



PROVINCE OF THE
EASTERN CAPE
EDUCATION

DIRECTORATE:
CURRICULUM FET PROGRAMMES
ENGINEERING GRAPHICS & DESIGN
LESSON PLANS
GRADE 12
TERM 3

FOREWORD

The following Grade 12 Lesson Plans were developed by Subject Advisors during May 2009. Teachers are requested to look at them, modify them where necessary to suit their contexts and resources. It must be remembered that Lesson Plans are working documents, and any comments to improve the lesson plans in this document will be appreciated. Teachers are urged to use this document with the following departmental policy documents: Subject Statement; LPG 2008; SAG 2008; Examination Guidelines 2009 and Provincial CASS Policy / Guidelines.

Lesson planning is the duty of each and every individual teacher but it helps when teachers sometimes plan together as a group. This interaction not only helps teachers to understand how to apply the Learning Outcomes (LOs) and Assessment Standards (ASs) but also builds up the confidence of the teachers in handling the content using new teaching strategies.

It must please be noted that in order to help teachers who teach across grades and subjects, an attempt has been made to **standardise lesson plan templates** and thus the new template might not resemble the templates used in each subject during the NCS training. However, all the essential elements of a lesson plan have been retained. This change has been made to assist teachers and lighten their administrative load.

Please note that these lesson plans are to be used only as a guide to complete the requirements of the Curriculum Statements and the work schedules and teachers are encouraged to develop their own learner activities to supplement and /or substitute some of the activities given here (depending on the school environment, number and type of learners in your class, the resources available to your learners, etc).

Do not forget to build in the tasks for the Programme of Assessment into your Lesson Plans.

Strengthen your efforts by supporting each other in clusters and share ideas. Good Luck with your endeavours to improve Teaching, Learning and Assessment.

CORE CONTENT: VISUALISATION / COGNITIVE / PERCEPTUAL skills related to Civil / Electrical / Mechanical Drawings.

INTERGRATION: Mechanical, Engineering, Technology, Mathematics, CAT & IT, Physical Sciences.

LEARNING OUTCOME 1: Technology, Society and the environment		LEARNING OUTCOME 2: Design Process		LEARNING OUTCOME 3: Knowledge and Understanding		LEARNING OUTCOME 4: Application of Knowledge	
12.1.1 Evaluate the contributions of Engineering Graphics and Design to technological development and suggest possible future contributions.		12.2.1 Identify a problem, need or opportunity by performing a needs analysis, interpreting information and formulating a design brief.		12.3.1 Drawing principles as contained in SANS code of Practice as related to complex Electrical, Civil and Mechanical drawings.	X	12.4.1 Drawing principles as contained in SANS code of Practice as related to complex Electrical, Civil and Mechanical drawings.	
12.1.2 Formulate strategies that show sensitivity to pertinent human rights issues.		12.2.1 Conduct relevant research/case studies and generate a number of ideas/concepts analytically and graphically.		12.3.2 Single and multi-view drawing principles: <ul style="list-style-type: none"> • 1st and 3rd angle orthographic projection, • interpenetrations, • development, • wiring and circuit diagrams, • complex assemblies, • detail drawings, • dwellings and • components of steel structures 	X	12.4.2 Single and multi-view drawing principles: <ul style="list-style-type: none"> • 1st and 3rd angle orthographic projection, • interpenetrations, • developments, • wiring and circuit diagrams, • complex assemblies, • detail drawings, • limits & fits, tolerances, measurement and surface textures, • dwellings and • Components of steel structures. 	
12.1.3 Analyse contributions that Engineering Graphics and Design has made to the campaigns against. HIV/AIDS		12.2.3 Select the most relevant possibility giving reasons for choice that are based on sound design principles citing references where possible, analyse it, and synthesise it into a final solution.		12.3.3 Principles of pictorial drawings: <ul style="list-style-type: none"> • isometric and • Perspective. 	X	12.4.3 Pictorial drawings principles: <ul style="list-style-type: none"> • isometric and • Perspective. 	
12.1.4 Analyse contributions made by Global Cultures to graphical communication.		12.2.4 Present the final solution using graphics including visual, symbolic, and language skills in appropriate modes.		12.3.4 Principles of sectioning: <ul style="list-style-type: none"> • pictorial drawings and • multi-view drawings 	X	12.4.4. Principles of sectioning: <ul style="list-style-type: none"> • pictorial drawings and • multi-view drawings 	
12.1.5 Identify and investigate possible entrepreneurial opportunities.		12.2.5 Show evidence of evaluation at each stage of the design process.		12.3.5 Loci of points on the components of mechanisms.	X	12.4.5 Loci of points.	
				12.3.6 Principles of design.	X	12.4.6 The design process	
				12.3.7 Visualisation, cognitive and perception skills related to the analysis and interpretation of: <ul style="list-style-type: none"> • data and information and • Multi-view drawing. 	X	12.4.7 Visualisation, cognitive and perception skills related to the analysis and interpretation of: <ul style="list-style-type: none"> • data and information and • Multi-view drawing. 	

