 12% of the question papers (compared with 8% in the August 2017 examination).
<b>Overall impression</b>	
<b>Standard of the question papers</b>	Ten percent of the question papers did not satisfy the requirements of each subject's current syllabus (compared with 6% in the August 2017 examination).
	In 12% of the cases, question papers did not adequately assess the outcomes of the syllabus.
	Twelve percent of the question papers did not compare favourably with the previous trimesters.
	Three question papers (7%) were not of the same standard as those set in the previous cycle (compared with 11% from August 2017 examination).

## 1.4 Areas of Compliance

The following areas of compliance were noticed:

- Ninety percent were of an acceptable standard and satisfied the requirements of the syllabi, they compared favourably with those from the previous years;
- The language in all the question papers was pitched at an appropriate level; and
- Ninety percent of the question papers covered the syllabus adequately.

## 1.5 Areas of Non-compliance

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

- Fifty-five percent of the question papers were conditionally approved with questions to be replaced, rephrased or restructured. Although the internal moderators approved question papers without any changes, there were problems with the questions.
- Some grids were incomplete, did not indicate the origin of the question in the syllabus and did not match or correlate with a specific question paper.
- In 45% of the question papers there was no evidence that the internal moderator's inputs or comments had been incorporated in the question itself, the paper as a whole or the development of the marking guidelines.
- Poor quality and labelling of illustrations in 45% of the question papers was reported.
- In Electrical Trade Theory N2, the allocation of marks for the solutions that required a drawn diagram were not clear and would not facilitate fair marking.
- The question paper and marking guidelines of Engineering Drawing N2 had a number of errors and some questions came directly from the textbook, although it was moderated twice.
- In 42% of the question papers, some of the answers in the marking guidelines were incorrect, inaccurate or incomplete.

## 1.6 Directives for Compliance and Improvement

To improve the quality and standard of question papers, the DHET must ensure that:

- The quality of labelling and illustrations are improved;
- Appropriate software is used for drawing and labelling diagrams;
- The internal moderators provide consistent feedback to the examiners to improve the quality of the examination question papers;
- Recommended changes are accurately documented in the internal moderators' reports to check and indicate that all the recommendations had been carried out as given;
- The syllabi are in line with the latest developments in industry;
- The standard practice for the layout of drawing question papers is adhered to, for example, in Engineering Drawing N2 the figures should be positioned after the questions on the question paper; and
- A table is inserted in the question paper to show the exact breakdown of marks where appropriate.

## **1.7 Conclusion**

The poor quality of internal moderators' reports remains a cause for concern. The compilation of analysis grids requires improvement. The DHET should strive to find a solution to making drawing software available and develop the skills required to draw, interpret, teach and examine as well as moderate internally. Training on how to use standard and quality diagrams and figures, and their annotation, to improve assessment appears to be essential.

# CHAPTER 2 MODERATION OF THE CONDUCT OF INTERNAL CONTINUOUS ASSESSMENT

## 2.1 Introduction

During each trimester Umalusi monitors and moderates the internal assessments of selected instructional offerings at specific sites to prepare a report that answers how the Internal Continuous Assessment (ICASS) instructions were followed and documented in the NATED Report 190/191: Engineering Studies N2 and N3.

The main objectives of moderating internal continuous assessment are to:

- Verify whether the lecturer's portfolio of assessment (PoA) adheres to the ICASS instructions;
- Ascertain the appropriateness and standard of the assessment tasks;
- Ensure that evidence was collected and documented efficiently;
- Ensure that assessment across different sites of delivery was consistent and that standards were maintained; and
- Ensure that the quality assurance of the internal assessment component of the NATED Report 190/191 Engineering Studies N2 and N3 are effectively implemented.

## 2.2 Scope and Approach

Moderators were sent to eight of the nine provinces during July 2018 to moderate the internal continuous assessment of N2 and N3 students' and lecturers' portfolios from a selected sample of NATED Report 190/191 Engineering Studies N2 and N3 instructional offerings. The external moderators drafted reports on their findings at the sampled sites. Sixteen instructional offerings were moderated at five private, ten public colleges and one correctional services centre (18 were moderated in July 2017).

Table 2A below provides information on the sampled instructional offerings, sites and provinces that were involved in the moderation of NATED Report 190/191 Engineering Studies N2-N3 internal continuous assessment during July 2018.

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

Instructional offering	College	Site	Province
Building and Civil Technology N3	Berea Technical College	Durban	KwaZulu-Natal
Building Drawing N3	Tshwane North TVET College	Rosslyn Campus	Gauteng
Diesel Trade Theory N3	Ehlanzeni TVET College	Kanyamazane Campus	Mpumalanga
Electrical Trade Theory N2	Elangeni TVET College	Ntuzuma Campus	KwaZulu-Natal
Electrical Trade Theory N3	Sekhukhune TVET College	CS Barlow Campus	Mpumalanga
Engineering Drawing N3	Advisor Progressive College	eMalahleni	Mpumalanga
Fitting and Machining Theory N2	Vuselela TVET College	Potchefstroom Campus	North West

Instructional offering	College	Site	Province
Industrial Electronics N2	Nkangala TVET College	Mpondozankomo Campus	Mpumalanga
Industrial Electronics N3	Eastcape Midlands TVET College	Park Avenue Campus	Eastern Cape
Instrument Trade Theory N3	Majuba TVET College	Newcastle Technology Centre	KwaZulu-Natal
Mathematics N2	False Bay TVET College	Westlake Campus	Western Cape
Mathematics N3	Tswelopele Correctional Services Centre	Kimberley	Northern Cape
Mechanotechnology N3	Damelin	East London	Eastern Cape
Plant Operation Theory N3	Gert Sibande TVET College	Evander Campus	Mpumalanga
Platers' Theory N2	Crane International Academy	eMalahleni	Mpumalanga
Water and Wastewater Treatment Practice N2	Rostec Technical College	Polokwane	Limpopo

In addition to these, moderators were requested to gather information on three additional instructional offerings. The colleges and campuses were informed prior to the visits of the monitoring of additional instructional offerings. However, the names of the specific instructional offerings were only disclosed on the moderator's arrival at the institution. This prevented window dressing of the tasks and all accompanying documents.

Four Umalusi officials also visited two colleges independently to verify the enrolments for Sake Afrikaans N3 and Business English N3. Although candidates would only write both these examinations in November 2018 after registering in Trimester 3, they were to be taught throughout the year. Due to past malpractices in which tuition only started in Trimester 3, it was decided to monitor colleges who had high enrolment figures for the November 2017 examination. Sampled sites had to confirm whether they had had enrolments and were requested to present mark sheets if they currently had prospective candidates for 2018.

Communication with the selected colleges and campuses was sent in writing in advance of Umalusi's moderation visits.

## 2.3 Summary of Findings

The following section presents the findings of the monitoring of the implementation of internal continuous assessment. Where shortcomings were noted, effective delivery of the NATED Report 190/191 Engineering Studies N2 and N3 programmes might have been hampered.

### 2.3.1 Enrolments

Enrolment figures were supplied by DHET and when compared with the actual enrolled students on site, it was found that in nine of 16 instances, the figures did not agree with the actual numbers enrolled at the colleges.

Table 2B indicates the enrolment numbers the DHET provided and those at the colleges on a part-time or full-time basis, or both:

**Table 2B: Comparison between DHET and site enrolments**

Instructional offering	College	Site	DHET	Site
Building and Civil Technology N3	Berea Technical College	Durban	166	166
Building Drawing N3	Tshwane North TVET College	Rosslyn Campus	33	34
Diesel Trade Theory N3	Ehlanzeni TVET College	Kanyamazane Campus	13	13
Electrical Trade Theory N2	Elangeni TVET College	Ntuzuma Campus	87	89
Electrical Trade Theory N3	Sekhukhune TVET College	CS Barlow Campus	19	19
Engineering Drawing N3	Advisor Progressive College	eMalahleni	43	43
Fitting and Machining Theory N2	Vuselela TVET College	Potchefstroom Campus	48	45
Industrial Electronics N2	Nkangala TVET College	Mpondozankomo Campus	138	155
Industrial Electronics N3	Eastcape Midlands TVET College	Park Avenue Campus	35	33
Instrument Trade Theory N3	Majuba TVET College	Newcastle Technology Centre	23	8
Mathematics N2	False Bay TVET College	Westlake Campus	149	116
Mathematics N3	Tswelopele Correctional Services Centre	Kimberley	11	11
Mechanotechnology N3	Damelin	East London	10	10
Plant Operation Theory N3	Gert Sibande TVET College	Evander Campus	41	38
Platers' Theory N2	Crane International Academy	eMalahleni	30	14
Water and Wastewater Treatment Practice N2	Rostec Technical College	Polokwane	34	34

### 2.3.2 Physical and other resources

Since the majority of enrolled students were not necessarily employed, the ideal situation was that the college would take responsibility for exposing students attending the institution to the practical component of their choice of career.

Half (50%) the sites (38% in 2017) exposed their students to the practical application of the instructional offering, namely Berea Technical College, Durban; Tshwane North College, Rosslyn Campus; Ehlanzeni TVET College, Kanyamazane Campus; Sekhukhune TVET College, CS Barlow Campus; Advisor Progressive College, eMalahleni; Vuselela TVET College, Potchefstroom Campus; Eastcape Midlands TVET College, Park Avenue Campus and Tswelopele Correctional Services Centre.

The students had access to computers and printers at 75% of the sites, compared with 77% in 2017 and 69% had access to the Internet.

The available facilities were sufficient in 94% of the sites visited. The textbooks/notes were not available when the classes commenced at Advisor Progressive College in eMalahleni and Tswelopele Correctional Services Centre in Kimberley.

Additional teaching materials were used at 63% of the sites (54% in 2017).

### **2.3.3 Human resources**

About a third (38%) of the lecturers had been exposed to the workplace environment or to the relevant industry.

Sixty-three percent of the staff (69% in 2017) indicated that they needed training. Half (50%) of the sites (38% in 2017) had a training plan for their staff; however, there was evidence at only 44% that the training plans were implemented. Forty-four percent of the sites had a training manual to ensure effective training of all the educators to improve teaching, learning and assessment.

### **2.3.4 Internal assessment policies and systems**

An up-to-date assessment policy was in place at 75% of the sites visited, which was significantly up from 54% in 2017. The policies covered planning for assessment (75%), monitoring and moderation of assessment (69%), having an appeals procedure (75%), absenteeism (63%), late or non-submission of tasks (38%), making provision for students experiencing barriers to learning (31%), stipulating conditions for re-assessment (50%) and dealing with irregularities (50%).

Only three sites had all the necessary documents. They were Berea Technical College in Durban, Rosslyn Campus of Tshwane North TVET College and Rostec Technical College in Polokwane.

### **2.3.5 Monitoring**

A plan for monitoring assessments was available at 63% of the sites, compared with 54% in 2017 and 50% of them had evidence of implementation. Only 69% of sites had evidence of an instructional offering monitoring report for each lecturer.

### **2.3.6 Task development plan**

In 94% of the cases, compared with 69% in 2017, there was a plan for the development of tasks yet at only 75% of the sites could evidence be found that these had been developed according to the plan. At 80% of them there was no indication of who would set and moderate them. Details about the content to be covered, the duration of the task, the mark allocation and timeframes were not available at 69% of the sites. Ninety-four percent of sites had systems for checking that the tasks were of an acceptable standard.

### **2.3.7 Irregularities register**

Although 38% of sites had irregularity registers (69% in 2017), only 25% of these sites had recorded irregularities of internal assessments (38% in 2017). It appeared the irregularities register was only used for national examinations.

### **2.3.8 Lecturers' files**

#### **a) Lecturers' instructional offering files**

Only five of the 16 sites visited (31%) had all the necessary documents available in this file. These were Berea Technical College, Durban; Tshwane North TVET College, Rosslyn Campus; Sekhukhune TVET College, CS Barlow Campus; Eastcape Midlands TVET College, Park Avenue Campus; False Bay TVET College, Westlake Campus. However, 94% of the sites compared with 62% in 2017, had a syllabus for

each instructional offering. Pacesetter year plans were on records in 75% of the sampled sites, but only 50% of these year plans were used as planning tools. Lesson plans were available at 88% of the sites. Eighty-one percent of the sites did not review their students' tasks. Only 38% of the sites had the minutes of instructional offering meetings.

### b) Lecturers' assessment files (PoA)

Documents relating to the assessment of the instructional offering had to be kept as a Portfolio of Assessment. Four colleges were fully compliant with all the required documents available. They were Berea Technical College, Durban; Tshwane North TVET College, Rosslyn Campus; Sekhukhune TVET College, CS Barlow Campus and Advisor Progressive College, eMalahleni. Importantly, and up from 85% in 2017, 94% of the sites were able to produce their assessment schedules. There was evidence that 88% of the tasks had undergone pre- and post-assessment moderation.

In the following table, major observations of the external moderators on non-compliance of the PoA to the requirements as set by the DHET are indicated:

**Table 2C: Portfolios of Assessment**

Instructional offering	College and site	Comments
Mechanotechnology N3	Damelin – East London	The assessment schedule did not follow the template in the DHET ICASS Instructions.
Instrument Trade Theory N3	Majuba TVET College – Newcastle Technology Centre	The campus did not strictly adhere to the DHET ICASS Instructions.
Industrial Electronics N3	Eastcape Midlands TVET College – Park Avenue Campus	Post-assessment moderation was not a qualitative evaluation of the process.
Engineering Drawing N3	Advisor Progressive College – eMalahleni	The campus changed the content, marks and duration of a common test of the entire college without reason.
Electrical Trade Theory N2	Elangeni TVET College – Ntuzuma Campus	The assessment plan reflected that the test was moderated after the assessment had been written.

All the sites had provided mark sheets. Ninety-four percent of the sites had captured, transcribed and converted their marks correctly.

There were moderation reports and checklists in 94% of the lecturers' assessment portfolios (PoA). Ninety-four percent of the sites seemed to have used the syllabus, but only 88% of the sites visited had evidence that the DHET ICASS Instructions had been consulted. There was evidence in only 44% of the PoA that the student's performance for each task had been analysed.

### 2.3.9 The assessment tasks

Seventy-five percent of the tasks were copies of previous question papers that had been used as tasks and tests. Eighty-eight percent of the tasks, compared with 69% in 2017, had covered a substantial amount of work and, 94% of the weighting and spread of topics had been appropriate.

Ninety-four percent of the tasks met the cognitive demands of the task by pitching them at the right level, a slight improvement from 85% of the previous year. Eighty-eight percent of the tasks varied in terms of difficulty.

### **2.3.10 Internal moderation of tasks**

The general impression of the external moderators was that internal moderation was a neglected area at most of the sites visited, as was indicated earlier. There had been an internal moderator's checklist at 63% of the sites. Qualitative feedback to the educator had only taken place in 25% of instances, compared with 46% in 2017. At 63% of the sites, 10% of the tasks had been moderated (lower than the 77% in 2017) and in 56% of cases, the sample internally moderated contained the full range of marks. At 31% of the sites the assessor was supplied with qualitative feedback, 19% of whom followed up on recommendations.

The following two colleges can be commended for full compliance with their internal moderation processes, namely, Berea Technical College, Durban and Tshwane North TVET College, Rosslyn Campus.

### **2.3.11 Technical aspects**

Ninety-four percent of the tasks had been neatly typed, containing all the relevant information. In 94% of instances, the mark allocation had been clear and the marks in the question papers corresponded with the marks in the marking guidelines. In 88% of cases, the time allocation of the tasks was realistic for the execution of the test.

### **2.3.12 Marking tools**

Although all the marking tools were appropriate and relevant for the scoring of the test, only 63% of the marking guidelines were clear and neatly typed. Sixty-nine percent of the marking tools facilitated marking/had been easy to use, compared with 85% in 2017.

