2017

Report on the Quality Assurance of the DHET August 2017 NATED Report 190/191: Engineering Studies N2-N3 Examinations and Assessment

UMALUSI

Council for Quality Assurance in General and Further Education and Training

REPORT ON THE QUALITY ASSURANCE OF THE DHET AUGUST 2017 NATED REPORT 190/191 ENGINEERING STUDIES N2-N3 EXAMINATIONS AND ASSESSMENT

PUBLISHED BY:

UMALUSI

Council for Quality Assurance in General and Further Education and Training

37 General Van Ryneveld Street, Persequor Technopark, Pretoria
Telephone: 27 12 349 1510 • Fax: 27 12 349 1511 • info@umalusi.org.za

TABLE OF CONTENTS

OVERVIEW

The General and Further Education and Training Quality Assurance (GENFETQA) Act (Act No. 58 of 2001, amended in 2008) mandates Umalusi to quality assure assessments and approve the release of examination results at all exit points. The NATED Report 190/191: Engineering Studies N2–N3 are Technical and Vocational Education and Training (TVET) programmes, registered on Umalusi's qualifications sub-framework.

Umalusi reports on its quality assurance of this national part qualification. The quality and standard of assessment is judged by adherence to policies and guidelines that are designed to deal with the critical aspects of administering credible national assessments and examinations.

In order to ensure the overall high standard and quality of examinations and assessments in the abovementioned programmes, established quality assurance processes are followed. This report provides the findings of the quality assurance processes for the August 2017 NATED Report 190/191: Engineering Studies N2-N3 examinations outlined in different chapters as follows:

- Moderation of examination question papers (Chapter 1);
- Monitoring and moderation of internal continuous assessment (ICASS) (Chapter 2);
- Monitoring of the conduct of the writing of the examinations (Chapter 3);
- Monitoring of the marking phase of the examinations (Chapter 4);
- Monitoring of marking guideline discussions (Chapter 5);
- Verification of marking (Chapter 6); and
- Standardisation and Resulting (Chapter 7).

Each chapter of the report will indicate the scope and approach, findings, areas of good practice, areas of concern, and provide directives for compliance and improvement.

Chapter 1 deals with moderation of question papers. The moderation of question papers is the most important quality assurance process and very critical to the establishment of standards in assessment. The aim of such moderation is to ensure that the examination question papers are of the required standard in that they are accurate, fair, valid and reliable and in compliance with approved syllabi and internal assessment guidelines. Moderation is also intended to ensure that current question papers are of a standard that is equivalent or comparable to that of previous cycles so that learners writing in any particular cycle are not unfairly advantaged or disadvantaged. The marking guidelines, designed to guide the marking process, are moderated to ensure their accuracy, fairness, validity and reliability. External moderators evaluate the quality of question papers against a set of criteria and their own individually prepared assessment frameworks.

Umalusi moderated 36 question papers set for the August 2017 examination. The number of NATED Report 190/191: Engineering Studies question papers moderated per level was:

- N2 11 of 32 subjects (32%)
- N3 25 of 27 subjects (93%)

The question papers were moderated off-site between March and May 2017. Thirteen question papers and marking guidelines were approved as received, requiring only minor technical adjustments; 22 approved conditionally; and one was rejected after the initial moderation. All

36 papers were eventually approved and signed off for the examination. This process was however, set back by a number of question paper leakages that were experienced. Six question papers and one marking guideline were confirmed to have leaked. Five of the seven papers which leaked were withdrawn and had their examination dates rescheduled.

Chapter 2 focuses on the moderation the internal continuous assessment (ICASS), which constitutes 40% of a candidate's final mark. Eighteen sites were moderated for NATED Report 190/191: Engineering Studies N2-N3 for twelve subjects across the country. Thirteen moderators were deployed to the various sites and one moderator performed off-site moderation where five sites were requested to submit their PoAs (Portfolios of Assessment) and PoEs (Portfolios of Evidence) to Umalusi for moderation.

Areas of good practice in the implementation of the ICASS were identified including, amongst others that assessment schedules were available in 85% of the sites and that 94% of the sites had dispatched textbooks and other learning material to the students before the commencement of the classes.

The most significant concern raised was a lack of proper recording of students' attendance. Lecturers were not keeping accurate records of attendance and this would make it difficult to enforce the Department of Higher Education and Training's (DHET) mandate of admission to examination only after satisfying a minimum of 80% class attendance.

Chapter 3 outlines the monitoring of examination writing as one of Umalusi's quality assurance processes. Umalusi's monitors and staff verified the adherence to policy and procedures in the conduct of the national examinations and in the marking processes at 21 examination centres and four marking centres. Monitoring of the writing of the examinations continued throughout the NATED Report 190/191: Engineering Studies N2-N3 examination period.

Umalusi monitors, reported the following irregularities: failure to seal answer books upon dispatch to the nodal point at one centre; crib notes found on a candidate; and subject clashes occurring at one site where candidates were made to write a paper scheduled for the morning session in the afternoon, without producing proof that a concession was applied for and granted.

Chapter 4 focuses on the monitoring of the marking phase of the examinations. Monitors were deployed to four marking venues to evaluate the readiness and effectiveness of the assessment body for marking.

It was found that marking centres were generally managed properly and complied with all the criteria set by the DHET. However, one setback found was that some examination centres sent scripts late to the marking venue, which may compromise the credibility of the examination.

Chapter 5 discusses the monitoring of marking guideline discussions. The marking guideline discussion meetings provide a platform for markers, chief markers, examiners, internal moderators and Umalusi's moderators to standardise and approve the final marking guidelines to be used to mark candidates' scripts.

All marking personnel are required to bring their own worked out marking guidelines to the discussion. This description refers to markers answering the questions in the relevant examination paper. It was found that there were still 63% of the sampled subjects for

monitoring where not all personnel had brought their own marking guidelines. However, there was a marked improvement in the process where it was found that all the adjusted marking guidelines and minutes of the discussions were duly submitted to the marking centre managers. Sample marking was done after the discussions in all the subjects monitored.

Chapter 6 deals with the verification of marking of candidates' scripts. External moderators sample a number of marked and a sample of marked and moderated scripts to verify the quality of marking and moderation.

Verification of marking was done for 12 subjects. One area of strength found was that the allocation of questions was done in accordance with the different markers' strengths and experience in marking to ensure quality and thorough marking.

Chapter 7 reports on the standardisation of results. According to the GENFETQA Act, the Council may adjust raw marks during the standardisation process. This statistical adjustment of results mitigates the effects on performance of factors other than candidates' ability and knowledge; and reduces the variability of marks from examination to examination.

The evidence presented to Umalusi suggests that, apart from the leaking of six papers and a marking guideline, no systemic irregularities with the potential to compromise the credibility and integrity of the August 2017 NATED Report 190/191: Engineering Studies N2–N3 examinations administered by the DHET had occurred.

Umalusi, in collaboration with all stakeholders, intends to continue with improvement initiatives and, through its quality assurance processes, to ensure that the quality, integrity and credibility of the NATED Report 190/191: Engineering Studies N2–N3 assessments and examinations are not only maintained but improved.

ACRONYMS AND ABBREVIATIONS

CD: NEA	-	Chief Directorate: National Examinations and Assessment
DHET	-	Department of Higher Education and Training
EC	-	Eastern Cape
EXCO	-	Executive Committee
FET	-	Further Education and Training
FS	-	Free State
Gau	-	Gauteng
GENFETQA	-	General and Further Education and Training Quality Assurance Act (Act No. 58 of 2001)
GFETQSF	-	General and Further Education and Training Qualifications Sub-framework
ICASS	-	Internal Continuous Assessment
IT	-	Information Technology
KZN	-	KwaZulu-Natal
Lim	-	Limpopo
MCM	-	Marking Centre Manager
Mpu	-	Mpumalanga
NATED	-	National Education
NC	-	Northern Cape
NW	-	North West
POA	-	Portfolio of Assessment (lecturer portfolio)
POE	-	Portfolio of Evidence (learner portfolio)
TVET	-	Technical and Vocational Education and Training
Umalusi	-	Council for Quality Assurance in General and Further Education and Training
WC	-	Western Cape

CHAPTER 1 MODERATION OF QUESTION PAPERS

1.1 Introduction

Umalusi moderates, as the most important quality assurance process, the question papers and accompanying marking guidelines for each examination. This ensures that these documents comply with the prescribed syllabi. The DHET sets and moderates the question papers internally. Once they are edited and print ready, they are submitted to Umalusi for external moderation. In principle, this process should be a verification process to confirm the standard and quality of the question papers. Outdated and underspecified syllabi impact negatively on the effective moderation of question papers.

External moderators were used to quality assure a sample of NATED N2 and N3 question papers and marking guidelines for the August 2017 examination.

1.2 Scope and Approach

Umalusi moderated a sample of 36 of the NATED N2 and N3 question papers and marking guidelines: 11 question papers and marking guidelines at N2 level; and 25 question papers and marking guidelines at N3 level. The subjects included in the moderated sample are listed in Table 1A.

Table 1A: Subjects included in the sample of question papers

Subject	Level
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

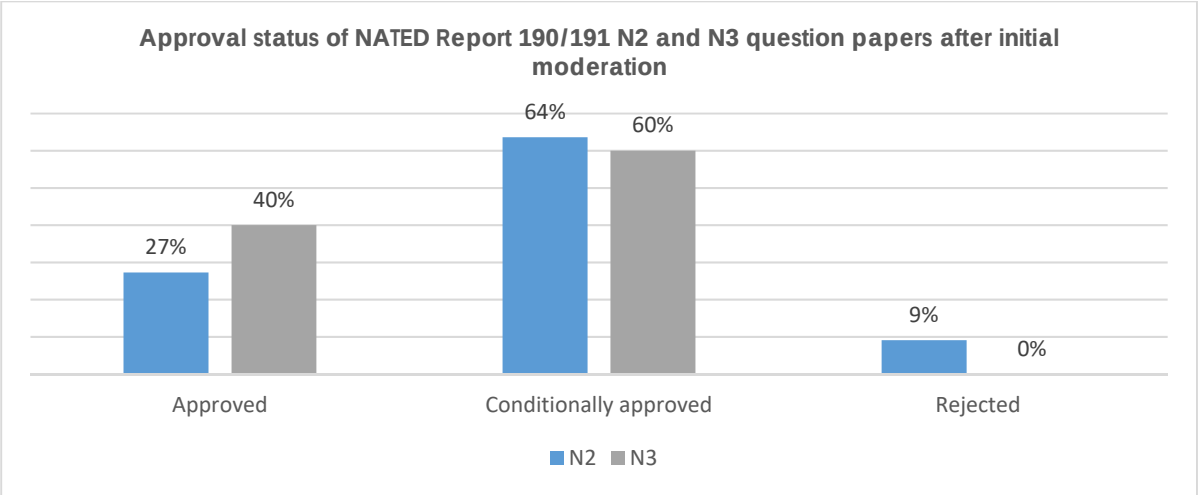
Subject	Level
Motor Trade Theory	N3
Plant Operation Theory	N3
Platers' Theory	N2
Plating and Structural Steel Drawing	N2, N3
Radio and Television Theory	N3
Radio Theory	N3
Refrigeration Technology	N3
Refrigeration Trade Theory	N3
Supervision in Industry	N3
Wastewater Treatment Practice	N3
Water Treatment Practice	N3

Umalusi used external moderators, all of whom were subject matter experts from TVET colleges, provincial education departments and universities of technology for the moderation task. They evaluated the question papers and marking guidelines to determine the extent to which these adhered to set criteria, and specified what amendments were required. The external moderators, in collaboration with the internal moderators, worked towards improving the question papers and submitted the final product to Umalusi. The papers were then returned to the external moderators to sign off, after the DHET had effected changes and finalised the editing.

1.3 Findings

From data captured in the external moderators' reports, the accompanying graph provides the approval status of the question papers after the initial moderation process.

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



After initial moderation, 27% of the N2 question papers were approved, 64% conditionally approved and 9% rejected. For N3, 40% were approved, 60% conditionally approved and none were rejected after initial moderation.

In the 2016 August examination, 39% were approved, 58% conditionally approved and only 3% rejected after initial moderation for both N2 and N3 subjects combined.

Table 2A provides a summary of the findings as captured in the external moderators' reports of the 36 subjects moderated.

Table 2A: Findings: Moderation of August 2017 N2 and N3 question papers

Criteria	Findings and challenges	Subjects
Technical Criteria: • Documents (question paper, marking guideline, assessment grid and internal moderator report). • Question paper complete with relevant answer sheets/addenda or formula sheets. • Cover page details: the logo, subject name, time allocation, number of pages and additional information. • Clear and unambiguous instructions to candidates, according to DHET requirements. • Well-organised and friendly layout. • Pages correctly numbered. • Questions correctly numbered. • Consistent headers and footers according to the format. • Appropriate fonts throughout the paper. • Clear mark allocations. • The paper can be completed in the time allocated. • Mark allocation on paper same as that on the marking guideline. • Quality of illustrations, graphs, tables, etc. is appropriate, clear, error-free and print ready. • Adherence to format requirements of the syllabus.	Umalusi received all the requested question papers and marking guidelines. All the question papers (100%) were complete, with the relevant answer sheets, addenda and formula sheets where applicable. A marked improvement from the 94% achieved during August 2016 examination. The assessment grid for one paper (3%) was not received.	Instrument Trade Theory N3
	There were three question papers (8%), a decrease of 3% from the 2016 August examination, in which the cover pages did not include all the required information. In two subjects, the NC (V) cover page was used.	Diesel Trade Theory N2 and N3 Mechanotechnology N3
	The question papers complied with the technical criteria. There were, however, some of the question papers that did not comply with some of the technical criteria as indicated below: In three question papers (8%), the instructions to candidates were not specified as per the DHET specifications. This was the same as in the 2016 August examination.	Building Drawing N2 Building Science N3 Diesel Trade Theory N3
	In four question papers (11%) the footers were inconsistent or did not adhere to the required format.	Building Science N2 Platers' Theory N2 Plating and Structural Steel Drawing N2 and N3
	The layout of the paper was not well organised and reader-friendly for three papers (8%).	Diesel Trade Theory N3 Mathematics N2 Plating and Structural Steel Drawing N2
	The questions were not numbered according to DHET requirements in three (8%) papers.	Diesel Trade Theory N2 and N3 Engineering Drawing N3
	One question paper (3%) did not use the recommended font for the Mathematics papers.	Mathematics N2
	There were three question papers (8%) in which the mark allocation was not clearly indicated.	Engineering Drawing N3 Plating and Structural Steel Drawing N2 Refrigeration Trade Theory N3

