



Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

JUNIOR SECONDARY PHASE

TECHNICAL STUDIES A SYLLABUS

**Module 1: Bricklaying and Plastering
Module 2: Metalwork and Welding
Module 3: Woodwork**

GRADE 8 & 9

**For implementation:
Grade 8 in 2025
and
Grade 9 in 2026**

Ministry of Education, Arts and Culture
National Institute for Educational Development (NIED)
Private Bag 2034
Okahandja
Namibia

© Copyright NIED, Ministry of Education, Arts and Culture, 2024
Technical Studies A Syllabus, Grade 8 & 9

ISBN: 978-99945-2-494-5

Printed by NIED

Website: <http://www.nied.edu.na>

Publication date: December 2024

Table of contents

1.	Introduction	1
2.	Rationale.....	1
3.	Aims.....	2
4.	Inclusive education	2
5.	Links to other subjects and cross-curricular issues	2
6.	Approach to teaching and learning.....	3
7.	End-of-phase competencies.....	4
8.	Summary of the learning content	5
9.	Learning content	7
9.1.	Grade 8 learning content.....	8
9.2.	Grade 9 learning content.....	21
10.	Assessment	33
10.1	Types and methods of assessment.....	33
10.2	Grade descriptors	34
10.3	Assessment objectives.....	35
10.4	Continuous assessment: detailed guidelines	36
10.5	End-of-year examinations: detailed guidelines.....	37
10.6	Specification grid	39
	Annexe 1: Glossary of terms	40
	Annexe 2: List of tools, equipment and materials	42
	Annexe 3: Assessment record sheet for grade 8.....	43
	Annexe 4: Assessment record sheet for grade 9.....	44

1. INTRODUCTION

The Technical Studies A syllabus describes the intended learning and assessment for Bricklaying and Plastering, Metalwork and Welding as well as Woodwork in the Junior Secondary phase. As a subject, Technical Studies A is within the technological area of learning in the curriculum, but has thematic links to other subjects across the curriculum. Learning about technology includes applying knowledge of how to work more efficiently using tools, materials and processes. Technology is a specific way of solving problems through planning, design, realisation and evaluation. Learners develop the necessary knowledge, skills and attitudes to perform tasks using appropriate technology.

2. RATIONALE

The presentation of Technical Studies A at school is first and foremost an educational matter, with the overall goal being that learners attain proper adulthood in the society. As a result of the increasing industrialisation and mechanisation of modern times, technological knowledge and skills have become indispensable in everyday life.

The inclusion of Technical Studies A in the learners' curriculum does not aim at vocational training in the narrow sense of the word. It simply provides the learner with a broad educational foundation for further specialised training. It also provides the learners with a clear understanding of technology and assists them in becoming better adapted and prepared for life. Technical Studies A has its main focus on the building industry.

The integration of entrepreneurial concepts and activities lays the foundation for the development of human resources as a basis for studies, occupations or self-employment. Technical Studies A, together with entrepreneurial concepts and activities, empowers the individual to be creative and gain problem-solving skills.

The particular features of Technical Studies A at this phase are to enable the learners to achieve technological literacy through the development of:

- technological knowledge and understanding
- technological capacity and
- an awareness of the significance of Technical Studies A (Bricklaying and Plastering, and Metalwork and Welding Woodwork) in society.

Learners should develop a thorough knowledge of basic concepts which they can apply in a wide range of situations. They must also develop the broad-based skills that are so important for effective functioning in the world of work. They must learn to identify and analyse problems and to explore and test solutions in a wide variety of contexts. This firm conceptual base is at the heart of the Technical Studies A Syllabus and must be the focus on teaching and learning in the classroom.

3. AIMS

Technical Studies A promotes the following aims in the curriculum:

- foster an awareness of local, regional and national needs of Namibia and contribute towards development
- equip learners to play an effective and productive role in the economic life of the nation
- help learners to develop pre-vocational skills
- promote positive attitudes towards the challenges of co-operation, work, entrepreneurship and self-employment

4. INCLUSIVE EDUCATION

Inclusive education is the right of every learner and promotes participation in, or access to, the full range of educational programmes and services offered by the education system in mainstream schools. It is based on the principle of supporting and celebrating the diversity found among all learners and removing all barriers to learning. The Technical Studies A teacher in the Junior Secondary phase should therefore accommodate learners with special educational needs by adapting this syllabus to the needs of the learner through differentiation of teaching methods and material as indicated in the *Inclusive Education Curriculum Framework (2023)*. The adaptation for assessment of learners with special educational needs must be done as prescribed in the *Handbook for Centres (2022)* by the Directorate of National Examinations and Assessment (DNEA). The accommodations prescribed in this handbook are not only for external examinations, but apply to learners from Grade 1 to 12.