### **2.3.13 Compliance check of additional instructional offerings**

The external moderators were also requested to do a compliance check on documents pertaining to three additional instructional offerings. Each sampled site had different additional instructional offerings which were informed by the enrolments from the DHET for the July/August 2018 examination. The external moderators found that there was a discrepancy between the numbers enrolled using the DHET data received for instructional offerings, and the numbers registered at the college as evident in the following table:

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

College	Site	Additional instructional offerings	DHET Enrolments	Mark sheet
Advisor Progressive College	eMalahleni	Electrotechnology N3	59	13
		Industrial Electronics N2	114	35
		Instrument Trade Theory N3	11	11
Berea Technical College	Durban	Electrotechnology N3	197	192
		Mechanotechnology N3	149	151
		Supervision in Industry N3	61	61
Crane International Academy	eMalahleni	Industrial Electronics N2	108	56
		Mathematics N3	114	37
		Mechanotechnology N3	34	4
Damelin	East London	Building Science N3	21	18
		Industrial Electronics N3	13	12
		Mathematics N3	40	49
Eastcape Midlands TVET College	Park Avenue Campus	Electrical Trade Theory N2	83	51 (31+20)
		Electrotechnology N3	37	34
		Engineering Science N2	81	58 (31+27)
Ehlanzeni TVET College	Kanyamazane Campus	Electrical Trade Theory N2	56	45
		Electrotechnology N3	9	8
		Mathematics N3	26	15
Elangeni TVET College	Ntuzuma Campus	Bricklaying and Plastering Theory N2	41	40
		Building Science N2	41	40
		Engineering Science N2	145	85
False Bay TVET College	Westlake Campus	Building Science N2	23	22
		Engineering Science N2	124	14
		Mechanotechnology N3	33	24
Gert Sibande TVET College	Evander Campus	Industrial Electronics N3	61	46
		Mechanotechnology N3	62	43
		Wastewater Treatment Practice N3	40	40
Majuba TVET College	Newcastle Technology Centre	Industrial Electronics N3	96	96
		Mechanotechnology N3	48	48
		Plating and Structural Steel Drawing N2	77	77
Nkangala TVET College	Mpondozankomo Campus	Electrical Trade Theory N2	144	84
		Engineering Drawing N3	71	34
		Mechanotechnology N3	98	Not available
Rostec Technical College	Polokwane	Diesel Trade Theory N2	54	32
		Industrial Electronics N2	123	87
		Water and Wastewater Treatment Practice N2	34	34

College	Site	Additional instructional offerings	DHET Enrolments	Mark sheet
Sekhukhune TVET College	CS Barlow Campus	Electrical Trade Theory N3	19	Not available
		Industrial Electronics N2	128	Not available
		Mathematics N3	23	Not available
Tshwane North TVET College	Rosslyn Campus	Electrotechnology N3	45	33
		Mathematics N3	124	32
		Mechanotechnology N3	35	32
Tswelopele Correctional Services Centre	Kimberley	Electrical Trade Theory N2	18	18
		Engineering Science N2	36	36
		Industrial Electronics N3	10	8
Vuselela TVET College	Potchefstroom Campus	Electrical Trade Theory N2	87	77
		Industrial Electronics N2	49	42
		Mechanotechnology N3	13	13

Ninety-four percent of the sites had a record of class attendance of all three additional instructional offerings. Fifty-six percent had implemented the 80% class attendance rule. There was evidence at 94% of the sites that Test 1 for all additional instructional offerings at the site had been performed and 88% that Test 2 for all additional instructional offerings at the site had been performed.

The external moderators' general observations, mostly positive, are captured in the following table:

**Table 2E: General observations with spot check**

College	Site	Comments
Advisor Progressive College	eMalahleni	<ul style="list-style-type: none"> <li>Insufficient knowledge of marking drawing instructional offerings was evident.</li> <li>The marks achieved in tests were not accurately calculated. Traces of inflation of marks to a pass mark had been detected.</li> </ul>
Berea Technical College	Durban	<ul style="list-style-type: none"> <li>Tasks, tests, marking guidelines, general administration, mark sheets, class attendance, convention of marks and student evidence presented were examples of good practice.</li> </ul>
Crane International Academy	eMalahleni	<ul style="list-style-type: none"> <li>Staff members with only an N6 certificate and no practical experience was of great concern.</li> </ul>
Damelin	East London	<ul style="list-style-type: none"> <li>Shadow marking during moderation was applied.</li> <li>The Assessment Plan was not as per DHET ICASS Instructions.</li> </ul>
Eastcape Midlands TVET College	Park Avenue Campus	<ul style="list-style-type: none"> <li>Concepts in Industrial Electronics N3 needed the assistance of visual stimuli and simulations, as well as practical work to be fully understood by students.</li> </ul>
Elangeni TVET College	Ntuzuma Campus	<ul style="list-style-type: none"> <li>Documentation was not completed correctly.</li> </ul>
False Bay TVET College	Westlake Campus	<ul style="list-style-type: none"> <li>Compilation of student POE was commendable.</li> </ul>

College	Site	Comments
Gert Sibande TVET College	Evander Campus	<ul style="list-style-type: none"> <li>It is evident in test 1 and 2 that the students have not grasped the full content of Plant Operation Theory N3. This might have been due to limited time allocated for the teaching of Plant Operation Theory N3.</li> </ul>
Majuba TVET College	Newcastle Technology Centre	<ul style="list-style-type: none"> <li>The assessment policy was not up to standard.</li> <li>The campus does not effectively monitor the implementation of the curriculum.</li> </ul>
Nkangala TVET College	Mpondozankomo Campus	<ul style="list-style-type: none"> <li>Concepts in Industrial Electronics N2 need the assistance of visual stimuli and simulations, as well as practical work to be fully understood by students.</li> </ul>
Rostec Technical College	Polokwane	<ul style="list-style-type: none"> <li>The documentation (evidence) was generally well presented and organised.</li> <li>The candidates should be exposed to the practical implementation of the theoretical component of Water and Wastewater Treatment Practice N2.</li> </ul>
Sekhukhune TVET College	CS Barlow Campus	<ul style="list-style-type: none"> <li>The Assessment and Moderation policy was not in line with the DHET ICASS Instructions.</li> </ul>
Tshwane North TVET College	Rosslyn Campus	<ul style="list-style-type: none"> <li>Record keeping at this institution was excellent. Cooperation between team members was evident. A team spirit existed that was both supportive and complementary. This campus was run professionally.</li> </ul>
Tswelopele Correctional Services Centre	Kimberley	<ul style="list-style-type: none"> <li>Mind-set videos were used to enhance understanding of Mathematics.</li> <li>Content coverage was a concern in both tests of Mathematics N3.</li> </ul>
Vuselela TVET College	Potchefstroom Campus	<ul style="list-style-type: none"> <li>All planning regarding assessments were in place.</li> <li>Good administrative supervision was evident.</li> <li>The content of Fitting and Machining Theory N2 is best explained with the use of visual aid and practical demonstrations much needed at this campus.</li> </ul>

### 2.3.14 Compliance check by staff members of Umalusi of sampled instructional offerings at private FET colleges

Four Umalusi officials each visited two colleges to verify the enrolments and progress made in assessments for Sake Afrikaans N3 and Business English N3. Although candidates would write the examination in November 2018, these two languages serve as year courses and need to be taught throughout the year.

In addition, the staff members each sampled between one and three instructional offerings at each college. The enrolments of the DHET were compared with the mark sheets. Evidence of students were verified against the marks on the mark sheet and those of the staff members confirmed that the weighting of the tests corresponded with the requirements given in the DHET ICASS Instructions for January 2018.

The names of the additional instructional offerings verified by Umalusi staff members at the colleges are presented in the table below.

**Table 2F: Additional instructional offerings verified by Umalusi staff**

College	Site	Instructional offerings
Academy of Business and Computer Studies	Johannesburg	Engineering Science N3 Industrial Orientation N3 Mathematics N3
Brooklyn City College	Polokwane	Engineering Science N2, N3
Churchil Technical College	Pretoria	Mathematics N2
Denver College	Pretoria	Mechanotechnology N3
Jeppe College	Polokwane	Engineering Science N2 Industrial Electronics N2 Mathematics N3
Jeppe College	Vereeniging	Industrial Electronics N2 Electrical Trade Theory N2 Engineering Science N3
Rostec Technical College	Vereeniging	Industrial Organisation and Planning N3 Industrial Electronics N3 Electrical Trade Theory N2
Watersrand Computer and Business College	Johannesburg	Engineering Science N3

General observations regarding available resources, lecturers' files and the compliance of tests are given in Table 2G that includes the findings of Sake Afrikaans N3, Business English N3 as well as the additional instructional offerings the staff members verified.

**Table 2G: Findings and challenges observed by Umalusi staff members in the July 2018 internal assessment monitoring/moderation visits**

Aspects	Findings and challenges	Instructional offerings
<b>Administrative information</b>	Fifty percent of the colleges (as listed) had students for Business English N3 and Sake Afrikaans N3.	Academy of Business and Computer Studies – Johannesburg Jeppe College – Polokwane Rostec College – Vereeniging Watersrand Computer and Business College – Johannesburg
	The number of candidates on mark sheets corresponded with the enrolments received from DHET for one of the eight sites (13%).	Watersrand Computer and Business College – Johannesburg
	The tests of the sampled instructional offerings were marked in full at 50% of the listed colleges.	Academy of Business and Computer Studies – Johannesburg Denver College – Pretoria Jeppe College – Vereeniging Watersrand Computer and Business College – Johannesburg
<b>Physical resources</b>	The facilities at 88% of the colleges suited effective teaching and learning needs.	Academy of Business and Computer Studies – Johannesburg Brooklyn City College – Polokwane Denver College – Pretoria Jeppe College – Polokwane Jeppe College – Vereeniging Rostec College – Vereeniging Watersrand Computer and Business College – Johannesburg

Aspects	Findings and challenges	Instructional offerings
<b>Internal assessment policies and systems</b>	Eighty-eight percent of the listed colleges had assessment policies.	Academy of Business and Computer Studies – Johannesburg Brooklyn City College – Polokwane Denver College – Pretoria Jeppe College – Polokwane Jeppe College – Vereeniging Rostec College – Vereeniging Watersrand Computer and Business College – Johannesburg
	The assessment policy was complete at these sites (13%) and provided for: <ul style="list-style-type: none"> <li>• Planning</li> <li>• Monitoring and moderation of assessment at different levels</li> <li>• Appeal procedures</li> <li>• Absenteeism</li> <li>• Late/non-submission of tasks</li> <li>• Provision for students with barriers</li> <li>• Conditions for re-assessment</li> <li>• Irregularities</li> </ul>	Rostec College – Vereeniging
	There was evidence (e.g. checklists) that the tests had been internally moderated at 63% of the sites.	Academy of Business and Computer Studies – Johannesburg Denver College – Pretoria Jeppe College – Polokwane Jeppe College – Vereeniging Watersrand Computer and Business College – Johannesburg
<b>Internal moderation</b>	A minimum sample, for each sampled instructional offering (10% of the marked scripts) was moderated at 63% of the sites.	Academy of Business and Computer Studies – Johannesburg Denver College – Pretoria Jeppe College – Polokwane Jeppe College – Vereeniging Watersrand Computer and Business College – Johannesburg
<b>Technical aspects</b>	Six sites (75%) complied in all technical aspects of the tasks namely: <ul style="list-style-type: none"> <li>• Neatly typed;</li> <li>• Contain all relevant information like the:               <ul style="list-style-type: none"> <li>– Name of the instructional offering;</li> <li>– The level of instructional offering;</li> <li>– Time allocation;</li> <li>– Content covered;</li> <li>– Number of tests; and</li> <li>– Date.</li> </ul> </li> </ul>	Brooklyn City College – Polokwane Denver College – Pretoria Jeppe College – Polokwane Jeppe College – Vereeniging Rostec College – Vereeniging Watersrand Computer and Business College – Johannesburg
	The tests of the sampled sites (88%) as listed had clear instructions to candidates.	Academy of Business and Computer Studies – Johannesburg Brooklyn City College – Polokwane Denver College – Pretoria Jeppe College – Polokwane Jeppe College – Vereeniging Rostec College – Vereeniging Watersrand Computer and Business College – Johannesburg

Aspects	Findings and challenges	Instructional offerings
<b>Technical aspects</b>	The mark allocation for each question was clearly indicated in the tests of all the sampled instructional offerings at 88% of the sites.	Academy of Business and Computer Studies – Johannesburg Brooklyn City College – Polokwane Denver College – Pretoria Jeppe College – Polokwane Jeppe College – Vereeniging Rostec College – Vereeniging Watersrand Computer and Business College – Johannesburg
	The mark allocation on the test was the same as that on the mark sheets for the sampled instructional offerings at 88% of the sites.	Academy of Business and Computer Studies – Johannesburg Brooklyn City College – Polokwane Denver College – Pretoria Jeppe College – Polokwane Jeppe College – Vereeniging Rostec College – Vereeniging Watersrand Computer and Business College – Johannesburg
<b>Marking tools</b>	The marking guidelines were clear and neatly typed for the sampled instructional offerings at 38% of the sites.	Academy of Business and Computer Studies – Johannesburg Jeppe College – Vereeniging Watersrand Computer and Business College – Johannesburg

## 2.4 Areas of Compliance

There were pockets of excellence at some of the sites moderated.

- The available facilities were sufficient at most of the sites visited;
- The exposure of students to the practical application of an instructional offering had increased by 12% to 50% of the sites visited;
- Seventy-five percent of the sites visited (an increase of 21%) had an up-to-date assessment policy;
- Ninety-four percent of the sites visited (an increase of 25%) had a plan for the development of tasks of an acceptable standard; and
- Ninety-four percent of the sites visited (an increase of 32%) had a syllabus for the instructional offering.

## 2.5 Areas of Non-compliance

During the quality assurance of the internal continuous assessment component at colleges, it was found that many areas require improvement. The following concerns were raised:

- The use of notes instead of textbooks at Advisor Progressive College in eMalahleni;
- Although practical demonstrations of the instructional offering content took place at 50% of the sites, more exposure to practical implementation of the theoretical component is still needed;
- The use of previous national question papers in the drafting of internal assessments was an unacceptable practice;
- The quality of internal moderation was an issue at most of the sites visited; and
- Marks were inflated and not a true reflection of the student's competencies.

## 2.6 Directives for Compliance and Improvement

For teaching and learning as well as assessment to take place effectively at the colleges in this sector, the DHET must ensure that:

- Colleges set their own tasks and not use previous examination question papers;
- Colleges implement effective internal moderation practices; and
- Colleges comply with ICASS instructions in terms of *The National Policy on the Conduct, Administration and Management of the Examination of Formal Technical College Instructional Programmes (FTCIP)*, which states that:
  - ICASS marks are valid for three (3) examinations (not necessarily consecutive) and that all assessment evidence should be available during this period should queries arise or further external moderation processes be conducted.

## 2.7 Conclusion

The NATED Report 190/191 training programme remains a popular choice among students. Although knowledge on the theory of instructional offerings is gained, it is advisable to expose students to the practical component. Well-trained lecturers need to guide students in both subject knowledge and skills.

# CHAPTER 3 MONITORING OF THE WRITING OF EXAMINATIONS

## 3.1 Introduction

Umalusi monitored the second Trimester examination for NATED Report 190/191: Engineering Studies N2 and N3 examinations, which commenced on 17 July and ended on 8 August 2018.

To determine the credibility of the conduct of examinations, Umalusi exercised its oversight role as the Quality Council by monitoring the conduct, administration and management of the August 2018 NATED Report 190/191 Engineering Studies (N2-N3) examinations.

The findings of the monitoring Umalusi conducted indicates a poor turn-up rate of candidates at examination centres as given in Table 3A below. The major differences in the enrolments versus the number of candidates who sat for the examinations, was largely at private colleges when compared with public colleges.

## 3.2 Scope and Approach

Umalusi monitored 22 colleges/campuses where the examination for NATED Report 190/191: Engineering Studies N2-N3 were administered. A mixed method approach for collecting data was conducted through:

- Interviews with the chief invigilator;
- Recording observations made to inform part of the criteria used for monitoring the writing of the examination; and
- Evidence-based verification of the examination regarding instructional offering the forms and examination instructions the DHET issued.

Table 3A indicates the centres monitored.

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

No.	Name of College and Type	Site/Campus	Province	Instructional offering	Date	Candidates registered/ actual number who wrote
1	Academy of Business and Computer Studies Private	Johannesburg	Gauteng	Engineering Science N3	26/07/18	362/93
2	Academy of Business and Computer Studies Private	Pretoria	Gauteng	Supervision in Industry N3	03/08/18	34/20

No.	Name of College and Type	Site/Campus	Province	Instructional offering	Date	Candidates registered/ actual number who wrote
3	Churchill Technical College Private	Pretoria	Gauteng	Fitting and Machining Theory N2	30/07/18	24/12
				Mechano-technology N3	01/08/18	15/10
4	Coastal KZN TVET College Public	Umlazi	KwaZulu-Natal	Engineering Science N3	26/07/18	220/160
		Umlazi	KwaZulu-Natal	Electrical Trade Theory N2	01/08/18	299/299
5	Crane International Academy Private	eMalahleni	Mpumalanga	Engineering Science N2	27/07/18	267/122
6	Ehlanzeni TVET College Public	Mlumati	Mpumalanga	Building Drawing N3	18/07/18	17/14
7	Engineering Technology Academy Private	Vereeniging	Gauteng	Mechno-Technology N3	31/07/18	7/2
8	Gauteng College of Engineering and Technology Private	Johannesburg	Gauteng	Electrotechnology N3	06/08/18	4/1
9	Germiston FET College Private	Germiston	Gauteng	Engineering Science N2	27/07/18	125/53
10	JFA Square Technical Training Institution Private	Boksburg	Gauteng	Engineering Drawing N2	19/07/18	32/22
11	Jintek Varsity College Private	Pretoria	Gauteng	Industrial Electronics N2	25/07/18	16/6
12	Northern Cape TVET College Public	Moremogolo	Northern Cape	Electrical Trade Theory N3	01/08/18	21/19
13	Nkangala TVET College Public	Mpondo-zankomo	Mpumalanga	Electrical Trade Theory N2	01/08/18	144/131
14	Nkangala Training Centre Private	eMalahleni	Mpumalanga	Electrical Trade Theory N2	01/08/18	99/56

No.	Name of College and Type	Site/Campus	Province	Instructional offering	Date	Candidates registered/ actual number who wrote
15	Polokwane Correctional Services Centre	Polokwane	Limpopo	Industrial Electronics N2	25/07/18	8/8
16	Springfield FET College Private	Kempton Park	Gauteng	Electrotechnology N3	06/08/18	19/12
17	Stanger FET College Private	Stanger	KwaZulu-Natal	Engineering Science N2	27/07/18	39/34
18	True Harvest College Private	Pretoria	Gauteng	Industrial Organisation and Planning N3	07/08/18	118/26
19	Tshwane North TVET College Public	Rossllyn	Gauteng	Mathematics N2	24/07/18	363/340
20	Northlink TVET College Public	Wingfield	Western Cape	Fitting and Machining Theory N2	30/07/18	117/109
21	Witbank Correctional Services Centre	eMalahleni	Mpumalanga	Supervision in Industry N3	03/08/18	11/9
22	Buffalo City TVET College Public	St Marks	Eastern Cape	Electrotechnology N3	06/08/18	10/07

### 3.3 Summary of Findings

The final findings of the monitoring initiative were prepared once all the examinations had been written and Umalusi's data was available. The monitoring instrument provided information about the overall levels of compliance according to the criteria used at 22 monitored centres. Table 3B gives the results of five main aspects of the process followed. Table 3C documents seven focal issues at each of the centres.