Criteria	Findings and challenges	Subjects
Technical Criteria	Although mark allocation in the papers did correspond with those of the marking guidelines in 83% of the subjects, external moderators reported on six papers where it did not correspond (17%, a decrease of 2% from the 2016 August examination).	Engineering Drawing N2 Mathematics N3 Plant Operation Theory N3 Plating and Structural Steel Drawing N2 and N3 Supervision in Industry N3
	The external moderators reported on poor quality illustrations, drawings, graphs and tables in 12 (33%) of the question papers.	Building Science N3 Diesel Trade Theory N2 and N3 Electrical Trade Theory N2 Engineering Drawing N2 and N3 Engineering Science N3 Industrial Electronics N2 Mathematics N2 and N3 Mechanotechnology N3 Supervision in Industry N3
Internal Moderation • The internal moderator's report is complete. • The report noted: o Appropriate quality; o Appropriate standard and; o Appropriate relevance. • There is evidence that the internal moderator's recommendations were effected or addressed.		Diesel Trade Theory N2 and N3 Industrial Organisation and Planning N3 Industrial Orientation N3 Instrument Trade Theory N3 Mathematics N2 Supervision in Industry N3
	Nine (25%) internal moderators' reports were of unacceptable quality. An increase from the 21% of 2016 August examination.	Building Science N2 and N3 Diesel Trade Theory N2 and N3 Engineering Drawing N2 Instrument Trade Theory N3 Mathematics N2 Plating and Structural Steel Drawing N3 Wastewater Treatment Practice N3
	Thirteen internal moderators' reports (36%) did not meet the required standard. A sharp increase from the 17% of the 2016 August examination.	Building Science N2 and N3 Diesel Trade Theory N2 and N3 Engineering Drawing N2 Industrial Organisation and Planning N3 Instrument Trade Theory N3 Mathematics N2 and N3 Platers' Theory N2 Refrigeration Technology N3 Refrigeration Trade Theory N3 Water Treatment Practice N3
	In eight (22%) of the internal moderators' reports, some information was irrelevant or some	Building Science N2 and N3 Engineering Drawing N2 Industrial Orientation N3

Criteria	Findings and challenges	Subjects
Internal Moderation	relevant information had not been included.	Instrument Trade Theory N3 Mathematics N2 and N3 Plating and Structural Steel Drawing N2
	There was no evidence that the internal moderators' recommendations had been addressed or implemented in 13 subjects (36%).	Building Science N2 and N3 Electrical Trade Theory N2 and N3 Engineering Drawing N2 and N3 Engineering Science N3 Fitting and Machining Theory N2 Logic Systems N3 Plant Operation Theory N3 Radio and Television Theory N3 Supervision in Industry N3 Water Treatment Practice N3
Content Coverage • Content of the syllabus covered. • Questions are within the broad scope of the syllabus. • Content coverage of the syllabus is appropriate for: o Prescribed weighting of topics o The spread of topics. • Appropriate linking and integration of different topics. • Questions representative of the latest developments in the subject.	There were five question papers (14%) that did not cover the syllabus adequately. This was the same in the 2016 August examination.	Diesel Trade Theory N3 Mathematics N2 Plating and Structural Steel Drawing N3 Refrigeration Trade Theory N3 Water Treatment Practice N3
	In three (8%) question papers some of the questions did not fall within the broad scope of the syllabus.	Diesel Trade Theory N3 Mathematics N2 Platers' Theory N2
	The content coverage as stipulated in the syllabus was not appropriate regarding the spread of topics for seven question papers (19% - an increase from the 14% of 2016 August examination).	Diesel Trade Theory N2 and N3 Industrial Electronics N2 Mathematics N2 and N3 Refrigeration Technology N3 Refrigeration Trade Theory N3
Types and Quality of Questions • Paper includes various types of questions. • Paper allows for creative responses from candidates. • Correlation between mark allocation, level of difficulty and time allocation. • Quality of questions: o Questions relate to what is pertinent to the subject; o Questions are free from vaguely defined problems, ambiguous wording, extraneous or irrelevant information, trivia and unintentional clues to the correct answers;	Three question papers (8%) did not include a variety of question types. This increased from 6% of 2016 August examination.	Building Science N2 and N3 Motor Trade Theory N3
	Four question papers (11%), lacked a correlation between the mark allocation, level of difficulty and time allocation in some of the questions.	Building Science N2 Engineering Drawing N2 Instrument Trade Theory N3 Mathematics N3
	Three question papers (8%) contained questions that did not relate to what was important in the subject.	Building Science N2 Industrial Organisation and Planning N3 Mathematics N3
	Seven question papers (19%) contained vaguely defined problems, ambiguous wording, irrelevant information and/or unintentional clues to correct answers.	Building Science N2 Fitting and Machining Theory N2 Industrial Electronics N3

Criteria	Findings and challenges	Subjects
o Questions provide clear instructional key words/verbs; o Questions contain sufficient information to elicit an appropriate response; o Question paper is free of any factual errors or misleading information; o Question paper is free of double negatives in the questions or unnecessary negative terms and; o References to visuals, drawings, illustrations, examples, tables, graphs, are relevant and correct. • Multiple-choice questions are set according to standard principles.		Instrument Trade Theory N3 Mathematics N3 Plant Operation Theory N3 Platers' Theory N2
	Some questions in four question papers (11%) did not provide clear instructional key words and verbs.	Building Science N2 Diesel Trade Theory N2 and N3 Mathematics N3
	Four question papers (11%) contained questions that did not provide sufficient information to elicit an appropriate response from candidates.	Building Science N2 Engineering Drawing N2 Mathematics N2 and N3
	References to tables in one question paper (3%) was incorrect. The table lacked information for the candidate to complete the answer.	Plant Operation Theory N3
Cognitive Skills • Analysis grid clearly shows the cognitive level of each question/sub-question. • Cognitive levels are appropriately distributed. • Choice questions are at an equal level of difficulty and standard. • The questions are representative of the latest developments in the teaching of this knowledge field.	In seven question papers (19%), the assessment grids were not received or did not clearly indicate the level of each question and/or sub-question.	Building Science N3 Fitting and Machining Theory N2 Industrial Orientation N3 Instrument Trade Theory N3 Mathematics N2 Plating and Structural Steel Drawing N2 Supervision in Industry N3
	The cognitive levels were not appropriately distributed in seven question papers (19%), a slight decrease of 2% from the 2016 August examination.	Building Science N2 Diesel Trade Theory N3 Electrical Trade Theory N2 and N3 Mathematics N2 and N3 Water Treatment Practice N3
	Some of the questions in five question papers (14%) were not representative of the latest developments in teaching of the particular subject field.	Building Science N3 Industrial Organisation and Planning N3 Mathematics N2 and N3 Water Treatment Practice N3
Language and Bias • Subject terminology and data are used correctly. • Language register/level and complexity of the vocabulary are appropriate for the language level of the candidates. • Grammar is free from any subtleties that might create confusion. • Language used in the question paper and marking guideline is grammatically correct. • Questions are free from over-complicated syntax.	Subject terminology was used incorrectly in one question paper (3%), a sharp decrease from the 17% of the 2016 August examination.	Engineering Drawing N2
	Grammatical errors occurred in four question papers (11%), decreasing from the 19% of the 2016 August examination.	Diesel Trade Theory N2 and N3 Fitting and Machining Theory N2 Mechanotechnology N3

Criteria	Findings and challenges	Subjects
• Paper is free from any evidence of bias in terms of cultural, gender, racial, language, political, religious, regional and provincial issues and stereotyping.		
Predictability • The question paper is free from questions that could easily be recognised or predicted. • The paper is free from any verbatim repetition of questions. • The paper contains an appropriate degree of innovation.	Five question papers (14%) were predictable and some questions could have been easily spotted, a similar occurrence during the 2016 August examination.	Building Science N3 Electrical Trade Theory N2 Mathematics N2 and N3 Motor Trade Theory N3
	Seven question papers (19%) contained questions that were verbatim repetitions of questions taken from question papers used previously over the past three years.	Fitting and Machining Theory N2 Industrial Organisation and Planning N3 Instrument Trade Theory N3 Mathematics N2 Refrigeration Technology N3 Refrigeration Trade Theory N3 Supervision in Industry N3
	An appropriate degree of innovation was not demonstrated in three question papers (8%).	Building Science N2 Mathematics N2 and N3
Overall Impression • The paper is in line with the relevant current syllabus. • Overall, the paper did assess the curriculum and syllabus stated outcomes satisfactorily. • The standard of the paper is appropriate. • The standard of the paper compared favourably to the previous years' examination papers. • The papers of the cycle April, August, November and Back-up) are of the same standard. • Skills, knowledge, attitudes, values and reasoning were considered in a balanced manner in the assessment of candidates' answers to questions set.	Two question papers (6%) were not aligned with the current syllabus.	Diesel Trade Theory N3 Mathematics N2
	Four question papers (11%) did not, on the whole, assess the broad outcomes of the syllabus.	Building Science N2 Diesel Trade Theory N3 Mathematics N2 Refrigeration Trade Theory N3
	Seven question papers (19%) were not up to standard.	Building Science N2 Diesel Trade Theory N3 Engineering Drawing N2 Industrial Organisation and Planning N3 Mathematics N2 and N3 Refrigeration Technology N3
	The standard of four question papers (11%) did not compare favourably with those of previous examinations.	Building Science N2 Diesel Trade Theory N3 Mathematics N2 and N3

1.4 Question Paper Leakages

The August 2017 examination saw a number of leaked question papers before the examination date. To mitigate this occurrence, DHET withdrew the affected question papers and set alternative dates for students to sit for these examinations. In subjects where evidence of the leakage was detected on the examination date, an audit would have been conducted during the marking and moderation processes.

The leaked subjects involved and the action taken by DHET is given in the table (Table 3A) below.

Table 3A: Leaked subject N2 and N3

No.	Question Paper	Action
1.	Engineering Drawing N2	Paper written
2.	Electrotechnology N3	Paper written
3.	Mathematics N2	Paper withdrawn
4.	Mathematics N3	Paper withdrawn
5.	Engineering Science N2	Paper withdrawn
6.	Engineering Science N3	Paper withdrawn
7.	Mechanotechnology N3	Paper withdrawn

1.5 Findings

A summary of the findings of the initial moderation of the replaced question papers, as captured in the external moderators' reports is tabled below.

Table 4A: Approval status of NATED Report 190/191: Engineering Studies replaced question papers after initial moderation

	Approved	Conditionally approved	Rejected
Engineering Science N2		x	
Engineering Science N3	x		
Mathematics N2		x	
Mathematics N3		x	
Mechanotechnology N3		x	

Table 5A provides a summary of the findings of the replaced question papers as captured in the external moderators' reports.

Table 5A: Findings: Moderation of August 2017 question papers: Replaced papers

Criteria	Findings and challenges	Subjects
Technical Criteria	The external moderators received all the question papers and marking guidelines. They were all complete (100%) with accompanying answer sheets, addenda and formula sheets where applicable.	Engineering Science N2 Engineering Science N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	There was one question paper (20%) in which the cover page did not include all the required information.	Mechanotechnology N3
	The instructions to candidates were clearly specified according to DHET specifications in all the question papers (100%).	Engineering Science N2 Engineering Science N3 Mathematics N2 Mathematics N3

Criteria	Findings and challenges	Subjects
Technical Criteria		Mechanotechnology N3
	The headers and footers were consistent and adhered to the required format in all question papers (100%).	Engineering Science N2 Engineering Science N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	The layout of the paper was not well organised and one paper (20%) was not reader-friendly.	Mathematics N2
	The questions were correctly numbered according to DHET requirements in all (100%) papers.	Engineering Science N2 Engineering Science N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	One question paper (20%) was reported for not using the recommended font for Mathematics papers.	Mathematics N2
	In all question papers (100%) the mark allocation was clearly indicated.	Engineering Science N2 Science N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	Mark allocation in the papers corresponded with that of the marking guideline in all (100%) subjects.	Engineering Science N2 Engineering Science N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	The external moderators reported on the poor quality of illustrations, drawings, graphs and tables in all (100%) the question papers.	Engineering Science N2 Engineering Science N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
Internal Moderation	There was one subject (20%) where the internal moderator's report was incomplete, of unacceptable quality and did not meet the required standard.	Mathematics N2
	In two (40%) of the internal moderators' reports, some information was irrelevant or some relevant information had not been included.	Mathematics N2 Mathematics N2
Content Coverage	There was one question paper (20%) that did not cover the syllabus adequately.	Mathematics N2
	In all (100%) question papers the questions fell within the broad scope of the syllabus.	Engineering Science N2 Engineering Science N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	The coverage of the syllabus content and spread of topics in two question papers (40%) was neither appropriate nor acceptable.	Mathematics N2 Mathematics N3
Types and Quality of Questions	All question papers (100%) included a variety of question types.	Engineering Science N2 Engineering Science N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	The correlation between the mark allocation, level of difficulty and time allocation was in order in all (100%) the question papers.	Engineering Science N2 Engineering Science N3 Mathematics N2 Mathematics N3

Criteria	Findings and challenges	Subjects
Types and Quality of Questions		Mechanotechnology N3
	Two question papers (40%) contained questions that did not relate to what was important in the subject.	Mathematics N2 Mathematics N3
	The questions in all question papers (100%) provided clear instructional key words and verbs.	Engineering Science N2 Engineering Science N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	One question paper (20%) contained questions that did not provide sufficient information to elicit an appropriate response from candidates.	Mathematics N2
	References to tables in all question papers (100%) were correct.	Engineering Science N2 Engineering Science N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
Cognitive Skills	In one question paper (20%), the assessment grid did not indicate the level of each question and/or sub-question clearly.	Mathematics N2
	The cognitive levels were not appropriately distributed in two question papers (40%).	Mathematics N2 Mathematics N3
	Some of the questions in two question papers (40%) were not representative of the latest developments in teaching of the particular subject field.	Mathematics N2 Mathematics N3
Language and Bias	Subject terminology was used correctly in all question papers (100%).	Engineering Science N2 Engineering Science N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	The language used in all (100%) question papers was grammatically correct.	Engineering Science N2 Engineering Science N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
Predictability	Two question papers (40%) were predictable and questions could easily be spotted.	Mathematics N2 Mathematics N3
	An appropriate degree of innovation was not demonstrated in two question papers (40%).	Mathematics N2 Mathematics N3
Overall Impression	One question paper (20%) did not align with the current syllabus.	Mathematics N2
	All question papers (100%) generally assessed the broad outcomes of the syllabus.	Engineering Science N2 Engineering Science N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	The standard of two question papers (40%) was not appropriate,	Mathematics N2 Mathematics N3
	The standard of two question papers (40%) did not compare favourably with those of previous examinations.	Mathematics N2 Mathematics N3

1.6 Areas of Good Practice

The following areas of good practice were identified:

- Of the question papers moderated, 86% covered the syllabus adequately.
- Ninety-two per cent of the question papers had questions that related well to the subject's important concepts and issues.
- Subject terminology was used correctly in 97% of the question papers.
- All N3 question papers were approved or conditionally approved after the initial moderation.
- The immediate availability of the replaced paper after the leakage of a question paper was discovered contributed to the timeous release of results.

1.7 Areas of Concern

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

- In 33% of the question papers and in all cases, the quality of illustrations, drawings, graphs and tables was totally unacceptable.
- Thirty-six per cent of the internal moderators' reports did not meet the required standard. Furthermore, there was no evidence that the internal moderator's recommendations had been addressed or implemented in 36% of the question papers.
- The lack of useful qualitative information in these internal moderator's reports could not assist external moderators in their task.
- As reported previously, it is again reported that the syllabi for each of the numerous 191/190 Engineering Studies subjects are not aligned to modern technology developments and trends.
- The weighting and spread of topics in 19% of the question papers did not match the prescribed requirements as indicated in the respective syllabi.
- The various cognitive levels were not appropriately distributed in 19% of the question papers.

1.8 Directives for Compliance and Improvement

Based on the identified areas of concern, DHET must ensure that:

- Diagrams, illustrations, tables and graphics are provided in a high-resolution format by using the latest appropriate software to ensure a good quality result. Scanned images with handwritten labels should be avoided.
- The internal moderator's reports are completed in full and should provide detailed and comprehensive recommendations and comments. The report must provide evidence that the internal moderator's recommendations were implemented or addressed.
- Subject and Assessment Guidelines or assessment frameworks for the assessment of the NATED Report 190/191: Engineering Studies programme are developed.
- The content of the question papers adheres to the weighting and spread of topics requirements as indicated in the syllabi.
- Cognitive levels are appropriately distributed in the questions set for the final question papers.

