

PROVINCE OF THE  
EASTERN CAPE  
EDUCATION

---

DIRECTORATE:  
CURRICULUM FET PROGRAMMES  
LESSON PLANS  
TERM 4  
MECHANICAL TECHNOLOGY  
GRADE: 10

## FOREWORD

The following Grade 10 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 Program 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: Mechanical Technology		GRADE: 10		LESSON PLAN 1		TERM 4		TIME: 8 hours	
CORE CONTENT: MAINTENANCE <ul style="list-style-type: none"><li>Basic maintenance on operating systems</li></ul>									
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 against, the initial design.		10.3.1 Demonstrate an understanding of the Occupational Health and Safety (OHS) Act where applicable.		10.4.1 Apply all relevant safety measures.			
10.1.2 Describe human rights issues		10.2.2 Generate and/or design possible solutions for problems.		10.3.2 Describe the functions of appropriate basic tools and equipment.		10.4.2 Select, use and care for appropriate basic tools and equipment.			
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 a selected design.		10.3.3 Explain the reason for using certain engineering materials when taking environmental aspects into consideration.		10.4.3 Distinguish between various materials according to their properties.			
10.1.4 Identify indigenous knowledge systems of different cultures.		10.2.4 Evaluate a final product		10.3.4 Understand appropriate terminology and procedures used in the subject.		10.4.4 Use instructions or basic drawings and apply different cutting methods to make an artefact.			
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 Explain the uses of semi-permanent joining applications.		10.4.5 Use working instructions and apply basic semi permanent joining methods.			
				10.3.6 Distinguish between different types of forces found in engineering components by graphically determining the nature of these forces.		10.4.6 Perform basic tests to verify various mechanical principles.			
				10.3.7 Explain the effect of inferior maintenance on operating systems.	X	10.4.7 Identify signs of wear on components of mechanical systems due to friction.	X		

				10.3.8 Describe the functions and control of components used in different operating systems, such as mechanical, hydraulic and pneumatic systems.		10.4.8 Demonstrate competency on basic systems and control.	
				10.3.9Describe the operating principles of heat engines		10.4.9 Demonstrate an understanding of the main functions of the components required for the internal combustion engines.	
TEACHING ACTIVITIES		LEARNERS ACTIVITIES		RESOURCES		ASSESSMENT	DATE COMPLETED
Theory: Explain the importance of maintenance and the impact it has on operating systems, identify signs of wear		Take notes, interact in discussion		Text books, handouts, Chalk board, charts on maintenance / frictions		Task based, question and answers, Assignment,	
Explain how to perform routine maintenance using different types of lubricants (oil and grease)		Adhere to instructions on the different routines. Take notes		Textbooks, handouts, Chalk board, charts on maintenance / frictions		Task based, question and answers, Assignment	
Practical: Demonstrate the different friction methods: wear, causes, preventative measures to follow. Demonstrate an understanding of routine maintenance on a vehicle or Lathe machine.		Adhere to instructions by carry out routine maintenance on workshop equipments, machinery or vehicles.		Workshop: equipment and facilities, text books and posters Vehicles for life demonstration		Task based / Practical demonstrations Check list / observation sheet	
Homework:							
Enrichment/Expanded Opportunities:							
Teacher Reflections: e							

**SIGNATURES:**

\_\_\_\_\_

TEACHER

\_\_\_\_\_

DATE

\_\_\_\_\_

HOD / SMT

\_\_\_\_\_

DATE

Pages

**Mechanical Technology Term**

**Grade10**

SUBJECT: Mechanical Technology		GRADE: 10		LESSON PLAN 2		TERM 4		TIME: 16 hours	
CORE CONTENT: HEAT ENGINE <ul style="list-style-type: none"><li>Operating principles of internal combusting engines</li></ul>									
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.	X	10.2.1 Identify, investigate, define and analyse problems in a given real-life situation against the initial design.		10.3.1 Demonstrate an understanding of the Occupational Health and Safety (OHS) Act where applicable.		10.4.1 Apply all relevant safety measures.			
10.1.2 Describe human rights issues		10.2.2 Generate and/or design possible solutions for problems.		10.3.2 Describe the functions of appropriate basic tools and equipment.		10.4.2 Select, use and care for appropriate basic tools and equipment.			
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 a selected design.		10.3.3 Explain the reason for using certain engineering materials when taking environmental aspects into consideration.		10.4.3 Distinguish between various materials according to their properties.			
10.1.4 Identify indigenous knowledge systems of different cultures		10.2.4 Evaluate a final product		10.3.4 Understand appropriate terminology and procedures used in the subject.		10.4.4 Use instructions or basic drawings and apply different cutting methods to make an artefact.			
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 Explain the uses of semi-permanent joining applications.		10.4.5 Use working instructions and apply basic semi permanent joining methods.			
				10.3.6 Distinguish between different types of forces found in engineering components by graphically determining the nature of these forces.		10.4.6 Perform basic tests to verify various mechanical principles.			
				10.3.7 Explain the effect of inferior maintenance on operating systems.		10.4.7 Identify signs of wear on components of mechanical systems due to friction.			
				10.3.8		10.4.8			

				Describe the functions and control of components used in different operating systems, such as mechanical, hydraulic and pneumatic systems.		Demonstrate competency on basic systems and control.	
				10.3.9 Describe the operating principles of heat engines	X	10.4.9 Demonstrate an understanding of the main functions of the components required for the internal combustion engines.	X
TEACHING ACTIVITIES		LEARNERS ACTIVITIES		RESOURCES		ASSESSMENT	DATE COMPLETED
Theory: The teacher explains the historical overview of heat engines in relation to the society and the environment		Discuss and debate on the impact of technology, society and the environment (cultural aspects)		Text books and handouts videos		Assignment	
Describes the operating principles of : - Internal combustion engines a. Four stroke & two stroke petrol engines b. Four stroke & two stroke diesel engines - External combustion engines Reciprocating steam engine - Comparison between two & four stroke engines - Sketches must be stressed - Group learners, Guide, Observe & assess task		Take notes, ask questions, and interact in discussion, Learners develop listening skills and adhere to constructive instructions, Group discussion and debate for presentation purposes.		Text books and handouts Posters and demonstration models		Task based, Experiment	
Practical : The teacher demonstrates the operating principles of an engine		Interact during demonstration question and answers. Carry out a practical demonstration by dismantling , assessing and assembling the main components of the engine.		Workshop: tools and equipment Practical models for demonstrations		Experiments Task based	
Describe the main functions of the components required for internal combustion engines and explain there functions		identify main components e.g ( Pistons, rings, crankshaft, connecting rod, gudgeon pin, etc. )		Workshop: demonstration models / posters		Task based / assignment	
Homework:							
Enrichment/Expanded Opportunities:							
Teacher Reflections:							

**SIGNATURES:**

\_\_\_\_\_

TEACHER

\_\_\_\_\_

DATE

\_\_\_\_\_

HOD / SMT

\_\_\_\_\_

DATE

Pages

**Mechanical Technology Term**

**Grade10**