Basic education prepares the society, as envisaged in Namibia's Vision 2030, by promoting inclusivity. Learners experiencing barriers to learning and other individual needs will be included in a mainstream school and their needs will be attended to through differentiation of teaching methods and materials as required. Learners, who are so severely impaired that they cannot benefit from attending inclusive schools, will be provided for according to their needs in learning support units, resource units or resource schools until such time that they can join the inclusive school where applicable. The curriculum, teaching methods and materials are adapted for learners in these institutions.

Technical Studies A promotes equal opportunity for males and females, enabling both to participate equally. Teachers should know and understand how to treat learners equally, and all materials should support gender fairness. Including gender perspectives is important in all social themes in order to raise awareness of gender stereotyping, how limitations are set on gender equity, and how to promote gender equity in all spheres of life. All teaching/learning materials should be analysed to ensure that they promote gender equity.

5. LINKS TO OTHER SUBJECTS AND CROSS-CURRICULAR ISSUES

The cross-curricular issues include Environmental Learning, HIV and AIDS, Population Education, Education for Human Rights and Democracy (EHRD), Information and Communication Technology (ICT) and Road Safety. These issues have been introduced to the formal curriculum, because each of the issues deals with particular risks and challenges in our Namibian society. They should be dealt with across all phases and in every subject where the topics overlap with the content of that subject.

All of our learners need to:

- understand the nature of these risks and challenges
- know how they will impact on our society and on the quality of our people's lives now and in future
- understand how these risks and challenges can be addressed on a national and global level
- understand how each learner can play a part in addressing these risks and challenges in their own school and local community.

The main risks and challenges have been identified as:

- the challenges and risks we face if we do not care for and manage our natural resources
- the challenges and risks caused by HIV and AIDS
- the challenges and risks to health caused by pollution, poor sanitation and waste
- the challenges and risks to democracy and social stability caused by inequity and governance that ignores rights and responsibilities
- the challenges and risks we face if we do not adhere to road safety measures
- the challenges and risks we face from globalization.

In this syllabus the following cross-curricular issues can be dealt with as indicated:

Grade	HIV and AIDS	Environmental learning	EHRD	Entrepreneurship Education	ICT
8	Health and safety	Building materials Metals welding Timber and timber products	Career prospects	Job shadowing	Sketches Design and realisation Communication
9	Safety precautions and first aid measures	Building sites Building structures Metals welding Timber and timber products	Human Resource	Job observation	Building sketches Design and realisation Communication

6. APPROACH TO TEACHING AND LEARNING

The approach to teaching and learning is based on a paradigm of Learner-Centred Education (LCE) described in ministerial policy documents and the LCE conceptual framework. This approach ensures optimal quality of learning when the principles are put into practice.

The aim is to develop learning with understanding, and the knowledge, skills and attitudes to contribute to the development of society. The starting point for teaching and learning is the fact that the learner brings to the school a wealth of knowledge and social experience gained continually from the family, the community, and through interaction with the environment.

Learning in school should involve, build on, extend and challenge the learner's prior knowledge and experience.

Learners learn best when they are actively involved in the learning process through a high degree of participation, contribution and production. At the same time, each learner is an individual with his/her own needs, pace of learning, experience and abilities. The teacher must be able to sense the needs of learners, the nature of the learning to be done, and how to shape learning experience accordingly. Teaching strategies must therefore be varied but flexible within well-structured sequence of lessons.

The teacher must decide, in relation to the general and specific objectives to be achieved, when it is best to convey content directly; when it is best to let learners discover or explore information for themselves; when they need directed learning; when they need reinforcement or enrichment learning; when there is a particular progression of skills or information that needs to be followed; or when the learners can be allowed to find their own way through a topic or area of content.

Work in groups, in pairs, individually, or as a whole class must therefore be organised as appropriate to the task at hand. Co-operative and collaborative learning should be encouraged wherever possible. In such cases, tasks must be designed so that pair or group work is needed to complete it, otherwise the learners will not see any relevance in carrying out tasks together. As the learners develop personal, social and communication skills, they can gradually be given increasing responsibility to participate in planning and evaluating their work, under the teacher's guidance. Practical work is essential for learning skills in Technical Studies A.

Technical Studies A emphasises the re-use of locally available resources (recyclable materials) to conserve the environment and the content has been adapted to suit the local context.

7. END-OF-PHASE COMPETENCIES

On entry to the Junior Secondary phase, all learners are expected to have a basic awareness of and some practical skills in pre-vocational subjects within the Namibian school curriculum. They should consider the social and environmental impact of these subjects and also have basic entrepreneurial awareness.