1.9 Conclusion

Both the quality and standard of the question papers were satisfactory. There were a few challenges such as the repetition of questions, improper phrasing of questions and poor adherence to the syllabi which required the re-working of some of the question papers.

Although external moderators try to do justice to the moderation of the question papers to the best of their ability, to do so for some of the subjects remains a challenge, due to the underspecified and outdated syllabi that need revising and upgrading.

CHAPTER 2: MONITORING/MODERATION OF INTERNAL ASSESSMENT

2.1 Introduction

All registered candidates for Engineering Studies: Report 191/190 N2 and N3 are required to complete a specified number of internal assessment tasks at the site where teaching and learning takes place. The summative internal assessment is the term mark that constitutes 40% of the final mark.

Two models were used for the monitoring and moderation of internal assessment (ICASS). The first model was where the moderation of ICASS was done on site to verify the availability and standard of resources, in addition to the moderation of the evidence from students and lecturers. Staff members were also interviewed to validate the evidence presented through the submitted documents. The written and oral evidence provided information for the external moderators to make fair and accurate judgements. A second model of moderation was where the Educator Portfolio of Assessment (PoA) and the Learner Portfolio of Evidence (PoE) were made available at a central point.

Umalusi quality assures the internal assessment by verifying the adherence of the Educator Portfolio of Assessment (PoA) and the Learner Portfolio of Evidence (PoE) to the DHET NATED ICASS Guidelines. Umalusi's moderators examine the evidence of the students to make an informed judgement on the compliance of the internal assessment to the prescribed DHET NATED ICASS Guidelines. External moderators confirm if the content coverage and cognitive demand of the tests meet the criteria as stipulated in the syllabi and the NATED ICASS Guidelines.

2.2 Scope and Approach

During July 2017, Umalusi monitored the implementation of internal assessment at 18 sites. Twelve subjects were sampled for monitoring and moderation across public TVET and private colleges. The sample was spread over four provinces. In total, 14 moderators were involved in the moderation of internal assessment. A team of 13 moderators were deployed to various sites to conduct the monitoring and moderation of the internal assessment tasks. One moderator followed the off-site monitoring approach whereby five sites were requested to submit their PoA and PoE to Umalusi for moderation.

Umalusi informed all relevant stakeholders in advance about the intended monitoring and moderation visits.

Table 2A below indicates the sites and the subjects included in the monitoring/moderation process.

Table 2A: Sites and subjects monitored/moderated during July 2017

Subject	Level	Province	College	Campus/Site
Building and Civil Technology	N3	Limpopo	Vhembe	Techniven
Building Drawing	N2	Free State	Maluti	Itemoheleng
Building Drawing	N3	KwaZulu-Natal	Berea Technical College	Durban
Diesel Trade Theory	N3	Gauteng	True Harvest College	Pretoria
Engineering Drawing	N2	KwaZulu- Natal	Coastal KZN	Swinton
Engineering Science	N2	Limpopo	Vhembe	Mavhoi
Engineering Science	N3	Limpopo	Vhembe	Tshisimani
Industrial Electronics	N2	KwaZulu- Natal	Elangeni	Ntuzuma
Industrial Organisation and Planning	N3	Free State	Rostec Technical College	Bloemfontein
Instrument Trade Theory	N3	Free State	Flavius Mareka	Sasolburg
Motor Trade Theory	N3	Gauteng	Central Johannesburg	Alexandra
Plating and Structural Steel Drawing	N2	KwaZulu-Natal	Thekwini	Springfield
Supervision in Industry	N3	Free State	Whitestone College	Bloemfontein
Waste Water Treatment Practice	N3	KwaZulu-Natal	Majuba	Majuba Technology Centre
		Gauteng	Rostec Technical College	Pretoria
		Gauteng	South West Gauteng	Roodepoort West
		KwaZulu-Natal	Umbilo Private Technical College	Durban
		Limpopo	Vhembe	Mavhoi

In addition, moderators were requested to gather information on three additional subjects per site. The subjects sampled for each site were selected by considering the subjects' enrolment figures. The final selection included Bricklaying and Plastering Theory N2; Building Science N2; Building Science N3; Diesel Trade Theory N2; Electrical Trade Theory N2; Electrotechnology N3; Engineering Science N3; Fitting and Machining Theory N2; Industrial Electronics N2; Industrial Electronics N3; Industrial Organisation and Planning N3; Industrial Orientation N3; Logic Systems N3; Mathematics N3; Mechanotechnology N3; Motor Trade Theory N2; Plant Operation Theory N3; Plating and Structural Steel Drawing N3; Plumbing Theory N2; and Supervision in Industry N3.

The colleges and campuses involved were not informed prior to the date and time of the visits during which this additional monitoring of subjects was done. This prevented window-dressing of the tasks and working with accompanying documents beforehand to promote authenticity of the findings.

Two staff members of Umalusi were deployed to verify the conduct of internal assessment of three subjects each, namely Industrial Electronics N3; Electrotechnology N3; Electrical Trade Theory N2 and Mathematics N3 at Tshisimani Campus and Techniven Campus of Vhembe TVET College.

2.3 Findings

2.3.1 Enrolments

The enrolment figures DHET supplied were compared with the actual numbers of the students on site at the colleges and campuses and it was found that these figures did not always correspond. The following table indicates these discrepancies:

Table 2B: Moderation of internal assessment – July 2017

Subject	Site	DHET	Site
Building and Civil Technology N3	Techniven Campus	138	137
Building Drawing N3	Berea Technical College	224	240
Building Drawing N2	Itemoheleng Campus	26	26
Diesel Trade Theory N3	True Harvest College	6	6
Engineering Drawing N2	Swinton Campus	58	52
Engineering Science N2	Mavhoi Campus	70	57
Engineering Science N3	Tshisimani Campus	129	119
Industrial Electronics N2	Ntuzuma Campus	64	63
Industrial Organisation and Planning N3	Rostec Technical College	28	28
Instrument Trade Theory N3	Sasolburg Campus	28	28
Motor Trade Theory N3	Alexandra Campus	22	35
Plating and Structural Steel Drawing N2	Springfield Campus	40	33
Supervision in Industry N3	Whitestone College	23	15
Waste Water Treatment Practice N3	Majuba Technology Centre Rostec Technical College Roodepoort West Campus Umbilo Private Technical College (Pty) (Ltd) Mavhoi Campus	61 12 37 - 37 38	Not available

The discrepancies in enrolment figures, are attributed to the enrolment of full-time candidates, part-time candidates and candidates for so called examination purposes only. Another contributing factor is that some students have pending results and they register at two different levels, and only de-register one level later on.

The 2017 NATED ICASS Guidelines stipulate that the marks of two tests must be used to calculate the term mark.

Table 2C: Number of tests per site

Tests	Site	Subject	Level
2	Techniven Campus	Building and Civil Technology	N3
2	Itemoheleng Campus	Building Drawing	N2
2	Berea Technical College	Building Drawing	N3
2	True Harvest College	Diesel Trade Theory	N3
2	Swinton Campus	Engineering Drawing	N2
2	Mavhoi Campus	Engineering Science	N2
2	Tshisimani Campus	Engineering Science	N3
2	Ntuzuma Campus	Industrial Electronics	N2
2	Rostec Technical College	Industrial Organisation and Planning	N3
2	Sasolburg Campus	Instrument Trade Theory	N3
2	Alexandra Campus	Motor Trade Theory	N3
2	Springfield Campus	Plating and Structural Steel Drawing	N2
2	Whitestone College	Supervision in Industry	N3
2 2 2 2 2	Majuba Technology Centre Mavhoi Campus* Roodepoort West Campus Rostec Technical College Umbilo Private Technical College**	Waste Water Treatment Practice	N3

* Two tests were conducted, while evidence of only one test was presented.

** Inadequate evidence was provided (no marked and moderated test answer scripts were submitted as evidence).

Table 2D presents the findings of the moderators when visiting the fourteen sites. All the findings presented in the table below apply to the subjects moderated at each of the sites.

Table 2D: Findings and challenges observed in the July 2017 internal assessment monitoring and moderation visits

Aspects	Findings and Challenges	Subjects
Support by the college before enrolment and thereafter	Fifty-four per cent of the colleges provided some support before enrolment e.g. competency, aptitude and placement tests. This was an improvement compared to 29% for August 2016.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N3 (Berea Technical College) Building Drawing N2 (Itemoheleng Campus) Diesel Trade Theory N3 (True Harvest College) Engineering Drawing N2 (Swinton Campus) Instrument Trade Theory N3 (Sasolburg Campus) Motor Trade Theory N3 (Alexandra Campus)

Aspects	Findings and Challenges	Subjects
Employment status of candidates	Some of the candidates at 23% of the sites visited were employed.	Industrial Electronics N2 (Ntuzuma Campus) Instrument Trade Theory N3 (Sasolburg Campus) Plating and Structural Steel Drawing N2 (Springfield Campus)
Physical resources and learning material Textbooks and teaching material	Sufficient classrooms were available for effective teaching and learning at all the sites, except at one site (8%) this was not the case.	Industrial Organisation and Planning N3 (Rostec Technical College)
	Thirty-eight per cent of the sites enhanced learning by including practical demonstrations and the use of models.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N3 (Berea Technical College) Engineering Drawing N2 (Swinton Campus) Engineering Science N2 (Mavhoi Campus) Plating and Structural Steel Drawing N2 (Springfield Campus)
	All sites but one (8%) had received the required textbooks and training material at the beginning of the trimester.	Industrial Organisation and Planning N3 (Rostec Technical College)
	Additional training material such as DVDs, additional reference books, etc. was available at 54% of the sites.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Industrial Electronics N2 (Ntuzuma Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Instrument Trade Theory N3 (Sasolburg Campus) Plating and Structural Steel Drawing N2 (Springfield Campus)
	Computers and printers were available for the students to complete their assignments, case studies and do research at 77% of the sites.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N3 (Berea Technical College) Building Drawing N2 (Itemoheleng Campus) Diesel Trade Theory N3 (True Harvest College) Engineering Drawing N2 (Swinton Campus) Industrial Electronics N2 (Ntuzuma Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Instrument Trade Theory N3 (Sasolburg Campus) Plating and Structural Steel Drawing N2 (Springfield Campus) Supervision in Industry N3 (Whitestone College)
Human resources Training of lecturers	Sixty-two per cent of the sites visited had a process in place for the identifying the lecturers' training needs.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N3 (Berea Technical College) Diesel Trade Theory N3 (True Harvest College) Engineering Drawing N2 (Swinton Campus) Engineering Science N2 (Mavhoi Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Instrument Trade Theory N3 (Sasolburg Campus) Plating and Structural Steel Drawing N2 (Springfield Campus)
	Thirty-eight per cent of the colleges had a training plan for staff development.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N3 (Berea Technical College) Engineering Science N2 (Mavhoi Campus)

Aspects	Findings and Challenges	Subjects
Human resources Training of lecturers		Industrial Organisation and Planning N3 (Rostec Technical College) Plating and Structural Steel Drawing N2 (Springfield Campus)
	Concerning the needs of educators, at 69% of the sites where information was sought, the educators mentioned two specific areas in which they felt they needed further training: namely, on the implementation and understanding of the ICASS Guidelines and lecturing skills.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Engineering Science N3 (Tshisimani Campus) Industrial Electronics N2 (Ntuzuma Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Motor Trade Theory N3 (Alexandra Campus) Plating and Structural Steel Drawing N2 (Springfield Campus) Supervision in Industry N3 (Whitestone College)
	At 31% of the sites monitored, educators were exposed to the industry that was relevant for their studies.	Building and Civil Technology N3 (Techniven Campus) Engineering Drawing N2 (Swinton Campus) Engineering Science N2 (Mavhoi Campus) Engineering Science N3 (Tshisimani Campus)
Assessment policy and systems	The Assessment Policy was complete with sections on: monitoring and moderation, appeal procedures, absenteeism, late or non-submission of tasks, provision for learners with barriers to learning, conditions for re-assessment and irregularities at 54% of the sites.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N3 (Berea Technical College) Engineering Drawing N2 (Swinton Campus) Engineering Science N2 (Mavhoi Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Motor Trade Theory N3 (Alexandra Campus) Plating and Structural Steel Drawing N2 (Springfield Campus)
	The Assessment Policy was lacking in some respects at 31% of the sites.	Building Drawing N2 (Itemoheleng Campus) Diesel Trade Theory N3 (True Harvest College) Engineering Science N3 (Tshisimani Campus) Supervision in Industry N3 (Whitestone College)
	However; policies were not available at 15% of the sites.	Industrial Electronics N2 (Ntuzuma Campus) Instrument Trade Theory N3 (Sasolburg Campus)
Monitoring plan	Fifty-four per cent of the sites had a monitoring plan in place for the monitoring of assessment at the site of learning.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N3 (Berea Technical College) Engineering Science N2 (Mavhoi Campus) Industrial Electronics N2 (Ntuzuma Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Plating and Structural Steel Drawing N2 (Springfield Campus) Supervision in Industry N3 (Whitestone College)
	However; three of these sites (23%), could not supply evidence that the academic head or campus manager had submitted a report to DHET.	Industrial Electronics N2 (Ntuzuma Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Supervision in Industry N3 (Whitestone College)
Internal assessment task development plan	Sixty- nine per cent of the sites visited had a plan in place. At the remaining	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus)

Aspects	Findings and Challenges	Subjects
Internal assessment task development plan	31% of the sites, a plan was not in place.	Building Drawing N3 (Berea Technical College) Engineering Drawing N2 (Swinton Campus) Engineering Science N2 (Mavhoi Campus) Engineering Science N3 (Tshisimani Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Plating and Structural Steel Drawing N2 (Springfield Campus) Supervision in Industry N3 (Whitestone College)
Irregularity registers **The use of irregularity registers.**	Sixty-nine per cent of sites had irregularity registers in place.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Engineering Drawing N2 (Swinton Campus) Engineering Science N2 (Mavhoi Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Motor Trade Theory N3 (Alexandra Campus) Plating and Structural Steel Drawing N2 (Springfield Campus) Supervision in Industry N3 (Whitestone College)
	Internal assessment irregularities were recorded in the registers at 38% of the sites.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N3 (Berea Technical College) Engineering Science N2 (Mavhoi Campus) Motor Trade Theory N3 (Alexandra Campus) Plating and Structural Steel Drawing N2 (Springfield Campus)
Lecturer files **The content of the lecturers' files.**	Forty-six percent of sites (46%) visited complied with all requirements expected in a lecturer file as stipulated in the ICASS Guidelines.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Engineering Science N2 (Mavhoi Campus) Instrument Trade Theory N3 (Sasolburg Campus) Plating and Structural Steel Drawing N2 (Springfield Campus)
	There was limited compliance with the requirements of the lecturer file as stipulated in the NATED ICASS Guidelines at 54% of the sites visited.	Diesel Trade Theory N3 (True Harvest College) Engineering Drawing N2 (Swinton Campus) Engineering Science N3 (Tshisimani Campus) Industrial Electronics N2 (Ntuzuma Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Motor Trade Theory N3 (Alexandra Campus) Supervision in Industry N3 (Whitestone College)
Assessment schedules and scores **Adherence to the ICASS Guidelines and the recording of the scores.**	Assessment schedules were available at 85% of the sites.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N3 (Berea Technical College) Engineering Drawing N2 (Swinton Campus) Engineering Science N2 (Mavhoi Campus) Engineering Science N3 (Tshisimani Campus) Industrial Electronics N2 (Ntuzuma Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Instrument Trade Theory N3 (Sasolburg Campus) Motor Trade Theory N3 (Alexandra Campus) Plating and Structural Steel Drawing N2 (Springfield Campus) Supervision in Industry N3 (Whitestone College)
	At 62% of the sites, there was evidence that the	Building and Civil Technology N3 (Techniven Campus)