				12.3.8 Terminology, concepts and functions of CAD as related to hardware and software.	12.4.8 Terminology, concepts and functions of CAD as related to hardware and software: <ul style="list-style-type: none"> • setting up of drawing environment: drawing and printing templates, • file management and • transferring drawings to and from hardcopy
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TEACHER ACTIVITIES	LEARNER ACTIVITIES	RESOURCES	ASSESSMENT	DATE COMPLETED
Explain the integration of SANS in EGD.	Visualisation, cognitive and perceptual exercises.			
Show, demonstrate and explain analysis of Civil / Electrical / Mechanical Drawings. <ul style="list-style-type: none"> • Single view, • multi-view and • Pictorial views. 	Analyse drawings and answer questions based on civil, electrical and mechanical drawings.	Models, CAD software, Audio-visual, Worksheets, Drawing instruments, Transparencies, Chalkboard & posters	Tools: <ul style="list-style-type: none"> • Memo's • Task lists, • rubrics Method: <ul style="list-style-type: none"> • Teacher Evidence: <ul style="list-style-type: none"> • Test-based • Task-based 	
PAT	Finalisation and submission of PAT done from term 1 to 3 on a continuous basis.	Models, CAD software, Audio-visual media, Worksheets, Drawing instruments, Transparencies, Chalkboard & posters	Presentation portfolio for performance evaluation.	
Homework: Teacher to enter the homework exercises here.				
Enrichment/Expanded Opportunities: Teacher to set enrichment and expanded opportunities according to local conditions.				
Teacher Reflections: After teaching the lesson, teacher to reflect on the lesson.				

SIGNATURES:

TEACHER

DATE

HOD / SMT

DATE

CORE CONTENT: REVISION/REMEDICATION/CAD of Civil / Electrical / Mechanical Drawings.

INTERGRATION: Mechanical, Engineering, Technology, Mathematics, CAT & IT, Physical Sciences

LEARNING OUTCOME 1: Technology, Society and the environment		LEARNING OUTCOME 2: Design Process		LEARNING OUTCOME 3: Knowledge and Understanding		LEARNING OUTCOME 4: Application of Knowledge	
12.1.1 Evaluate the contributions of Engineering Graphics and Design to technological development and suggest possible future contributions.		12.2.1 Identify a problem, need or opportunity by performing a needs analysis, interpreting information and formulating a design brief.		12.3.1 Drawing principles as contained in SANS code of Practice as related to complex Electrical, Civil and Mechanical drawings.		12.4.1 Drawing principles as contained in SANS code of Practice as related to complex Electrical, Civil and Mechanical drawings.	X
12.1.2 Formulate strategies that show sensitivity to pertinent human rights issues.		12.2.1 Conduct relevant research/case studies and generate a number of ideas/concepts analytically and graphically.		12.3.2 Single and multi-view drawing principles: <ul style="list-style-type: none"> • 1st and 3rd angle orthographic projection, • interpenetrations, • development, • wiring and circuit diagrams, • complex assemblies, • detail drawings, • dwellings and • components of steel structures 		12.4.2 Single and multi-view drawing principles: <ul style="list-style-type: none"> • 1st and 3rd angle orthographic projection, • interpenetrations, • developments, • wiring and circuit diagrams, • complex assemblies, • detail drawings, • limits & fits, tolerances, measurement and surface textures, • dwellings and • Components of steel structures. 	X
12.1.3 Analyse contributions that Engineering Graphics and Design has made to the campaigns against. HIV/AIDS		12.2.3 Select the most relevant possibility giving reasons for choice that are based on sound design principles citing references where possible, analyse it, and synthesise it into a final solution.		12.3.3 Principles of pictorial drawings: <ul style="list-style-type: none"> • isometric and • Perspective. 		12.4.3 Pictorial drawings principles: <ul style="list-style-type: none"> • isometric and • Perspective. 	
12.1.4 Analyse contributions made by Global Cultures to graphical communication.		12.2.4 Present the final solution using graphics including visual, symbolic, and language skills in appropriate modes.		12.3.4 Principles of sectioning: <ul style="list-style-type: none"> • pictorial drawings and • multi-view drawings 		12.4.4. Principles of sectioning: <ul style="list-style-type: none"> • pictorial drawings and • multi-view drawings 	
12.1.5 Identify and investigate possible entrepreneurial opportunities.		12.2.5 Show evidence of evaluation at each stage of the design process.		12.3.5 Loci of points on the components of mechanisms.		12.4.5 Loci of points.	
				12.3.6 Principles of design.		12.4.6 The design process	
				12.3.7 visualisation, cognitive and perception skills related to the analysis and interpretation of: <ul style="list-style-type: none"> • data and information and • Multi-view drawing. 		12.4.7 Visualisation, cognitive and perception skills related to the analysis and interpretation of: <ul style="list-style-type: none"> • data and information and • Multi-view drawing. 	X

