PROVINCE OF THE

EASTERN CAPE

EDUCATION

DIRECTORATE:

CURRICULUM FET PROGRAMMES

ELECTRICAL TECHNOLOGY

GRADE 10

LESSON PLANS

TERM 4

FOREWORD

The following Grade 10 Lesson Plans were developed by Subject Advisors during August 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.

SUBJECT: ELECTRICAL TECHNOLOGY	GRADE: 10	LESSON PLAN 1	TERM 4	TIME: 20 HOURS

CORE CONTENT: **Describe the principles of electricity:**
Construct single phase circuits with protective devices in the home environment.

INTEGRATION: Engineering subjects, Physical Science, Mathematics and CAT/IT

LEARNING OUTCOME 1: TECHNOLOGY, SOCIETY AND THE ENVIROMENT		LEARNING OUTCOME 2: TECNOLOGICAL PROCESS		LEARNING OUTCOME 3: KNOWLEDGE AND UNDERSTANDING .		LEARNING OUTCOME 4: APPLICATION OF KNOWLEGE	
10.1.1 Describe the interrelationship between technology, society and the environment.		10.2.1 Identify, investigate, define and analyse problems in a given real-life situation.		10.3.1 Demonstrate an understanding of the Occupational Health and Safety (OHS) Act where applicable.		10.4.1 **Safety and instruments** Identify unsafe conditions and acts and apply tools and instruments correctly.	
10.1.2 Describe human rights issues		10.2.2 Generate and/or design possible solutions for problems.		10.3.2 Describe the use and care of tools and measuring instruments.		10.4.2 **Electrical applications** Construct and comprehend single-phase circuits.	**X**
10.1.3 Describe, explain and respond to basic medical emergencies in context, taking cognizance of health issues such as HIV/Aids.		10.2.3 Make or improve products according to the selected design		10.3.3 Describe the principles of magnetism.		10.4.3 **Electronics** Construct and comprehend electronic circuits.	
10.1.4 Identify indigenous knowledge systems of different cultures.		10.2.4 Evaluate the final product against the initial design.		10.3.4 Describe the principles of electricity.	**X**	10.4.4 **Digital electronics** Construct and comprehend digital circuits.	
10.1.5 Describe entrepreneurship and its influence on society and environment.		10.2.5 Present assignments by means of a variety of communication media		10.3.5 Describe the principles of electrostatics.			
				10.3.6 Identify and describe the characteristics of electronic components			
				10.3.9 Describe the principles of operation and use of power sources.			
				10.3.10 Describe basic logic concepts.			

				10.3.11 Describe and compare different types of protective devices.	X		
				10.3.12 Draw single-phase circuits	X		
				10.3.13 Describe electronic communication systems			

TEACHING ACTIVITIES	LEARNERS ACTIVITIES	RESOURCES	ASSESSMENT	DATE COMPLETED
Explain current flow.	Do practical experiments	Worksheet	Task based	
Series circuit as a voltage divider	Do work sheet with calculations. Practical measurements	Worksheet	Task based	
Parallel circuit as a current divider	Do work sheet with calculations. Practical measurements	Work sheet	Task based	
Combination circuits	Do calculations. Practical measurements	Text book / work sheet Light current lab Bread board	Task based	
Current/voltage operating devices	Do practical experiments	Text book / work sheet Light current lab Bread board	Task based	
Earth leakage devices/switching	Do practical experiments	Text book / work sheet Light current lab Bread board	Task based	
Distribution boards/lighting switching circuits	Do practical experiments	Heavy current lab	Task based	
Homework:				
Enrichment/Expanded Opportunities:				
Teacher Reflections:				

SIGNATURES:

_____ _____ _____ _____

TEACHER DATE HOD / SMT DATE

SUBJECT: ELECTRICAL TECHNOLOGY	GRADE: 10	LESSON PLAN 2	TERM 4	TIME: 4 HOURS

CORE CONTENT: Test on electrical portable equipment

INTEGRATION: Engineering subjects, Physical Science, Mathematics and CAT/IT

LEARNING OUTCOME 1: TECHNOLOGY, SOCIETY AND THE ENVIROMENT		LEARNING OUTCOME 2: TECNOLOGICAL PROCESS		LEARNING OUTCOME 3: KNOWLEDGE AND UNDERSTANDING .		LEARNING OUTCOME 4: APPLICATION OF KNOWLEGE	
10.1.1 Describe the interrelationship between technology, society and the environment.		10.2.1 Identify, investigate, define and analyse problems in a given real-life situation.		10.3.1 Demonstrate an understanding of the Occupational Health and Safety (OHS) Act where applicable.		10.4.1 **Safety and instruments** Identify unsafe conditions and acts and apply tools and instruments correctly.	**X**
10.1.2 Describe human rights issues		10.2.2 Generate and/or design possible solutions for problems.		10.3.2 Describe the use and care of tools and measuring instruments.		10.4.2 **Electrical applications** Construct and comprehend single-phase circuits.	
10.1.3 Describe, explain and respond to basic medical emergencies in context, taking cognizance of health issues such as HIV/Aids.		10.2.3 Make or improve products according to the selected design		10.3.3 Describe the principles of magnetism.		10.4.3 **Electronics** Construct and comprehend electronic circuits.	
10.1.4 Identify indigenous knowledge systems of different cultures.		10.2.4 Evaluate the final product against the initial design.		10.3.4 Describe the principles of electricity.	**X**	10.4.4 **Digital electronics** Construct and comprehend digital circuits.	
10.1.5 Describe entrepreneurship and its influence on society and environment		10.2.5 Present assignments by means of a variety of communication media		10.3.5 Describe the principles of electrostatics.			
				10.3.6 Identify and describe the characteristics of electronic components			
				10.3.9 Describe the principles of operation and use of power sources.			
				10.3.10 Describe basic logic concepts.			
				10.3.11 Describe and compare different types of protective devices.	**X**		
				10.3.12 Draw single-phase circuits	**X**		

				10.3.13 Describe electronic communication systems			
TEACHING ACTIVITIES		**LEARNERS ACTIVITIES**		**RESOURCES**		**ASSESSMENT**	**DATE COMPLETED**
Test portable equipment for insulation, continuity and earth continuity.		Fault finding, observation and task based		Equipment/heavy current lab		Observation/task based	
Homework:							
Enrichment/Expanded Opportunities:							
Teacher Reflections:							

SIGNATURES:

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TEACHER	DATE	HOD / SMT	DATE

SUBJECT: ELECTRICAL TECHNOLOGY	GRADE: 10	LESSON PLAN 3	TERM 4	TIME: 16 HOURS

CORE CONTENT: Logic concepts and circuits

INTEGRATION: Engineering subjects, Physical Science, Mathematics and CAT/IT

LEARNING OUTCOME 1: TECHNOLOGY SOCIETY AND THE ENVIRONMENT		LEARNING OUTCOME 2: TECHNOLOGICAL PROCESS		LEARNING OUTCOME 3: KNOWLEDGE AND UNDERSTANDING		LEARNING OUTCOME 4: APPLICATION OF KNOWLEDGE	
10.1.1 Describe the interrelationship between technology, society and the environment.		10.2.1 Identify, investigate, define and analyse problems in a given real-life situation.		10.3.1 Demonstrate an understanding of the Occupational Health and Safety (OHS) Act where applicable.		10.4.1 **Safety and instruments** Identify unsafe conditions and acts and apply tools and instruments correctly.	
10.1.2 Describe human rights issues.		10.2.2 Generate and/or design possible solutions for problems.		10.3.2 Describe the use and care of tools and measuring instruments.		10.4.2 **Electrical applications** Construct and comprehend single-phase circuits.	
10.1.3 Describe, explain and respond to basic medical emergencies in context, taking cognisance of health issues such as HIV/Aids.		10.2.3 Make or improve products according to the selected design.		10.3.3 Describe the principles of magnetism.		10.4.3 **Electronics** Construct and comprehend electronic circuits.	
10.1.4 Identify indigenous knowledge systems of different cultures.		10.2.4 Evaluate the final product against the initial design.		10.3.4 Describe the principles of electricity.	**X**	10.4.4 **Digital electronics** Construct and comprehend digital circuits.	**X**
10.1.5 Describe entrepreneurship and its influence on society and environment.		10.2.5 Present assignments by means of a variety of communication media.		10.3.5 Describe the principles of electrostatics.			
				10.3.6 Identify and describe the characteristics of electronic components.			
				10.3.9 Describe the principles of operation and use of power sources.			
				10.3.10 Describe basic logic concepts.	**X**		
				10.3.11 Describe and compare different types of protective devices.			
				10.3.12 Draw single-phase circuits.			