Aspects	Findings and Challenges	Subjects
Assessment schedules and scores Adherence to the ICASS Guidelines and the recording of the scores.	syllabus and ICASS Guidelines were used.	Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Engineering Science N2 (Mavhoi Campus) Engineering Science N3 (Tshisimani Campus) Industrial Electronics N2 (Ntuzuma Campus) Motor Trade Theory N3 (Alexandra Campus) Plating and Structural Steel Drawing N2 (Springfield Campus)
	At 23%, there was evidence that neither the syllabus nor the ICASS Guidelines were not used.	Engineering Drawing N2 (Swinton Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Supervision in Industry N3 (Whitestone College)
	However, there was no evidence that the syllabus and ICASS Guidelines were used at 15% of the sites.	Diesel Trade Theory N3 (True Harvest College) Instrument Trade Theory N3 (Sasolburg Campus)
Content coverage	Ninety-two per cent of the visited sites had the required two tasks available for moderation as stipulated in the ICASS Guidelines	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Engineering Drawing N2 (Swinton Campus) Engineering Science N2 (Mavhoi Campus) Engineering Science N3 (Tshisimani Campus) Industrial Electronics N2 (Ntuzuma Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Instrument Trade Theory N3 (Sasolburg Campus) Motor Trade Theory N3 (Alexandra Campus) Plating and Structural Steel Drawing N2 (Springfield Campus) Supervision in Industry N3 (Whitestone College)
	According to the ICASS Guidelines, two tasks were required for moderation purposes. One site (8%) had only one readily available.	Diesel Trade Theory N3 (True Harvest College)
Cognitive demand and difficulty levels	Sixty-nine per cent of the sites ensured that a substantial amount of work had been covered in the tests and that the weighting and spread of questions throughout the final paper was satisfactory.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N3 (Berea Technical College) Engineering Science N2 (Mavhoi Campus) Engineering Science N3 (Tshisimani Campus) Industrial Electronics N2 (Ntuzuma Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Motor Trade Theory N3 (Alexandra Campus) Plating and Structural Steel Drawing N2 (Springfield Campus) Supervision in Industry N3 (Whitestone College)
	Eighty-five per cent of the sites had pitched the tasks at the right level.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Engineering Science N2 (Mavhoi Campus) Engineering Science N3 (Tshisimani Campus) Industrial Electronics N2 (Ntuzuma Campus)

Aspects	Findings and Challenges	Subjects
Cognitive demand and difficulty levels		Industrial Organisation and Planning N3 (Rostec Technical College) Instrument Trade Theory N3 (Sasolburg Campus) Motor Trade Theory N3 (Alexandra Campus) Plating and Structural Steel Drawing N2 (Springfield Campus) Supervision in Industry N3 (Whitestone College)
Internal moderation of task	Six sites (46%) were fully compliant with Umalusi's criteria for internal moderation in that there was: • Evidence of effective pre- and post-moderation • Relevant, qualitative feedback was supplied.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Engineering Science N2 (Mavhoi Campus) Plating and Structural Steel Drawing N2 (Springfield Campus) Supervision in Industry N3 (Whitestone College)
	There was no evidence that internal moderation of assessments at one of the sites (8%) was done.	Motor Trade Theory N3 (Alexandra Campus)
Assessment schedules and scores Adherence to the ICASS Guidelines and the recording of the scores.	Forty-six per cent (46%) of the sites gave qualitative feedback to the educator who had set the task.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Engineering Science N2 (Mavhoi Campus) Plating and Structural Steel Drawing N2 (Springfield Campus) Supervision in Industry N3 (Whitestone College)
	Seventy-seven per cent of the sites had evidence of the moderation of the marking of a minimum sample of 10% of the scripts.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Engineering Science N2 (Mavhoi Campus) Engineering Science N3 (Tshisimani Campus) Industrial Electronics N2 (Ntuzuma Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Instrument Trade Theory N3 (Sasolburg Campus) Plating and Structural Steel Drawing N2 (Springfield Campus) Supervision in Industry N3 (Whitestone College)
Technical aspects	Seven sites (54%) complied with all technical aspects of the tasks, namely: Clear language and instructions. Correct use of terminology. Mark allocations on the question paper and marking guidelines correlate. Graphics used are clear and relevant. Numbering is correct. Time allocation is realistic.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Engineering Science N2 (Mavhoi Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Motor Trade Theory N3 (Alexandra Campus) Plating and Structural Steel Drawing N2 (Springfield Campus)

Aspects	Findings and Challenges	Subjects
Technical aspects	Typed in the specified font.	
	Furthermore: three sites (23%) generally complied with most of the technical aspects of the tasks set.	Engineering Science N3 (Tshisimani Campus) Industrial Electronics N2 (Ntuzuma Campus) Supervision in Industry N3 (Whitestone College)
	However, three of the sites (23%) where moderation was conducted complied with only some of the technical aspects.	Diesel Trade Theory N3 (True Harvest College) Engineering Drawing N2 (Swinton Campus) Instrument Trade Theory N3 (Sasolburg Campus)
Marking tools	Eight sites (62%) met all the requirements of the marking tool in that it was relevant and appropriate; Made provision for alternative responses; Marking Guidelines were clear and neatly typed; and Mark allocation was realistic and clearly indicated which would facilitate the marking.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Engineering Science N2 (Mavhoi Campus) Engineering Science N3 (Tshisimani Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Motor Trade Theory N3 (Alexandra Campus) Plating and Structural Steel Drawing N2 (Springfield Campus)
	Marking tools used for 38% subjects of those moderated, however, only met certain criteria.	Diesel Trade Theory N3 (True Harvest College) Engineering Drawing N2 (Swinton Campus) Industrial Electronics N2 (Ntuzuma Campus) Instrument Trade Theory N3 (Sasolburg Campus) Supervision in Industry N3 (Whitestone College)
	At 85% of the sites, educators found that the marking tool facilitated marking and was easy to use.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Diesel Trade Theory N3 (True Harvest College) Engineering Drawing N2 (Swinton Campus) Engineering Science N2 (Mavhoi Campus) Engineering Science N3 (Tshisimani Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Instrument Trade Theory N3 (Sasolburg Campus) Motor Trade Theory N3 (Alexandra Campus) Plating and Structural Steel Drawing N2 (Springfield Campus)
Learner performance	Students at 92% of the sites interpreted the assessment tasks correctly and were able to answer all or most of the questions in the tasks.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Diesel Trade Theory N3 (True Harvest College) Engineering Drawing N2 (Swinton Campus) Engineering Science N2 (Mavhoi Campus) Engineering Science N3 (Tshisimani Campus) Industrial Electronics N2 (Ntuzuma Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Instrument Trade Theory N3 (Sasolburg Campus) Plating and Structural Steel Drawing N2 (Springfield Campus)

Aspects	Findings and Challenges	Subjects
Learner performance		Supervision in Industry N3 (Whitestone College)
Quality of marking	The quality and standard of marking was acceptable at 92% of the sites.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Diesel Trade Theory N3 (True Harvest College) Engineering Science N2 (Mavhoi Campus) Engineering Science N3 (Tshisimani Campus) Industrial Electronics N2 (Ntuzuma Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Instrument Trade Theory N3 (Sasolburg Campus) Motor Trade Theory N3 (Alexandra Campus) Plating and Structural Steel Drawing N2 (Springfield Campus) Supervision in Industry N3 (Whitestone College)
	There was evidence that the learners' work had been moderated internally at 50% of the sites.	Building and Civil Technology N3 (Techniven Campus) Building Drawing N2 (Itemoheleng Campus) Building Drawing N3 (Berea Technical College) Engineering Science N2 (Mavhoi Campus) Industrial Electronics N2 (Ntuzuma Campus) Industrial Organisation and Planning N3 (Rostec Technical College) Instrument Trade Theory N3 (Sasolburg Campus) Plating and Structural Steel Drawing N2 (Springfield Campus)

Table 2E presents the findings of the moderator who conducted off-site moderation for Wastewater Treatment Practice N3. One site, namely Roodepoort West Campus, submitted files on Water Treatment Practice N3 and not Wastewater Treatment Practice N3.

Table 2E: Findings and challenges observed in the July 2017 internal assessment moderation of Wastewater Treatment Practice N3 (four sites) and Water Treatment Practice N3 (one site).

Aspects	Findings and Challenges	Centres
Assessment policy and systems	The Assessment Policy was complete and up to date.	Majuba Technology Centre Umbilo Private Technical College
	However; no policies were available at three of the five sites.	Mavhoi Campus Roodepoort West Campus Rostec Technical College
Monitoring plan	Two sites had a monitoring plan in place for the monitoring of assessment at the site of learning.	Majuba Technology Centre Umbilo Private Technical College
Internal assessment task development plan	Four of the five sites had a plan in place. At the remaining one site, there was no plan in place.	Majuba Technology Centre Mavhoi Campus Roodepoort West Campus Umbilo Private Technical College
Lecturer files The content of the lecturers' files.	Four sites had the correct subject syllabus and the work schedule in the lecturer file as stipulated in the ICASS Guidelines.	Majuba Technology Centre Mavhoi Campus Roodepoort West Campus Umbilo Private Technical College

Aspects	Findings and Challenges	Centres
Lecturer files	The lecturer file at one site was poorly populated with limited evidence.	Rostec Technical College
Assessment schedules and scores Adherence to the ICASS Guidelines and the recording of the scores.	Assessment schedules were available and there was evidence that the syllabus and ICASS Guidelines were used at all sites.	Majuba Technology Centre Mavhoi Campus Roodepoort West Campus Rostec Technical College Umbilo Private Technical College
Content coverage	Four sites ensured that a substantial amount of work had been covered and that the weighting and spread was appropriate.	Majuba Technology Centre Roodepoort West Campus Rostec Technical College Umbilo Private Technical College
	However, at one site both tests carried an equal weight of 50% in terms of subject content instead of the 30% and 70% as prescribed in the ICASS Guidelines.	Mavhoi Campus
Cognitive demand and difficulty levels	All the sites had pitched the tasks at the right level.	Majuba Technology Centre Mavhoi Campus Roodepoort West Campus Rostec Technical College Umbilo Private Technical College
Internal moderation of task **Internal moderation of task**	Four of the sites had evidence of moderation of marking of a minimum sample of 10% of the scripts.	Majuba Technology Centre Mavhoi Campus Roodepoort West Campus Rostec Technical College
Technical aspects	All sites (100%) complied with all technical aspects of the tasks, namely: • Clear language and instructions; • Correct use of terminology; • Mark allocations on paper and marking guidelines correlate; • Graphics used are clear and relevant; • Numbering is correct • Time allocation is realistic; and • Typed in specified font.	Majuba Technology Centre Mavhoi Campus Roodepoort West Campus Rostec Technical College Umbilo Private Technical College
Marking tools	All sites (100%) met all the requirements of the marking tool in that the marking tool was relevant and appropriate; Made provision for alternative responses; Marking Guidelines were clear and neatly typed; and Mark allocations were realistic and clearly indicated within a task to facilitate marking.	Majuba Technology Centre Mavhoi Campus Roodepoort West Campus Rostec Technical College Umbilo Private Technical College
Learner performance	Students at four of the sites interpreted the assessment tasks correctly and were able to answer all or most of the questions in the tasks.	Majuba Technology Centre Mavhoi Campus Roodepoort West Campus Rostec Technical College

Aspects	Findings and Challenges	Centres
Learner performance	The interpretation of the questions by the learners could not be verified at one site as no learners' evidence was presented.	Umbilo Private Technical College
Quality of marking	The quality and standard of marking was acceptable at four of the sites.	Majuba Technology Centre Mavhoi Campus Roodepoort West Campus Rostec Technical College
Internal moderation of marking	There was evidence that the learners' work had been moderated internally at four of the sites.	Majuba Technology Centre Mavhoi Campus Roodepoort West Campus Rostec Technical College

Table 2F presents the findings of the two staff members of Umalusi who conducted monitoring at Tshisimani Campus and Techniven Campus of Vhembe College for three sampled subjects.

Table 2F: Findings and challenges observed in the July 2017 internal assessment monitoring by the two staff members of Umalusi.

Aspects	Findings and Challenges	Subjects
Contact hours per week	Tuition time for the subjects monitored is five hours per week.	Electrical Trade Theory N2 (Techniven and Tshisimani Campuses) Electrotechnology N3 (Techniven and Tshisimani Campuses) Industrial Electronics N3 (Techniven Campus) Mathematics N3 (Tshisimani Campus)
Physical resources	Text books and learning material were available when the classes commenced for all subjects except one subject at one site.	Electrical Trade Theory N2 (Tshisimani Campus)
Attendance registers for subjects	Attendance registers for some of the days were presented in all subjects except in one subject at one site where the attendance register could only be presented for the test. It was therefore evident that attendance was not always effectively managed.	Electrical Trade Theory N2 (Tshisimani Campuses) Electrotechnology N3 (Techniven and Tshisimani Campuses) Industrial Electronics N3 (Techniven Campus) Mathematics N3 (Tshisimani Campus) Electrical Trade Theory N2 (Techniven Campus) – evidence for test only
	The attendance register was well-organised and up-to-date for one subject at one site.	Electrotechnology N3 (Techniven Campus)
The availability and accuracy of mark sheets	The mark sheets were available and correct for all but one subject at one site.	Mathematics N3 (Tshisimani Campus)
Internal moderation	Internal moderation was not done for three subjects at the two sites.	Electrical Trade Theory N2 (Techniven) Electrotechnology N3 (Techniven) Mathematics N3 (Tshisimani Campus)

Aspects	Findings and Challenges	Subjects
Marking	The marking of all subjects was completed at both sites.	Electrical Trade Theory N2 (Techniven and Tshisimani Campuses) Electrotechnology N3 (Techniven and Tshisimani Campuses) Industrial Electronics N3 (Techniven Campus) Mathematics N3 (Tshisimani Campus)
Recording of marks	The marks were recorded on the IT system of the college for three subjects at the two campuses.	Electrical Trade Theory N2 (Techniven Campus) Electrotechnology N3 (Tshisimani Campus) Industrial Electronics N3 (Techniven Campus)
	The marks were recorded manually but not yet captured on the IT system of the college for two of the sampled subjects at the two campuses.	Electrotechnology N3 (Techniven Campus) Mathematics N3 (Tshisimani Campus)
	The marks were not yet recorded manually or on the IT system of the college for one of the sampled subjects at the two campuses.	Electrical Trade Theory N2 (Tshisimani Campus)
Weighting of marks	The marks were correctly converted by the electronic systems of the college during capturing for all subjects.	Electrical Trade Theory N2 (Techniven and Tshisimani Campuses) Electrotechnology N3 (Techniven and Tshisimani Campuses) Industrial Electronics N3 (Techniven Campus) Mathematics N3 (Tshisimani Campus)

The table below reflects adherence to the moderation criteria in the three additional subjects**.**

Evidence of these subjects was evaluated at the 13 colleges/campuses. Table 2G below reflects the consolidated findings of each site.