**Table 3B: Findings of monitoring of examination centres**

Criterion	Met all criteria 100%	Met 80% criteria	Met 60% of criteria	Met 40% of criteria	Did not meet criteria 0%	Total
Preparation for the examination	5 100%	14 81-94%	1 75%	2 56%	0	22
The invigilators and their training	15 100%	0	2 75%	4 50%	1 25%	22
Preparations for writing and examination room/venue(s)	4 100%	5 – 93% 4 – 86%	1-79% 5-71%	1- 57% 1 - 50%	1 21%	22
Time management for the conduct of examinations	13 – 100%	2 – 92% 2 – 85%	2 – 69 2 – 61	1 – 54%	0	22
Activities during writing	14 – 100%	4 – 88%	3 – 75%	0	1 – 13%	22
Packaging of answer scripts	16 – 100%	5 – 90% 1 – 80%	0	0	0	22

Table 3C indicates the general findings concerning the levels of compliance with the specified criteria at the 22 monitored centres.

**Table 3C: Findings at the sites monitored**

Criterion	Challenges/Concerns	Implicated centres/sites
<b>Preparation for the examination</b>	<p>Six of the 22 centres (27%) complied fully with criteria on preparation for the examination before the writing session:</p> <ul style="list-style-type: none"> <li>All six examination centres were verified by the Assessment Body to ensure compliance for the availability of necessary facilities to write the examination;</li> <li>Question papers were collected from and delivered to designated nodal points on the day of writing. The necessary and correct procedures were followed to ensure accountability and ethical practice;</li> <li>In all instances, the question papers were sealed and only opened in the presence of candidates.</li> </ul>	<ul style="list-style-type: none"> <li>Academy of Business and Computer Studies (Pretoria)</li> <li>Jintek Varsity College</li> <li>Northern Cape TVET College (Moremogolo)</li> <li>Nkangala TVET College (Mpondozankomo)</li> <li>True Harvest College</li> <li>JFA Square Technical Training Institution</li> </ul>
	<p>Fourteen of the 22 centres achieved between 81-94% which indicated that these colleges achieved compliance in most of the criteria:</p> <ul style="list-style-type: none"> <li>No authorisation letter available of personnel collecting the question papers;</li> <li>Invigilators did not check the question paper for technical accuracy with the candidates.</li> </ul>	<ul style="list-style-type: none"> <li>Academy of Business and Computer Studies (Johannesburg)</li> <li>Coastal KZN TVET College (both campuses of Umlazi)</li> <li>Crane International Academy</li> <li>Ehlanzeni TVET College (Mlumati)</li> <li>Gauteng College of Engineering and Technology</li> <li>Engineering Technology Academy</li> </ul>

Criterion	Challenges/Concerns	Implicated centres/sites
<b>Preparation for the examination</b>		<ul style="list-style-type: none"> <li>• Stanger FET College</li> <li>• Tshwane North TVET College (Rosslyn)</li> <li>• Northlink TVET College (Wingfield)</li> <li>• Witbank Correctional Services Centre</li> <li>• Germiston FET College</li> <li>• Polokwane Correctional Services Centre</li> <li>• Springfield FET College</li> </ul>
	<p>One examination centre did not comply with two of the six requirements:</p> <ul style="list-style-type: none"> <li>• Candidates were closer than 1m apart during the writing;</li> <li>• Examination venue was noisy;</li> <li>• The monitor did not verify if the correct question paper was collected;</li> <li>• The monitor was not able to validate if all examination question papers were sealed on arrival.</li> </ul>	<ul style="list-style-type: none"> <li>• Churchil Technical College</li> </ul>
	<p>At one centre substantial non-compliance was observed:</p> <ul style="list-style-type: none"> <li>• No official timetable available, the training centre downloaded it from <a href="http://www.dhet.gov.za">www.dhet.gov.za</a>;</li> <li>• There were insufficient rooms to accommodate all the candidates;</li> <li>• The rooms allocated to the students were very small and candidates were cramped inside;</li> <li>• There was less than 1m space between the candidates during the writing;</li> <li>• The furniture was not suitable for the drawing;</li> <li>• Some of tables were unstable and made a lot of noise;</li> <li>• Only one classroom had a window and there were no windows in the other five classrooms;</li> <li>• There was no ventilation and proper lighting in three classes;</li> <li>• The fluorescent lighting was insufficient.</li> </ul>	<ul style="list-style-type: none"> <li>• Nkangala Training Centre (eMalahleni)</li> </ul>
<b>The invigilators and their training</b>	<p>Fifteen of the 22 monitored centres (68%) complied fully with the criteria regarding invigilators and their training:</p> <ul style="list-style-type: none"> <li>• The chief invigilators and invigilators were trained and had been appointed in writing.</li> </ul>	<ul style="list-style-type: none"> <li>• Academy of Business and Computer Studies (Pretoria and Johannesburg)</li> <li>• Churchil Technical College</li> <li>• Coastal KZN TVET College (both campuses of Umlazi)</li> <li>• Stanger FET College</li> <li>• Tshwane North TVET College (Rosslyn)</li> <li>• Northlink TVET College (Wingfield)</li> <li>• True Harvest College</li> </ul>

Criterion	Challenges/Concerns	Implicated centres/sites
<b>The invigilators and their training</b>		<ul style="list-style-type: none"> <li>• Witbank Correctional Services Centre</li> <li>• Germiston FET College</li> <li>• JFA Square Technical Training Institution</li> <li>• Northern Cape TVET College (Moremogolo)</li> <li>• Polokwane Correctional Services Centre</li> <li>• Springfield FET College</li> <li>• Nkangala TVET College (Mpondozankomo)</li> </ul>
	<p>One centre (4.5%) complied with three of the four requirements:</p> <ul style="list-style-type: none"> <li>• The chief invigilator was not trained by the Assessment Body.</li> </ul>	<ul style="list-style-type: none"> <li>• Jintek Varsity College</li> </ul>
	<p>Four centres (18.2%) complied with two of the four requirements:</p> <ul style="list-style-type: none"> <li>• The chief invigilator was not appointed and there was no evidence that the chief invigilator was trained by the Assessment Body;</li> <li>• There was no evidence of the appointment of invigilators in writing;</li> <li>• An educator was appointed as Chief Invigilator by the area co-ordinator at Witbank Correctional Services Centre and there was no evidence that training took place.</li> </ul>	<ul style="list-style-type: none"> <li>• Crane International Academy</li> <li>• Ehlanzeni TVET College (Mlumati)</li> <li>• Engineering Technology Academy</li> <li>• Witbank Correctional Services Centre</li> </ul>
	<p>One centre met one out of the four requirements:</p> <ul style="list-style-type: none"> <li>• There was no evidence that the chief invigilator was trained by the Assessment Body;</li> <li>• The invigilators were not trained and no letters of appointment were evident.</li> </ul>	<ul style="list-style-type: none"> <li>• Gauteng College of Engineering and Technology</li> </ul>
<b>Preparations for writing and the examination venues</b>	<p>Seven centres (32%) demonstrated adherence to all fourteen of the monitoring criteria set by Umalusi for the preparation of examination venues:</p> <ul style="list-style-type: none"> <li>• The environment was conducive both inside and outside the examination centre;</li> <li>• Candidates were seated as per seating plan;</li> <li>• There were sufficient tables and chairs for all candidates who were placed 1m apart;</li> <li>• The examination file contained all relevant documentation;</li> <li>• The examination rooms were free of any material/writing/drawing that could have assisted them in writing the examination.</li> </ul>	<ul style="list-style-type: none"> <li>• JFA Square Technical Training Institution</li> <li>• Northern Cape TVET College (Moremogolo)</li> <li>• Witbank Correctional Services Centre</li> <li>• Northlink TVET College (Wingfield)</li> <li>• Germiston FET College</li> <li>• Polokwane Correctional Services Centre</li> <li>• Witbank Correctional Services Centre</li> </ul>

Criterion	Challenges/Concerns	Implicated centres/sites
<b>Preparations for writing and the examination venues</b>	<p>Five of the 22 centres achieved between 86%-94% compliance. The following observations were made:</p> <ul style="list-style-type: none"> <li>• At True Harvest there was no relevant information written on the board;</li> <li>• At the Academy of Business and Computer Studies (Pretoria )there was no attendance register signed by all Invigilators;</li> <li>• An Information Board was available but it did not display any relevant information pertaining to the examinations. Calculators were not checked either;</li> <li>• At Tshwane North TVET College (Rosslyn) documentation of the candidates were verified during the writing of the examination and not prior to the examination;</li> <li>• At Engineering Technology Academy 11 of the 14 requirements were not available in the examination file;</li> <li>• At Coastal KZN TVET College (Umlazi), an information board was available however it was not visible to all the candidates.</li> </ul>	<ul style="list-style-type: none"> <li>• True Harvest College</li> <li>• Academy of Business and Computer Studies (Pretoria)</li> <li>• Tshwane North TVET College (Rosslyn)</li> <li>• Engineering Technology Academy</li> <li>• Coastal KZN TVET College (Umlazi)</li> </ul>
	<p>Six of the 22 centres monitored (27%), achieved between 71-79% for this criterion. The following was observed:</p> <ul style="list-style-type: none"> <li>• At Academy of Business and Computer Studies (Johannesburg) there was no evidence of an attendance register signed by all invigilators, no information board available displaying relevant information of the examination and an instruction was given to candidates to switch off their cell phones however it remained in the pockets of the candidates;</li> <li>• Jintek Varsity College did not have a clock displayed in the examination room. Candidates' calculators were not checked for compliance;</li> <li>• At Stanger FET College, candidates cell phones were switched off but they kept them in their possession and calculators were not checked for compliance; Candidates entered the examination room after 8.30. Examination files were not available;</li> <li>• At Crane International Academy entry into the examination room was done in a haphazard manner. Candidates were not checked prior to entering the examination room and checking commenced after some candidates were already seated. There was no evidence of seven of the 14 documents required in the examination file;</li> <li>• At Ehlanzeni TVET College (Mlumati), there was no evidence of checking calculators prior to the examination. The examination timetable was not available. A clock was brought into the room ten minutes after the commencement of the examination. Candidates were not seated according to the seating plan.</li> </ul>	<ul style="list-style-type: none"> <li>• Academy of Business and Computer Studies (Johannesburg)</li> <li>• Jintek Varsity College</li> <li>• Stanger FET College</li> <li>• Springfield FET College</li> <li>• Crane International Academy</li> <li>• Ehlanzeni TVET College (Mlumati)</li> </ul>

Criterion	Challenges/Concerns	Implicated centres/sites
<b>Preparations for writing and the examination venues</b>	<p>Two of the 22 centres attained between 50-57%:</p> <ul style="list-style-type: none"> <li>At Nkangala Training Centre (eMalahleni), a relief timetable for invigilators was not evident and only three of the six invigilators were recorded and signed in. There was evidence of an attendance of one of the six invigilators only. There was no seating plan for the examination and due to the large number of candidates who wrote, they were divided to be seated in all four examination rooms. Clocks were not evident in all four examination rooms. Nine of the 14 required documents were not available in the examination file.</li> <li>At Gauteng College of Engineering and Technology, a candidate arrived at 8:57. There was no invigilation and relief timetable provided. A seating plan was not available on the day of writing. There were no clocks available. The information board was available however; no examination related information was displayed. The examination file did not have 10 of the 14 required documents.</li> </ul>	<ul style="list-style-type: none"> <li>Nkangala Training Centre (eMalahleni)</li> <li>Gauteng College of Engineering and Technology</li> </ul>
<b>Time management</b>	<p>Time management at thirteen of the 22 centres (59.9%) was in accordance with all the set indicators:</p> <ul style="list-style-type: none"> <li>All thirteen commenced and ended the examinations on time;</li> <li>All crucial activities were executed diligently within the timeframe set for the examinations.</li> </ul> <p>Three centres (14%) of the 22 centres achieved between 85-92%. All three centres adhered to most criteria as far as time management was concerned:</p> <ul style="list-style-type: none"> <li>Some of the indicators that were not adhered to included examination rules not read out and questions papers were not checked for technical accuracy.</li> </ul>	<ul style="list-style-type: none"> <li>Coastal KZN TVET College (Umlazi Campus)</li> <li>JFA Square Technical Training Institution</li> <li>Northern Cape TVET College (Moremogolo)</li> <li>Polokwane Correctional Services Centre</li> <li>Nkangala TVET College (Mpondozankomo)</li> <li>Nkangala Training Centre (eMalahleni)</li> <li>Stanger FET College</li> <li>True Harvest College</li> <li>Engineering Technology Academy</li> <li>Tshwane North TVET College (Rosslyn)</li> <li>Northlink TVET College (Wingfield)</li> <li>Witbank Correctional Services Centre</li> <li>Germiston FET College</li> <li>Academy of Business and Computer Studies (Pretoria)</li> <li>Coastal KZN TVET College (Umlazi)</li> <li>Jintek Varsity College</li> </ul>

Criterion	Challenges/Concerns	Implicated centres/sites
<b>Time management</b>	<p>Four centres (18%) demonstrated satisfactory compliance with the Umalusi criteria for time management. The following requirements were not met:</p> <ul style="list-style-type: none"> <li>• At the Academy of Business and Computer Studies (Johannesburg), invigilators arrived at the examination room only 15 minutes prior to the starting of the examination. Candidates were admitted to the examination room 20 minutes prior to commencement of the examination. There was no evidence of checking for technical accuracy and the reading time was not observed;</li> <li>• At Crane International Academy, the invigilators arrived at varying times after 08:30. A few candidates were seated in the examination room while the majority arrived after 08:45;</li> <li>• The clock in the room was set 10 minutes ahead to accommodate the late start. The question paper was not checked for technical accuracy with the candidates. The examination commenced at 09:10 and not at 9:00;</li> <li>• At Ehlanzeni TVET College (Mlumati), the question papers were not checked with candidates for technical accuracy. Candidates were allocated five minutes reading time instead of ten minutes. One candidate was not allowed to write the examination due to being one hour late;</li> <li>• At Springfield FET College, candidates were not admitted to the room 30 minutes before the commencement of writing. Invigilators did not verify the correctness of the information on the cover page of the answer book. Question papers were not distributed to the candidates on time. The question paper was not checked for technical accuracy with the candidates.</li> </ul>	<ul style="list-style-type: none"> <li>• Academy of Business and Computer Studies (Johannesburg)</li> <li>• Crane International Academy</li> <li>• Ehlanzeni TVET College (Mlumati)</li> <li>• Springfield FET College</li> </ul>
	<p>One centre (5%) demonstrated unsatisfactory compliance with the Umalusi criteria for time management:</p> <ul style="list-style-type: none"> <li>• The Chief invigilator and the invigilator were delayed. The candidate arrived late and the question paper was distributed to the only candidate at 9:04;</li> <li>• The candidate was given little reading time because the question paper was delivered late to the examination centre;</li> <li>• The question paper was not checked for technical accuracy. In general, time was poorly managed.</li> </ul>	<ul style="list-style-type: none"> <li>• Gauteng College of Engineering and Technology</li> </ul>

Criterion	Challenges/Concerns	Implicated centres/sites
<b>Activities during the writing process</b>	<p>Fourteen of the 22 centres (63.3%) fully complied with all the set criteria:</p> <ul style="list-style-type: none"> <li>• Invigilators engaged actively and professionally in invigilation and were mobile and vigilant throughout the examination session;</li> <li>• The examination proceeded without any occurrence of irregularities.</li> </ul>	<ul style="list-style-type: none"> <li>• JFA Square Technical Training Institution</li> <li>• Northern Cape TVET College (Moremogolo)</li> <li>• Polokwane Correctional Services Centre</li> <li>• Stanger FET College</li> <li>• Engineering Technology Academy</li> <li>• Tshwane North TVET College (Rosslyn)</li> <li>• Northlink TVET College (Wingfield)</li> <li>• Witbank Correctional Services Centre</li> <li>• Academy of Business and Computer Studies (Johannesburg)</li> <li>• Crane International Academy</li> <li>• Ehlanzeni TVET College (Mlumati)</li> <li>• Springfield FET College</li> <li>• Academy of Business and Computer Studies (Pretoria)</li> <li>• Jintek Varsity College</li> </ul>
	<p>Five centres (18.2%) of the 22 centres complied with between 87.5-88% of this criterion:</p> <ul style="list-style-type: none"> <li>• In one centre, three irregularities of cribbing were observed. Detailed reports were sent to DHET;</li> <li>• At one centre, a candidate was caught with crib notes while writing Mechanotechnology N3 on 26 July 2018;</li> <li>• At one centre, a female candidate was not escorted to and from the ablution facilities;</li> <li>• In one of the centres, a candidate was allowed to leave the examination room during the last 15 minutes of the examination;</li> <li>• At a centre, on 19 July 2018, a latecomer was seen arriving at 09:50 and the examination had started at 09:00.</li> </ul>	<ul style="list-style-type: none"> <li>• Coastal TVET College (Umlazi)</li> <li>• Nkangala TVET College (Mpondozankomo)</li> <li>• Nkangala Training Centre (eMalahleni)</li> <li>• Gauteng College of Engineering and Technology</li> <li>• True Harvest College</li> </ul>
	<p>Three of the 22 centres achieved 75% for this criterion. The following findings were evident:</p> <ul style="list-style-type: none"> <li>• At Churchil Technical College, candidates were not escorted to the ablution facilities. The invigilator left the examination venue to collect question papers and the candidates were left unattended;</li> <li>• At Coastal KZN TVET College (Umlazi) an irregularity was observed for the current examination and a detailed report of the incident was forwarded to DHET;</li> <li>• At Germiston FET College unauthorised personnel were seen in the examination room during the examination session. Candidates left the examination room temporarily without any escort.</li> </ul>	<ul style="list-style-type: none"> <li>• Churchil Technical College</li> <li>• Coastal KZN TVET College (Umlazi)</li> <li>• Germiston FET College</li> </ul>

