Every child is a National Asset

(DRAFT as on 15 November 2020)

2021 RECOVERY CURRICULUM AND ASSESSMENT PLANS

ENGINEERING GRAPHICS & DESIGN (EGD)

GRADE 10, 11 & 12

Implementation: January 2021

basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

Read to Lead

Presentation Outline

1. 2021 Content Overview for the Phase
2. 2021 Annual Teaching Plan
3. 2021 School Based Assessment (SBA)
4. Conclusion

1. 2021 Content Overview for the FET Phase

Engineering Graphics & Design (EGD)

***NOTE*: Information as on 15 November 2020.**

Summary: *(as on 15 November 2020)*
2021 Content Overview for the Phase

ENGINEERING GRAPHICS AND DESIGN		
GRADE 10	**GRADE 11**	**GRADE 12**
General drawing principles		
Use/care/dangers of drawing instruments, line types, line work, lettering, dimensioning etc.	*The Grade 10 content remains applicable*	*The Grade 10 content remains applicable*
Free-hand drawing		
Free-hand drawing techniques	*The Grade 10 content remains applicable*	*The Grade 10 content remains applicable*
Setting up a drawing sheet		
A4 and A3 drawing sheets with general name/title blocks	Relevant Civil and Mechanical name/title blocks/-panels	Relevant Civil and Mechanical name/title blocks/-panels

Summary: *(as on 15 November 2020)*
2021 Content Overview for the Phase

ENGINEERING GRAPHICS AND DESIGN		
GRADE 10	**GRADE 11**	**GRADE 12**
Geometrical construction		
Geometrical (instrument) constructions, regular polygons and ellipses	*The Grade 10 content remains applicable*	*The Grade 10 content remains applicable*
Scales		
The application of any scale	*The Grade 10 content remains applicable*	*The Grade 10 content remains applicable*
Solid geometry		
Right-regular solids with sections and true shapes	Combinations of the right-regular solids, which includes solids with holes, that include sections and true shapes	Combinations of the right-regular solids, which includes solids with holes, that include sections and true shapes

Summary: *(as on 15 November 2020)*
2021 Content Overview for the Phase

ENGINEERING GRAPHICS AND DESIGN		
GRADE 10	**GRADE 11**	**GRADE 12**
Descriptive geometry		
• True lengths of line segments. Use projection and construction methods. • True inclinations	*The Grade 10 content on true lengths and true inclinations remains applicable*	*The Grade 10 content on true lengths and true inclinations remains applicable*
Mechanical drawing		
Castings and objects from industry	Simple assemblies	Complex assemblies and welding, machining, tolerances & treatment symbols

Summary: *(as on 15 November 2020)*
2021 Content Overview for the Phase

ENGINEERING GRAPHICS AND DESIGN		
GRADE 10	**GRADE 11**	**GRADE 12**
Civil drawing		
Floor plans, basic single line elevations and sectional elevations of the foundation to slab	Floor plans, elevations with basic single line roofs and sectional elevations of the foundation to the ceiling height, as well as fixtures	Floor plans, complete detailed elevations and sectional elevations of the foundation to the roof, as well as drainage, electrical fittings and site plans
Isometric drawing		
Simple isometric drawings with auxiliary views	Complex isometric drawings with auxiliary views and circles	Complex isometric drawings with auxiliary views, circles and sections

Summary: *(as on 15 November 2020)*
2021 Content Overview for the Phase

ENGINEERING GRAPHICS AND DESIGN		
GRADE 10	**GRADE 11**	**GRADE 12**
Perspective drawing		
N/A for 2021!	2-point perspective drawings	Complex 2-point perspective drawings with circles and arcs
Electrical diagrams		
N/A for 2021!	***N/A for 2021!***	Electrical fixtures and wiring diagrams on floor plans of civil drawings
Interpenetration		
N/A	Between two in-line regular geometrical prisms and/or cylinders	Between two in-line or offset regular geometrical prisms and/or cylinders

Summary: *(as on 15 November 2020)*
2021 Content Overview for the Phase

ENGINEERING GRAPHICS AND DESIGN		
GRADE 10	**GRADE 11**	**GRADE 12**
Developments		
N/A	The parts of interpenetrating solids or tubes/pipes ***NO transition pieces for 2021!***	• Parts of interpenetrating solids or tubes/pipes • Transition pieces
Loci (Cam)		
N/A	Simple cams with uniform motion with wedge shaped followers	Complex cams with motions that are either uniform and/or harmonic and/ or uniform acceleration and retardation, with either wedge shaped or roller followers