Table 2G: Monitoring of NATED internal assessment –July 2017

Criteria	Alexandra Campus	Berea Technical College	Itemoheleng Campus	Mavhoi Campus	Ntuzuma Campus	Rostec Technical College	Sasolburg Campus	Springfield Campus	Swinton Campus	Techniven Campus	True Harvest College	Tshisimani Campus	Whitestone College
DHET enrolments as per the sampled subjects	111 65 160	82 61 253	47 82 32	75 73 53	36 42 36	16 23 29	80 49 132	103 167 189	40 21 46	25 100 87	50 29 212	112 35 75	16 17 26

Criteria	Alexandra Campus	Berea Technical College	Itemoheleng Campus	Mavhoi Campus	Ntuzuma Campus	Rostec Technical College	Sasolburg Campus	Springfield Campus	Swinton Campus	Techniven Campus	True Harvest College	Tshisimani Campus	Whitestone College
Candidates' names on mark sheet	110 57 153	81 61 256	44 42 32	76 76 54	35 38 35	12 12 28	68 37 132	75 *** 148	41 21 42	25 75 84	52 n/a 216	111 32 65	15 12 24
Record of class attendance	Y	Y	Y	Y	Y	N*	N	Y	Y	Y	Y	Y	Y
80% class attendance rule implemented	Y	Y	Y	Y	Y	N*	N	Y	N	N	Y	N	N
Evidence: Test 1	Y	Y	Y	Y	#	Y	Y	Y ***	Y	Y	Y	Y	Y
Evidence: Test 2	Y	Y	Y	Y	#	Y	Y	Y ***	Y	Y	Y	Y	Y
Mark conversion correct													**

* *Yes* for Engineering Drawing N2

** Lecturer could not convince the external moderator about how the marks given had been derived as the correspondence between the allocation recorded on the script and the accompanying marking guidelines for Industrial Electronics N3 was not apparent.

*** Candidates' evidence was not available for Mathematics N2

Key:
Y = Yes
N = No
# = No evidence available

The 80% class attendance rule was implemented at 39% of the campuses. Sixty-seven per cent of the sites could provide evidence of tests for two or all three of the additional subjects.

One site, Ntuzuma Campus, could not provide any evidence of the tests being used to compile the ICASS marks.

Marks were incorrectly converted at Rostec Technical College. Mark conversion could not be verified at Ntuzuma Campus, Swinton Campus, True Harvest College and Whitestone College.

2.4 Areas of Good Practice

2.4.1 Physical Resources and Learning Material

Ninety-two per cent of sites received the textbooks/training material at the beginning of the trimester.

2.4.2 Assessment Schedules and Scores

Assessment schedules were available at 85% of the sites.

2.4.3 Content Coverage

Ninety-two per cent of the visited sites made the required number of two tasks in line with the requirements of the ICASS Guidelines available for moderation.

2.5 Areas of Concern

2.5.1 Physical Resources and Learning Material

At Techniven Campus of Vhembe College, the students of Building and Civil Technology N3 did not have any exposure to working in a workshop. The workshop is in the process of being closed and the tools and machines were rusted. The workshop at Alexandra Campus of Central Johannesburg College is inadequately equipped and must be upgraded for the Motor Trade Theory N3 learners to experience some of the latest developments in industry. Although exposure to a practical component is not a requirement for the NATED Report 190/191 programmes, it would make teaching and learning meaningful and ultimately lead to the improvement of the results and knowledge acquisition.

At True Harvest College in Pretoria, the site where teaching and learning takes place is in a busy, noisy arcade which is not conducive for good teaching and learning.

The absence of demonstrations, and /or the use of multi-media at Ntuzuma Campus of Elangeni College has proved to make the subject of Industrial Electronics N2 uninteresting and abstract for the students and they are more likely to find it more difficult to understand without being exposed to visual stimulus. The fact that the lecturer lacks practical experience in the electronic field exacerbates the above, as he would have to design the demonstrations even if the resources were available. Practical exposure is meant to enhance teaching and learning for the students and cannot be overlooked.

At Rostec Technical College in Bloemfontein, the learners of Industrial Organisation and Planning N3 were found to be motivated and eager to make a success of their studies. However, not enough money is being spent on infrastructure and equipment to enhance the eagerness of the learners and to improve on the quality of teaching.

2.5.2 Assessment Policy and Systems

No policies were available at Ntuzuma Campus of Elangeni College and Sasolburg Campus of Flavius Mareka College and the implementation thereof could not be verified.

2.5.3 Lecturer Files

The lecturer file for Wastewater Treatment Practice at Rostec Technical College was poorly populated with limited evidence.

2.5.4 Assessment Schedules

There was no evidence that the syllabus and ICASS Guidelines were used at True Harvest College in Pretoria and Sasolburg Campus of Flavius Mareka College.

2.5.5 Content Coverage

At Mavhoi Campus of Vhembe College both tests for Wastewater Treatment N3 carried an equal weight of 50% instead of the 30% and 70% as prescribed in the ICASS Guidelines.

2.5.6 Internal Moderation

There was no evidence of internal moderation of assessments at Alexandra Campus of Central Johannesburg College.

2.5.7 Marking Tools

At the Swinton Campus of Coastal KZN College, it was evident that the marking was done in a rush and therefore of inferior quality.

2.6 Directives for Compliance and Improvement

The DHET must ensure that:

- Appropriate facilities are available e.g. lecture rooms need to be conducive for effective teaching and learning.
- Internal assessment policies are available at all sites and inform the drafting and conducting of internal assessments.
- The syllabi and ICASS Guidelines are available and implemented at public and private colleges.

2.7 Conclusion

The internal assessments conducted at the sites of teaching and learning need to test the knowledge, skills and aptitudes of the learners. Students should be developed holistically to prepare them for the workplace. Some colleges excel in assessing the students in a valid and fair way. It is however, a concern that practices at some colleges are such that a student cannot be suitably prepared for the world-of-work in the subject and field for which they have received technical and educational training for which they need a specific recognised qualification.

CHAPTER 3 MONITORING OF WRITING

3.1 Introduction

Monitoring is one of the important processes that Umalusi executes to ensure the integrity and credibility of conducting examinations. Umalusi monitored the August 2017 NATED Report 190/191: Engineering Studies N2 and N3 examinations. The examinations were conducted from 18 July 2017 to 11 August 2017.

3.2 Scope and Approach

Umalusi monitored the August 2017 NATED Report 190/191: Engineering Studies N2 and N3 examinations from a sample of campuses at public and private colleges across the nine provinces. The reports were compiled based on data collected through the verification of evidence in line with Umalusi criteria, observations and interviews.

Table 3A provides the venues, subjects and number of candidates who wrote the examination at the examination venues that were monitored:

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

No.	Name of College	Site/ Campus	Province	Subject	Date	Candi-dates registered/ Actual number that wrote
1.	Damelin Mowbray College	Mowbray	Western Cape	Engineering Science N3	8/08/2017	55/21
2.	Jengrac Technical College	Sebokeng	Gauteng	Supervision in Industry N3	4/08/2017	180/94
3.	Advisor Progressive College	Nelspruit	Mpumalanga	Engineering Science N2 Engineering Science N3	8/08/2017	41/32 36/23
4.	Central Technical College		Gauteng	Engineering Drawing N3	18/07/2017	24/15
5.	Gert Sibande College	Ermelo	Mpumalanga	Mathematics N3	10/08/2017	46/33
6.	Gert Sibande College	Evander	Mpumalanga	Electrical Trade Theory N2	2/08/2017	122/73
7.	Johannesburg Institute of Engineering and Technology		Gauteng	Engineering Science N3	8/08/2017	159/104

No.	Name of College	Site/ Campus	Province	Subject	Date	Candi-dates registered/ Actual number that wrote
8.	King Hintsa College	Teko	Eastern Cape	Plant Operation Theory N2	18/07/2017	34/27
9.	Management and Leadership Academy		KwaZulu-Natal	Mathematics N3	10/08/2017	35/29
10.	Maluti College	Itemoheleng	Free State	Engineering Science N3	8/08/2017	40/26
11.	Mthashana College	Vryheid	KwaZulu-Natal	Building Drawing N3	2/08/2017	74/74
12.	Jeppe College of Communication and Computer Studies		Free State	Supervision in Industry N3	4/08/2017	79/33
13.	Orbit	Brits	North West	Electrotechnology N3	7/08/2017	144/59
14.	Roseville FET College	Pretoria	Gauteng	Electrical Trade Theory N2	2/08/2017	18/10
15.	East Cape Midlands	Charles Good Year	Eastern Cape	Supervision in Industry N3	4/08/2017	33/27
16.	Vhembe	Shingwedzi	Limpopo	Engineering Science N2	19/07/2017	67/30
17.	Taalnet Training Institute		Gauteng	Mathematics N2 Industrial Electronics N3	11/08/2017	110/81 17/13
18.	Gert Sibande	Ermelo	Mpumalanga	Industrial Electronics N2	24/07/2017	65/60
19.	Lovedale	Zwelitsha	Eastern Cape	Mathematics N3	10/08/2017	40/37
20.	Northern Cape Rural	Upington	Northern Cape	Mathematics N2	11/08/2017	34/31
21.	Vhembe	Tshisimani	Limpopo	Industrial Electronics N3	11/08/2017	152/118

3.3 Findings

Table 3B indicates the statistical overall level of compliance of the centres monitored according to the required criteria:

Table 3B: Compliance of centres monitored

Criterion	Met all criteria 100%	Met 80% criteria	Met 60% of criteria	Met 40% of criteria	Did not meet criteria 0%	Total
Delivery and storage of examination material	16 76%	3 14%	2 10%	0	0	21
The invigilators and their training	13 62%	1 5%	5 24%	2 10%	0	21
Preparations for writing and examination room/venue(s)	9 43%	5 24%	6 29%	1 5%	0	21
Time management for conducting the examinations	10 48%	4 19%	5 24%	2 10%	0	21
Checking the immediate environment	13 62%	0	0	0	8 38%	21
Activities during writing	15 71%	2 10%	2 10%	2 10%	0	21
Packaging and transmission of answer sripts	12 57%	5 24%	3 14%	1 5%	0	21
Monitoring by the Assessment Body	1 5%	0	8 38%	0	12 57%	21
Total	89	20	31	8	20	168

Table 3C indicates the overall general findings of the level of compliance at the centres monitored in line with Umalusi's criteria.

Table 3C: Findings and Challenges

Criteria	Findings and Challenges
Delivery and storage of examination material before writing	• Seventeen of the 21 centres, collected the question papers from the designated nodal points on the day of writing. The necessary and correct procedure was adopted in an accountable manner. • Ermelo Campus, Evander Campus, Upington Campus and Vryheid Campus served as nodal points and had courier services delivering the question papers. • In all instances, the question papers were sealed and opened in the presence of candidates. • Storage facilities and security measures met the requirements, with minor deviations (for security reasons) as indicated in Annexure A. • Twelve of the centres achieved maximum rating for this criterion, with the lowest being 60%.
The Invigilators and their training	• At 18 centres the chief invigilators and invigilators had the required appointment letters and had undergone training. • Invigilators were vigilant and mobile. • The invigilators appointed were either lecturers from the institution or community members. • Nineteen of the centres achieved a rating of 60% plus, with only two of them achieving 40%.
Preparations for writing and the examination venues	• Nineteen of the twenty-one centres achieved 60% plus for this criterion. • The writing venues were suitable for writing and had the required administrative processes in place. • The invigilators had nametags except for the centres indicated in Annexure A. • The checking of calculators was not witnessed when monitoring the Engineering Science N3 at some sites. • The most common shortcoming was the administrative aspect of the examination file, e.g. o Files were not updated with current and relevant documents. o Invigilation and relief invigilation time-tables were not available. o Attendance registers for invigilators and/or monitors/visitors were not placed in the examination files.
Time management	• Nineteen of the centres obtained a rating of 60% plus for this criterion. However, the common defaults were: o Late arrivals of some invigilators and candidates at the writing venue affected the procedural process of the commencement of the examination negatively. o Insufficient, or even no time, was allocated for reading the question paper. o Technical aspects of the question paper were not checked.
Checking of environment	• Thirteen of the centres received a rating of 100% whilst eight received 0% because the checking of the immediate environment was not done.
Activities during the writing process Activities during the writing process	• Nineteen of the centres received a rating of 60% plus of which 15 received the maximum rating. • All invigilators were mobile, vigilant and attentive. • Cover pages of answer books were checked at various stages of the writing process. • The same gender invigilator accompanied candidates to the ablution facilities and the last 15-minute rule prior to ending the examination officially was strictly observed in that candidates were not allowed to leave the examination room.
Packaging and transport of scripts after writing	• Only one of the centres received a rating of 40%. • Twenty of the centres conformed to the required process of packaging and transporting the answer scripts. • Two centres did not seal their answer scripts (refer to Areas of Concern) • The compilation of daily situational reports was neglected. A nil report should be filed if a noteworthy incident that required reporting did not take place.
Monitoring by the Assessment Body	• Only one centre out of 21 centres provided the evidence of monitoring by the assessment body during Umalusi's visit to the centre.

3.4 Irregularities/Incidents identified by Umalusi Monitors

The following are the irregularities/incidents that Umalusi monitors highlighted:

- Answer books were not sealed on dispatch at Johannesburg Institute for Engineering and Technology and Jengrac Technical College;
- The monitor found crib notes on a candidate at Vryheid Campus; and
- Subject clashes at Johannesburg Institute for Engineering and Technology. Candidates wrote Mathematics N2 in the morning and then wrote Mathematics N3 in the afternoon which was written in the morning by other candidates. The college could not provide evidence that this concession was approved.

3.5 Areas of Good Practice

The following areas of good practice were observed:

- Ermelo Campus: Excellent teamwork and an examination file well arranged with relevant documents. Seven of the eight criteria received a rating of 100%;
- Evander Campus: Excellent compilation of the examination file. Seven of the eight criteria received a rating of 100%;
- Rock of Springs Technical College: Seven of the eight criteria received a rating of 100%;
- Shingwedzi Campus: Seven of the eight criteria received a rating of 100%;
- Upington Campus: Seven of the eight criteria received a rating of 100%; and
- Jeppe College in the Free State: Seven of the eight criteria received a rating of 100%.

3.6 Areas of Concern

The following are areas of great concern:

- The poor examination venue due to renovations at Management and Leadership Academy in Pietermaritzburg;
- No female invigilator at Taalnet Training Institute to accompany female candidates to the toilet;
- Answer books of Johannesburg Institute for Engineering and Technology and Jengrac Technical College were not sealed when dispatched to the nodal point;
- 1:82 invigilator candidate ratio and insufficient space for writing at Johannesburg Institute for Engineering and Technology;
- Generally, a lack of reading time for candidates and the checking of technical accuracy of the question papers was not done;
- Lack of training of invigilators;
- Poor lighting and small clocks at Advisor Progressive College;
- Daily situational reports not completed despite the template provided by DHET;
- Lack of updated examination files at some centres;
- Poor time management at some of the centres; and
- Unsuitable furniture for Drawing at Central Technical College.

3.7 Directives for Compliance and Improvement

The following directives need to be adopted and implemented so as to enhance the credibility of the examinations:

- The head/centre manager should be appointed as Chief Invigilator and a "letter of delegation" must be in place in cases of delegation and placed in the examination file;
- All examination sessions must have a seating plan to be followed and available for verification;
- All centres should commence with the administrative aspect of the examination at least half an hour before the start of the examination;
- Examination centres should verify each candidate's identity using relevant documentation at the entry point to the examination room to avoid a non-registered candidate from writing the paper;
- All question papers must be checked for technical accuracy before the commencement of writing; and
- Chief Invigilators must complete the daily situational report and submit it to the DHET.

3.8 Conclusion

Despite some son-compliance observed**,** the writing phase of the August 2017 examination generally was conducted fairly. Despite some concerns raised, the integrity and the credibility of the examination cannot be questioned.