Criterion	Challenges/Concerns	Implicated centres/sites
<b>Packaging and transport of scripts after writing</b>	<p>Seventeen of the 22 centres (77%) complied with all the prescribed aspects of this criterion:</p> <ul style="list-style-type: none"> <li>All the answer scripts were collected by the Invigilators after the candidate(s) indicated they finished writing or at the end of the examination;</li> <li>Scripts were counted in a safe and secure area;</li> <li>Scripts were sealed in the official bags provided by the Assessment Body and was done in the presence of the Umalusi Monitor;</li> <li>Only authorised personnel transported scripts.</li> </ul>	<ul style="list-style-type: none"> <li>JFA Square Technical Training Institution</li> <li>Northern Cape TVET College (Moremogolo)</li> <li>Polokwane Correctional Services Centre</li> <li>Nkangala TVET College (Mpondozankomo)</li> <li>Nkangala Training Centre (eMalahleni)</li> <li>True Harvest College</li> <li>Tshwane North TVET College (Rosslyn)</li> <li>Northlink TVET College (Wingfield)</li> <li>Witbank Correctional Services Centre</li> <li>Germiston FET College</li> <li>Gauteng College of Engineering and Technology</li> <li>Crane International Academy</li> <li>Ehlanzeni TVET College (Mlumatj)</li> <li>Springfield FET College</li> <li>Academy of Business and Computer Studies (Pretoria)</li> <li>Jintek Varsity College</li> <li>Engineering Technology Academy</li> </ul>
	<p>Five of the 22 centres (23%) achieved 90% and complied with most of the set criteria:</p> <ul style="list-style-type: none"> <li>At two centres, a situational report was not completed.</li> </ul>	<ul style="list-style-type: none"> <li>Coastal KZN TVET College (Umlazi both campuses)</li> <li>Academy of Business and Computer Studies: (Johannesburg)</li> <li>Stanger FET College</li> <li>Churchil Technical College</li> </ul>
<b>Monitoring by the Assessment Body</b>	<ul style="list-style-type: none"> <li>Monitoring reports were made available in nine centres Umalusi staff visited.</li> </ul>	<ul style="list-style-type: none"> <li>Nkangala TVET College (Mpondozankomo)</li> <li>True Harvest College</li> <li>Tshwane North TVET College (Rosslyn)</li> <li>Germiston FET College</li> <li>Academy of Business and Computer Studies (Pretoria)</li> <li>Jintek Varsity College</li> <li>Engineering Technology Academy</li> <li>Coastal KZN TVET College (Umlazi)</li> <li>Churchil Technical College</li> </ul>

### **3.4 Irregularities Identified by Umalusi Monitors**

The monitors highlighted the following irregularities:

- At Coastal KZN TVET College (Umlazi), an irregularity was identified in which the invigilator saw that a candidate writing Engineering Science N3 had almost completed all questions after 40 minutes of writing. Two other candidates were found with crib notes. The correct procedure to manage the irregularity was followed and a report sent to DHET. A report of this irregularity was also sent to Umalusi;
- At Gauteng College of Engineering and Technology a candidate was allowed to leave the examination room during the last 15 minutes of the examination;
- At True Harvest College a candidate arrived at 09:50 to write the examination and the examination commenced at 09:00;
- At Germiston FET College it was observed that unauthorised personnel were in the examination room during the examination session, and this was reported to the chief invigilator; and
- At the Academy of Business and Computer Studies (Johannesburg), instruction was given to candidates to switch their cell phones off; however, it remained in the pockets of the candidates during the entire writing session.

### **3.5 Areas of Compliance**

The following areas of good practice were observed:

- Fourteen (64%) monitored centres fully complied with the criteria of activities during writing. Invigilators engaged actively and professionally in invigilation duties and were mobile and vigilant throughout the examination session. The examination proceeded without any occurrence of irregularities; and
- Sixteen (73%) monitored centres fully complied with the criteria of packaging and transmission of scripts after writing, thus packaging was done in safe and secure environment with only the designated authorised personnel being involved in the process. This was also applicable to delivery of scripts at nodal points.

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

The following aspects caused great concern:

- At Crane International Academy, Ehlanzeni TVET College (Mlumati), Engineering Technology Academy and Witbank Correctional Services Centre there was no evidence that the Assessment Body has trained the chief invigilator. At some centres their appointment letters were not evident;
- Gauteng College of Engineering and Technology only met one of the four requirements for invigilator training. The chief invigilator did not seem to be trained by the Assessment Body neither were invigilators. Letters of appointment were unavailable;
- At five of the centres no information board displaying relevant information of the examination was available;
- At four centres candidates were not checked for any material or equipment that was not required for writing and calculators were not checked for compliance prior to entering the examination room;
- A seating plan for examinations was not done at three centres and candidates then chose their own seats;

- There were no clocks evident in the examination room at three centres; and
- It was observed at Germiston FET College, Nkangala Training Centre (eMalahleni) and Churchil Technical College that candidates left the room temporarily without an escort.

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

To be sure that examinations are credible and fair, the DHET is required to ensure that:

- The appointment of chief invigilators is done in writing;
- As the chief invigilator, the principal or manager of the centre takes full responsibility for each examination;
- Prior to them entering the examination room, each candidate's identity is validated and that they are checked for being in possession of cell phones, materials or equipment that is not allowed;
- Invigilator roles and responsibilities are enforced. Candidates should, at no stage, be left alone without the presence of an invigilator and neither should candidates temporarily leave the examination room unaccompanied; and
- No unauthorised personnel should be allowed to enter the examination room.

### **3.8 Conclusion**

Umalusi observed pockets of good practice and most centres achieved the required standard satisfactorily. However, some critical and non-negotiable practices were compromised in some areas at certain centres. In all instances where non-compliance was reported, it will be appropriate for DHET to ensure that improvement is attended to and more closely watched, and policies are enforced.

# CHAPTER 4 MONITORING OF THE MARKING OF EXAMINATIONS

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## 4.1 Introduction

The marking of the August 2018 answer scripts for the NATED Report 190/191: Engineering Studies N2 and N3 examination was done at various marking centres that the Department of Higher Education and Training (DHET) identified.

This section of the report provides an overview of the compliance levels the DHET displayed by concerning adherence to policies, memoranda and related instructions issues for the marking processes of the NATED Report for Engineering Studies N2 and N3.

The marking models the Department of Higher Education and Training (DHET) followed for the August 2018 examinations were decentralised provincially for most N2 subjects and centralised nationally for most of the N3 subjects. Umalusi monitored the marking processes of the August 2018 Report 190/191: Engineering Studies N2 and N3 examinations at four marking centres.

The purpose of the monitoring was to determine whether the marking the Department of Higher Education and Training (DHET) had undertaken was conducted in accordance with the policies and marking instructions the Assessment Body had issued. The degree of fairness, validity and the manner in which the marking was conducted was also measured.

This chapter reports on the findings from the monitoring conducted at sampled marking centres. It provides an overview of the findings from the monitoring of the marking of the examination scripts and the DHET conduct, administration and management of the marking process. The extent to which the entire monitoring process complied with legislation governing examinations was verified.

## 4.2 Scope and Approach

Umalusi sampled four marking centres to determine the level of preparedness to undertake the marking of NATED Report 190/191: Engineering Studies N2 and N3 answer scripts. The use of an approved monitoring instrument for marking centres was implemented consistently across sampled centres.

The monitoring reports comprised the following criteria for the monitoring of the marking:

- Prior planning done at the marking centres;
- The suitability of the marking centre for conducting the marking processes;
- Adherence to security standards at the marking centres;
- The management of irregularities at the centres; and
- Monitoring the Assessment Body.

Table 4A depicts the four centres monitored during the August NATED Report 190/191 N2-N3 marking process.

**Table 4A: Examination centres monitored for the marking of examinations**

No.	Province	Centre	Date
1	Gauteng	Pretoria West	28 July 2018
2	Gauteng	Centurion	15 August 2018
3	KwaZulu-Natal	Northdale	11 August 2018
4	Limpopo	Seshego	11 August 2018

Table 6B reflects the number of scripts marked at the four centres visited and the number of markers appointed to mark at the respective centres.

**Table 4B: Number of scripts and number of markers at centres**

No.	Province	Centre	Number of scripts	Number of markers
1	Gauteng	Pretoria West	75 949	333
2	Gauteng	Centurion	60 856	105
3	KwaZulu-Natal	Northdale	25 833	99
4	Limpopo	Seshego	23 905	82

### 4.3 Summary of Findings

This summary merges the findings at the four marking centres and is informed by the respective reports of the four monitors.

#### 4.3.1 Planning for marking

The Marking Centre Manager bears the onus for the planning and execution of all marking related activities at the marking centre under their auspice.

The reports filed by the monitors during the marking cycle reflected the following:

- The four centres presented a marking management plan covering all the activities required;
- The marking centre personnel (Marking Centre Management and markers) at the four centres reported for duty at the centres which aligned with the marking management plan;
- A list of appointed marking personnel was observed at the four centres;
- Marking guidelines were received on time electronically from the DHET;
- As per the marking management plan all the marking personnel at three of the centres were trained;
- At two centres the marking started at 07:00 and ended daily at 19:00. At Centurion the markers were expected to mark 30 to 40 scripts per day.

The monitors noted the following challenges regarding the planning at the centres:

- At the Pretoria West Centre the Assessment Body provided the marking centre with the wrong marking guidelines for Engineering Drawing N2. The provided guidelines were not approved by Umalusi; and
- The Building Science N2 scripts were not available at the Pretoria West Centre for sample marking although the paper was written on 27 July 2018. Scripts had not arrived at the marking centre yet on the day of the monitor's visit (28 July 2018).

### 4.3.2 Suitability of marking centres infrastructure and physical resources

A conducive environment at the marking centres is required for the sustainability of the quality of the marking processes.

The monitors noted that:

- a) At the Pretoria West, Northdale, Centurion and Seshego centres the marking facilities were suitable for the marking processes and adequate space was available to accommodate all the answer scripts. Even empty classrooms were available nearby for any overflow of scripts (Seshego);
- b) Secure and adequate rooms were used as control hubs at the respective centres;
- c) The following communication facilities were available at the centres:
  - E-mail
  - Telephones (landlines)
  - Cell phones
  - Two-way radios at Seshego Marking Centre
- d) Three centres complied with the minimum Occupation Health and Safety requirements;
- e) Suitable furniture to accommodate the marking personnel was available at the four centres;
- f) Markers who live in closer proximity to the marking centres travelled to and from the marking centres on a daily basis while those who stayed far would receive a daily allowance for accommodation from the DHET.

At the Seshego Marking Centre

- a) A shortage of water on the day of the monitoring visit was observed and no contingency plans were available; and
- b) It was noticed that important emergency numbers were not available.

### 4.3.3 Security of marking venues

This focus area is regarded as critical for the safekeeping of examination scripts and the following findings were noted:

- a) Adequate security at the main entrances and within the marking premises was observed at all marking centres and comprised:
  - Declaration forms signed by all marking personnel (Pretoria West Centre);
  - Car searches and body searches conducted (Seshego Centre);
  - Car searches (Centurion);
  - Security staff on each floor where marking took place (Pretoria West and Centurion Centres); and
  - Marking personnel wearing name tags were escorted to the marking venues and signed on entrance and exit at the main gate. The markers used a designated parking area with security at the gate (Pretoria West Centre).
- b) Measures were observed to ensure that all scripts were accounted for during the marking process to control the flow of scripts at the four centres and included the following:
  - Script movement registers;
  - Accounting for all scripts before chief markers and internal moderators were cleared to leave the marking centre;
  - Examination assistants counted scripts before dispatching them to the marking rooms and verified the numbers when scripts were returned in the presence of the chief markers (Pretoria West Centre); and
  - Scripts were stamped before dispatch to the marking rooms (Pretoria West Centre).

#### 4.3.4 Handling of Irregularities

Irregularities identified during the marking process were either reported by markers of examination answer scripts or were any other acts committed by examination officials and markers and those which contravened any relevant national policies.

The findings revealed the following from the four centres monitored:

- a) Extensive training of the marking personnel ensured that they were fully aware of what constitutes an irregularity. Processes to deal with the irregularities the markers identified when marking were included in marking centre's plans.
- b) At all the centres the Irregularity Committee comprised the marking centre manager, a deputy marking centre manager: academic, chief markers and internal moderators;
- c) At Centurion a person was specifically allocated the task of documenting the reported irregularities;
- d) The scripts were clearly marked with tags attached and recorded before being sent to DHET for investigation. A daily irregularity register was also attached to a batch containing a script/s with identified irregularities (Pretoria West Centre);
- e) A copy of the script/s under investigation was left in the original batch and the original script, with a report from the Irregularity Committee, was sent to the DHET by courier. The deputy marking centre manager: academic e-mailed a summarised report to the DHET that was also used in the Irregularity Committee meeting (Northdale Marking Centre);
- f) The four centres introduced systems to control and the route to follow where a script could have been lost; and
- g) The marking centres reported all identified irregularities daily to the DHET and a record was kept in the allocated file at the marking centre.

The monitors reported the following identified or suspected irregularities:

- a) A script with different handwritings at Centurion Marking Centre; and
- b) An incident of a lost script was noted at Northdale Marking Centre.

#### 4.3.4 Monitoring by the Assessment Body

From the reports, the following findings regarding the monitoring visits by the DHET were noted:

- a) Five visits were conducted by the Assessment Body to the Seshego Marking Centre and a copy of the last report was available indicating the shortages of markers in some subjects due to the withdrawals and resignations of markers;
- b) At the Seshego Marking Centre the Assessment Body report noted that emergency numbers were not available, but this challenge had still not been addressed on the day of the monitor's next visit;
- c) The Assessment Body advised the Seshego Marking Centre to use markers from the reserve lists.
- d) Markers were not provided with a tuck shop facility and they were advised to bring lunch boxes with them or they were allowed to leave the premises to buy food;
- e) The Assessment Body conducted a monitoring visit in April 2018 at the Northdale Marking Centre and in the report it was stated that the marking centre should appoint five instead of three security guards. This directive was not adhered to due to budget constraints; and
- f) The Umalusi monitor attended a DHET presentation by an official outlining key issues to be noted during the marking of examination scripts (Pretoria West).

## 4.4 Areas of Compliance

Findings also confirmed the following primary areas of compliance as reported:

- The availability of detailed marking management plans and adherence to the marking plan at the centres was satisfactory;
- Adherence at the marking centres to the norm times for starting and closing each day when the marking was in progress was acceptable;
- Ample and adequate facilities at the respective centres hosting the marking processes were available;
- Compliance at three centres with the minimum Occupation Health and Safety requirements;
- Security measures at all four centres were well aligned with all the requirements with regard to the premises, the marking personnel and the flow and transportation of scripts;
- Extensive measures were in place at the four centres concerning identified irregularities such as daily records to, irregularity committees, the appointment of a designated person responsible for irregularities with strict systems to deal with the removal of scripts and lost answer scripts; and
- The DHET monitored all the marking centres prior to monitoring done by Umalusi and key issues were noted in reports that were available at the centres.

## 4.5 Areas of Non-compliance

The following areas of non-compliance were noted:

- The wrong, not Umalusi approved marking guidelines for Engineering Drawing N2 at the Pretoria West Centre;
- Building Science N2 scripts were not available for sample marking at the Pretoria West Marking Centre;
- At the Seshego Marking Centre a shortage of water was reported on the day of the visit and there were no contingency plans to meet this shortcoming;
- A suspected irregularity was shown to the monitor where a candidate had different handwritings on the same answer script at the Centurion Marking Centre;
- Inconsistent handling of irregularities across marking centres;
- An incident of a lost script was reported at the Northdale Marking Centre;
- At the Northdale Marking Centre the suggestion by the Assessment Body to appoint five security guards instead of three for the duration of the marking process was not done as the centre had experienced budget constraints); and
- Important emergency numbers were still not available at the Seshego Marking Centre as the Assessment Body advised.

