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REPUBLIC OF SOUTH AFRICA

2021 Annual Teaching Plan: Term 1 — Engineering Graphics and Design (EGD): Grade 12

TERM 1 *(45 days)*	WEEK 1 27 – 29 Jan	WEEK 2 01 – 05 Feb	WEEK 3 08 – 12 Feb	WEEK 4 15 – 19 Feb	WEEK 5 22 – 26 Mar	WEEK 6 01 – 05 Mar	WEEK 7 08 – 12 Mar	WEEK 8 15 – 19 Mar	WEEK 9 23 – 26 Mar	WEEK 10 29 – 31 Mar
CAPS Topic *(Days)*	**Classroom Admin** *(3 days)*	**Mechanical Drawing** *(12 days)*		*Commence with* ***Civil Drawing***	**PAT** *(2 days)*	*Continue with* ***Civil Drawing*** *(15 days TOTAL)*		**Perspective Drawing** *(10 days)*		**PAT** *(3 days)*
Prescribed content & Skills	◆ Classroom and administrative management ◆ Revision of the General Drawing Principles	**3rd angle orthographic** working drawings with **non-sectional**, **sectional**, **half-sectional** and **part-sectional** views of **complex mechanical assemblies**. **Include the following:** ◆ Title, scale, hidden detail, dimensioning, centre lines, cutting planes, hatching detail, notes, symbol of projection and layout planning ◆ Hexagonal bolts, nuts and lock nuts, washers/spacers. keys and keyways and appropriate labels ◆ Different types of section, e.g. aligned section, revolved section, removed section, etc. ◆ Conventional presentation of common features ◆ Format and content of working drawing name/title blocks ◆ **Detailed drawings of individual components** ◆ **Basic welding, machining** and **surface treatment symbols** ◆ **Tolerances**		Limited to **single-storey** dwellings, **1st angle orthographic** working drawings with **floor plans**, **detailed elevations** and **sectional elevations** showing the detail of the **foundation to the roof**. **Include ALL the prescribed Civil content (see 2021 content mapping), i.e.:** ◆ Annotation, labels, dimensioning, scales ◆ Relevant abbreviations and graphical symbols ◆ Hatching detail and the application of colours ◆ Format and content of layout/working drawing name/title panels ◆ Perimeters and total/floor areas	◆ Revision of the **Design Process** ◆ The **PAT scenarios given** to learners and **discussed.**	Limited to **single-storey** dwellings, **1st angle orthographic** working drawings with **floor plans**, **detailed elevations** and **sectional elevations** showing the detail of the **foundation to the roof**. **Include ALL the prescribed Civil content (see 2021 content mapping), i.e.:** ◆ On **all relevant views/elevations: detail** of **pitched** and **flat roofs** (trusses, buttons/purlins, covering, fascia, barge-board, ceiling, etc.)**, gutters** and **rain-water downpipes, plumbing** and **drainage detail** (floor plans, elevations & site plans)**, electrical fixtures** and **wiring diagrams** as well as **all** the other **features and fixtures** already **covered in Gr 10 and Gr 11** ◆ **Detailed site plans** showing **electrical, plumbing**, **drainage services** detail as well as relevant **natural features etc.** ◆ **The north point**		**2- Point** perspective drawings of **complex** castings, dwellings and civil structures with **overhangs**, **depth detail**, **circles** and **arcs.** The HL, PP and SP can be varied to provide any desired view.		***NOTE: Rather complete during one entire day (8 - 9 hrs)*** **Phase 1: Complete/ consolidate the Design Process requirements:** ◆ Design brief, specifications and constraints ◆ Research conducted ◆ TWO free hand solutions ◆ Selecting best solution.
Requisite pre-knowledge	Gr 10 General Drawing Principles	◆ ALL the Grade 10 & 11 Mechanical drawing content ◆ 3rd angle ortho. projection		ALL the Grade 10 & 11 Civil drawing content	Design Process	ALL the Grade 10 & 11 Civil drawing content		ALL the Grade 11 2-point perspective drawing content		Design Process requirements
Add. resources, other than textbooks & drawing instruments	Files/folders, own notes	◆ **LTSM:** Own complaint notes, previous exam/test questions on specific topic/content, compliant content from TD textbooks, relevant models/ physical examples ◆ **ICT:** Visualiser & data projector, video clips			PAT document, previous best examples	◆ **LTSM:** Own complaint notes, previous exam/test questions on specific topic/content, compliant content from TD textbooks, relevant models/ physical examples ◆ **ICT:** Visualiser & data projector, video clips				PAT document, previous best practice examples
Informal Assessment	Class test (suggested)	Min **7 DDEs/Tasks** completed. Class test suggested for theory.		Min **7 DDEs/Tasks** completed. Class test suggested for theory.				Min **6 DDEs/Tasks** completed		N/A
Formal Assessment (SBA & PAT)	None	Drawings for **Course Drawing (CD) 1** (1st Mechanical Assembly) **& CD 2** (Mech Analytical), sourced from the DDEs/Tasks		Drawings for **CD 3** (Floor Plan & Elevations), **CD 4** (Sectional Elevation) **& CD 5** (Site Plan), to be sourced from the DDEs/Tasks				Drawings for **CD 6** (2-point perspective), to be sourced from the DDEs/Tasks		**Phase 1** of **ALL PATs** completed

