

2023/24 TEACHING PLANS: ENGINEERING GRAPHICS AND DESIGN (EGD): GRADE 12 (TERM 1)

TERM 1	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11	
CAPS TOPIC	CLASSROOM ADMIN & REVISION	MECHANICAL DRAWING		COMMENCE WITH CIVIL DRAWING		PAT	CONTINUE WITH CIVIL DRAWING	2-POINT PERSPECTIVE DRAWING		COMMENCE WITH ISOMETRIC DRAWING	PAT	
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, complete detailed elevations and sectional elevations showing the detail of the foundation to the roof Include the following: - Annotation, labels, dimensioning, scales - Relevant abbreviations & graphical symbols - On all relevant views/elevations: detail of pitched and flat roofs (trusses, buttons/purlins, covering, fascia, bargeboard, 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 other features & fixtures already covered in Gr 10 & 11 - Hatching detail and the application of colours - Format and content of layout/working drawing name/title panels Detailed site plans showing electrical, plumbing, drainage services detail as well as relevant natural features etc. - The calculation of perimeters, as well as total- and floor areas The north point		- 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, complete detailed elevations and sectional elevations showing the detail of the foundation to the roof Include all the civil detail as mentioned from week 4	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		Complex isometric drawings with isometric and non-isometric lines as well as auxiliary views, circles, and sections	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 orthographic 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		ALL the Grade 10 & 11 isometric drawing content The ability to convert 2D views into a 3D	Design process requirements	
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 EGD 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 EGD 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 11 DDEs/tasks completed Class test suggested for theory				Min 6 DDEs/tasks completed		Min 2 DDE/task completed	N/A	
		Suggested: A controlled test on the term 1 content completed, that could be made up of TWO questions that constitutes a min. of 60 minutes and a min. of 50 marks										
FORMAL ASSESSMENT (SBA & PAT)	N/A	Drawings for course drawing (CD) 1 (1 st Mechanical assembly) & CD 2 (Mech analytical), sourced from the DDEs/tasks		Drawings for CD 3 (Civil floor plan & elevations), CD 4 (civil sectional elevation) & CD 5 (civil site plan), to be sourced from the DDEs/tasks			Drawings for CD 6 (2-point perspective), to be sourced from the DDEs/tasks		N/A	Phase 1 of ALL PATs completed NOTE: PAT is <u>NOT</u> part of the SBA!		
Formal assessment for Grade 12 term 1						Contribution for term 1			Contribution to final SBA			
CD 1: Mechanical analytical CD 2: 1st mechanical assembly CD 3: Civil sectional elevation CD 4: Civil floor plan + elevations CD 5: Civil site plan (could be 2 or more civil analytical NSC site plan questions) CD 6: 2-point perspective						100%			To be confirmed			

2023/24 ANNUAL TEACHING PLANS: ENGINEERING GRAPHICS AND DESIGN (EGD): GRADE 12 (TERM 2)