## 4.6 Directives for Compliance and Improvement

The DHET must ensure that:

- Marking centres are provided with the correct, approved marking guidelines timeously;
- Scripts for sample marking must be delivered to marking centres in good time;
- Contingency plans for all required minimum Occupation Health and Safety requirements are available and used at all marking centres;
- The Marking Centre management teams, in cooperation with the Assessment Body, should address the appointment of extra security guards during the marking process; and
- Marking centres should have guidelines for the appointment of the number of security guards need at each marking centre.

## **4.7 Conclusion**

The level of preparedness at monitored marking centres was generally acceptable. The DHET is required to address the issued directives to keep in line and maintain a satisfactory standard.

# CHAPTER 5 STANDARDISATION OF MARKING GUIDELINES

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## 5.1 Introduction

It is crucial for Umalusi moderators to attend the marking guideline discussions to report on the standard of the marking guidelines and the preparedness of the marking panel.

The standardisation of marking guidelines provides a platform for markers, examiners, internal moderators and external moderators to discuss responses per question and to reach consensus before the final marking guidelines are approved.

The purpose of standardising the marking guidelines is to ensure that personnel involved in the marking process have a common understanding and interpretation of them. Furthermore, this process aims to ensure that all possible alternative responses are included in the final marking guidelines before it is implemented.

The standardisation of the marking guidelines for N2 and N3 was finalised by the Gauteng chief markers, internal moderators and markers, and the chief markers of Mpumalanga.

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

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

## 5.2 Scope and Approach

Umalusi deployed fourteen moderators to attend a sample of the N3 (seven) and N2 (five) marking guideline discussions (as listed below) on 28 July and 4 August 2018 at the Centurion and Pretoria West marking centres. The marking of structural offerings took place from the 11 August 2018, which gave sufficient time for the Pretoria West marking centre to finalise the amended marking guidelines and to send them to the respective marking centres across the provinces. Representatives from Umalusi attended the marking guideline discussion meetings at the marking centres as listed in

Tables 5A and 5B.

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

No.	Instructional offering	Date	Marking centre
1	Building Science N2	28 July 2018	Pretoria West
2	Electrical Trade Theory N2	4 August 2018	
3	Engineering Drawing N2	28 July 2018	
4	Engineering Science N2	28 July 2018	
5	Mathematics N2	28 July 2018	

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

No.	Instructional offering	Date	Marking centre
1	Aircraft Maintenance Theory N3	4 August 2018	Centurion
2	Building and Civil Technology N3	4 August 2018	Pretoria West
3	Engineering Science N3	28 July 2018	
4	Instrument Trade Theory N3	4 August 2018	
5	Mathematics N3	28 July 2018	
6	Mechanotechnology N3	4 August 2018	
7	Water Treatment Practice N3	4 August 2018	

Umalusi moderators signed the final approved marking guidelines off that were to be used to mark candidate's scripts in various provinces. They undertook several roles through observation at marking centres and discussions. Issues that were checked and verified concerned: the relevance of any changes made in the marking guidelines; the preparedness of marking personnel; doing and moderating sample marking; checking whether the minutes of the meetings represented a true reflection of what transpired during the meetings held; became mediators; offered sage advice and expert judgement regarding what would be appropriate alternative answers to questions.

## 5.3 Summary of Findings

### 5.3.1 Participation

The marking personnel contributed to the finalisation of the marking guidelines in all the instructional offerings (Tables 5A and B).

### 5.3.2 Status of marking guidelines and amendments

Corrections or amendments were made to the following marking guidelines during the discussions held:

- Aircraft Maintenance Theory N3 replaced wording "carburettor" to cylinders and changed mark allocation for three questions.
- In two questions of Building and Civil Technology N3, drawings were replaced.
- A concession was requested with a total of 14 marks for Building Science N2, the question paper would be marked out of 86 marks total. The question now had two unknowns. Past question papers only allowed for one unknown and it was felt that it was unfair. The chief

marker argued that such question could not have two unknowns, otherwise the candidates would have to guess which was not allowed for a particular instructional offering.

- For Electrical Trade Theory N2, alternative answers were added to certain questions in the marking guidelines.
- Additional notes were added for Engineering Drawing N2 to some of the answers, to ensure further standardisation or clarity to marking centres across the provinces.
- An incorrect answer and typographical error in Engineering Science N3 was corrected and in another question an alternative method was inserted.
- More additional responses were added in Instrument Trade Theory N3.
- Alternative answers were added to the Mathematics N3 and Mechanotechnology N3 marking guidelines. Mark distribution and instances and places where candidates would be penalised were highlighted in the marking guidelines.

### 5.3.3 Preparedness of marking centres

The planning, administration and management of the marking centres were done efficiently. For example, at the Pretoria West marking centre the DHET official presented an overview of marking principles to be adhered to so that the marking process ran smoothly. The panel discussions ensured that all participants developed a common understanding of the marking process to be followed.

The findings concerning marking centre preparedness are tabled below and represent the marking guideline discussion process for all the N2 and N3 instructional offerings included in the sample.

**Table 5C: Findings - marking guideline discussions N2 and N3**

Criteria	Findings	Instructional offerings
<b>Attendance by chief markers and internal moderators at the marking guideline discussion meetings</b>	The chief markers were present for all instructional offerings (100%) of the instructional offerings. Same as for August 2017 examination.	All sampled instructional offerings
	Markers were present for 92% of the instructional offerings.	Aircraft Maintenance Theory N3 Building and Civil Technology N3 Electrical Trade Theory N2 Engineering Drawing N2 Engineering Science N2 and N3 Instrument Trade Theory N3 Mathematics N2 and N3 Mechanotechnology N3 Water Treatment Practice N3
	The markers for Building Science N2 were not present on the day of the marking guideline discussion (8%).	
	Internal moderators were present for 92% of the instructional offerings.	Building and Civil Technology N3 Building Science N2 Electrical Trade Theory N2 Engineering Drawing N2 Engineering Science N2 and N3 Instrument Trade Theory N3 Mathematics N2 and N3 Mechanotechnology N3 Water Treatment Practice N3

Criteria	Findings	Instructional offerings
<b>Attendance by chief markers and internal moderators at the marking guideline discussion meetings</b>	The internal moderator for one instructional offering (Aircraft Maintenance Theory N3) was not appointed due to the small number of the scripts to be marked. (8%)	
<b>Punctuality</b>	In 67% of the instructional offerings, all marking personnel were on time and the marking guideline discussion meetings started as planned. A slight decrease of 8% from August 2017 examination.	Aircraft Maintenance Theory N3 Building and Civil Technology N3 Building Science N2 Electrical Trade Theory N2 Engineering Science N2 and N3 Instrument Trade Theory N3 Water Treatment Practice N3
	In the case of 25% of the question papers, a marker or several arrived late.	Mathematics N2 and N3 Mechanotechnology N3
	Two markers were absent in one instructional offering. (8%)	Engineering Drawing N2
<b>Ratio of scripts per marker</b>	The ratio of scripts per marker was within the limit or below the stipulated maximum of 300 in all the instructional offerings.	All sampled instructional offerings
<b>Contingency plans to address absenteeism among marking personnel</b>	Absent markers were telephoned by the marking centre managers. If there was no response or if the marker were unable to attend, the markers on the reserve list were contacted.	Engineering Drawing N2
<b>Training of marking personnel</b>	The marking centre managers ran a training session in the morning before the commencement of the marking guideline discussion meetings for all marking staff.	All sampled instructional offerings
<b>Appointment of marking staff</b>	Chief markers, internal moderators and markers were appointed for 92% of the instructional offerings, they received sms messages to confirm their appointment before marking commencement. The same pool of markers who marked in April 2018 were used for the August 2018 marking sessions.	Building and Civil Technology N3 Building Science N2 Electrical Trade Theory N2 Engineering Drawing N2 Engineering Science N2 and N3 Instrument Trade Theory N3 Mathematics N2 and N3 Mechanotechnology N3 Water Treatment Practice N3
	The internal moderator for one instructional offering was not appointed due to the small number of the scripts to be marked. (8%)	Aircraft Maintenance Theory N3
<b>Preparedness of the chief markers, markers and internal moderators for marking guideline discussions</b>	In 75% of the instructional offerings, the marking personnel came prepared for the marking guideline discussion meetings, each with their own worked out marking guidelines. No improvement as it is the same percentage compared to August 2017.	Aircraft Maintenance Theory N3 Building and Civil Technology N3 Building Science N2 Electrical Trade Theory N2 Engineering Science N2 and N3 Instrument Trade Theory N3 Mathematics N2 and N3
	Two markers answered only two questions and made copies of the other three questions.	Engineering Drawing N2
	The internal moderator did not answer two questions.	Water Treatment Practice N3
	One marker copied a question from another fellow marker.	Mechanotechnology N3

Criteria	Findings	Instructional offerings
<b>Adjustments made to marking guidelines during the marking guideline discussion</b>	Adjustments were made to 100% of the marking guidelines. Adjustments were made to include alternative answers and correct items.	All sampled instructional offerings
<b>Sharing of marking guideline changes between marking centres</b>	The approved and signed off marking guidelines to be marked at other marking centres, would be sent through Drop Box by the marking centre manager. The DHET officials verified if all marking centres received the marking guidelines.	
<b>Justification for changes to the marking guidelines</b>	The adjustment changes to marking guidelines were justified for all instructional offerings during marking guideline discussions.	
<b>Impact of changes to marking guidelines on cognitive level of answers</b>	No changes to cognitive levels were caused by adjustments for instructional offerings which had adjustments.	
<b>Sample marking: each marker received scripts to mark</b>	In 92% of the instructional offerings, markers received scripts to mark. A decrease from 100% for the August 2017 examination.	Aircraft Maintenance Theory N3 Building and Civil Technology N3 Electrical Trade Theory N2 Engineering Drawing N2 Engineering Science N2 and N3 Instrument Trade Theory N3 Mathematics N2 and N3 Mechanotechnology N3 Water Treatment Practice N3
	The scripts for one instructional offering did not arrive by the time the marking guideline discussions began, hence no sample marking could be done (8%).	Building Science N2
<b>Sample marking: each marker marked a copy of the same script</b>	In 92% of the instructional offerings where sample scripts were marked, markers received the same scripts to mark to establish consistency in marking.	
	On completion of the sample marking discussions, markers rectified mistakes accordingly so that candidates were not unfairly disadvantaged.	
<b>Sample marking: each marker received a sample of scripts from a range of centres</b>	In 67% of the instructional offerings, markers received a sample of scripts to mark from a range of centres.	Aircraft Maintenance Theory N3 Building and Civil Technology N3 Electrical Trade Theory N2 Engineering Drawing N2 Engineering Science N2 and N3 Instrument Trade Theory N3 Mathematics N2 and N3 Mechanotechnology N3 Water Treatment Practice N3
<b>Performance of markers for sample marking</b>	The standard of sample marking was rated as average in three instructional offerings (25%).	Engineering Drawing N2 Engineering Science N3 Mathematics N3

Criteria	Findings	Instructional offerings
<b>Performance of markers for sample marking</b>	The standard of sample marking was rated as good in six instructional offerings (50%).	Aircraft Maintenance Theory N3 Building and Civil Technology N3 Electrical Trade Theory N2 Instrument Trade Theory N3 Mathematics N2 Mechanotechnology N3
	The standard of sample marking was rated as excellent in two instructional offerings (17%).	Engineering Science N2 Water Treatment Practice N3
<b>Standard of internal moderation</b>	The standard of internal moderation was rated as average in one instructional offering.	Mathematics N3
	The standard of internal moderation was rated as good in six instructional offerings.	Building and Civil Technology N3 Engineering Drawing N2 Engineering Science N2 Instrument Trade Theory N3 Mechanotechnology N3 Water Treatment Practice N3
	Internal moderation of sample marking did not take place for three instructional offerings. The internal moderator discussed the marking of each question with all markers upon completion of the sample marking process.	Aircraft Maintenance Theory N3 Engineering Science N3 Mathematics N2
	Internal moderation of sample marking did not take place for one instructional offering. The internal moderator discussed the marking of each question with all markers on completion of sample marking.	Electrical Trade Theory N2
<b>Measures to address inconsistency in marking and calculation errors and adjustments made to the marking guidelines after sample marking</b>	Chief markers and internal moderators moderated and checked consistency.	All sampled instructional offerings
	Adjustments were not made to marking guidelines after the sample marking process in 92% of the instructional offerings. Compared to 62% of the August 2017 examination.	All sampled instructional offerings
<b>Signing the marking guidelines off</b>	External moderators signed the adjusted marking guidelines off for 100% of the instructional offerings.	All sampled instructional offerings
<b>Conduct of the marking staff</b>	No problems were experienced with the marking staff during the marking guideline discussions for 92% of the instructional offerings.	Aircraft Maintenance Theory N3 Building and Civil Technology N3 Building Science N2 Electrical Trade Theory N2 Engineering Drawing N2 Engineering Science N2 and N3 Instrument Trade Theory N3 Mathematics N3 Mechanotechnology N3 Water Treatment Practice N3

Criteria	Findings	Instructional offerings
<b>Conduct of the marking staff</b>	It was reported that markers refused to mark sample scripts from multiple centres and each marker only marked a single script because the appointed officials wanted to leave by 16:00.	Mathematics N2
<b>External moderator recommendations</b>	The accuracy of the pre-worked out marking guidelines of the markers should be verified and checked to determine if the markers were indeed capable of marking a particular instructional offering. The internal moderator should moderate the marking of the sampled scripts and thereafter the chief marker can allocate which question(s) each marker should do based on their assessed performance.	

## 5.4 Areas of Compliance

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

- Discussions around the solutions in the marking guidelines were in depth and would facilitate the process of marking as consensus was reached for all solutions and answers;
- The external moderators and Umalusi staff observed that the marking centre management teams were always readily available to assist the marking panels on site; and
- Reappointment of same markers who marked for the previous examinations ensured that the process was smooth as they brought and shared their experiences to the current marking processes.

## 5.5 Areas of Non-compliance

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

- Building Science N2 markers were not available on the day of marking, for unknown reasons. Sample marking was not done because scripts had not arrived at the marking centre;
- The markers (25%) who arrived late at the marking centre missed the briefing sessions in which the marking centre manager addressed adjustments and procedures to follow;
- The marking guidelines some of the marking personnel offered were poor, for example, Engineering Drawing N2;
- Internal moderation of sample scripts was not done for three instructional offerings;
- Preparedness of markers: markers still do not accept the reasons why they should bring their own worked out marking guidelines to the marking venue. They still rely heavily on the marking guidelines provided at the marking centre; and
- The marking panel for Mathematics N2, failed to mark the sampled scripts for a different range of centres because they wanted the marking guideline meeting to end by 16:00.

## 5.6 Directives for Compliance and Improvement

The DHET must ensure that:

- All marking personnel come prepared for the marking guideline discussions;
- Sample scripts for all instructional offerings are available on the day the marking guideline discussions are held;
- The process of sample marking is concluded on the day of marking guideline discussion and cover a range of centres;

- Internal moderation of sample marking is done for all the instructional offerings; and
- Marking personnel attend the full session of the marking guideline discussion to ensure that all processes are completed.

## **5.7 Conclusion**

Discussion on the marking guidelines is of utmost importance for their finalisation and adhering to all processes and procedures is essential. More emphasis should be placed on the submission of markers own marking guidelines prepared, their correctness and understanding of the questions. During this meeting, justice must be done to sample marking and moderation so as not to disadvantage candidates during the marking process.

# CHAPTER 6 VERIFICATION OF MARKING

## 6.1 Introduction

The moderation of marking is of vital importance as it is largely through this process that the standard and quality of marking is verified. Umalusi verifies the conduct of the marking process to ensure consistency and accuracy of marking, as well as to establish that both the marking and the internal moderation are conducted according to agreed and established practices and standards.

Umalusi verified the marking of a sample of NATED Report 190/191 Engineering Studies N2 and N3 August 2018 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 at the marking centres.

## 6.2 Scope and Approach

Umalusi conducted an on-site verification of marking from 13 to 17 August 2018 at various marking centres in eight provinces. Fourteen moderators were deployed to verify the marking of a sample of 14 N2 and N3 instructional offerings at Mpondozankomo for three instructional offerings, two at Northdale, one each at Thornton and Iqhayiya and seven at Pretoria West. Umalusi planned to moderate 20 scripts for each instructional offering through contracted external moderators. Each moderator verified the marking of an instructional offering at one marking centre. The dates when this was done is given in Table 6A.

**Table 6A: Verification of marking conducted**

No.	Instructional offering	Date	Marking centre
1	Building Drawing N2	16 August 2018	Mpondozankomo
2	Building Drawing N3	17 August 2018	Pretoria West
3	Electrical Trade Theory N3	16 August 2018	Pretoria West
4	Electrotechnology N3	16 August 2018	Mpondozankomo
5	Engineering Science N3	16 August 2018	Northdale
6	Fitting and Machining Theory N2	16 August 2018	Mpondozankomo
7	Instrument Trade Theory N3	13 August 2018	Pretoria West
8	Mathematics N2	16 August 2018	Northdale
9	Mathematics N3	16 August 2018	Pretoria West
10	Motor Trade Theory N3	16 August 2018	Iqhayiya
11	Plating and Structural Steel Drawing N3	16 August 2018	Pretoria West
12	Plumbing Theory N2	16 August 2018	Thornton
13	Refrigeration Trade Theory N3	16 August 2018	Pretoria West
14	Water and Wastewater Treatment Practice N2	15 August 2018	Pretoria West

Moderators were tasked to sample at least 20 marked scripts from across the provinces and examination centres marked at the specific marking centre. The number of marking centres and the provinces included in the sample per instructional offering are indicated in Table 6B. The reason for the inclusion of scripts from only one marking centre is that Umalusi only verified that particular marking centre noting that the instructional offering might have been marked at other marking centres as well.