A few learners might not be able to achieve all the specific objectives satisfactorily and must receive learning support through adapted teaching approaches, adapted materials, and assistance from peers. A small number of learners have special educational needs to a degree which requires greater individual attention, resources or assessment. Others will have impairments which do not necessarily limit cognitive and affective learning and development, e.g. the visually impaired, hearing impaired and physically challenged.

On completion of the Junior Secondary phase, learners are expected to be able to demonstrate their competence in simple technological processes and have basic skills in woodworking, metalwork and welding as well as bricklaying and plastering. They should be able to make informed choices about design and/or materials and evaluate a finished product in these areas. They should also be able to use basic equipment and know the safety precautions in doing so.

8. SUMMARY OF THE LEARNING CONTENT

Grade 8	Grade 9
Module 1: Bricklaying and Plastering	
1.1 Safety	1.1 Safety precautions and first aid measures
1.2 Basic hand tools and machinery	1.2 Tools and machinery
1.3 Trades in the construction industry	1.3 Professions in the building industry
1.4 Use and quality of building materials	1.4 Building materials
1.5 Bonding of simple walls	1.5 Bricklaying skills
1.6 Jointing and pointing	1.6 Basic plastering
1.7 Choice of building sites	1.7 Setting out of building sites
1.8 Types of foundations	1.8 Setting out and excavation of foundations
1.9 Types of floors and damp-proofing	1.9 Construction of ground floors and damp-proofing
1.10 Types of roof coverings	1.10 Types of roof structures
Module 2: Metalwork and Welding	
2.1 Safety and first aid	2.1 Health and safety
2.2 Measuring and marking out tools	2.2 Measuring and marking out tools
2.3 Hand tools	2.3 Hand tools
2.4 Power tools	2.4 Power tools
2.5 Metals	2.5 Metals
2.6 Joining methods	2.6 Joining methods
2.7 Oxy-acetylene welding	2.7 Oxy-acetylene
2.8 Arc welding	2.8 Arc welding
2.9 Sheet metalwork	2.9 Sheet metalwork
2.10 Metal finishing	2.10 Finishing of metals

Grade 8	Grade 9
Module 3: Woodwork	
3.1 Safety and first aid	3.1 Health and safety
3.2 Hand tools - Measuring and marking out tools - Basic Hand tools	3.2 Hand tools - Measuring and marking out tools - Hand tools
3.3 Machines - Portable power tools - Stationary machines	3.3 Machines - Portable power tools - Stationary machines
3.4 Trees	3.4 Timber products
3.5 Timber	3.5 Fastening and fitting
3.6 Fastening and fitting	3.6 Basic Joints and constructions
3.7 Basic joints and constructions	3.7 Finishing and finishes
3.8 Finishing and finishes	

9. LEARNING CONTENT

Introduction to learning content

The learning content outlined below is designed to provide guidance to teachers as to what will be assessed in the overall evaluation of learners. It is not meant to limit, in any way, the teaching programme of any particular school.

Topics refer to those components of the subject which learners are required to study/master.

The **general objectives** are derived from the topic/skill and are the general knowledge, understanding and demonstration of skills on which learners will be assessed.

The **specific objectives** are the detailed and specified content of the syllabus, which learners need to master to achieve the general objectives, and on which they will be assessed. For skills-based subjects, specific objectives indicate what learners should be able to do at the end of the year.

9.1. Grade 8 learning content

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 1: BRICKLAYING AND PLASTERING		
1.1 Safety	• understand safety measures in the workplace regarding building constructions • know the different types of safety measures • be aware of safe practices and conditions during work • know health and safety precautions on a building site and workplace • know and understand: - emergency situations - first aid kit and - first aid procedures to be applied	• demonstrate how to store safety equipment and tools in their correct places • identify and apply appropriate basic safety measures relating to: - personal safety - workshop safety - tools and equipment • apply safety rules and habits when doing practical work • practise health and safety precautions on a building site and workplace • practise safety procedures when injury occurs • identify and explain the uses of the basic content of the first aid kit • list and explain the appropriate basic first aid procedures to be followed with HIV and AIDS in mind • role play an emergency situation