Annexure A:

Summary on the areas of concern raised in the chapter

Aspect	Challenges/Concerns	Implicated Centres/Sites
The invigilators and their training	Invigilators not trained and no documentation	Johannesburg Institute of Engineering and Technology
	No appointment letters for invigilators	Teko Campus
	No appointment letter and training of chief invigilator	Taalnet Training Institute
	Chief invigilator – no appointment letter	Management and Leadership Academy
	No relief invigilators on the day	Taalnet Training Institute Vryheid Campus
	Outdated appointment letters for the invigilators	Pretoria West Campus
Preparations for writing and the examination venues	No invigilation/relief time table in examination file	Damelin Mowbray College Johannesburg Institute of Engineering and Technology Management and Leadership Academy Pretoria Campus Taalnet Training Institute
	No relief time table	Teko Campus Itemoheleng Campus Pretoria Campus Zwelitsha Campus Damelin Mowbray College
	Departmental forms not in file	Johannesburg Institute of Engineering and Technology Pretoria Campus Zwelitsha Campus
	Desks were too small for drawing examinations and calculators not checked	Central Technical College
	Candidate: invigilator ratio of 1:82	Johannesburg Institute of Engineering and Technology
	Identity documents not checked or verified	Johannesburg Institute of Engineering and Technology
	No examination manual	Itemoheleng Campus
	No seating plan	Zwelitsha Campus
Time management	Technical aspects of paper not checked	Damelin Mowbray College Central Technical College Management and Leadership Academy Vryheid Campus Taalnet Training Institute Zwelitsha Campus
	Only 5 minutes reading time was given	Central Technical College
	Late arrival of candidates – transport cited as the problem	At all centres
	No reading time allocated	Itemoheleng Campus Taalnet Training Institute Zwelitsha Campus

Aspect	Challenges/Concerns	Implicated Centres/Sites
Checking of environment	Checking of the immediate environment not done	Damelin Mowbray College Johannesburg Institute of Engineering and Technology Management and Leadership Academy Vryheid Campus Jeppe College of Communication and Computer Studies Zwelitsha Campus
Activities during the writing process **Activities during the writing process**	Collection of answer scripts – candidates walked to the front of the examination room	Johannesburg Institute of Engineering and Technology
	Checking of cover page – not done	Vryheid Campus Zwelitsha Campus
	Candidates with crib notes on a calculator	Vryheid Campus
	Student with Mathematical formula	Taalnet Training Institute
Packaging and transport of scripts after writing	Answer scripts not sealed	Jengrac Technical College; Sebokeng Johannesburg Institute of Engineering and Technology
Monitoring by the Assessment Body	No evidence of monitoring during Umalusi visit	All centres; except at Itemoheleng Campus and Jeppe College of Communication and Computer Studies

CHAPTER 4 MONITORING OF MARKING

4.1 Introduction

The Department of Higher Education and Training followed, for the August 2017 examinations, a decentralised (provincial) marking model for N2 and centralised (national) marking model for most of the N3 subjects.

Umalusi monitored the marking processes of the August 2017 Report 190/191: Engineering Studies N2 and N3 Examinations. The marking started on 13 August 2017 and concluded on 18 August 2017.

4.2 Scope and Approach

Umalusi deployed four monitors to four sampled marking centres in four provinces. The reports were compiled based on data collection through the verification of evidence in line with Umalusi criteria, observations and interviews held with marking centre managers at the selected marking centres.

Table aA provides the names of the centres and dates on which the respective marking centres were monitored.

Table 4A: Marking Centres monitored by Umalusi

No.	Province	Centre	Monitoring Date
1.	Eastern Cape	Iqhayiya	16/08/2017
2.	Free State	Hillside View	16/08/2017
3.	Gauteng	Centurion	17/08/2017
4.	KwaZulu-Natal	Northdale	15/08/2017

The marking centres were monitored in terms of Umalusi's criteria which included planning for marking, compliance of marking centres, security, training of marking personnel, marking procedure, handling of irregularities, quality assurance procedures and writing of reports.

4.3 Findings

The findings presented are in accordance with the criteria for monitoring the marking centres prescribed by Umalusi.

4.3.1 Monitors' Findings

a) Planning for marking

All marking centres Umalusi monitored were found to be fully compliant with the criteria. All management plans were presented and verified. It was reported that marking centre managers monitored the progress across all the marking activities according to the approved management plan. The marking centre managers maintained a comprehensive list of marking and administrative personnel. All markers arrived at the marking centres on the stipulated

dates. It was reported that the arrival of marking guidelines varied between 24 and 72 hours after the paper was written.

b) Marking centres

All reports indicated that the venues used as marking centres were fully compliant with the minimum requirements for marking centres. The required infrastructure was available at all centres used. All centres were equipped with appropriate communication facilities and furniture. Accommodation and meals for markers were not provided at any of the marking centres. Only one marking centre had a cafeteria. Two out of four centres began marking between 7:00 and concluded 19:00. The two other centres functioned from 8:00 until 20:00.

It was reported that some answer scripts were observed to have arrived late at Northdale and Iqhayiya marking centres.

Adequate control of scripts was in place at all centres. On receipt of the scripts, the examination assistants (EAs) verified them against the mark sheets.

c) Security

Marking was conducted at campuses where security measures functioned well. The following security measures were observed:

- All centres had 24-hour security guards on duty;
- Access to all the marking centres was controlled;
- All marking centres had burglar bars and security gates;
- Two centres were under 24-hour camera surveillance;
- All marking centres had alarm systems;
- Searching the arriving cars was done at all centres;
- Access and movement registers were controlled well at all centres.

Courier services transported all scripts to the marking centres.

d) Training of marking personnel

It is worth noting that all marking centres monitored complied fully with this criterion.

The marking centre managers and deputy marking centre managers were trained at DHET in Pretoria. Documents to this effect were available and verified on site.

The marking centre managers trained the chief markers and internal moderators on their arrival at the marking centre. Chief markers and internal moderators were responsible for training all markers and EAs.

Marking personnel were given dummy scripts to mark after the marking guideline discussions. Immediate training was provided where problems were identified.

e) Marking procedure

All members of the marking team and monitors visiting the centres signed attendance registers.

Once the marking guidelines had been confirmed at the marking guideline discussion, no changes were allowed. For the subjects monitored, a question by question marking approach was used. In instances where the candidates answered a question twice, or answered both optional questions, the first answer was taken as correct.

All marking centres had good quality assurance processes in place to ensure that the entire script had been marked.

f) Monitoring of marking

The chief markers, assisted by the internal moderators, monitored the performance of the markers closely. This is regarded as one of their critical responsibilities. Both the chief marker and internal moderator monitored and moderated the quality of the marking and recorded the findings against each marker. The evaluation forms were sent to DHET to ensure appropriate appointments in the future.

Procedures to monitor underperforming markers were carried out. These markers were to be closely monitored and provided with additional support in areas where marking inconsistency was identified.

g) Handling of irregularities

This is an area that the assessment body managed well. It was reported that all the marking centres Umalusi monitored were found to be fully compliant with this criterion.

During the training, markers, chief markers and internal moderators were made aware of what constitutes an irregularity, how to identify it and the steps to be taken should an irregularity be detected. The marking centre manager did this training. The most important steps were clearly outlined as follows:

- Markers had to report any irregularity to the chief marker and the chief marker then had to report it to the internal moderator.
- The internal moderator would then report it to the marking centre manager. After verification, the alleged irregularity would be reported to and discussed by the irregularity committee.
- All the documentation had to be completed and submitted to the DHET.

The irregularity committee comprised the marking centre manager, chief markers, internal moderators (of the subject in which the irregularity occurred) and the academic deputy marking centre manager (academic).

The following irregularities were identified at Northdale marking centre:

- Some candidates wrote the compromised Mathematics N3 paper of the 24 July 2017 on 10 August 2017.

h) Quality assurance procedures

All marking centres monitored by Umalusi were found to be fully compliant with this criterion. Strict quality assurance processes were in place to ensure that every script was fully marked, and that a candidate had not been advantaged or disadvantaged.

The EAs checked that all sections of the script had been marked, that sub-totals were correct and all other computation procedures had been completed. Finally, the chief marker and internal moderator checked a sample of approved marked scripts. It was reported that the marks were captured at the marking centres. A data capture manager was appointed to oversee the capturing of data.

i) Reports

It is the responsibility of the internal moderator to evaluate each marker under their supervision. The reports are then forwarded to DHET, which assists in the future appointments of markers.

However, the chief marker mentioned that DHET should implement these recommendations more stringently as underperforming markers were still being reappointed.

The chief marker and internal moderator compiled detailed reports on each subject, identifying all the strengths and weaknesses related to the quality of the question paper and marking guidelines, as well as the marking process. All reports were completed using a pre-determined template. It was the duty of the deputy marking centre manager: academic to make certain that all the reports meet the specified standards before they are submitted to the DHET. Control measures to manage the receipt of these reports from the all the responsible personnel were in place. All marking centres provided evidence of the monitoring the assessment body did during the Umalusi visit, except for the marking centre at Northdale College.

4.4 Areas of Good Practice

The general management of all the marking centres monitored by Umalusi was good and the following areas of good practice were observed:

- The marking centres were managed in a professional manner;
- All centres monitored were compliant in almost all criteria for monitoring the marking process;
- All marking centres adhered to marking plans;
- Marking venues were conducive to conducting marking efficiently and effectively as the infrastructure was good; and
- The flow of scripts was well controlled.

4.5 Areas of Concern

Late arrivals of some of the answer scripts at Northdale and Iqhayiya marking centres was noted.

4.6 Directives for Compliance and Improvement

Timeous delivery of answer scripts must be ensured and closely monitored by the DHET.

4.7 Conclusion

The marking processes of the August Engineering Studies N2 and N3 examinations were well managed. The integrity and the credibility of the examinations were not compromised at any stage of the marking process at all the centres Umalusi monitored.

CHAPTER 5 MONITORING OF MARKING GUIDELINE DISCUSSIONS

5.1 Introduction

Attending marking guideline discussions as scheduled is of the utmost importance for the external moderators. It enables and ensures that the standards and the processes set are adhered to, known and implemented. The main objective of Umalusi's external moderators' participation in the marking guidelines discussion process was to allow for a fair, credible and transparent finalisation of the marking guidelines.

Meetings to finalise the N2 and N3 marking guidelines were held on three consecutive Saturdays. The N2 marking guidelines were standardised by panels comprising the chief markers from two provinces (Gauteng and North West) and the internal moderator of Gauteng.

5.2 Scope and Approach

Umalusi's external moderators attended the marking guideline discussion meetings for a sample of N2 and N3 subjects at various marking centres, as outlined in Tables 5A and 5B:

Table 5A: N2 marking guideline discussion meetings attended

No.	Subject	Date	Marking Centre
1.	Engineering Science N2	12/08/17	Centurion
2.	Mathematics N2	12/08/17	
3.	Plating and Structural Steel Drawing N2	12/08/17	

Table 5B: N3 marking guidelines discussion meetings attended

No.	Subject	Date	Marking Centre
1.	Engineering Drawing N3	22/07/17	Centurion
2.	Instrument Trade Theory N3	12/08/17	Pretoria West
3.	Mechanotechnology N3	12/08/17	
4.	Motor Trade Theory N3	12/08/17	Struandale
5.	Waste Water Treatment Practice N3	12/08/17	Pretoria West

As indicated in Table 5A, Umalusi deployed three moderators to the Centurion Campus (Tshwane South TVET College) for the August 2017 NATED Report 190/191: Engineering Studies marking guideline discussions for three N2 subjects.

Marking guidelines for two N2 subjects were finalised by a panel consisting of the chief markers and internal moderators from Gauteng and North West, and one N2 subject's marking guideline was finalised by the chief marker, internal moderator and markers from Gauteng.

Three moderators were deployed to the Pretoria West Campus (Tshwane South TVET College) to attend the August 2017 marking guideline discussions for three N3 subjects, one at Centurion (Tshwane South TVET College) and one at Struandale (Port Elizabeth TVET College) Campuses as indicated in Table 5B.

The external moderators attended the marking guideline discussion meetings to participate in the standardisation of the marking guidelines, report on the standard of the meetings and the preparedness of the marking personnel. The marking guideline discussion meetings were evaluated according to the evaluation criteria and quality indicators set out in Table 5C below.

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

Evaluation criteria	Quality indicators
Staff attendance	All the appointed markers, chief marker, internal moderator and external moderator attend the marking guideline discussion. All participants arrive on time to attend the training session.
Appointment of marking staff	Markers, chief marker(s), and the internal moderator(s) be appointed on time. Marking personnel receive their appointment letters before the marking guideline discussions.
External moderation	Changes recommended by the external moderator to the question paper and the marking guidelines are implemented.
Sample marking	The chief marker or the internal moderator mark a sample of examination scripts before the marking guideline discussion.
Adjustments to the marking guidelines	The chief marker or the internal moderator adjust the marking guidelines appropriately before the marking guideline discussion.
Chairperson of the marking guidelines discussion meeting	Chief marker or internal moderator
Participants' preparedness for the marking guidelines discussion	Chief marker, internal moderator and all the markers come prepared to the marking guideline discussion.
Adjustments to the marking guidelines during the marking guideline discussion	Indication of adjustments made to the marking guidelines during the marking guideline discussion.
Justification for changes to the marking guidelines	Changes made to the marking guidelines are justified.
Influence of changes to the marking guidelines on the cognitive level of the answers/responses	An indication of whether changes to the marking guidelines had influenced the cognitive level of the answers or responses required from the markers.
Role of the external moderator in the marking guidelines discussion	Role played by the external moderator.
Sample marking of examination scripts	Process of sample marking: Markers receive examination scripts to mark after the marking guideline discussions.

Evaluation criteria	Quality indicators
Sample marking of examination scripts	Markers mark a copy of the same examination script. Markers mark a sample of scripts from a range of examination centres.
Guidance and/or training during the sample marking	Guidance or training provided for markers during the marking of the sample.
Adherence to marking guidelines during sample marking	Adherence to the marking guidelines during the marking of the sampled scripts.
Markers' and internal moderators' performance during sample marking	The rating of the performance of the markers and internal moderators for the sampled scripts as poor, average, good or excellent.
Measures to address inconsistency in marking or calculation errors during sample marking	Measures to address inconsistency in marking or calculation errors identified during the sample marking process.
Adjustments to the marking guidelines	Adjustments made to the marking guidelines after the sampled scripts had been marked.
General conduct of internal moderators, chief markers and markers	Evaluation of problems experienced with the internal moderators, chief markers and markers and their general conduct were evaluated.
Signing off the marking guidelines	The external moderators sign the marking guidelines off.
Translated marking guidelines	Measures in place to ensure that translated marking guidelines are equivalent to the originals.
Fairness of the question paper	Complaints about: • Questions that are ambiguous. • Questions that go beyond the syllabus. • Questions that are above the level candidates are expected to achieve.
Minutes of marking guideline discussions	Minutes of the marking guideline discussions submitted to the marking centre manager.
Submission of adjusted marking guidelines	A copy of the adjusted marking guidelines submitted to the marking centre manager.
Comments and recommendations	Comments and recommendations for the outcome of the marking guideline discussions recorded.

5.3 Findings

Table 5D presents the findings of the marking guideline discussions, as reflected in the external moderator reports. All statistics are indicated for the sample included in the process and they are compared to findings for the same examination in August 2016.