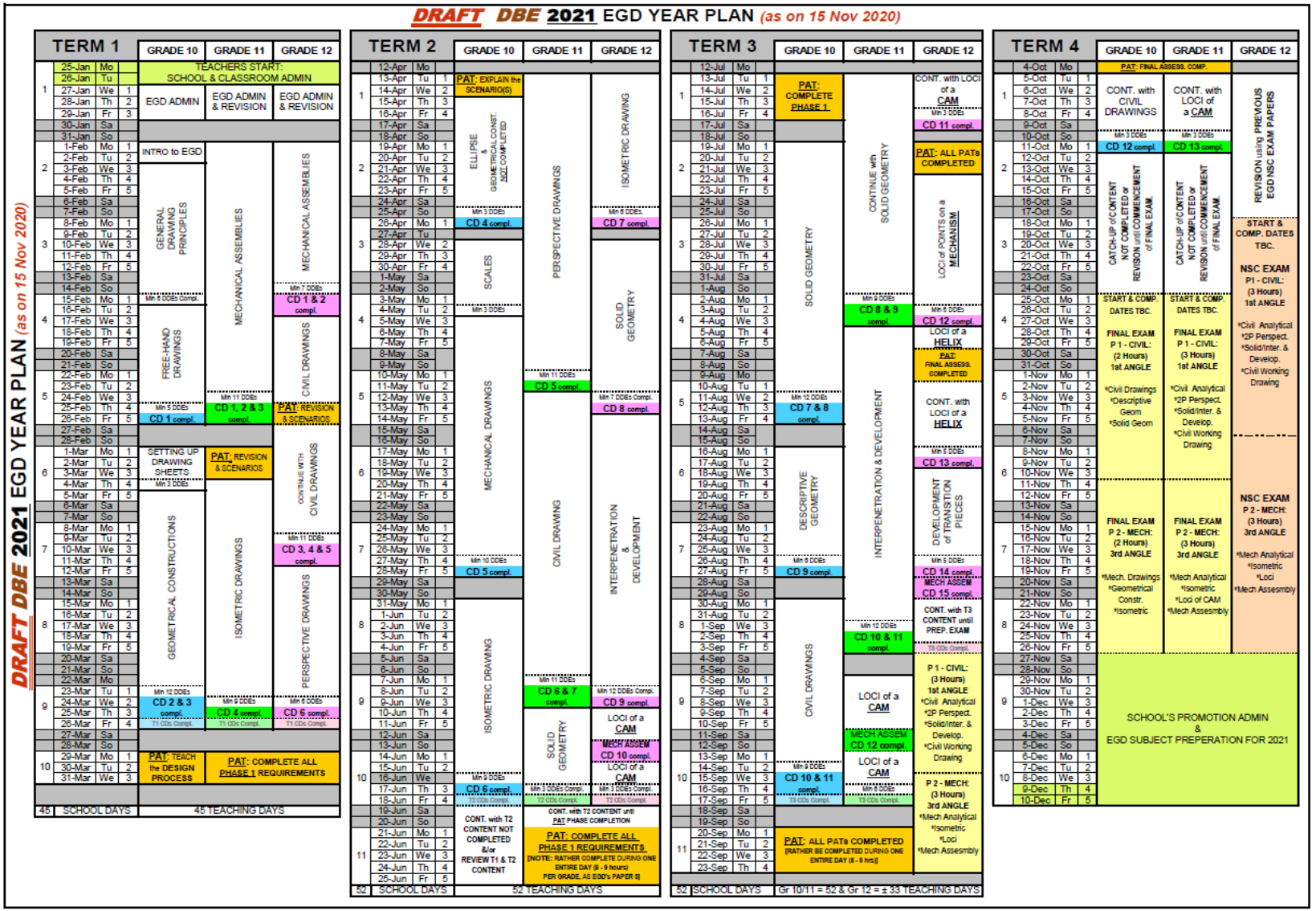
Summary: *(as on 15 November 2020)*
2021 Content Overview for the Phase

ENGINEERING GRAPHICS AND DESIGN		
GRADE 10	**GRADE 11**	**GRADE 12**
Loci (Mechanisms)		
N/A	N/A	Loci of a point(s) on the components of mechanisms
Loci (Helix)		
N/A	***N/A for 2021!***	Helix of augers, spiral chutes and coil springs
PAT: The Design Process		
Application of the complete Design Process to a selected scenario	Application of the complete Design Process to a selected scenario	Application of the complete Design Process to a selected scenario

3. The 2021 EGD Year Plan

***NOTE*: The 2021 EGD YEAR PLAN is aligned to the 2021 School Calendar.**

ORIGINAL 2021 EGD YEAR PLAN (ATP)



4. 2021 Curriculum Annual Teaching Plans (ATPs)

NOTE: The 2021 EGD ATP is aligned to the 2021 School Calendar.