**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 Drawing N2	1	-	-	-	-	-	9	-	-	-	-
Building Drawing N3	9	1	1	1	1	1	1	1	1	1	-
Electrical Trade Theory N3	6	1	-	-	1	2	-	2	2	-	1
Electrotechnology N3	1	-	-	-	-	-	11	-	-	-	-
Engineering Science N3	1	-	-	-	-	20	-	-	-	-	-
Fitting and Machining Theory N2	1	-	-	-	-	-	27	-	-	-	-
Instrument Trade Theory N3	9	1	1	1	-	1	2	1	2	1	1
Mathematics N2	1	-	-	-	-	19	-	-	-	-	-
Mathematics N3	3	-	-	-	-	-	-	-	9	3	2
Motor Trade Theory N3	8	1	-	1	1	3	1	1	4	-	1
Plating and Structural Steel Drawing N3	7	2	-	1	-	2	2	6	4	-	1
Plumbing Theory N2	1	5	-	-	-	-	-	-	-	-	-
Refrigeration Trade Theory N3	3	1	-	-	-	-	-	1	-	-	1
Water and Wastewater Treatment Practice N2	5	-	-	-	1	2	1	1	2	-	-

\*Centres outside the borders of South Africa

## 6.3 Findings

### 6.3.1 Summary of findings

The table below captures the most important findings for the 14 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
<b>Amendments to the marking guidelines</b>	Changes were made to the marking guidelines of 71% of the instructional offerings at the marking guideline discussion meetings.	Building Drawing N3 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Mathematics N2 Mathematics N3 Engineering Science N3 Motor Trade Theory N3 Plumbing Theory N2 Instrument Trade Theory N3
	No changes were made to the marking guidelines of 21% of the instructional offerings at the marking guideline discussion meetings.	Building Drawing N2 Fitting and Machining Theory N2 Refrigeration Trade Theory N3 Water and Wastewater Treatment Practice N2
	Additions were made to the marking guidelines of 14 % of the instructional offerings during the marking process.	Engineering Science N3 Instrument Trade Theory N3
	No additions were made to the marking guidelines of 86 % of the instructional offerings during the marking process.	Building Drawing N3 Building Drawing N2 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Fitting and Machining Theory N2 Refrigeration Trade Theory N3 Mathematics N2 Mathematics N3 Motor Trade Theory N3 Plumbing Theory N2 Water and Wastewater Treatment Practice N2
<b>Availability of answer scripts for marking and moderation</b>	Almost all (90%) the expected examination instructional offerings' scripts had been received by the time external moderation took place. An increase of 18% to that of August 2017.	Building Drawing N3 Building Drawing N2 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Fitting and Machining Theory N2 Refrigeration Trade Theory N3 Mathematics N2 Engineering Science N3 Motor Trade Theory N3 Plumbing Theory N2 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3
<b>Training for marking</b>	Training for marking was conducted in 93% of the instructional offerings. A slight increase of 1% to that of August 2017.	Building Drawing N3 Building Drawing N2 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Fitting and Machining Theory N2 Refrigeration Trade Theory N3 Mathematics N2 Mathematics N3

Evaluation criteria	Findings and challenges	Instructional offerings
<b>Training for marking</b>		Engineering Science N3 Motor Trade Theory N3 Plumbing Theory N2 Instrument Trade Theory N3
<b>Marking approach</b>	A whole script marking approach was adopted in 36% of the instructional offerings.	Building Drawing N2 Motor Trade Theory N3 Plumbing Theory N2 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3
	Marking per question approach was followed in 64% of the instructional offerings. A decline of 19% to that of August 2017.	Building Drawing N3 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Fitting and Machining Theory N2 Refrigeration Trade Theory N3 Mathematics N2 Mathematics N3 Engineering Science N3 Motor Trade Theory N3
<b>Adherence to the marking guidelines</b>	Adherence to marking guidelines was rated as poor in 7% of the instructional offerings. An improvement of 10% to that of August 2017.	Building Drawing N2
	Adherence to marking guidelines was rated as average in 14% of the instructional offerings.	Fitting and Machining Theory N2 Mathematics N3
	Adherence to marking guidelines was rated as good in 79% of the instructional offerings. An improvement of 12% to that of August 2017.	Building Drawing N3 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Refrigeration Trade Theory N3 Mathematics N2 Engineering Science N3 Motor Trade Theory N3 Plumbing Theory N2 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3
<b>Standard of marking</b>	The standard of marking was rated as average in 14% of the instructional offerings.	Fitting and Machining Theory N2 Mathematics N3
	Standard of marking was rated as good in 79% of the instructional offerings. An improvement of 13% to that of August 2017.	Building Drawing N3 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Refrigeration Trade Theory N3 Mathematics N2 Engineering Science N3 Motor Trade Theory N3 Plumbing Theory N2 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3

Evaluation criteria	Findings and challenges	Instructional offerings
<b>Standard of marking</b>	The standard of marking was rated as poor in 7% of the instructional offerings. An improvement of 10% to that of August 2017.	Building Drawing N2
<b>Administration</b>	The prescribed administrative procedure for mark allocation was followed in 93% of instructional offerings verified. A slight improvement of 1% to that of August 2017.	Building Drawing N3 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Fitting and Machining Theory N2 Refrigeration Trade Theory N3 Mathematics N2 Mathematics N3 Engineering Science N3 Motor Trade Theory N3 Plumbing Theory N2 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3
	Marks were indicated per question in all the instructional offerings.	All instructional offerings
	In all the instructional offerings, mistakes were clearly indicated. An improvement of 8% to that of August 2017.	All instructional offerings
	In 93% of instructional offerings, marks were transferred correctly to the cover page and mark sheet. A slight increase of 1% to that of August 2017.	Building Drawing N3 Building Drawing N2 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Fitting and Machining Theory N2 Refrigeration Trade Theory N3 Mathematics N2 Engineering Science N3 Motor Trade Theory N3 Plumbing Theory N2 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3
	In 7% of instructional offerings, marks were not transferred correctly to the cover page and mark sheet.	Mathematics N3
	In 86% of instructional offerings mark sheets were correctly completed. A decline of 14% to that of August 2017.	Building Drawing N3 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Fitting and Machining Theory N2 Refrigeration Trade Theory N3 Mathematics N3 Engineering Science N3 Motor Trade Theory N3 Plumbing Theory N2 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3

Evaluation criteria	Findings and challenges	Instructional offerings
<b>Administration</b>	In 64% of instructional offerings, notes were kept throughout the marking period. A decline of 3% to that of August 2017.	Building Drawing N3 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Mathematics N2 Mathematics N3 Engineering Science N3 Motor Trade Theory N3 Plumbing Theory N2 Instrument Trade Theory N3
	No notes were kept throughout the marking period in 36% of the instructional offerings.	Building Drawing N2 Electrotechnology N3 Fitting and Machining Theory N2 Refrigeration Trade Theory N3 Mathematics N2 Water and Wastewater Treatment Practice N2
	The code/name of the marker was indicated in red ink on the cover page next to the question marked in 93% of the instructional offerings. A slight improvement of 1% to that of August 2017.	Building Drawing N3 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Fitting and Machining Theory N2 Refrigeration Trade Theory N3 Mathematics N2 Mathematics N3 Engineering Science N3 Motor Trade Theory N3 Plumbing Theory N2 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3
	The name of the internal moderator was clearly indicated in 67% of the 12 instructional offerings moderated. A decline of 16% to that of August 2017.	Building Drawing N3 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Trade Theory N3 Mathematics N2 Motor Trade Theory N3 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3
<b>Internal moderation</b>	In 14 instructional offerings which were verified, two of them were not internally moderated due to low expected number of scripts, viz. Refrigeration Trade Theory N3 and Plumbing Theory N2. There was evidence of moderation throughout the marking process for all the other (12) instructional offerings.	Building Drawing N3 Building Drawing N2 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Fitting and Machining Theory N2 Mathematics N2 Mathematics N3 Engineering Science N3 Motor Trade Theory N3 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3

Evaluation criteria	Findings and challenges	Instructional offerings
<b>Internal moderation</b>	In 75% of the 12 instructional offerings, examination scripts from all the examination centres were moderated. The same as that of August 2017.	Building Drawing N3 Building Drawing N2 Plating and Structural Steel Drawing N3 Electrotechnology N3 Fitting and Machining Theory N2 Mathematics N3 Engineering Science N3 Plumbing Theory N2 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3
	In 25% of the 12 instructional offerings, not all the examination centres were included in the moderation process.	Electrical Trade Theory N3 Mathematics N2 Water and Wastewater Treatment Practice N2
	The internal moderator moderated all the questions in a script (whole script moderation) in all the 12 instructional offerings. An increase of 8% to that of August 2017.	Building Drawing N3 Building Drawing N2 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Fitting and Machining Theory N2 Mathematics N2 Mathematics N3 Engineering Science N3 Motor Trade Theory N3 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3
	The standard of internal moderation was rated as poor in 17% of the 12 instructional offerings which were moderated. The same as that of August 2017.	Building Drawing N2 Mathematics N3
	The standard of internal moderation was rated as average in 16% of the instructional offerings.	Fitting and Machining Theory N2 Mathematics N2
	The standard of internal moderation was rated as good in 67% of the instructional offerings. An improvement of 9% to that of August 2017.	Building Drawing N3 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Refrigeration Trade Theory N3 Engineering Science N3 Motor Trade Theory N3 Plumbing Theory N2 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3

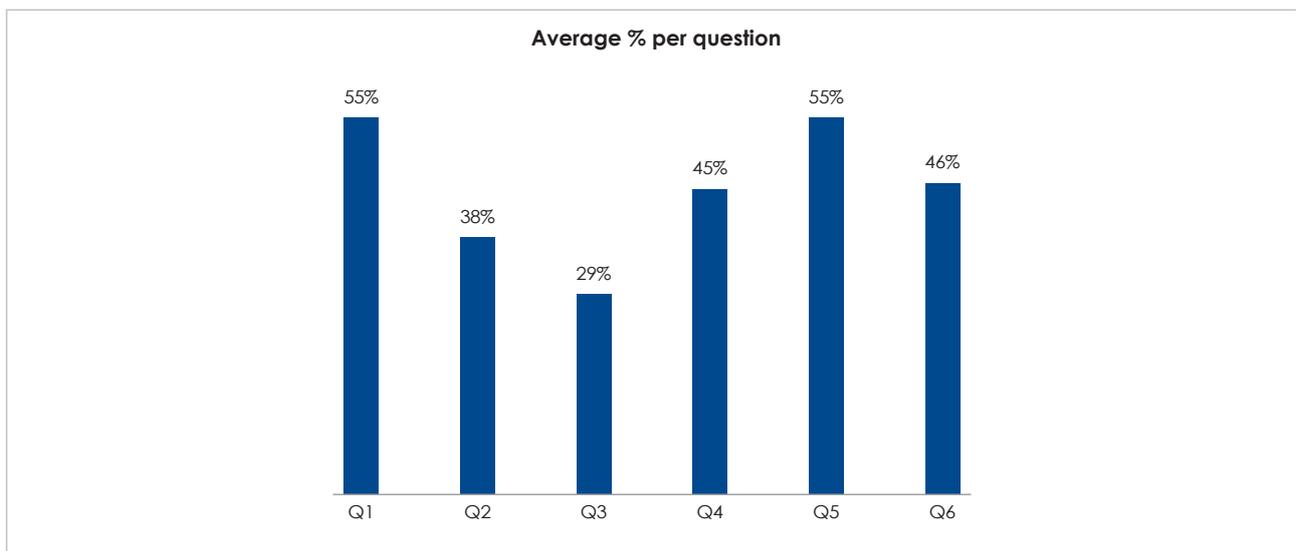
Evaluation criteria	Findings and challenges	Instructional offerings
<b>Response to the examination question paper</b>	The candidates' performance was in line with predictions in 86% of the instructional offerings. An improvement of 11% to that of August 2017.	Building Drawing N2 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Fitting and Machining Theory N2 Mathematics N2 Mathematics N3 Engineering Science N3 Motor Trade Theory N3 Plumbing Theory N2 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3
	Candidates in 79% of instructional offerings found the question paper fair. An increase of 37% to that of August 2017.	Building Drawing N2 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Fitting and Machining Theory N2 Mathematics N3 Engineering Science N3 Motor Trade Theory N3 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3
	Candidates in 21% of instructional offerings found the question paper difficult.	Building Drawing N3 Refrigeration Trade Theory N3 Mathematics N2
<b>Prevention and handling of irregularities</b>	Irregularities were reported to the marking centre manager and handled according to examination guidelines (79% of instructional offerings).	Building Drawing N3 Building Drawing N2 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Refrigeration Trade Theory N3 Mathematics N3 Motor Trade Theory N3 Plumbing Theory N2 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3
	No irregularities had been identified or reported in 21% of the instructional offerings by the time external moderation has started.	Fitting and Machining Theory N2 Mathematics N2 Engineering Science N3
<b>Conduct at the marking centre</b>	In 86% of the instructional offerings, markers were disciplined, professional, punctual, committed and quiet. Cell phones were switched off and the attendance register was signed. A decline of 14% to that of August 2017.	Building Drawing N3 Building Drawing N2 Electrical Trade Theory N3 Plating and Structural Steel Drawing N3 Electrotechnology N3 Fitting and Machining Theory N2 Refrigeration Trade Theory N3 Engineering Science N3 Motor Trade Theory N3 Plumbing Theory N2 Water and Wastewater Treatment Practice N2 Instrument Trade Theory N3

Evaluation criteria	Findings and challenges	Instructional offerings
<b>Comments on improvement of teaching and learning</b>	<p>From the discussions with the marking personnel it was evident that:</p> <ul style="list-style-type: none"> <li>Lecturers needed to research the different topics and bring to the class the relevant information to broaden students' understanding and knowledge;</li> <li>Colleges and DHET need to arrange and make it compulsory for Trade Theory lecturers to be placed on Work Integrated Learning (WIL) courses so they could cope with introducing registered students to the latest technology;</li> <li>Exposure to the practical component is required for NATED Report 190/191 students to improve their understanding;</li> <li>Subject Advisors are required to assist, monitor and support lecturers. Continuous monitoring of teaching and learning is required; and</li> <li>Lecturers need to be continuously updated and/or trained in instructional offering content.</li> </ul>	To all related and relevant instructional offerings

### 6.3.2 Performance of candidates

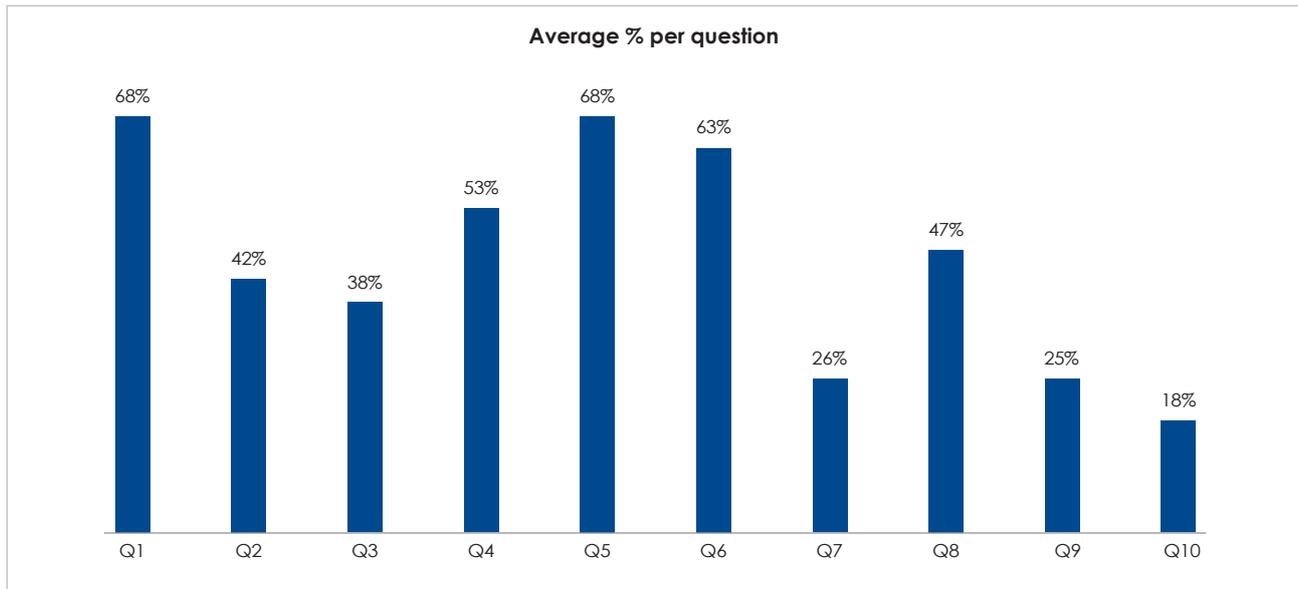
The figures and distribution tables given below show the performance and the mark distribution of candidates per instructional offering per question. The figures and distribution tables in this section are based on the samples Umalusi moderated.