TERM 2	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11																															
CAPS TOPIC	CONTINUE WITH ISOMETRIC DRAWING		SOLID GEOMETRY		COMMENCE WITH INTERPENETRATION & DEVELOPMENT		PAT	MID-YEAR EXAMINATION																																		
PRESCRIBED CONTENT & SKILLS	Complex isometric drawings with isometric and non-isometric lines as well as auxiliary views , circles , and sections		Revision of all Grade 11 solid geometry content 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 right-regular cylinders or cones The axis of the solids may be perpendicular, parallel, or inclined to one principal projection plane only Include the following: • Layout planning • Sectional views • The true shapes of the cut surfaces • Hidden detail must be shown		1 st angle orthographic views showing the curve of interpenetration formed between two solids, tubes or pipes joined at either 30°, 45°, 60° or 90° • The solids or tubes/pipes must be right-regular geometrical prisms , with 3, 4, 5, 6 & 8 sides, and/or cylinders only • The axes of the two solids or tubes/pipes must meet in a common plane , i.e. in-line only , but the solids or tubes could be turned to create non symmetrical curves of interpenetration • Hidden detail must be shown , unless otherwise stated Include the surface developments of the parts of the interpenetrating solids or tubes/pipes		Phase 2: Complete the working drawing, a pictorial (3D) drawing as required by the specific scenario, i.e.: • An orthographic working drawing with min. 4x views • A site plan/ detailed drawing with min. 3x views • Pictorial (3D) drawing (Perspective or Isometric drawing)		Continue with term 2 content until the commencement of the mid-year examination <table><tr><td colspan="3">PAPER 1 – CIVIL (3 hours) In first-angle orthographic projection</td><td colspan="3">PAPER 2 – MECHANICAL (2½ hours) In third-angle orthographic projection</td></tr><tr><td>Q 1</td><td>Civil analytical</td><td>± 15%</td><td>Q 1</td><td>Mechanical analytical</td><td>± 20%</td></tr><tr><td>Q 2</td><td>Solid geometry <u>and/or</u> interpenetration and development</td><td>± 20%</td><td>Q 2</td><td>Isometric drawing</td><td>± 25%</td></tr><tr><td>Q 3</td><td>2-point perspective drawing</td><td>± 20%</td><td>Q 3</td><td>Mechanical assembly</td><td>± 55%</td></tr><tr><td>Q 4</td><td>Civil working drawing, incl. electrical features</td><td>± 45%</td><td colspan="3"></td></tr></table>				PAPER 1 – CIVIL (3 hours) In first-angle orthographic projection			PAPER 2 – MECHANICAL (2½ hours) In third-angle orthographic projection			Q 1	Civil analytical	± 15%	Q 1	Mechanical analytical	± 20%	Q 2	Solid geometry <u>and/or</u> interpenetration and development	± 20%	Q 2	Isometric drawing	± 25%	Q 3	2-point perspective drawing	± 20%	Q 3	Mechanical assembly	± 55%	Q 4	Civil working drawing, incl. electrical features	± 45%			
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Q 4	Civil working drawing, incl. electrical features	± 45%																																								
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 geometry content • 1 st angle orthographic projection		• ALL the Gr. 11 & 12 interpenetration & development content • 1 st angle orthographic projecting		Content & skills for Civil/ Mech. working drawings																																			
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 4 DDEs/tasks completed		Min 4 DDEs/tasks completed		Min 6 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 8 (Solid geometry.), sourced from DDEs/tasks		Drawings for CD 9 (Interpenetration & development), sourced from DDEs/tasks Drawings for CD 10 (3 rd Mech. assembly)		Phase 2 of ALL PATs completed <i>NOTE: PAT is NOT part of the SBA!</i>		Mid-year examination																																	
Formal assessment for Grade 12 term 2						Contribution for term 2			Contribution to final SBA																																	
• CD7 : Isometric drawing • CD8 : Solid geometry • CD9 : 1 st interpenetration & development (two prisms) • CD10 : 2 nd mechanical assembly						25%		100%		To be confirmed																																
Mid-year examination						75%				To be confirmed																																

2023/24 ANNUAL TEACHING PLANS: ENGINEERING GRAPHICS AND DESIGN (EGD): GRADE 12 (TERM 3)