Summary: *(as on 15 November 2020)*
2021 EGD Topics

GRADE 10 ATP for 2021			
TERM 1 *(45 days)*	**TERM 2** *(28 days)*	**TERM 3** *(52 days)*	**TERM 4** *(Max 14 days)*
EGD Admin and Introduction to *(5 days)*	**PAT: Scenarios(s)** *(2 days)*	**PAT Phase 2** *(4 days)*	**Civil Drawing** *(5 days)*
General drawing principals *(9 days)*	**Ellipse** *(8 days)*	**Solid Geometry** *(19 days)*	**Revision** *(Remaining days till examination)*
Free-hand drawing *(9 days)*	**Scale** *(5 days)*	**Descriptive Geom.** *(10 days)*	
Geometrical construction *(15 days)*	**Mechanical draw.** *(18 days)*	**Civil Drawing** *(15 days)*	
PAT: Design Process *(3 days)*	**Isometric drawing** *(14 days)*	**PAT Phase 3** *(4 days)*	

Summary: *(as on 15 November 2020)*
2021 EGD Topics

GRADE 11 ATP for 2021			
TERM 1 (45 days)	**TERM 2** *(28 days)*	**TERM 3** *(52 days)*	**TERM 4** *(Max 14 days)*
Mechanical drawing *(20 days)*	**2-point perspective** *(20 days)*	*Continue with* **Solid geometry** *(17 days)*	*Continue with* **Loci of a Cam** *(5 days)*
Isometric drawing *(16 days)*	**Civil drawing** *(21 days)*	**Interpenetration & Development** *(21 days)*	**Revision** *(Remaining days till examination)*
2-point perspective *(5 days)*	**Solid geometry** *(6 days)*	**Loci of a Cam** *(10 days)*	
PAT Phase 1 *(3 days)*	**PAT Phase 2** *(5 days)*	**PAT Phase 3** *(4 days)*	

Summary: *(as on 15 November 2020)*
2021 EGD Topics

GRADE 12 ATP for 2021			
TERM 1 *(45 days)*	**TERM 2** *(28 days)*	**TERM 3** *(Max 28 days)*	**TERM 4** *(Max 10 days)*
Mechanical draw. *(12 days)*	**Isometric drawing** *(10 days)*	*Continue with* **Loci of a Cam** *(4 days)*	**Revision** *(Remaining days till examination)*
Civil drawing *(15 days)*	**Solid geometry** *(12 days)*	**PAT Phase 3** *(3 days)*	
2-point perspective *(10 days)*	**Interpenetration & Development** *(19 days)*	**Loci of a Mechanism** *(10 days)*	
PAT Phase 1 *(3 days)*	**Loci of a Cam** *(6 days)*	**Loci of a Helix** *(8 days)*	
	PAT Phase 2 *(5 days)*	**Develop. Transition Piece** *(8 days)*	

4. 2021 School Based Assessment (SBA), Examination & Practical Assessment Task (PAT) Amendments

NOTE: 2021 EGD 'Assessment Requirements' are aligned to the 2021 School Calendar.

Summary: *(as on 15 November 2020)*
2021 Programme of Assessment

GRADE 10 SBA Requirements for 2021			
TERM 1	**TERM 2**	**TERM 3**	**TERM 4**
Course Drawings: 1. Freehand drawing 2. 1st Geometrical construction ***3. 2nd Geometrical construction***	**Course Drawings:** ***4. Ellipse*** 5. Mechanical drawing 6. Isometric drawing **Controlled Test**	**Course Drawings:** 7. 1st Solid geometry ***8. 2nd Solid geometry*** 9. Descriptive geometry ***10. Civil: areas & perimeters*** 11. Civil floor plan	**Course Drawings:** ***12. Civil section of foundation*** **FINAL Promotional Examination**

