



PROVINCE OF THE  
EASTERN CAPE  
EDUCATION

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DIRECTORATE:  
CURRICULUM FET PROGRAMMES  
LESSON PLANS  
ELECTRICAL TECHNOLOGY  
GRADE 11  
TERM 3

## FOREWORD

The following Grade 11 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.

**SUBJECT: Electrical Technology****GRADE: 11****LESSON PLAN 1****TERM 3****TIME: 8 Hours****CORE CONTENT:** Operation and construction of power control circuits and complete project.

<b>LEARNING OUTCOME 1:</b>		<b>LEARNING OUTCOME 2:</b>		<b>LEARNING OUTCOME 3:</b>		<b>LEARNING OUTCOME 4:</b>	
<b>TECHNOLOGY, SOCIETY AND THE ENVIROMENT</b>		<b>TECNOLOGICAL PROCESS</b>		<b>KNOWLEDGE AND UNDERSTANDING</b>		<b>APPLICATION OF KNOWLEGE</b>	
11.1.1 Discuss and evaluate the interrelationship between technology, society and the environment.	<b>X</b>	11.2.1 Identify, investigate, define, and analyse problems in a given real-life situation.	<b>X</b>	11.3.1 Apply the Occupational Health and Safety (OHS) Act and regulations where applicable.	<b>X</b>	11.4.1 <b>Safety and instruments</b> Identify unsafe conditions and acts and apply tools and instruments correctly.	
11.1.2 Consider human rights issues and discuss fair and equal employment practices.		11.2.2 Generate and/or design possible solutions for problems.	<b>X</b>	11.3.2 Explain the use and care of instruments.		11.4.2 <b>Electrical applications</b> Construct and apply single-phase circuits	<b>X</b>
11.1.3 Describe, explain and respond to medical emergencies in context, taking cognizance of health issues such as HIV/Aids.		11.2.3 Make or improve products according to the selected design.	<b>X</b>	11.3.3 Explain the principles of single-phase AC generation.		11.4.3 <b>Electronics</b> Construct and apply electronic circuits	<b>X</b>
11.1.4 Compare how different cultures solved technological problems.	<b>X</b>	11.2.4 Evaluate the product against the initial design	<b>X</b>	11.3.4 Explain the principles and effect of AC on resistor, inductor and capacitor components and determine the effect on a combination of series circuits.		11.4.4 <b>Digital electronics</b> Construct and apply digital circuits	
11.1.5 Discuss the competencies required by entrepreneurs.	<b>X</b>	11.2.5 Present assignments by means of a variety of communication media	<b>X</b>				
				11.3.6 Explain the operating principles, characteristics curves and use of semi-conductor devices.			
				11.3.7 Explain the operation of an amplifier circuit.			
				11.3.8	<b>X</b>		

				Describe the principle of operation and use of single-phase transformers			
				11.3.9 Describe the principles of operation and use of power supplies.	X		
				11.3.10 Combine logic concepts to form logic systems			
				11.3.11 Explain the operating principles of different protective devices			
				11.3.12 Explain the operating principles and application of single-phase motors			
				11.3.13 Explain the operating principles of modulation and demodulation with reference to communication systems			
TEACHER ACTIVITIES		LEARNER ACTIVITIES		RESOURCES		ASSESSMENT	DATE COMPLETED
Handout notes on practical task on power supply circuits.		Read notes.		Work sheet			
Supply breadboard and electronic components.		Analyze and identify the components and compare to circuit diagram..		Breadboard and electronic components		Questionnaire	
Explain the purpose, outcomes, and procedure and safety aspects.		Take notes and list the safety precautions.		Note books and pens		Orally	
Direct, supervise and assess.		Do practical task and hand in after completion				Final project	
Homework: Write short notes on the work done every day.							
Enrichment/Expanded Opportunities: Building more circuits when completed							
Teacher Reflections:							

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**SUBJECT:** Electrical Technology