TERM 3	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11																															
CAPS TOPIC	CONTINUE WITH INTER. & DEVELOP.	LOCI (CAM)	PAT	LOCI (MECHANISMS)	LOCI (HELIX)	CONTINUE WITH TERM 3 EXAMINABLE CONTENT OR DO REVISION OF ALL EXAMINABLE CONTENT UNTIL THE COMMENCEMENT OF THE PREPARATORY EXAMINATION	PREPARATORY EXAMINATION																																			
PRESCRIBED CONTENT & SKILLS	1 st angle orthographic views showing the curve interpenetration formed between two solids, tubes or pipes joined at either 30°, 45°, 60° or 90° • The solids or tubes/pipes must be right-regular geometrical prisms , with 3, 4, 5, 6 & 8 sides, and/or cylinders only • The axes of the two solids or tubes/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 , unless otherwise stated • Include the surface developments of the parts of the interpenetrating solids or tubes/pipes	The principles of the cam in complex applications in which the following must be shown: - the cam shaft and follower detail - the complete displacement graph - the complete cam profile • Motion may be uniform and/or simple harmonic and/or uniform acceleration and retardation • The direction has to be emphasised • The follower may be placed at any angle , provided that it reciprocates on a line which passes through the centre of the cam shaft • The follower may be wedge-shaped or a roller	Phase 3: Complete the PAT and include: • Self-assess. & deadlines • Presentation	The principles of the loci of a point(s) on schematic drawings of the moving components of mechanisms • Maximum THREE points	The principles of the helix in applications of: Augers: Spiral chutes, round coil springs NOTE: This is non-examinable content		<table><tr><td colspan="3">PAPER 1 – CIVIL <i>(3 hours)</i> In first-angle orthographic projection</td><td colspan="3">PAPER 2 – MECHANICAL <i>(3 hours)</i> In third-angle orthographic projection</td></tr><tr><td>Q 1</td><td>Civil analytical</td><td>± 15%</td><td>Q 1</td><td>Mechanical analytical</td><td>± 15%</td></tr><tr><td>Q 2</td><td>Solid geometry and/or interpenetration and development</td><td>± 20%</td><td>Q 2</td><td>Loci of a Cam and/or loci of a Mechanism</td><td>± 20%</td></tr><tr><td>Q 3</td><td>2-point perspective drawing</td><td>± 20%</td><td>Q 3</td><td>Isometric drawing</td><td>± 20%</td></tr><tr><td>Q 4</td><td>Civil working drawing including electrical features</td><td>± 45%</td><td>Q 4</td><td>Mechanical assembly</td><td>± 45%</td></tr></table>						PAPER 1 – CIVIL <i>(3 hours)</i> In first-angle orthographic projection			PAPER 2 – MECHANICAL <i>(3 hours)</i> 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%
PAPER 1 – CIVIL <i>(3 hours)</i> In first-angle orthographic projection			PAPER 2 – MECHANICAL <i>(3 hours)</i> 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%																																					
REQUISITE PRE-KNOWLEDGE	• ALL the Gr. 11 & 12 Interpenetration & development content • 1 st angle orthographic projection	ALL the Grade 11 cam content	Design process requirements	N/A	N/A																																					
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		PAT document, previous best practice 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		N/A																																				
INFORMAL ASSESSMENT	Min 2 DDEs/tasks completed for term 3 (<i>Min. 8 DDEs/tasks in total</i>)	Min 5 DDEs/tasks completed	N/A	Min 5 DDEs/tasks completed		N/A																																				
FORMAL ASSESSMENT (SBA & PAT)	Drawings for CD 11 (2 nd Interpenetration & development), sourced from DDEs/tasks	Drawings for CD 12 (Cam) to be sourced from the DDEs/tasks	All PATs completed NOTE: PAT is NOT part of SBA!	Drawings for CD 13 & 14 (1 st & 2 nd Mechanisms), to be sourced from the DDEs/tasks		Drawings for CD 15 (3 rd Mech. assembly)		Preparatory examination																																		
Formal assessment for Grade 12 term 3						Contribution for term 2			Contribution to final SBA																																	
• CD8: 2 nd interpenetration & development [including a cylinder(s)] • CD8: Loci of a cam • CD9: 1 st loci of points on a mechanism • CD9: 2 nd loci of points on a mechanism • CD12: 3 rd mechanical assembly						25%		100%		To be confirmed																																
Preparatory examination						75%				To be confirmed																																

2023/24 ANNUAL TEACHING PLANS: ENGINEERING GRAPHICS AND DESIGN (EGD): GRADE 12 (TERM 4)

TERM 4	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10																															
CAPS TOPIC	TRANSITION PIECES	CONTINUE WITH REVISION ON EXAMINABLE CONTENT USING PREVIOUS EGD NSC EXAM PAPERS/ QUESTIONS	FINAL NSC EXAMINATION																																						
PRESCRIBED CONTENT & SKILLS	The surface developments of transition pieces <u>NOTE:</u> This is non-examinable content		<table><tr><td colspan="4">PAPER 1 – CIVIL (3 hours) In first-angle orthographic projection</td><td colspan="3">PAPER 2 –MECHANICAL (3 hours) In third-angle orthographic projection</td></tr><tr><td>Q 1</td><td>Civil analytical</td><td>± 15%</td><td>Q 1</td><td>Mechanical analytical</td><td>± 15%</td></tr><tr><td>Q 2</td><td>Solid geometry and/or interpenetration and development</td><td>± 20%</td><td>Q 2</td><td>Loci of a cam and/or loci of a Mechanism</td><td>± 20%</td></tr><tr><td>Q 3</td><td>2-point perspective drawing</td><td>± 20%</td><td>Q 3</td><td>Isometric drawing</td><td>± 20%</td></tr><tr><td>Q 4</td><td>Civil working drawing including electrical features</td><td>± 45%</td><td>Q 4</td><td>Mechanical assembly</td><td>± 45%</td></tr></table>							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%	
PAPER 1 – CIVIL (3 hours) In first-angle orthographic projection				PAPER 2 –MECHANICAL (3 hours) In third-angle orthographic projection																																					
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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%																																			
REQUISITE PRE-KNOWLEDGE	N/A																																								
RESOURCES, OTHER THAN TEXTBOOKS & DRAWING INSTRUMENTS	N/A																																								
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