- ***CDs indicated in GREEN are the CDs replaced/moved for 2021 only!***
- ***See 2021 EGD Assessment Requirements document for details of CDs.***

Summary: *(as on 15 November 2020)*

2021 Programme of Assessment

GRADE 11 SBA Requirements for 2021

TERM 1	TERM 2	TERM 3	TERM 4
Course Drawings: 1. Mechanical analytical exercise 2. 1st mechanical assembly ***3. 2nd mechanical assembly*** 4. Isometric drawing	**Course Drawings**: ***5. Two-point perspective*** 6. Civil floor plan with elevations 7. Civil sectional elevation	**Course Drawings:** ***8. 1st Solid geometry*** ***9. 2nd Solid geometry (new)*** 10. 1st Interpen. & development ***11. 2nd Interpen. & development (new)*** 12. 3rd Mechanical assembly	**Course Drawings:** ***13. Loci: Cam***
	Controlled Test		**FINAL Promotional Examination**

- ***CDs indicated in GREEN are the CDs replaced/moved for 2021 only!***
- ***See 2021 EGD Assessment Requirements document for details of CDs.***

Summary: *(as on 15 November 2020)*
2021 Programme of Assessment

<table>
<tr><th colspan="6">GRADE 10 & 11 PROGRAMME of FORMAL ASSESSMENT for 2021</th></tr>
<tr><td colspan="6">FORMAL ASSESSMENT: 100%</td></tr>
<tr><td colspan="3">LEARNERS EGD FILE(S): 50%</td><td colspan="2" rowspan="2">PROMOTIONAL EXAMINATION
20% (tbc.)
(Internally or externally set, but internally assessed)</td><td rowspan="2"></td></tr>
<tr><td colspan="2">SCHOOL BASED ASSESSMENT
60% (tbc.)
(Internally set and assessed)</td><td>PRACTICAL ASSESSMENT TASK (PAT)
20% (tbc.)
(Externally set and internally assessed)</td></tr>
<tr><td><u>TEST</u>:
Term 2 Controlled Tests</td><td>40
(tbc.)</td><td rowspan="2"><u>PAT Phase 1:</u>
The Design Process
&
<u>PAT Phase 2:</u>
Orthographic Working Drawings
&
<u>PAT Phase 3:</u>
Self-assessment and Presentation</td><td colspan="2" rowspan="2">NB: The final mark for each paper must be a mark that has been converted to 100.</td></tr>
<tr><td><u>COURSE DRAWINGS:</u>
ALL the marks of ALL the prescribed CDs</td><td>60
(tbc.)</td></tr>
<tr><td colspan="3"></td><td>PAPER ONE:</td><td>100</td></tr>
<tr><td colspan="3"></td><td>PAPER TWO:</td><td>100</td></tr>
<tr><td>TOTAL</td><td>100</td><td>TOTAL</td><td>100</td><td>TOTAL</td><td>200</td></tr>
</table>

Summary: *(as on 15 November 2020)*
2021 Programme of Assessment

GRADE 12 SBA Requirements for 2021			
TERM 1	**TERM 2**	**TERM 3**	**TERM 4**
Course Drawings: 1. 1st mechanical assembly 2. Mechanical analytical exercise 3. Civil section 4. Civil floor plan with elevations 5. Civil site plan 6. Two-point perspective	**Course Drawings:** 7. Isometric drawing 8. Solid geometry 9. Interpenetration & development 7. 2nd mechanical assembly	**Course Drawings:** ***11. Loci: Cam*** ***12. Loci: Mechanisms*** ***13. Loci: Helix*** ***14. Development of Transition Piece*** 15. 3rd mechanical assembly	
		Preparatory Examination	**FINAL NSC Examination**

- ***CDs indicated in GREEN are the CDs replaced/moved for 2021 only!***
- ***See 2021 EGD Assessment Requirements document for details of CDs.***