Table 5D: Findings of marking guideline discussions for N2 and N3 subjects

Criteria	Findings and challenges	Sample subjects implicated
Attendance/absenteeism of participants	The required chief markers and internal moderators were in attendance for 100% of the subjects, as compared to 50% in attendance for the August 2016 examination. This is a significant improvement.	Engineering Science N2 Mathematics N2 Plating and Structural Steel Drawing N2 Engineering Drawing N3 Instrument Trade Theory N3 Mechanotechnology N3 Motor Trade Theory N3

Criteria	Findings and challenges	Sample subjects implicated
Attendance/absenteeism of participants		Waste Water Treatment Practice N3
	Participants for six subjects (75%) were on time as compared to 62% who were punctual for August 2016 examination, thus an improvement.	Engineering Science N2 Mathematics N2 Plating and Structural Steel Drawing N2 Instrument Trade Theory N3 Motor Trade Theory N3 Waste Water Treatment Practice N3
Appointment of marking staff	All internal moderators and chief markers (100%) for the sampled subjects, as was the case in the August 2016 examination, had received their appointment letters during the first trimester for all the three examinations of the year.	Engineering Science N2 Mathematics N2 Plating and Structural Steel Drawing N2 Engineering Drawing N3 Instrument Trade Theory N3 Mechanotechnology N3 Motor Trade Theory N3 Waste Water Treatment Practice N3
Preparedness of appointed participants	The internal moderator, chief marker and the appointed markers (75%) came prepared to the marking guidelines discussion. This is an improvement from the 67% who came prepared with their own marking guidelines for the August 2016 examination.	Engineering Science N2 Mathematics N2 Plating and Structural Steel Drawing N2 Instrument Trade Theory N3 Motor Trade Theory N3 Waste Water Treatment Practice N3
	Some marking personnel did not come prepared to the marking guidelines discussion (25%, compared to 33% for the August 2016 examination), e.g. they had not prepared their own marking guidelines.	Engineering Drawing N3 Mechanotechnology N3 Motor Trade Theory N3
Participation in the marking guidelines discussion	All those present (100%) participated actively in the marking guideline discussions of all subjects included in the sample.	Engineering Science N2 Mathematics N2 Plating and Structural Steel Drawing N2 Engineering Drawing N3 Instrument Trade Theory N3 Mechanotechnology N3 Motor Trade Theory N3 Waste Water Treatment Practice N3
Role of the external moderator	The external moderator chaired and facilitated the discussion as the chief marker was not feeling well, in 13% of the subjects compared to 38% in August 2016 NATED examination.	Mathematics N2
	The external moderators observed the process, provided guidance, supported and evaluated discussion in all the subjects.	All subjects
Pre-marking and sample marking	The chief markers of one subject, 13%, received a sample of scripts to mark before the marking guidelines discussion.	Motor Trade Theory N3

Criteria	Findings and challenges	Sample subjects implicated
Pre-marking and sample marking	All the markers (100%) received dummy scripts to mark after the marking guidelines discussion (sample marking). This was the action taken with 67% of the subjects during the marking guideline discussions for the 2016 August examination. A substantial improvement in this practice.	Engineering Science N2 Mathematics N2 Plating and Structural Steel Drawing N2 Engineering Drawing N3 Instrument Trade Theory N3 Mechanotechnology N3 Motor Trade theory N3 Waste Water Treatment Practice N3
Adherence to the marking guidelines in sample marking and performance of chief markers and markers in sample marking	Eighty per cent of the N3 markers adhered to the marking guideline. This compares favourably to 75% achieved in August 2016 examination.	Instrument Trade Theory N3 Mechanotechnology N3 Motor Trade Theory N3 Waste Water Treatment Practice N3
	In thirteen per cent (1 subject), the chief marker and the markers were rated as excellent during sample marking.	Motor Trade Theory N3
	In thirteen per cent (1 subject), the chief marker and the markers was rated as good during sample marking, compared to 75% in August 2016 examination.	Mathematics N2
	As opposed to 25% in August 2016, 13% (1 subject) of chief markers and the markers were rated as average during sample marking.	Engineering Drawing N2
	Sixty-three per cent of the chief markers and markers were not rated for the sample marking, compared to 50% for the August 2016 examination.	Engineering Science N2 Plating and Structural Steel Drawing N2 Instrument Trade Theory N3 Mechanotechnology N3 Waste Water Treatment Practice N3
Rating of internal moderation in sample marking	Internal moderation was rated as good in 25% of the subjects during the sample marking, as compared to 75% during the 2016 August examination.	Plating and Structural Steel Drawing N2 Mechanotechnology N3
	Internal moderation was rated as excellent in 50% of the subjects during the sample marking.	Engineering Science N2 Engineering Drawing N3 Motor Trade Theory N3 Waste Water Treatment Practice N3
	Standard of internal moderation in two subjects (25%) was not rated.	Mathematics N2 Instrument Trade Theory N3
Measures to address issues of inconsistency and calculation errors	The following corrective measures were reported:	
	Remarking was the corrective procedure in 38% of the subjects during sample marking.	Plating and Structural Steel Drawing N2 Mechanotechnology N3 Waste Water Treatment Practice N3
	The chief marker discussed and re-trained markers after inconsistencies and calculation errors were identified in three subjects (38%).	Engineering Drawing N3 Instrument Trade Theory N3 Motor Trade Theory N3

Criteria	Findings and challenges	Sample subjects implicated
	Corrective measures were not reported on in two subjects (25%).	Engineering Science N2 Mathematics N2
Adjustments to the marking guidelines after sample marking	Adjustments were made to the marking guidelines after sample marking in 38% of the sampled subjects.	Engineering Science N2 Mathematics N2 Instrument Trade Theory N3
	No adjustments were made to the marking guidelines after sample marking in 62% of the sampled subjects.	Plating and Structural Steel Drawing N2 Engineering Drawing N3 Mechanotechnology N3 Motor Trade Theory N3 Waste Water Treatment Practice N3
Signing off marking guidelines	The listed marking guidelines were signed off by the external moderators in all the sampled subjects.	Engineering Science N2 Mathematics N2 Plating and Structural Steel Drawing N2 Engineering Drawing N3 Instrument Trade Theory N3 Mechanotechnology N3 Motor Trade Theory N3 Waste Water Treatment Practice N3
Measures regarding translated marking guidelines	The following issues concerning translated marking guidelines were reported:	
	Seventy-five per cent of the subjects did not require translated marking guidelines because there were no Afrikaans speaking students who wrote the subjects.	Mathematics N2 Plating and Structural Steel Drawing N2 Engineering Drawing N3 Instrument Trade Theory N3 Motor Trade Theory N3 Waste Water Treatment Practice N3
	Translated marking guidelines (Afrikaans version) were received for 25% of the subjects.	Engineering Science N2 Mechanotechnology N3
Complaints regarding ambiguous, questions beyond the syllabus or above the level	There was a complaint about a confusing mark allocation to a question in one subject.	Mechanotechnology N3
	No complaints about questions were received for 88% of the subjects.	Engineering Science N2 Mathematics N2 Plating and Structural Steel Drawing N2 Engineering Drawing N3 Instrument Trade Theory N3 Motor Trade Theory N3 Waste Water Treatment Practice N3
Minutes of the marking guidelines discussion	The minutes of the marking guideline discussions for all subjects were submitted to the marking centre manager.	Engineering Science N2 Mathematics N2 Plating and Structural Steel Drawing N2 Engineering Drawing N3 Instrument Trade Theory N3 Mechanotechnology N3 Motor Trade Theory N3 Waste Water Treatment Practice N3

Criteria	Findings and challenges	Sample subjects implicated
Submission of adjusted marking guidelines	All adjusted marking guidelines (100%) were submitted to the marking centre manager.	Engineering Science N2 Mathematics N2 Plating and Structural Steel Drawing N2 Engineering Drawing N3 Instrument Trade Theory N3 Mechanotechnology N3 Motor Trade Theory N3 Waste Water Treatment Practice N3
Conduct of marking personnel	There were no problems with the general conduct or participants in all the sampled subjects.	

5.4 Areas of Good Practice

The following areas of good practice were observed for the marking guideline discussions monitored:

- All the chief markers and internal moderators attended the marking guideline discussion meeting as expected.
- Seventy-five per cent of the participants were on time for the marking guideline discussions.
- In seventy-five per cent of the subjects, all participants came prepared, with their own worked out marking guidelines. These are their own answers worked out for the questions in the relevant examination paper.
- All those present (100%) participated actively in the marking guideline discussions for all subjects included in the sample and no problems were experienced or reported in the general conduct of chief markers, internal moderators or markers.
- All the adjustments made to the marking guidelines in all N3 subjects were justified.
- Sample marking was done in all the sampled subjects after the marking guideline discussions.
- Discussion meetings: Except for one subject (Engineering Drawing N3, in which marker judgement and adherence to marking guidelines was reported as average), the markers adhered to the marking guidelines during the sample marking process.
- Minutes of marking guideline discussions for all the sampled subjects (100%) were submitted to the marking centre manager.

Adjusted marking guidelines for all the sampled N2 and N3 subjects (100%) were submitted to the marking centre manager.

5.5 Areas of Concern

Based on the external moderators' findings, the following areas of concern were observed during the marking guideline discussions:

- There were three N3 subjects (38%) in which not all the participants presented their own worked out marking guidelines. These are their own answers worked out for the questions in the relevant examination paper.
- In seven subjects (88%) chief makers did not receive a sample of scrips to mark before the marking guideline discussions.

5.6 Directives for Compliance and Improvement

In order to achieve compliance and improve the marking guideline discussion meetings, the DHET should address each of the following:

- Ensure that all internal moderators, chief markers and markers are well prepared for the marking guideline discussion meetings; and
- Ensure that all chief markers do sample marking before the marking guideline discussions commence.

5.7 Conclusion

The marking guideline discussions for the August 2017 NATED Report 190/191 examinations were carried out effectively. The strict discipline among markers is commendable and their commitment to the marking process is acknowledged. The number of chief markers, internal moderators and markers who brought their own worked out marking guidelines to the discussions is also commendable. However, there is still room for improvement as all marking personnel should come prepared.

CHAPTER 6 VERIFICATION OF MARKING

6.1 Introduction

The marking of scripts affects the fairness and reliability of marks awarded to a candidate, therefore the validity of the marking of examinations should receive meticulous attention.

A staggered marking approach for the NATED Report 190/191: Engineering Studies N2 and N3 drawing subjects, was followed.

Adherence to approved marking guidelines and accuracy of totalling and transfer of marks were, amongst others, checked. The verification of marking process aims to ensure that marking is conducted in a fair, valid, credible and accurate manner. Candidate performance is also analysed and compared per question.

6.2 Scope and Approach

Ten moderators were deployed to verify the marking of a sample of twelve N2 and N3 subjects at the Brits (1 subject), Centurion (2 subjects), Hillside View (1 subject), Pretoria West (4 subjects), Mpondozankomo (1 subject) and Northdale (3 subjects) marking centres between 5 and 17 August 2017.

Verification of marking was conducted for the following subjects:

Table 6A: Verification of marking conducted

No.	Subject	Date	Marking Centre
1.	Building Drawing N2	5/08/2017	Northdale
2.	Building Drawing N3	14/08/2017	Pretoria West
3.	Building Science N2	17/08/2017	Brits
4.	Diesel Trade Theory N2	16/08/2017	Centurion
5.	Diesel Trade Theory N3	17/08/2017	Pretoria West
6.	Electrical Trade Theory N2	16/08/2017	Centurion
7.	Engineering Science N3	17/08/2017	Northdale
8.	Fitting and Machining Theory N2	17/08/2017	Northdale
9.	Logic Systems N3	16/08/2017	Pretoria West
10.	Mathematics N2	16/08/2017	Hillside View
11.	Mathematics N3	16/08/2017	Mpondozankomo
12.	Mechanotechnology N3	17/08/2017	Pretoria West

Each moderator had to sample 20 scripts from across the provinces and examination centres marked at the specific marking centre. The table below indicates the number of marking centres and the provinces included in the sample per subject. It must be noted that the reason

for the inclusion of scripts from only one marking centre in most cases was that the scripts marked at different marking centres and Umalusi only verified the marking at one centre.

Table 6B: Verification of marking N3 and N2: subjects, number of provinces and number of examination centres per province

Subject	Number of Provinces	Western Cape	Northern Cape	Free State	Eastern Cape	KwaZulu-Natal	Mpumalanga	Limpopo	Gauteng	North West	Province 10*
Building Drawing N2	1	-	-	-	-	17	-	-	-	-	-
Building Drawing N3	9	2	-	1	1	1	1	1	1	1	1
Building Science N2	1	-	-	-	-	-	-	-	-	6	-
Diesel Trade Theory N2	2	1	-	-	-	-	-	-	6	-	-
Diesel Trade Theory N3	7	-	1	1	1	-	-	1	2	1	1
Electrical Trade Theory N2	2	-	-	-	-	-	-	-	18	-	1
Engineering Science N3	1	-	-	-	-	19	-	-	-	-	-
Fitting and Machining Theory N2	1	-	-	-	-	12	-	-	-	-	-
Logic Systems N3	5	2	-	-	1	1	1	-	8	-	-
Mathematics N2	2	-	1	7	-	-	-	-	-	-	-
Mathematics N3	1	-	-	-	-	-	10	-	-	-	-
Mechanotechnology N3	9	1	1	1	1	1	1	1	1	-	1

*10 Centres outside the borders of South Africa

Verification of marking was done using the Umalusi verification of marking instrument.

6.3 Findings

The table below captures the most important findings for the 12 sampled subjects as reported by the external moderators.