				10.3.13 Describe electronic communication systems.			
TEACHING ACTIVITIES		**LEARNERS ACTIVITIES**		**RESOURCES**		**ASSESSMENT**	**DATE COMPLETED**
The use of number systems in digital electronics		Research the traditional ways of communication and compare them with modern technology		Computer lad/light current lab		Assignments (Task based)	
Basic logic functions and gates e.g. AND, OR and NOT		Demonstrate an understanding of circuit diagram containing lamp/ buzzer by interacting, discussing and experimenting in groups.		Light current lab		Work sheet	
Construct basic switching logic circuits e.g. AND, OR and NOT		Demonstrate an understanding of circuit diagram containing lamp/ buzzer by interacting, discussing and experimenting in groups.		Light current lab		Work sheet	
Homework:							
Enrichment/Expanded Opportunities:							
Teacher Reflections:							

SIGNATURES:

_____	_____	_____	_____
TEACHER	DATE	HOD / SMT	DATE

ELECTRICAL TECHNOLOGY PAT

<table>
<tr><th>TEACHING ACTIVITIES</th><th>LEARNERS ACTIVITIES</th><th>RESOURCES</th><th>ASSESSMENT</th><th>DATE COMPLETED</th></tr>
<tr><td rowspan="2">Technological Process:

Review/explain the Technological process:

1. Identify, investigate, define and analyse problems in a given real-life situation.
2. Generate and/or design possible solutions for problems.
3. Make or improve products according to a selected design.
4. Evaluate a final product against the initial design.
5. Present assignments by means of a variety of communication media.

Teacher provides guidance in planning and execution of PAT topic</td><td rowspan="2">Learners apply the following principles

1. Identify, investigate, define and analyse problems in a given real-life situation.
2. Generate and/or design possible solutions for problems.
3. Make or improve products according to a selected design.
4. Evaluate a final product against the initial design.
5. Present assignments by means of a variety of communication media.

and then

• Present the final solution with working/layout drawings
• Present the final solution, or parts thereof, with a 3D pictorial drawing(s), and a model where necessary
• Evaluate the whole process</td><td>Models, CAD software, Audio-visual media, Worksheets, Drawing instruments catalogues, internet.</td><td>Tools:
• Memo’s
• Task lists,
• rubrics
Method:
• Teacher
Evidence:
• Task-based</td><td rowspan="2"></td></tr>
<tr><td></td><td rowspan="3">Presentation portfolio for performance evaluation</td></tr>
<tr><td>Cost Factors
Guide learners in costing the PAT</td><td>Learners research and compile costing lists.</td><td></td><td></td></tr>
<tr><td>Entrepreneurial opportunities</td><td>Research and present Entrepreneurial Opportunities for the scenario in a portfolio of evidence.</td><td></td><td></td></tr>
<tr><td>Models (Shoebox Size)</td><td>Model the final solution.</td><td></td><td></td><td></td></tr>
<tr><td colspan="5">Homework:</td></tr>
<tr><td colspan="5">Enrichment/Expanded Opportunities:</td></tr>
<tr><td colspan="5">Teacher Reflections:</td></tr>
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