**GRADE:** 11

**LESSON PLAN 2**

**TERM 3**

**TIME:** 4 Hours

**CORE CONTENT:** Protective devices such as over current and under voltage devices and use.

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	
11.1.1 Discuss and evaluate the interrelationship between technology, society and the environment.		11.2.1 Identify, investigate, define, and analyse problems in a given real-life situation.		11.3.1 Apply the Occupational Health and Safety (OHS) Act and regulations where applicable.	X	11.4.1 <b>Safety and instruments</b> Identify unsafe conditions and acts and apply tools and instruments correctly.	
11.1.2 Consider human rights issues and discuss fair and equal employment practices.	X	11.2.2 Generate and/or design possible solutions for problems.		11.3.2 Explain the use and care of instruments.		11.4.2 <b>Electrical applications</b> Construct and apply single-phase circuits	X
11.1.3 Describe, explain and respond to medical emergencies in context, taking cognisance of health issues such as HIV/Aids.		11.2.3 Make or improve products according to the selected design.		11.3.3 Explain the principles of single-phase AC generation.		11.4.3 <b>Electronics</b> Construct and apply electronic circuits	
11.1.4 Compare how different cultures solved technological problems.		11.2.4 Evaluate the product against the initial design		11.3.4 Explain the principles and effect of AC on resistor, inductor and capacitor components and determine the effect on a combination of series circuits.		11.4.4 <b>Digital electronics</b> Construct and apply digital circuits	
11.1.5 Discuss the competencies required by entrepreneurs.		11.2.5 Present assignments by means of a variety of communication media					
				11.3.6 Explain the operating principles, characteristics curves and use of semi-conductor devices.			
				11.3.7 Explain the operation of an amplifier circuit.			
				11.3.8 Describe the principle of operation and use of single-phase transformers			
				11.3.9 Describe the principles of operation and use of power supplies.			

			11.3.10 Combine logic concepts to form logic systems			
			11.3.11 Explain the operating principles of different protective devices	X		
			11.3.12 Explain the operating principles and application of single-phase motors			
			11.3.13 Explain the operating principles of modulation and demodulation with reference to communication systems			
TEACHER ACTIVITIES		LEARNER ACTIVITIES		RESOURCES	ASSESSMENT	DATE COMPLETED
Divide learners into groups.		Learners form groups and select chair person and scribe person.		Text Book		
Hand out work sheet		Discuss all protection needed when working with electric motors. Give feedback.		Work sheet / flip chart	Work sheet and oral feedback	
Discuss : Electrical equipment protection		Listen and take notes		A4 Paper/ note book	Notes	
Discuss : Operator protection		Listen and take notes		A4 Paper/ note book	Notes	
Discuss direct on line motor starting circuit with overload and no load protection.		To discuss difference between no load and overload protection in groups and give and give feedback.		Flip chart.	Flip chart notes.	
Homework: Do exercise in text book.						
Enrichment/Expanded Opportunities: Practical work in workshop.						
Teacher Reflections:						

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**SUBJECT:** Electrical Technology

**GRADE:** 11

**LESSON PLAN 3**

**TERM 3**

**TIME:** 4 Hours

**CORE CONTENT:** Use and care for instruments and their correct application and interpretation to ensure accurate measurements such as a multimeter and continuity or insulation tester.

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	
11.1.1 Discuss and evaluate the interrelationship between technology, society and the environment.		11.2.1 Identify, investigate, define, and analyse problems in a given real-life situation.	X	11.3.1 Apply the Occupational Health and Safety (OHS) Act and regulations where applicable.	X	11.4.1 <b>Safety and instruments</b> Identify unsafe conditions and acts and apply tools and instruments correctly.	X
11.1.2 Consider human rights issues and discuss fair and equal employment practices.	X	11.2.2 Generate and/or design possible solutions for problems.		11.3.2 Explain the use and care of instruments.	X	11.4.2 <b>Electrical applications</b> Construct and apply single-phase circuits	X
11.1.3 Describe, explain and respond to medical emergencies in context, taking cognizance of health issues such as HIV/Aids.		11.2.3 Make or improve products according to the selected design.		11.3.3 Explain the principles of single-phase AC generation.		11.4.3 <b>Electronics</b> Construct and apply electronic circuits	
11.1.4 Compare how different cultures solved technological problems.		11.2.4 Evaluate the product against the initial design		11.3.4 Explain the principles and effect of AC on resistor, inductor and capacitor components and determine the effect on a combination of series circuits.		11.4.4 <b>Digital electronics</b> Construct and apply digital circuits	
11.1.5 Discuss the competencies required by entrepreneurs.		11.2.5 Present assignments by means of a variety of communication media					
				11.3.6 Explain the operating principles, characteristics curves and use of semi-conductor devices.			
				11.3.7 Explain the operation of an amplifier circuit.			
				11.3.8 Describe the principle of operation and use of single-phase transformers			
				11.3.9			