Summary: *(as on 15 November 2020)*
2021 Programme of Assessment

<table>
<tr><th colspan="6">GRADE 12 PROGRAMME of FORMAL ASSESSMENT for 2021</th></tr>
<tr><td colspan="6">FORMAL ASSESSMENT: 100%</td></tr>
<tr><td colspan="2" rowspan="2">SCHOOL BASES ASSESSMENT 25%
(Internally set and assessed)</td><td colspan="4">EXTERNAL ASSESSMENT: 75%</td></tr>
<tr><td colspan="2">PRACTICAL ASSESSMENT TASK (PAT) 25%
(Externally set & internally assessed)</td><td colspan="2">FINAL NSC EXAMINATION 50%
(Externally set and assessed)</td></tr>
<tr><td colspan="2">LEARNER'S EGD FILE</td><td colspan="2">LEARNER'S PAT FILE/PORTFOLIO</td><td colspan="2" rowspan="2">The final mark for each paper will be a mark that has been converted from 200 to 100.</td></tr>
<tr><td rowspan="2"><u>COURSE DRAWINGS:</u>
ALL the marks of ALL the prescribed CDs</td><td rowspan="2">40
<u>(tbc.)</u></td><td colspan="2" rowspan="3"><u>PAT Phase 1:</u>
The Design Process
&
<u>PAT Phase 2:</u>
Orthographic Working Drawings
&
<u>PAT Phase 3:</u>
Self-assessment and Presentation</td><td>PAPER ONE: 3 hrs (200 marks ÷ 2 = 100)</td><td>100</td></tr>
<tr><td><u>EXAMINATIONS:</u>
Preparatory (Sept)</td><td>60
<u>(tbc.)</u></td><td>PAPER TWO: 3 hrs (200 marks ÷ 2 = 100)</td><td>100</td></tr>
<tr><td>TOTAL</td><td>100</td><td>TOTAL</td><td>100</td><td>TOTAL</td><td>200</td></tr>
</table>

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Read to Lead
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Summary: *(as on 15 November 2020)*
2021 Programme of Assessment

Motivation for retaining Course Drawings (CDs):

An **essential 'teaching and learning' component** of EGD is **'assessment for learning'**, which requires of learners do as many tasks as possible, of which most should be informally evaluated or assessed so that gaps can be identified, and appropriate remedial actions implemented.

Although only addressing some of the required 'assessment for learning' requirements, **CDs will at least ensure that all the learners will be given constructive feedback on some of their Daily Developmental Exercises (DDEs)/tasks**.

As EGD is both a knowledge and application/skill-based subject, **many DDEs**, on the content of each topic and in accordance with the Annual Teaching Plan (ATP), **must be done on a regular (daily) basis.**

From this essential developmental process, **various DDEs should be formally assessed and recorded** as part of the programme of compulsory SBA tasks. **These assessed and recorded DDEs will then be referred to as CDs.**

Summary: *(as on 15 November 2020)*
2021 Programme of Assessment

Cont. of Motivation for retaining Course Drawings (CDs):

Some of the purposes of the CDs *(As described in the CAPS):*

- To provide evidence that the prescribed content has been adequately covered;
- To provide evidence that ALL the learners have been assessed and given sufficient feedback on their acquired knowledge and skills on common tasks of each topic;

Some of the most relevant requirements for CDs *(As described in the CAPS):*

- The CDs must come from the normal developmental teaching and learning process of EGD and should therefore be some of the regular (daily) tasks, i.e. the DDEs;
- The recorded CD mark should address all, or most of, the grade-specific content of the topic and it must be of an appropriate higher order of complexity for the specific grade. However, more than one task may be used to obtain the recorded CD mark;
- To ensure that all the CDs comply with test and examination requirements and standards, all CDs, with the exception of the analytical exercises and the perspective drawing(s), must be tasks that are completely redrawn;
- It is important to note that the **CDs are not tests**.

Summary: *(as on 15 November 2020)*
2021 Programme of Assessment

Moderation of EGD SBA tasks

The pre- and post-moderation of SBA task must still be implemented where required!

Moderation of Course Drawings (CDs):

As CDs should be randomly selected from the daily tasks, referred to as Daily Developmental Exercises (DDEs), the **pre-moderation of CDs is not a prerequisite**. The **post-moderation of ALL aspects of CDs**, i.e. if the tasks met ALL the requirements as well as the assessment of ALL the tasks, **must however be conducted at ALL the required levels**, i.e. School (SMT), District and Provincial.

Moderation of Examination Papers:

ALL Examination Papers, i.e. the Final/Promotional Grade 10 & 11 papers as well as the Preparatory Grade 12 papers, **must at least be pre-moderated at the level it was set**, i.e. at School (SMT) level if set at school, Provincial level if set by the Province etc., **and post-moderated at ALL the required levels**, i.e. School (SMT), District and Provincial.