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2021 Annual Teaching Plan: Term 2

Engineering Graphics and Design (EGD): Grade 12

TERM 2 *(52 days)*	WEEK 1 13 – 16 Apr	WEEK 2 19 – 23 Apr	WEEK 3 26 – 30 Apr	WEEK 4 03 – 09 May	WEEK 5 10 – 14 May	WEEK 6 17 – 21 May	WEEK 7 24 – 28 May	WEEK 8 09 May – 04 Jun	WEEK 9 07 – 11 Jun	WEEK 10 14 – 18 Jun	WEEK 11 21 – 24 Jun
CAPS Topic *(Days)*	**Isometric Drawing** *(10 days)*		**Solid Geometry** *(12 days)*			**Interpenetration & Development** *(19 days)*				*Commence with* **Loci (Cam)** *(Min 6 days in Term 2)*	**PAT** *(5 days)*
Prescribed content & Skills	**Complex** isometric drawings with isometric and non-isometric lines as well as **auxiliary views**, **circles** and **sections**.		**1st angle orthographic views** of **solids or a combination of solids**, which includes **solids with holes.** The solids and shape of the holes may be either right-regular **prisms** or **pyramids** with 3, 4, 5, 6 and 8 sides only, as well as **cylinders** or **cones.** The axis of the solids may be perpendicular, parallel or inclined to one principal projection plane only. Include the following: ◆ Sectional views ◆ The true shapes of the cut surfaces ◆ ALL hidden detail			**1st angle orthographic** views showing the **curve of interpenetration** formed between two solids or pipes joined at either 30°, 45°, 60° or 90°. ◆ The solids or pipes have to be **right-regular geometrical prisms,** with 3, 4, 5, 6 & 8 sides, **and/or cylinders only.** ◆ The **axes** of the two solids or pipes must **meet in a common plane**, i.e. **in-line only**, but the **curve of interpenetration could be non-symmetrical.** ◆ Hidden detail must be shown. ◆ Include the **surface developments** of the parts of the **interpenetrating** solids or pipes.			**Cams** in **complex** applications showing the following: ◊ the **cam shaft** and **follower detail** ◊ the complete **displacement graph** ◊ the complete **cam profile**. ◆ The **motion** may be **uniform** and/or **simple harmonic** and/or **uniform acceleration and retardation**. ◆ The follower may be **placed at any angle** that reciprocates on a line which **passes through the centre of the cam shaft.** ◆ Emphasise **direction**. ◆ **Wedge-shaped** or **roller follower**.	***NOTE: Rather complete during one entire day (8 - 9 hrs)*** **Phase 2: Complete the working drawing an pictorial (3D) drawing as required by the specific scenario**, i.e.: ◆ An **Orthographic Working Drawing** with min 4 x views ◆ A **Site Plan/ Detailed Drawing** with min 3 x views ◆ **Pictorial (3D) Drawing** (Perspective or Isometric Drawing)
Requisite pre-knowledge	ALL the Grade 10 & 11 Isometric drawing content The ability to convert 2D views into a 3D drawing		◆ ALL Gr 10 & 11 Solid geo content. ◆ 1st angle ortho. project.			◆ ALL the Gr. 11 & 12 Interpenetration & Development content ◆ 1st angle orthographic projecting				ALL the Grade 11 Cam content	Content & skills for Civil/ Mech. working drawings
Add. resources, other than textbooks & drawing instruments	◆ **LTSM:** Own complaint notes, previous exam/test questions on specific topic/content, compliant content from TD textbooks, relevant models/ physical examples ◆ **ICT:** Visualiser & data projector, video clips										N/A
Informal Assessment	Min **6 DDEs/Tasks** completed		Min **6 DDEs/Tasks** completed			Min **12 DDEs/Tasks** completed				Min **3 DDEs/Tasks** completed for Term 2	N/A
Formal Assessment (SBA & PAT)	Drawings for **Course Drawing (CD) 7** (complex Isometric drawing), to be sourced from the DDEs/Tasks		Drawings for **CD 9** (Solid Geom.), sourced from DDEs/Tasks			Drawings for **CD 11** (Interpenetration & Development), to be sourced from the DDEs/Tasks				N/A *(To be completed in Term 3)* / Drawing for **CD 10** (3rd Mech. Assembly)	**Phase 2 of ALL PATs completed**