#### a) Building Drawing N2



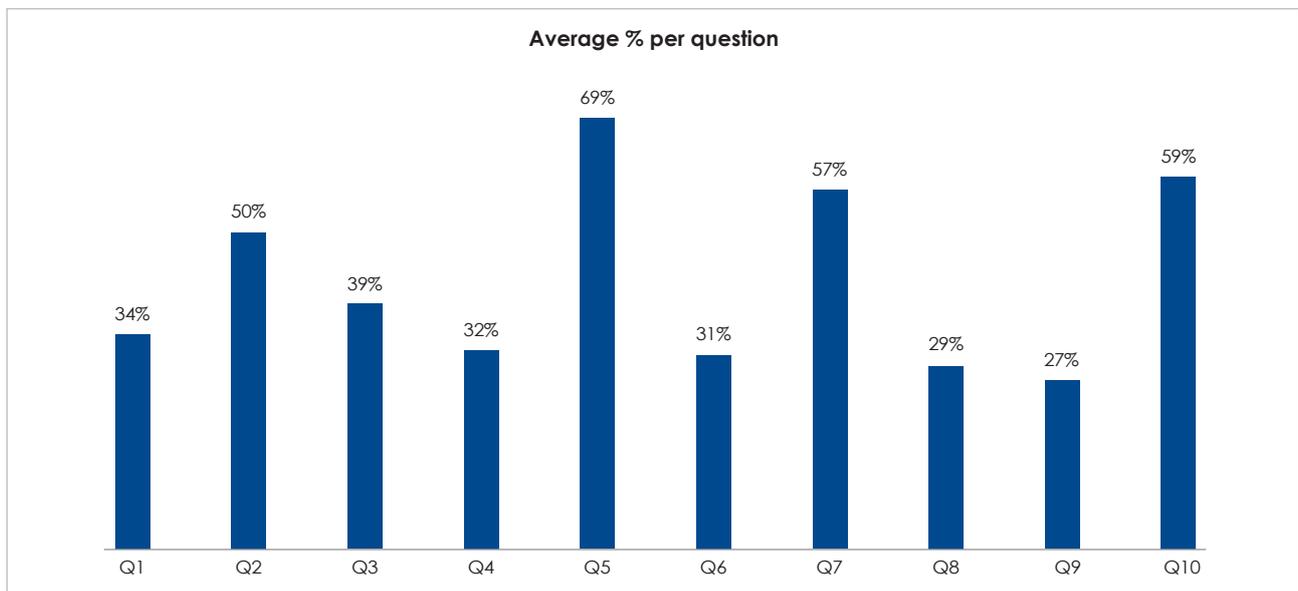
Mark Distribution (Percentage)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
1	0	1	5	5	7	1	0	0	0

**b) Electrical Trade Theory N3**



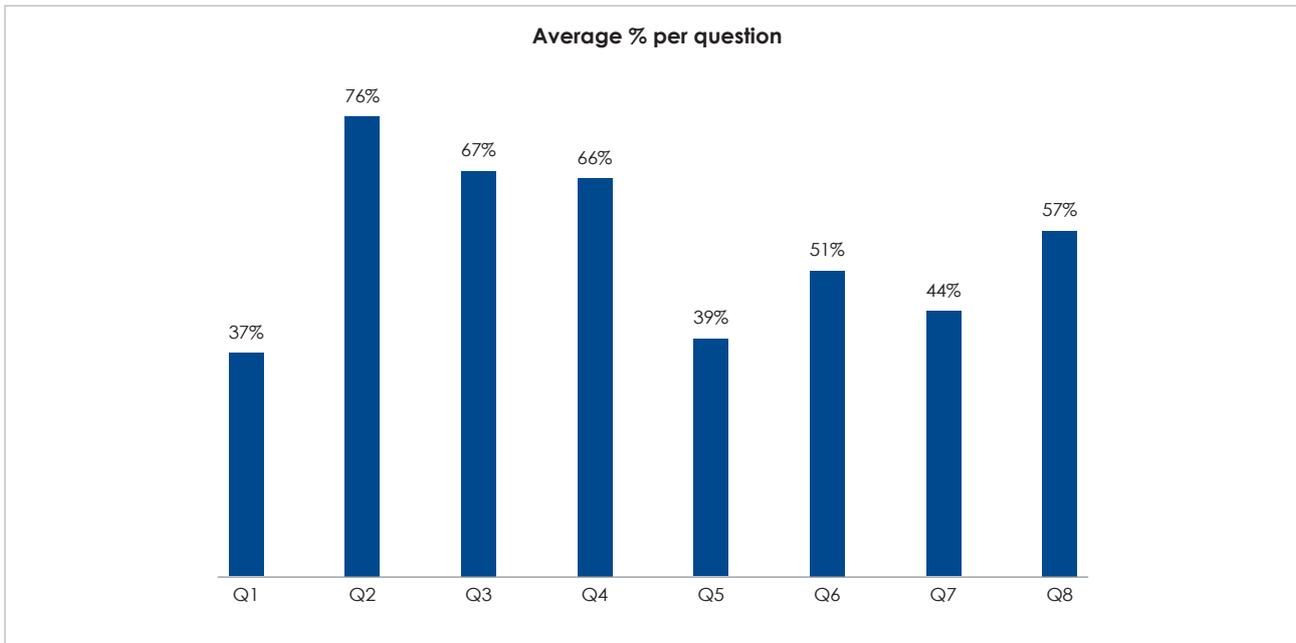
Mark Distribution (Percentage)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
0	0	5	2	3	8	1	1	0	0

**c) Electrotechnology N3**



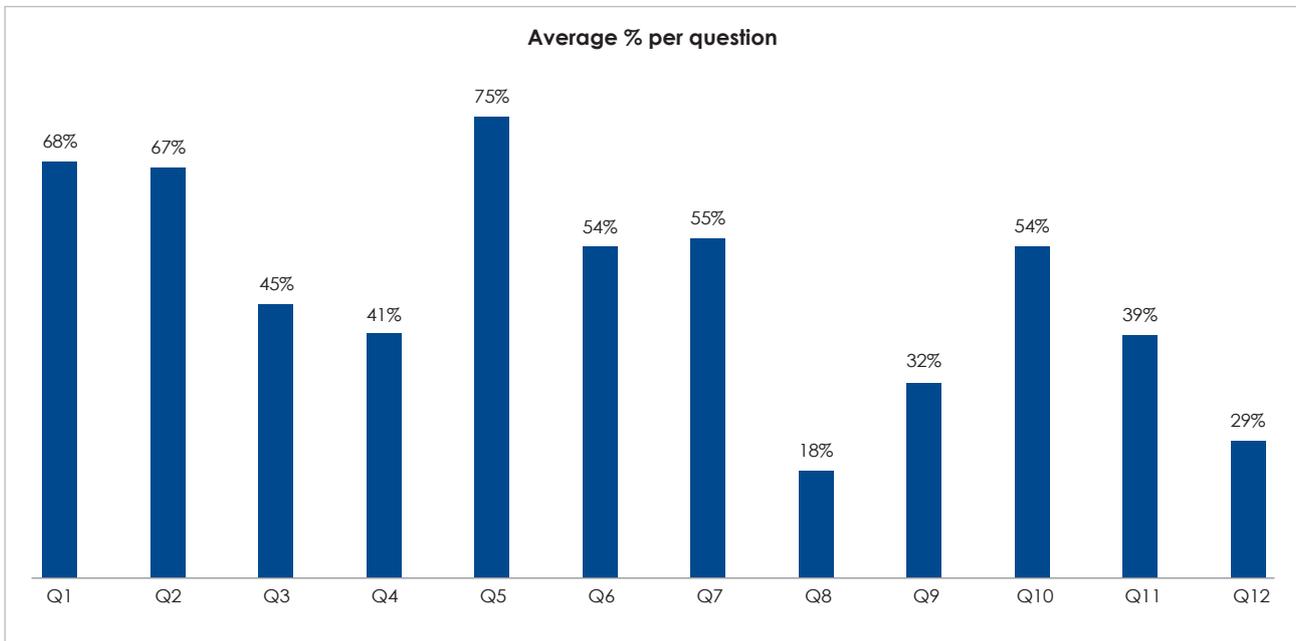
Mark Distribution (Percentage)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
0	3	2	7	3	3	1	1	0	0

**d) Engineering Science N3**



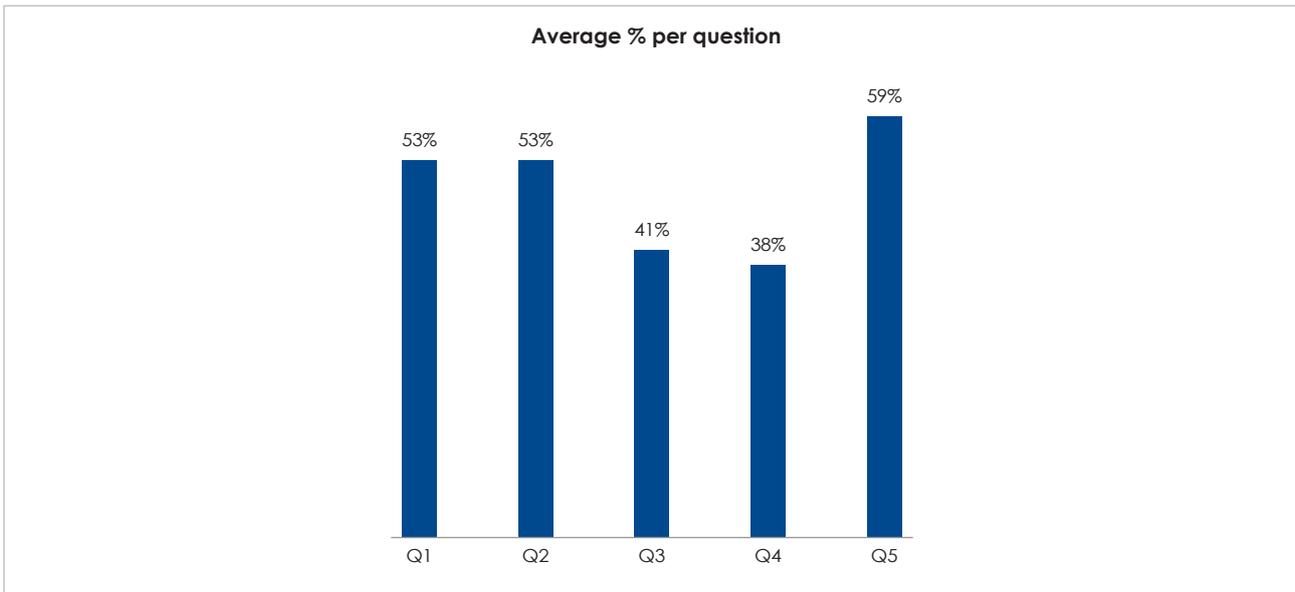
Mark Distribution (Percentage)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
0	2	2	2	3	2	2	4	3	0

**e) Fitting and Machining Theory N2**



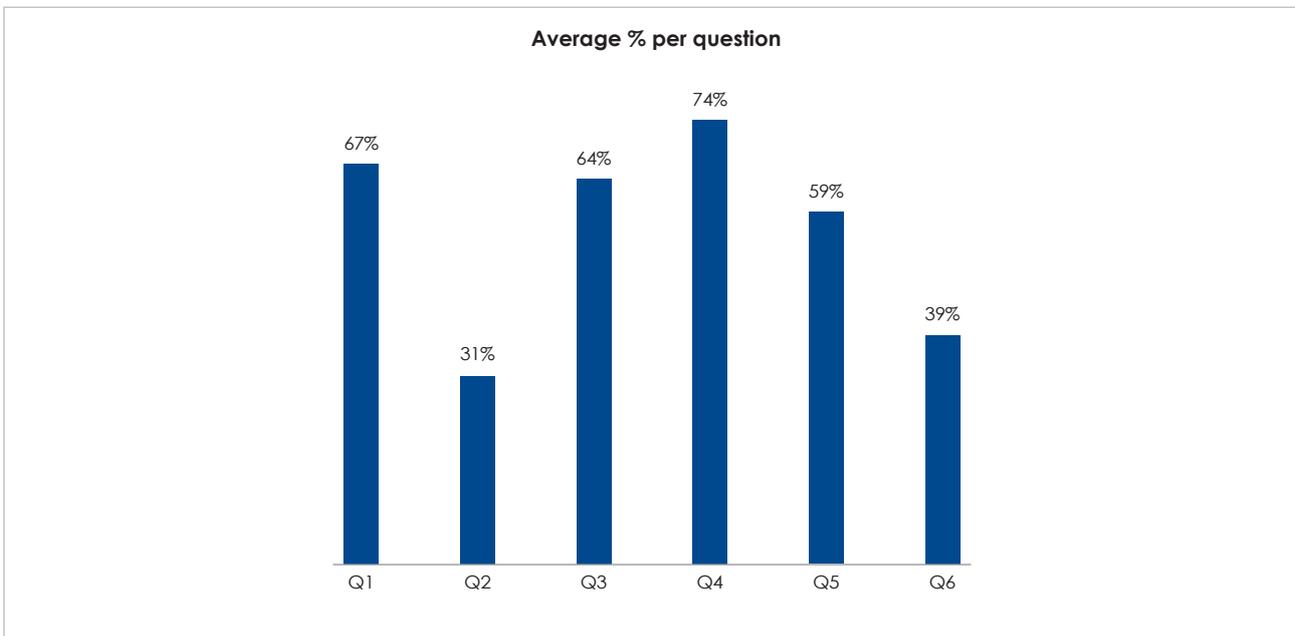
Mark Distribution (Percentage)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
1	2	2	5	5	4	1	0	0	0

**f) Mathematics N2**



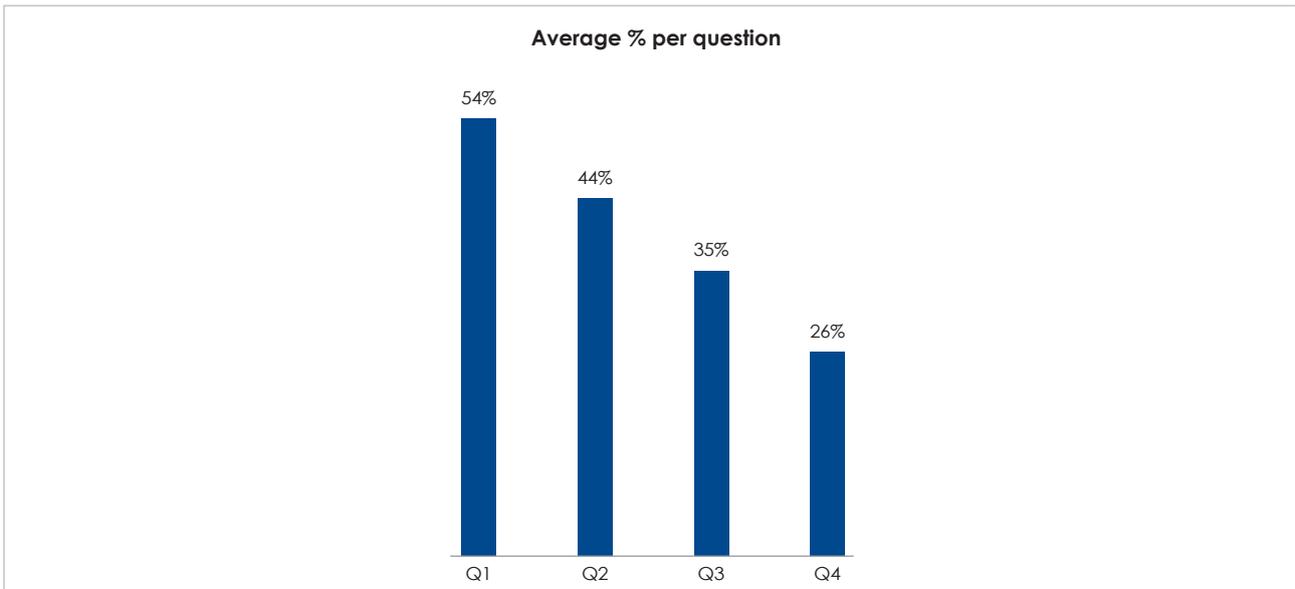
Mark Distribution (Percentage)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
0	1	1	4	6	3	2	2	1	0