Table 6C: Findings - Verification of marking N2 and N3

Evaluation criteria	Findings and challenges	Subjects
Amendments to the marking guidelines	Changes were made to the marking guidelines of 58% of the subjects at the marking guideline discussion meetings.	Building Drawing N3 Diesel Trade Theory N2 Diesel Trade Theory N3 Engineering Science N3 Fitting and Machining Theory N2 Logic Systems N3 Mechanotechnology N3
	No changes were made to the marking guidelines of 42% of the	Building Drawing N2 Building Science N2 Electrical Trade Theory N2

Evaluation criteria	Findings and challenges	Subjects
Amendments to the marking guidelines	subjects at the marking guideline discussion meetings.	Mathematics N2 Mathematics N3
	The changes made during the marking guideline discussions mostly concerned possible alternative answers from the candidates. This applied to 42% of the subjects.	Building Drawing N2 Building Science N2 Fitting and Machining Theory N2 Logic Systems N3 Mathematics N2
Availability of answer scripts for marking and moderation	By the time external moderation took place 75% of the total number of examination scripts anticipated for each subject had already been received.	Building Drawing N2 Building Drawing N3 Building Science N2 Diesel Trade Theory N2 Fitting and Machining Theory N2 Logic Systems N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	Twenty-five per cent of the subjects' anticipated examination scripts, however, had not been received by the time external moderation was due to start.	Diesel Trade Theory N3 Electrical Trade Theory N2 Engineering Science N3
Training for marking	There was evidence that marking training was given in 92% of the subjects. The allocation of questions for marking therefore depended on the strength of markers as seen from the results of their manner of marking the dummy and live scripts as well as their experience of being regular markers.	Building Drawing N3 Building Science N2 Diesel Trade Theory N2 Diesel Trade Theory N3 Electrical Trade Theory N2 Engineering Science N3 Fitting and Machining Theory N2 Logic Systems N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
Marking approach	Marking of the whole script was the method used in 17% of the subjects.	Fitting and Machining Theory N2 Logic Systems N3
	Marking per question was the approach followed in 83% of the subjects.	Building Drawing N2 Building Drawing N3 Building Science N2 Diesel Trade Theory N2 Diesel Trade Theory N3 Electrical Trade Theory N2 Engineering Science N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
Adherence to the marking guidelines	Adherence to marking guidelines was rated as poor in 25% of the subjects.	Electrical Trade Theory N2 Mathematics N2 Mathematics N3
	Adherence to marking guidelines was rated as average in 8% of the subjects.	Building Drawing N2 Building Drawing N3 Building Science N2 Diesel Trade Theory N2 Diesel Trade Theory N3 Engineering Science N3

Evaluation criteria	Findings and challenges	Subjects
Adherence to the marking guidelines		Logic Systems N3 Mechanotechnology N3
	Adherence to marking guidelines was rated as good in 67% of the subjects. Compared to the August 2016 examination, this figure had dropped from 75% to 67% of markers adhering to the marking guidelines for the current examination,	Fitting and Machining Theory N2
Standard of marking	The standard of marking was rated as poor in 17% of the subjects.	Building Drawing N2 Building Drawing N3 Building Science N2 Diesel Trade Theory N2 Diesel Trade Theory N3 Engineering Science N3 Logic Systems N3 Mechanotechnology N3
	The standard of marking was rated as average in 17% of the subjects.	Electrical Trade Theory N2 Fitting and Machining Theory N2
	The standard of marking was rated as good in 66% of the subjects.	Mathematics N2 Mathematics N3
Administration	Ninety-two per cent of the subjects followed the prescribed administrative procedure for mark allocation.	Building Drawing N2 Building Drawing N3 Building Science N2 Diesel Trade Theory N2 Diesel Trade Theory N3 Electrical Trade Theory N2 Engineering Science N3 Logic Systems N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	Eight per cent of the subjects however, did not follow the correct administrative procedure for mark allocation.	Fitting and Machining Theory N2
	In all the subjects, marks were indicated per question.	Building Drawing N2 Building Drawing N3 Building Science N2 Diesel Trade Theory N2 Diesel Trade Theory N3 Electrical Trade Theory N2 Engineering Science N3 Fitting and Machining Theory N2 Logic Systems N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	Mistakes were clearly indicated in 92% of the subjects.	Building Drawing N2 Building Drawing N3 Building Science N2 Diesel Trade Theory N2 Diesel Trade Theory N3 Electrical Trade Theory N2 Engineering Science N3 Logic Systems N3 Mathematics N2

Evaluation criteria	Findings and challenges	Subjects
Administration		Mathematics N3 Mechanotechnology N3
	Mistakes were not clearly indicated in 8% of the subjects.	Fitting and Machining Theory N2
	In 92% of the subjects, marks were transferred correctly to the cover page and mark sheet.	Building Drawing N2 Building Drawing N3 Building Science N2 Diesel Trade Theory N2 Diesel Trade Theory N3 Electrical Trade Theory N2 Engineering Science N3 Logic Systems N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	Mark sheets were completed correctly in all the subjects.	Building Drawing N2 Building Drawing N3 Building Science N2 Diesel Trade Theory N2 Diesel Trade Theory N3 Electrical Trade Theory N2 Engineering Science N3 Fitting and Machining Theory N2 Logic Systems N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	In 67% of subjects, notes about the performance of candidates were kept throughout the marking period.	Building Drawing N3 Building Science N2 Diesel Trade Theory N2 Diesel Trade Theory N3 Electrical Trade Theory N2 Engineering Science N3 Logic Systems N3 Mechanotechnology N3
	Notes were however not kept in 33% of the subjects.	Building Drawing N2 Fitting and Machining Theory N2 Mathematics N2 Mathematics N3
	The code/name of the marker was indicated in red ink on the cover page next to the question marked in 92% of the subjects.	Building Drawing N3 Building Science N2 Diesel Trade Theory N2 Diesel Trade Theory N3 Electrical Trade Theory N2 Engineering Science N3 Fitting and Machining Theory N2 Logic Systems N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	The name of the internal moderator was clearly indicated on 83% of the examination scripts.	Building Drawing N3 Building Science N2 Diesel Trade Theory N2 Diesel Trade Theory N3 Engineering Science N3 Fitting and Machining Theory N2 Logic Systems N3 Mathematics N2 Mathematics N3 Mechanotechnology N3

Evaluation criteria	Findings and challenges	Subjects
Administration	The name of the internal moderator was not clearly indicated on 17% of the examination scripts.	Building Drawing N2 Electrical Trade Theory N2
Internal moderation	There was evidence of moderation throughout the marking process for 92% of the subjects.	Building Drawing N2 Building Drawing N3 Building Science N2 Diesel Trade Theory N2 Diesel Trade Theory N3 Engineering Science N3 Fitting and Machining Theory N2 Logic Systems N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	In 75% of the subjects, examination scripts from all the examination centres were moderated.	Building Drawing N3 Building Science N2 Diesel Trade Theory N3 Engineering Science N3 Fitting and Machining Theory N2 Logic Systems N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	In 25% of the subjects, not all the examination centres were included in the moderation process.	Building Drawing N2 Diesel Trade Theory N2 Electrical Trade Theory N2
	The internal moderator moderated all the questions in a script (whole script moderation) in 92% of the subjects.	Building Drawing N2 Building Drawing N3 Diesel Trade Theory N2 Diesel Trade Theory N3 Electrical Trade Theory N2 Engineering Science N3 Fitting and Machining Theory N2 Logic Systems N3 Mathematics N2 Mathematics N3 Mechanotechnology N3
	The standard of internal moderation was rated as poor in 17% of the subjects.	Mathematics N2 Mathematics N3
	The standard of internal moderation was rated as average in 25% of the subjects.	Building Science N2 Electrical Trade Theory N2 Fitting and Machining Theory N2
	The standard of internal moderation was rated as good in 58% of the subjects.	Building Drawing N2 Building Drawing N3 Diesel Trade Theory N2 Diesel Trade Theory N3 Engineering Science N3 Logic Systems N3 Mechanotechnology N3
Response to the examination question paper	The candidates' performance was in line with predictions in 75% of the subjects.	Building Drawing N2 Building Drawing N3 Building Science N2 Diesel Trade Theory N3 Engineering Science N3 Fitting and Machining Theory N2 Mathematics N2 Mathematics N3 Mechanotechnology N3

Evaluation criteria	Findings and challenges	Subjects
Response to the examination question paper	The candidates' performance was not in line with expectations in 25% of the subjects.	Diesel Trade Theory N2 Electrical Trade Theory N2 Logic Systems N3
	Candidates in 42% of subjects found the question paper fair.	Building Drawing N3 Engineering Science N3 Fitting and Machining Theory N2 Logic Systems N3
	Candidates in 50% of the subjects found the question paper difficult.	Building Drawing N2 Building Science N2 Diesel Trade Theory N2 Electrical Trade Theory N2 Mathematics N2 Mathematics N3 Mechanotechnology N3
	Candidates in 8% of the subjects found the question paper easy.	Diesel Trade Theory N3
Prevention and handling of irregularities	Irregularities – mostly administrative or technical in nature – were reported to the marking centre manager and handled according to examination guidelines (52% of subjects).	Building Science N2 Mechanotechnology N3
	Verbatim copying and repetition of similar answers was reported for two centres.	Electrical Trade Theory N2 Logic Systems N3
	Three centres allowed their candidates to write the paper that was withdrawn: Mandeni Campus, Shakaland College and Stanger FET College.	Engineering Science N3
	Students were found with crib notes in two centres.	Diesel Trade Theory N3
	No irregularities were identified or reported in 42% of the subjects by the time of external moderation.	Building Drawing N2 Building Drawing N3 Diesel Trade Theory N2 Fitting and Machining Theory N2 Mathematics N2 Mathematics N3
Conduct at the marking centre	In all the subjects monitored, markers were disciplined, professional, punctual, committed and quiet. Cell phones were switched off and the attendance register was signed.	All 12 subjects

6.4 Areas of Good Practice

The following good practice were noted:

- The allocation of questions for marking was determined by strengths of markers from marking dummy and live scripts and the experience of markers in 83% of the subjects.

6.5 Areas of Concern

Umalusi external moderators raised several concerns about the marking process in the marking centres. These are:

- Building Drawing markers failed to adhere to the provisions of the marking guidelines;

- Thirty-three per cent of the markers did not make notes throughout the marking process as required to contribute to the compilation of the chief marker and internal moderation reports;
- In Building Science N2 there was evidence of shadow moderation where the moderator marked the same mistake correct without correcting the marker and improving the marking;
- The time frame allocated to marking was reduced from 10 days to 6 days. This may possibly compromise the quality of marking as the process would have to be completed in shorter space of time, thereby leading to marking being rushed off;
- Hillside View marking centre's (Mathematics N2), markers amended the marking guidelines even after it was signed off and the marking centre manager was not informed; and
- Only two worked out marking guidelines out of nine markers were produced in Mpondozankomo marking centre (Mathematics N3). The external moderator found out that some markers were not vigilant enough during the process and erroneously left out some questions, only to be made aware by the examination assistants.

6.6 Recommendations to improve teaching and learning

The following recommendations were made:

- Lecturers must not restrict themselves solely to textbooks as resource materials for teaching and learning purposes. Research using internet, contemporary manual guidelines and regulations must be consulted to keep abreast with new developments which should be brought into teaching;
- Due to technological improvements in the motor industry, the syllabi need to be updated to keep abreast with the latest developments; and
- The chief markers' reports should be sent to all colleges for distribution to the relevant faculties. The weak and strong areas need to be noted and there must interventions to address these areas.

6.7 Directives for Compliance and Improvement

To ensure that the marking of candidate's scripts does not threaten the validity of the NATED Report 190/191: Engineering studies examinations, the DHET should do the following:

- Marking for drawing subjects is not compromised by markers who do not have the adequate knowledge and skills of how the subjects should be marked;
- Markers should be encouraged to keep notes during marking to contribute to the production of the qualitative reports at the end of marking session;
- Allocate enough time or markers to ensure quality marking;
- Chief markers must be trained properly on how to report changes to the marking guidelines to the marking centre management after changes are made after the making guideline discussion; and
- Markers should not be allowed to mark if they do not come prepared to the marking centre without their own worked out marking guidelines.

6.8 Conclusion

Marking is one of the most crucial assessment processes and chief markers, internal moderators and markers need to be vigilant. Poor marking may mean that the results are not a true

reflection of the candidates' performance and as such everything possible should be done to ensure the process is flawless and fair.

CHAPTER 7 STANDARDISATION AND RESULTING

7.1 Introduction

Standardisation is a statistical process used to mitigate the effects on performance of factors other than only a learner's 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 could 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 Umalusi Council may adjust raw marks during the standardisation process. During the standardisation process, qualitative reports from external moderators, internal moderators, monitoring of marking reports and the principles of standardisation are considered to inform the decisions taken.

7.2 Scope and Approach

The DHET presented 60 instructional offerings for the standardisation of the NATED Report 190/191: Engineering Studies N2 and N3.

Standardisation involves various procedures to ensure that the standardisation process is carried out accurately. In preparation for the standardisation meeting, the verification of subject structures and the capturing of marks are completed tasks for which the respective assessment body's computer system will have been available. The development and verification of norms follows with the production of the verification of standardisation data booklets.

During the standardisation process, the qualitative reports from external and internal moderators, monitoring reports as well as applying the principles of standardisation inform final decisions made. The process is concluded after the approval of the mark adjustments per subject where required.

Umalusi verifies the systems, the historical averages, the standardisation and statistical moderation and the resulting datasets.

7.2.1 Development of the historical averages

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

Level	Subject	Excluded Exam sitting
N2	Radio and Television Theory N2	2015/08
N3	Building Drawing N3 8090023	2015/08
	Mathematics N3 16030143	2016/04

7.2.2 Capturing of marks

No verification of capturing of marks was done.

7.2.3 Verification of datasets and standardisation booklets

The verification of systems was not done for the standardisation process due to time constraints. The datasets were verified before the printing of the final standardisation booklets. The number of candidates processed, the calculation of the norms, the adjusted marks, raw marks and the graphs were verified and approved after several corrections had been made.

7.2.4 Pre-standardisation and standardisation

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

7.2.5 Post standardisation

The assessment body was required to submit the adjustment file for approval after the approved standardisation decisions. These were verified and approved after several moderations submissions for N2 and at third submission for N3.

7.3 Findings and decisions

7.3.1 Development of historical averages

The historical norm for the NATED Report 190/191: Engineering Studies N2 and N3 was submitted, verified and approved at moderation. DHET submitted the correct data for all previous examination sittings, as the data and the norms were approved at first submission. Outliers were identified mostly in the N3 Engineering Studies and, where applicable, the principle of exclusion was applied to develop the August 2017 final norm.

7.3.2 Capturing of marks

No verification of capturing was conducted.

7.3.3 Verification of datasets and standardisation booklets

The datasets were verified and approved after several moderations. The standardisation datasets and the electronic booklets were approved at first submission.

7.3.4 Pre-standardisation and standardisation

a) Pre-standardisation

The pre-standardisation meeting took place on the 1st of September 2017. The Assessment Standards Committee (ASC) of Umalusi's Council discussed the learner performance per subject. In the decision-making, the ASC also considered the qualitative input from reports of some subjects, which was presented by Umalusi staff. Out of the 58 subjects submitted by the

DHET, three subjects were provisionally standardised awaiting executive committee's approval.

b) Standardisation meeting

The August 2017 NATED Report 190/191: Engineering Studies N2–N3 results were standardised at the meeting on the 1st of September 2017.

The DHET presented 60 instructional offerings for the standardisation of the NATED Report 190/191: Engineering Studies N2 and N3 programmes.

Fifty-five subjects were standardised for the NATED Report 190/191: Engineering Studies and only two were provisionally standardised. Electrotechnology N3 and Logic Systems N2 were provisionally standardised pending Umalusi executive committee decision on alleged irregularities. For Engineering Drawing N2 the adjustments decided on exceeded the 10% of the historical average. The ASC had to adjust beyond 10% because the performance in these subjects was extra ordinarily high. The decisions on the August 2017 NATED Report 190/191: Engineering Studies N2–N3 were informed by the trends in learner performance, the qualitative input reports, the historical norm and a pair's analysis.

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

Description	Total
Number of instructional offerings presented	60
Raw marks accepted	31
Adjustments (mainly upwards)	13
Adjustments (mainly downwards)	13
Provisionally standardised	3
Not standardised	0
Number of instructional offerings standardised	60

7.4 Areas of Good Practice

The following good practices were observed:

- The DHET achieved 100% capture rate in all subjects for standardisation purposes; and
- Standardisation datasets and electronic booklets were approved on first submission.

7.5 Areas of Concern

The following areas of concern were noted:

- The adjustments for N2 were approved after the third submission while those for the N3 approval was after the fifth submission;
- The statistical moderation was not yet approved by the day of the approval meeting; and
- The large number of subjects involved in paper leakages is worrisome.

7.6 Directives for Improvement and Compliance

The DHET must ensure that:

- Adjustments are approved as per the directives; and
- The statistical moderation and results are completed by the time of the approval of the release of results.

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 to those of Umalusi, which is a clear indication of a maturing examination system.

The verification of the statistical moderation and resulting processes was not completed by the day the results were approved.

37 General Van Ryneveld Street,
Persequor Technopark, Pretoria
Telephone: +27 12 349 1510 | Fax: +27 12 349 1511
E-mail: info@umalusi.org.za | Web: www.umalusi.org.za
Facebook: www.facebook.com/UmalusiSA
Twitter: @UmalusiSA

UMALUSI

Council for Quality Assurance in
General and Further Education and Training