				Describe the principles of operation and use of power supplies.		
				11.3.10 Combine logic concepts to form logic systems		
				11.3.11 Explain the operating principles of different protective devices		
				11.3.12 Explain the operating principles and application of single-phase motors		
				11.3.13 Explain the operating principles of modulation and demodulation with reference to communication systems		
TEACHER ACTIVITIES		LEARNER ACTIVITIES		RESOURCES	ASSESSMENT	DATE COMPLETED
Revise the use of the ammeter, voltmeter and ohm meter		Answer questions on work sheet. Give feedback.		Work sheet	Work sheet	
Group learners. Give each group a multimeter to discuss the use and control switches of it. Also label the different parts of the meter.		To discuss the multimeter and complete work sheet. Give feedback to other groups.		Multimeter Work sheet	Work sheet	
Discuss the use and care of multimeter as: Voltmeter, Ammeter, ohmmeter, diode and transistor tester.		Take notes		Handbook	Notes	
Show examples of a continuity and insulation tester to learners		Discuss the practical applications of the testers. Give feedback to class.		Continuity tester and Insulation tester.	Flip chart	
Discuss the use, care and correct use of the continuity and insulation tester.		Take notes.		Note books	Notes	
Illustrate <b>practical</b> use of instruments		Make practical tests.		Work sheet	Practical test results on work sheet	
Homework: Do exercise in text book.						
Enrichment/Expanded Opportunities:						
Teacher Reflections:						

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<b>SUBJECT: Electrical Technology      GRADE: 11      LESSON PLAN 4      TERM 3      TIME: 12 Hours</b>							
<b>CORE CONTENT:</b> Explain the operating principles and applications of single phase motors							
<b>LEARNING OUTCOME 1:</b> <b>TECHNOLOGY, SOCIETY AND THE ENVIROMENT</b>		<b>LEARNING OUTCOME 2:</b> <b>TECNOLOGICAL PROCESS</b>		<b>LEARNING OUTCOME 3:</b> <b>KNOWLEDGE AND UNDERSTANDING</b>		<b>LEARNING OUTCOME 4:</b> <b>APPLICATION OF KNOWLEDGE</b>	
11.1.1 Discuss and evaluate the interrelationship between technology, society and the environment.		11.2.1 Identify, investigate, define, and analyse problems in a given real-life situation.		11.3.1 Apply the Occupational Health and Safety (OHS) Act and regulations where applicable.	X	11.4.1 <b>Safety and instruments</b> Identify unsafe conditions and acts and apply tools and instruments correctly.	
11.1.2 Consider human rights issues and discuss fair and equal employment practices.	X	11.2.2 Generate and/or design possible solutions for problems.		11.3.2 Explain the use and care of instruments.		11.4.2 <b>Electrical applications</b> Construct and apply single-phase circuits	X
11.1.3 Describe, explain and respond to medical emergencies in context, taking cognisance of health issues such as HIV/Aids.		11.2.3 Make or improve products according to the selected design.		11.3.3 Explain the principles of single-phase AC generation.		11.4.3 <b>Electronics</b> Construct and apply electronic circuits	
11.1.4 Compare how different cultures solved technological problems.		11.2.4 Evaluate the product against the initial design		11.3.4 Explain the principles and effect of AC on resistor, inductor and capacitor components and determine the effect on a combination of series circuits.		11.4.4 <b>Digital electronics</b> Construct and apply digital circuits	
11.1.5 Discuss the competencies required by entrepreneurs.		11.2.5 Present assignments by means of a variety of communication media	X				
				11.3.6 Explain the operating principles, characteristics curves and use of semi-conductor devices.			
				11.3.7 Explain the operation of an amplifier circuit.			
				11.3.8 Describe the principle of operation and use of single-phase transformers			

			11.3.9 Describe the principles of operation and use of power supplies.			
			11.3.10 Combine logic concepts to form logic systems			
			11.3.11 Explain the operating principles of different protective devices			
			11.3.12 Explain the operating principles and application of single-phase motors	X		
			11.3.13 Explain the operating principles of modulation and demodulation with reference to communication systems			
TEACHER ACTIVITIES		LEARNER ACTIVITIES		RESOURCES	ASSESSMENT	DATE COMPLETED
Show learners different types of motors and give them a questionnaire to complete		To identify the motors and their uses by completing the work sheet.		Different types of AC and DC motors. Work sheet	Completed work sheet	
Identify the single phase split phase motors and discuss the construction, operating principle, uses of each and circuit diagram.		To take notes. Bring more data and uses for split phase motors. (Photo's must show the practical uses)		Text book Note book	Assignment	
Identify the universal motor and discuss the construction, operation principle, main circuit, control circuit and uses..		To take notes Bring more data and uses of universal motors. (Photo's must show the practical uses)		Text book Note book	Assignment	
<b>Practical Task:</b> Work sheet		To apply knowledge of wiring on practical board.		Work sheet.  Practical board	Completed work sheet task	
Set small test		Do test		Question paper and memo	Question paper, memo And answer sheet	
Homework: Do exercise in text book.						
Enrichment/Expanded Opportunities: Testing for faulty motors.						
Teacher Reflections:						

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