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2021 Annual Teaching Plan: Term 3 — Engineering Graphics and Design (EGD): Grade 12

TERM 1 *(52 days)*	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
CAPS Topic *(Days)*	*Continue with* **Loci (Cam)** ***(4 days in Term 3, i.e.*** *10 days in TOTAL)*	**PAT** ***(3 days)***	**Loci (Mechanisms)** ***(10 days)***	**Loci (Helix)** ***(8 days)***		**Development of Transition Pieces** ***(8 days)***		**Continue with Term 3 content or do revision until** the **commencement** of the '**Preparatory Exams**'!	**Preparatory Examination** ***(Min. 15 days)***		
Prescribed content & Skills	**Cams** in **complex** applications showing the following: ◊ the **cam shaft** and **follower detail** ◊ the complete **displacement graph** ◊ the complete **cam profile**. ◆ The **motion** may be **uniform** and/or **simple harmonic** and/or **uniform acceleration and retardation**. ◆ The follower may be **placed at any angle** that reciprocates on a line which **passes through the centre of the cam shaft.** ◆ Emphasise **direction**. ◆ **Wedge-shaped** or **roller follower**.	***NOTE: Rather complete during one entire day (8 - 9 hrs)*** **Phase 3: Complete the PAT and include:** ◆ Self-assess. & Deadlines ◆ Present.	The principles of the **loci of a point(s)** on **schematic drawings** of the moving **components** of **mechanisms**. ◆ **Maximum THREE** points.	Principles of the **helix** in applications of: ◊ **augers** ◊ **spiral chutes** ◊ **Round coil springs** ◆ **Single start** only ◆ **Right** handed or **left** handed ◆ The **direction** has to be emphasised		The **surface developments** of **transition pieces**					
Requisite pre-knowledge	ALL the Grade 11 Cam content	Design Process	N/A	ALL the Grade 11 Helix content		◆ ALL the Gr. 11 & 12 Development content					
Add. resources, other than textbooks & drawing instruments	◆ **LTSM:** Own complaint notes, previous exam/test questions on specific topic/content, compliant content from TD textbooks, relevant models/ physical examples ◆ **ICT:** Visualiser & data projector, video clips										
Informal Assessment	Min **3 DDEs/Tasks** completed for Term 3 *(Min 6 DDEs/Tasks in TOTAL!)*	N/A	Min **6 DDEs/Tasks** completed	Min **5 DDEs/Tasks** completed		Min **5 DDEs/Tasks** completed					
Formal Assessment (SBA & PAT)	Drawings for **CD 11** (Cam), to be sourced from the DDEs/Tasks	**All PATs completed**	Drawings for **CD 12** (Mechanisms), to be sourced from the DDEs/Tasks	Drawings for **CD 13** (Helix), to be sourced from the DDEs/Tasks		Drawings for **CD 14** (Transition piece), to be sourced from the DDEs/Tasks		Drawings for **CD 15** (3rd Mech. Assembly)			

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 **and/or** Loci of a Mechanism	± 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%

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2021 Annual Teaching Plan: Term 4 — Engineering Graphics and Design (EGD): Grade 12

TERM 1 *(45 days)*	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10
CAPS Topic ***(Days)***	**Revision** ***(Until the commencement of the 'Final NSC Examinations')***		**Final NSC Examination**							
Prescribed content & Skills **Requisite pre-knowledge** **Add. resources,** other than textbooks & drawing instruments **Informal Assessment** **Formal Assessment (SBA & PAT)**	**Revision using previous EGD NSC Exam Papers/Questions**									

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 **and/or** Loci of a Mechanism	± 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%