**g) Mathematics N3**



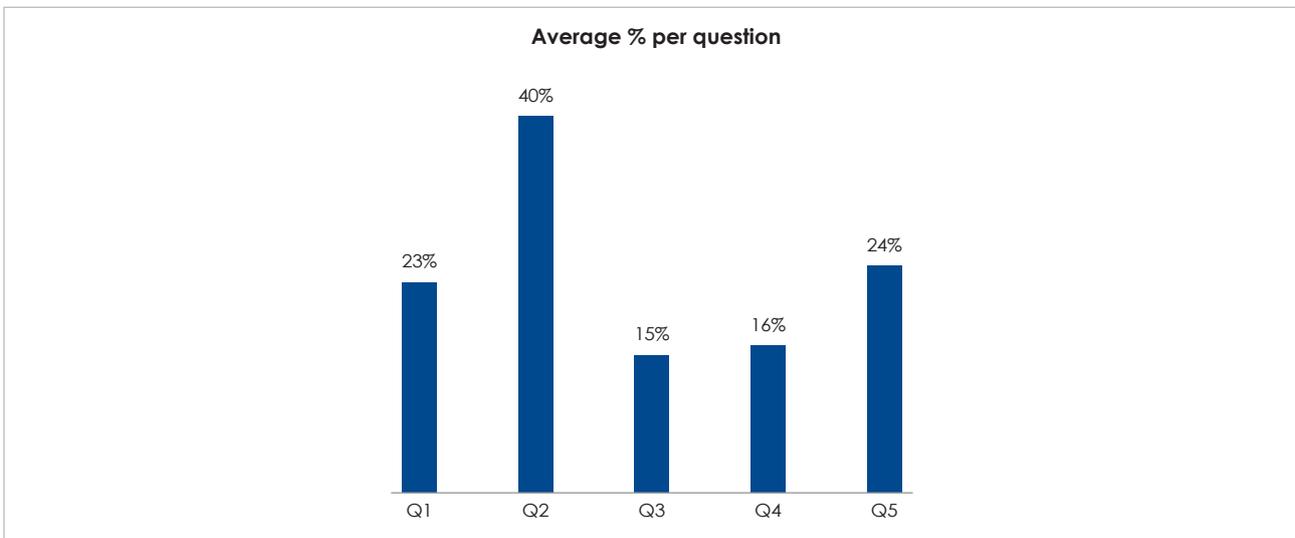
Mark Distribution (Percentage)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
1	1	0	1	5	1	7	2	2	0

**h) Motor Trade Theory N3**



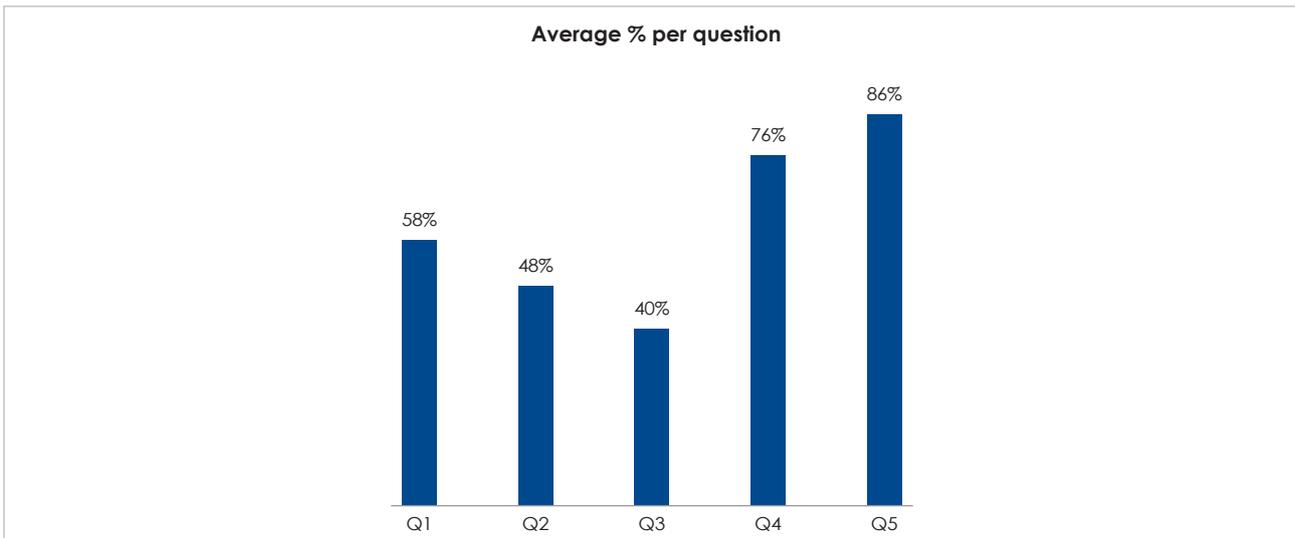
Mark Distribution (Percentage)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
0	2	5	5	1	5	1	0	1	0

**i) Plating and Structural Steel Drawing N3**



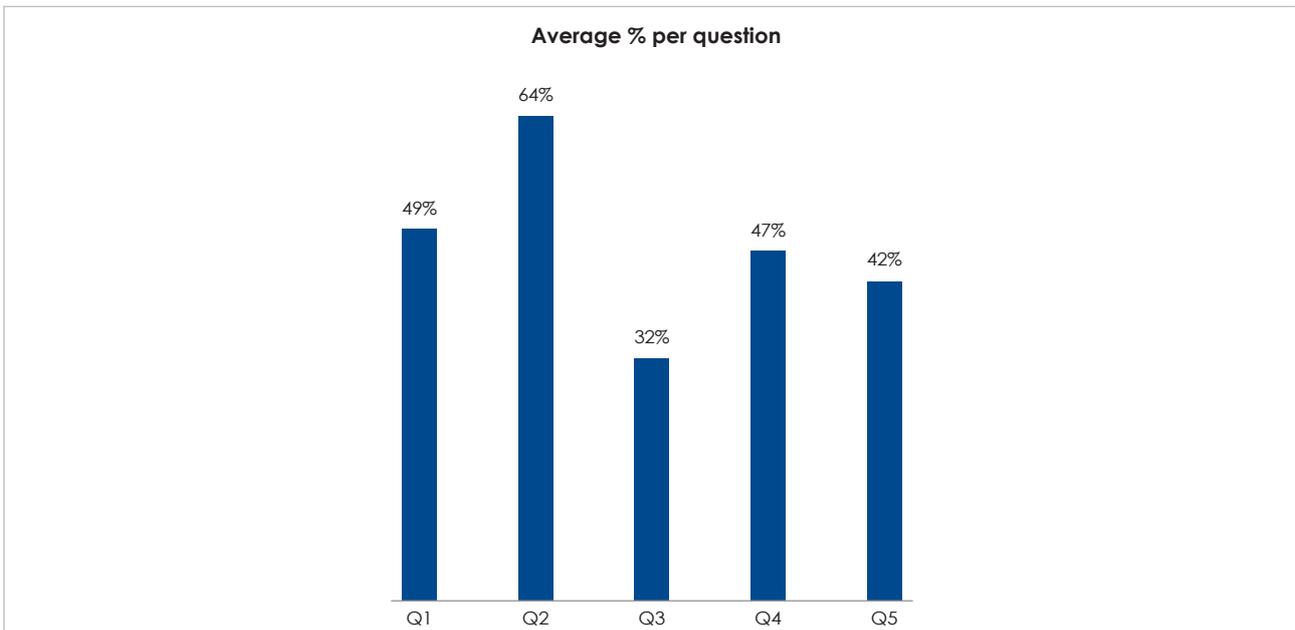
Mark Distribution (Percentage)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
4	8	7	1	0	0	0	0	0	0

**j) Plumbing Theory N2**



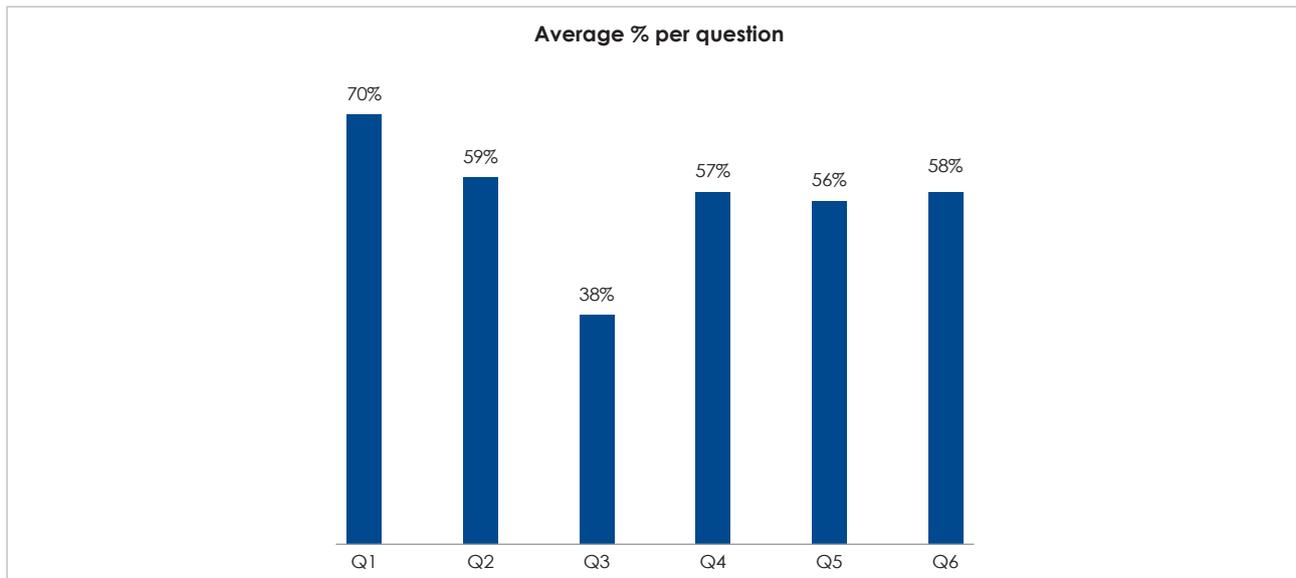
Mark Distribution (Percentage)									
0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-100
1	4	2	1	1	3	4	3	1	0

**k) Refrigeration 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
0	1	1	4	5	5	4	0	0	0

## I) Water and Wastewater Treatment Practice N2



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	1	5	5	0	2	3	1

### 6.4 Areas of Compliance

The following good practices were observed:

- No additions were made to the marking guidelines of 64% of the instructional offerings during the marking process. An improvement of 11% to that of August 2017;
- Of the instructional offerings' anticipated examination scripts 93% had been received by the time external moderation took place. An increase of 18% to that of August 2017;
- The standard of marking was rated as good in 79% of the instructional offerings. An improvement of 13% to those of August 2017;
- Candidates in 79% of instructional offerings found the question papers fair. An increase of 37% to that of August 2017; and
- The standard of internal moderation was rated as good in 67% of the instructional offerings. An improvement of 9% to those of August 2017.

### 6.5 Areas of Non-compliance

The following is of concern:

- Marking per question approach was followed in only 64% of the instructional offerings. A decline of 19% to that of August 2017;
- No notes were kept throughout the marking period in 36% of the instructional offerings; and
- The standard of internal moderation was rated as poor in 17% of the instructional offerings. The same and no improvement to those of August 2017.

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

The DHET must:

- Devise mechanisms to reduce the number of irregularities;
- Reinforce the means to ensure that marking guidelines are of a high standard and that alternative methods and answers are included where applicable;
- Ensure that the standard of internal moderation is continuously improved;
- Ensure that lecturers use previous question papers as additional resources instead of using them as syllabi; and
- Continuously improve the behaviour of marking personnel with regard to punctuality, professionalism, commitment, discipline and maintaining silence.

## **6.7 Conclusion**

Umalusi noted that in most of the instructional offerings, and at most of the marking centres included in the sample, the quality of marking has improved. The majority of the marking personnel approached the administration, marking and internal moderation of scripts with professionalism. Umalusi was satisfied that marking centres and personnel complied in most respects with the specifications for the administration, marking and moderation of the scripts for each of the instructional offerings.

# CHAPTER 7 STANDARDISATION AND RESULTING

## 7.1 Introduction

Standardisation is a statistical process used to mitigate the effects on performance of factors other than candidates' ability and knowledge. The standardisation of examination results is necessary to minimise the variation in marks from one examination session to the next. The reasons for this variability may include the standard of question papers and the quality of marking.

Section 17A (4) of the GENFETQA Act of 2001 and amended in 2008 states that the Council may adjust raw marks during the standardisation process.

Standardisation involves various procedures to ensure that the standardisation process is carried out accurately. This includes the verification of subject structures, capturing of marks and the computer system of the respective Assessment Body. It also involves the development and verification of norms, the production of and the verification of standardisation data booklets in preparation for the standardisation meeting.

## 7.2 Scope and Approach

The DHET presented 55 instructional offerings for the standardisation of the August 2018 NATED Report 190/191: Engineering Studies N2 and N3 examination results. The qualitative reports from external moderators, chief markers and monitors (where applicable) were submitted. The performance of candidates and the principles of standardisation informed the standardisation decisions made. The process was concluded with the approval of mark adjustments, statistical moderation and final results per subject.

Umalusi did not conduct the verification of the marks captured for the August 2018 NATED Report 190/191 Engineering Studies N2-N3 Examinations. Umalusi also verified the historical averages, the standardisation and statistical moderation and the resulting datasets.

### 7.2.1 Development of the historical averages

The subject structures the Department of Higher Education and Training (DHET) submitted were verified and approved. The historical norm was calculated from the previous six examination sittings. The principle of exclusion was applied to the following instructional offerings which were identified as outliers:

Level	Instructional offering	Excluded examination sitting
N2	Carpentry and Roofing Theory 11022192	201708
	Industrial Electronics 8080602	201611
	Engineering Drawing 8090272	201708

Level	Instructional offering	Excluded examination sitting
<b>N2</b>	Mathematics 16030192	201704
	Radio and Television Theory 11040832	201804
<b>N3</b>	Diesel Trade Theory 11041823	201711
	Motor Trade Theory 11040673	201708
	Radio and Television Theory 11040843	201608

### 7.2.2 Capturing the marks

Umalusi did not conduct a verification of the captured marks for the August 2018 NATED Report 190/191 Engineering Studies N2-N3 Examinations.

### 7.2.3 Verification of datasets and standardisation booklets

The datasets were verified before the printing of the final standardisation booklets. The number of candidates processed, the calculation of the norms, the statistical analysis file, raw marks distribution and the graphs were verified.

### 7.2.4 Pre-standardisation and standardisation

The qualitative input, chief marker and external moderator reports, historical averages, pairs analysis as well as the standardisation principles were considered to determine adjustments, if any, to be made per instructional offering.

### 7.2.5 Post standardisation

The Assessment Body was required to submit the adjustment and statistical moderation files for approval after the standardisation meeting.

## 7.3 Findings and Decisions

### 7.3.1 Development of historical averages

The historical norms for the NATED Report 190/191: Engineering Studies N2 and N3 were submitted, verified and approved without rectifications. The outliers were identified in both N2 and N3 Engineering Studies and, where applicable, the principle of exclusion was applied to develop the August 2018 final norms.

### 7.3.2 Capturing the marks

Umalusi did not conduct a verification of the marks captured after the August 2018 NATED Report 190/191 examination.

### 7.3.3 Verification of datasets and standardisation booklets

Since there were no new system changes, the DHET did not submit datasets for the verification of the systems. The datasets were verified before the printing of the final standardisation booklets. The number of candidates processed, the calculation of the norms, the statistical analysis file, the distribution of raw marks and the graphs were verified and approved during first submission. However, the approval of the electronic booklets was done for the second submission as the 201711 and 201804 graphs were incorrect.

### 7.3.4 Pre-standardisation and standardisation

#### a) Pre-standardisation

The pre-standardisation meeting took place on 30 August 2018. The Assessment Standards Committee (ASC) of Umalusi's Council discussed the student performance per instructional offering. The ASC also considered the qualitative input from reports about some instructional offerings that Umalusi staff members presented during this stage of the decision-making process.

#### b) Standardisation meeting

The August 2018 NATED Report 190/191: Engineering Studies N2 and N3 examination results were standardised at a meeting on 30 August 2018. The DHET presented 55 instructional offerings on this occasion.

Fifty-five instructional offerings were standardised for the NATED Report 190/191: Engineering Studies and only three were provisionally standardised. On perusal of the graphs, it was apparent that markers had given additional marks to raise marks around 30, 40 and 50% to effect passes. Moreover, the ASC was alarmed when realising that an extremely high number of candidates obtained a zero mark in Industrial Organisation and Planning N3, given that candidates should achieve at least 40% in Internal Continuous Assessment tests before they were allowed to sit for the examination. The DHET was also requested to investigate the allegations of leakages in the following instructional offerings: Mathematics N2, Mathematics N3 and Engineering Science N3 and submit a report by 3 September 2018.

The decisions taken on the August 2018 NATED Report 190/191: Engineering Studies N2-N3 were well informed. Current trends in candidate performance, qualitative input reports, the historical average and the pair's analysis were studied for further insight into the examination results.

**Table 7A: Standardisation decisions August 2018 NATED Report 190/191: Engineering Studies N2 and N3**

Description	Total
Number of instructional offerings presented	55
Raw marks accepted	26
Adjustments (mainly upwards)	20
Adjustments (mainly downwards)	9
Provisionally standardised	3
Not standardised	0
Number of instructional offerings standardised	55

### **7.3.5 Post standardisation**

The N3 and N2 adjustments were approved during the first and the second submissions respectively.

## **7.4 Areas of Compliance**

The following areas of compliance were observed:

- The DHET submitted the standardisation and adjustment datasets and standardisation booklets within the stipulated timeframes; and
- The historical averages; the standardisation datasets and the adjustment file for N3 were approved at their first submission.

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

The following areas of non-compliance were observed:

- The high number of candidates who scored zero in Industrial Organisation and Planning N3;
- Lenient marking or condonation at 30, 40 and 50% by markers;
- The high rate of absenteeism of candidates registered to write Industrial Orientation and Planning N3; and
- The absence of all candidates registered to write Armature Winding Theory N2 and Aircraft Metalwork Theory 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 around the 30, 40 and 50% mark.

## **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, which is a clear indication of a maturing examination system.

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Council for Quality Assurance in  
General and Further Education and Training