Summary: *(as on 15 November 2020)*

Examination Structure for 2021

Grade 10 Final Examination

ENGINEERING GRAPHICS & DESIGN					
GRADE 10 2021 **FINAL Promotional Examination**					
PAPER 1 -*CIVIL*- *(2 hours)* In **first-angle** orthographic projection			**PAPER 2 -*MECHANICAL*-** *(2 hours)* In **third-angle** orthographic projection		
Q 1	Civil analytical	± 15%	Q 1	Mechanical analytical	± 15%
Q 2	Descriptive geometry	± 15%	Q 2	Geometrical construction + Ellipse	± 25%
Q 3	Solid geometry	± 25%	Q 3	Isometric drawing	± 25%
Q 4	Civil working drawing	± 45%	Q 4	Mechanical working drawing	± 35%

Summary: *(as on 15 November 2020)*

Examination Structure for 2021

Grade 11 Final Examination

ENGINEERING GRAPHICS & DESIGN					
GRADE 11 2021 **FINAL Promotional Examination**					
PAPER 1 -*CIVIL*- *(3 hours)* In **first-angle** orthographic projection			**PAPER 2 -*MECHANICAL*-** *(3 hours)* In **third-angle** orthographic projection		
Q 1	Civil analytical	± 15%	Q 1	Mechanical analytical	± 15%
Q 2	Solid geometry **and/or** Interpenetration and development	± 20%	Q 2	Loci of a Cam	± 20%
Q 3	2-point perspective drawing	± 25%	Q 3	Isometric drawing	± 25%
Q 4	Civil working drawing	± 40%	Q 4	Mechanical assembly	± 40%

Summary: *(as on 15 November 2020)*

Examination Structure for 2021

Grade 12 Preparatory Examination

ENGINEERING GRAPHICS & DESIGN					
GRADE 12 2021 **Preparatory Examination**					
PAPER 1 -*CIVIL*- *(3 hours)* In **first-angle** orthographic projection			**PAPER 2 -*MECHANICAL*-** *(3 hours)* In **third-angle** orthographic projection		
Q 1	Civil analytical	± 15%	Q 1	Mechanical analytical	± 15%
Q 2	Solid geometry **and/or** Interpenetration and development **and/or** Develop. of transition piece	± 20%	Q 2	Loci of a Cam **and/or** Loci of point(s) of a mechanism **and/or** Loci of a Helix	± 20%
Q 3	2-point perspective drawing	± 20%	Q 3	Isometric drawing	± 20%
Q 4	Civil working drawing including electrical features	± 45%	Q 4	Mechanical assembly	± 45%

Summary: *(as on 15 November 2020)*

Examination Structure for 2021

Grade 12 Final NSC Examination

ENGINEERING GRAPHICS & DESIGN					
GRADE 12 2021 **FINAL NSC Examination**					
PAPER 1 -*CIVIL*- *(3 hours)* In **first-angle** orthographic projection			**PAPER 2 -*MECHANICAL*-** *(3 hours)* In **third-angle** orthographic projection		
Q 1	Civil analytical	± 15%	Q 1	Mechanical analytical	± 15%
Q 2	Solid geometry **and/or** Interpenetration and development **and/or** Develop. of transition piece	± 20%	Q 2	Loci of a Cam **and/or** Loci of point(s) of a mechanism **and/or** Loci of a Helix	± 20%
Q 3	2-point perspective drawing	± 20%	Q 3	Isometric drawing	± 20%
Q 4	Civil working drawing including electrical features	± 45%	Q 4	Mechanical assembly	± 45%

Summary: Practical Assessment Task (PAT) for 2021

ENGINEERING GRAPHICS AND DESIGN		
GRADE 10	**GRADE 11**	**GRADE 12**
Phase 1: • Design Brief • Research • 2 x Freehand Solutions • Selection	**Phase 1:** • Design Brief • Research • 2 x Freehand Solutions • Selection	**Phase 1:** • Design Brief • Research • 2 x Freehand Solutions • Selection
Phase 2: • Orthographic Drawing: 3 x views • 3D Drawing	**Phase 2:** • Orthographic Drawing: 3 x views • 3D Drawing	**Phase 2:** • Orthographic Drawing No 1: 4 x views • Orthographic Drawing No 2: 1 x view Civil & 3 x views Mechanical • 3D Drawing
Phase 3: • Self-assessment & Deadlines • Presentation	**Phase 3:** • Self-assessment & Deadlines • Presentation	**Phase 3:** • Self-assessment & Deadlines • Presentation

Thank you!