				12.3.8 Terminology, concepts and functions of CAD as related to hardware and software.	12.4.8 Terminology, concepts and functions of CAD as related to hardware and software: <ul style="list-style-type: none"> • setting up of drawing environment: drawing and printing templates, • file management and • transferring drawings to and from hardcopy 	X
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TEACHER ACTIVITIES	LEARNER ACTIVITIES	RESOURCES	ASSESSMENT	DATE COMPLETED
Revision: Revise and remediate concepts and content that still present a challenge.	Revise and remediate concepts and content that still present a challenge.	Models, CAD software, Audio-visual, Worksheets, Drawing instruments, Transparencies, Chalkboard & posters	Tools: <ul style="list-style-type: none"> • Memo's • Task lists, • rubrics Method: <ul style="list-style-type: none"> • Teacher Evidence: <ul style="list-style-type: none"> • Test-based • Task-based 	
Show, demonstrate and explain terminology, concepts and functions of CAD as related to hardware and software: <ul style="list-style-type: none"> • setting up of drawing environment: drawing and printing templates • file management and transferring drawings to and from hardcopy 	<ul style="list-style-type: none"> • setting up of drawing environment: drawing and printing templates • File management and transferring drawings to and from hardcopy. 	CAD software, Audio-visual media, Worksheets.	Tools: <ul style="list-style-type: none"> • Memo's • Task lists, • rubrics Method: <ul style="list-style-type: none"> • Teacher Evidence: <ul style="list-style-type: none"> • Test-based • Task-based 	
Homework:				
Enrichment/Expanded Opportunities:				
Teacher Reflections:				

SIGNATURES:

TEACHER

DATE

HOD / SMT

DATE

SUBJECT: Engineering Graphics & Design		GRADE: 12		LESSON PLAN 3		TERM 3		TIME: 18 hours			
CORE CONTENT: PAT. (Practical Assessment Task)											
INTERGRATION: Mechanical, Engineering, Technology, Mathematics, CAT & IT											
LEARNING OUTCOME 1: Technology, Society and the environment			LEARNING OUTCOME 2: Design Process			LEARNING OUTCOME 3: Knowledge and Understanding			LEARNING OUTCOME 4: Application of Knowledge		
12.1.1 Evaluate the contributions of Engineering Graphics and Design to technological development and suggest possible future contributions.		X	12.2.1 Identify a problem, need or opportunity by performing a needs analysis, interpreting information and formulating a design brief.		X	12.3.1 Drawing principles as contained in SANS code of Practice as related to complex Electrical, Civil and Mechanical drawings.		X	12.4.1 Drawing principles as contained in SANS code of Practice as related to complex Electrical, Civil and Mechanical drawings.		X
12.1.2 Formulate strategies that show sensitivity to pertinent human rights issues.		X	12.2.1 Conduct relevant research/case studies and generate a number of ideas/concepts analytically and graphically.		X	12.3.2 Single and multi-view drawing principles: <ul style="list-style-type: none"> 1st and 3rd angle orthographic projection, interpenetrations, development, wiring and circuit diagrams, complex assemblies, detail drawings, dwelling and components of steel structures 		X	12.4.2 Single and multi-view drawing principles: <ul style="list-style-type: none"> 1st and 3rd angle orthographic projection, interpenetrations, developments, wiring and circuit diagrams, complex assemblies, detail drawings, limits & fits, tolerances, measurement and surface textures, dwelling and Components of steel structures. 		X
12.1.3 Analyse contributions that Engineering Graphics and Design has made to the campaigns against. HIV/AIDS		X	12.2.3 Select the most relevant possibility giving reasons for choice that are based on sound design principles citing references where possible, analyse it, and synthesise it into a final solution.		X	12.3.3 Principles of pictorial drawings: <ul style="list-style-type: none"> isometric and Perspective. 		X	12.4.3 Pictorial drawings principles: <ul style="list-style-type: none"> isometric and Perspective. 		X
12.1.4 Analyse contributions made by Global Cultures to graphical communication.		X	12.2.4 Present the final solution using graphics including visual, symbolic, and language skills in appropriate modes.		X	12.3.4 Principles of sectioning: <ul style="list-style-type: none"> pictorial drawings and multi-view drawings 			12.4.4. Principles of sectioning: <ul style="list-style-type: none"> pictorial drawings and multi-view drawings 		
12.1.5 Identify and investigate possible entrepreneurial opportunities.		X	12.2.5 Show evidence of evaluation at each stage of the design process.		X	12.3.5 Loci of points on the components of mechanisms.			12.4.5 Loci of points.		
						12.3.6 Principles of design.		X	12.4.6 The design process		X
						12.3.7 Visualisation, cognitive and perception skills related to the analysis and interpretation of: <ul style="list-style-type: none"> data and information and multi-view drawing. 		X	12.4.7 Visualisation, cognitive and perception skills related to the analysis and interpretation of: <ul style="list-style-type: none"> data and information and multi-view drawing. 		X

				<p>12.3.8 Terminology, concepts and functions of CAD as related to hardware and software.</p>	<p>X</p>	<p>12.4.8 Terminology, concepts and functions of CAD as related to hardware and software:</p> <ul style="list-style-type: none"> • setting up of drawing environment: drawing and printing templates, • file management and • transferring drawings to and from hardcopy 	<p>X</p>
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TEACHER

DATE

HOD / SMT

DATE