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 1: BRICKLAYING AND PLASTERING (CONTINUED)		
1.2 Basic hand tools and machinery	• know basic hand tools used in bricklaying and plastering and their storage	• identify and use tools correctly • store tools and equipment after use
1.3 Trades in the construction industry	• be familiar with trades in the construction industry	• name the different trades within the construction industry • identify different trades persons at a building site • distinguish between the different trades
1.4 Use and quality of building materials	• know the use of various building materials used in bricklaying and plastering • understand the process of cleaning different building materials • show awareness of the need to preserve the environment	• list building materials used in bricklaying and plastering • use building materials correctly • demonstrate how to clean building materials in order to ensure quality • collect different building materials from the environment without causing serious damage
1.5 Bonding of simple walls	• know types of bonds used in bricklaying and plastering • understand simple bonding rules used in bricklaying and plastering	• identify the types of bonds used in bricklaying and plastering • describe the types of bonds used in bricklaying and plastering • sketch and explain the three commonly used bonds • solve bonding problems of walls up to one brick thick • apply simple bonding rules used in bricklaying and plastering

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 1: BRICKLAYING AND PLASTERING (CONTINUED)		
1.6 Jointing and pointing	understand jointing and pointing used in bricklaying and plastering	- name types of joints used in bricklaying and plastering during and after work - sketch the types of joints used when jointing and pointing - list the advantages and disadvantages of pointing and jointing - distinguish between pointing and jointing
1.7 Choice of building sites	understand how to choose a building site	- list factors influencing the choice of a building site - identify suitable sites for building - explain the disadvantages of top soil on a building site - explain the importance of site clearance and excavation of top soil
1.8 Types of foundations	know different types of foundations	- name types of foundations commonly used in bricklaying and plastering - sketch the different types of foundations - explain the advantages and disadvantages of each type of foundation

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 1: BRICKLAYING AND PLASTERING (CONTINUED)		
1.9 Types of floors and damp-proofing	• know different types of floors and damp-proofing	• list types of floors commonly used in the construction industry • identify different types of floors: • identify different types of damp-proofing materials • describe the damp-proofing materials
1.10. Types of roof coverings	• understand roof covering materials	• list types of roof coverings: - corrugated iron sheets - thatch - tiles • state the advantages and disadvantages of different roof covering materials

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 2: METALWORK AND WELDING		
2.1 safety and first aid	- understand National Occupational Safety Association (NOSA) safety measures - know basic first aid	- explain and apply appropriate safety measures of NOSA with reference to: - obstruction - loose clothing and jewelry - personal safety or Personal Protective Equipment (PPE) - workshop and environmental safety - hand tools and machinery - portable electrical equipment - list the content of a basic first aid kit (box) - identify and demonstrate basic first aid procedures including: - treatment of bleeding wounds with HIV and AIDS in mind - ABC (Airway, Breathing, Circulation) of first aid application
2.2 Measuring and marking out tools	- understand the different measuring and marking tools and their uses - familiarise themselves with accurate measuring and marking by means of different tools	- identify and state the uses of the following measuring tools: - measuring tape - steel rule - folding rule - engineers square - marking out tools: - scriber - punches, - dividers, - calipers - apply the correct use of the mentioned measuring and marking tools <i>(possible practical activities: any measuring and marking related activities)</i>

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 2: METALWORK AND WELDING (CONTINUED)		
2.3 Hand tools	• know basic hand tools and their uses	• identify and discuss uses of the various hand tools: - driving tools (hammer, screwdriver, hand drill) - cutting tools (hack saw, tin snip, side cutter, drill bit) - holding devices (bench vice, hand vice, clamp, plier) - shaping tools (file, hammer) <i>(possible practical activities: use the listed tools to demonstrate filing, planning, hammering, sawing)</i>
2.4 Power tools	• understand power tools and its uses	• identify different power tools and state their uses: - electric hand drill - bench grinder - angle grinder - jig saw - soldering iron
2.5 Metals	• know the three classes of metals	• identify the three classes of metal • discuss the uses of the following types of metals: - ferrous metals (containing iron): mild steel (used for general welding work), tool steel (used for tools e.g. hammer head.) - non-ferrous metals: lead, zinc, copper, tin - alloys: brass, bronze <i>(possible practical activity: collect, identify and exhibit different types of metals)</i>

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 2: METALWORK AND WELDING (CONTINUED)		
2.6 Joining methods	understand basic joining methods	- identify the following temporary joining methods: - screws - bolts - nuts - identify the following permanent joining methods: - riveting - welding (arc, oxy-acetylene, soldering) <i>(possible practical activities: riveting, bolting, screwing, soldering related activities)</i>
2.7 Oxy-acetylene equipment	- understand safety rules and precautionary measures of the oxy-acetylene equipment - know components of the oxy-acetylene equipment	- list the precautionary measures and safety rules to be taken in joining metals: - storage - handling - maintenance - identify the difference in screw threads and colour coding (cylinders) - explain the dangers and causes of back flashing and back firing - discuss the process of testing gas leaks - identify and name the components of oxy-acetylene equipment: - cylinders - regulators - hoses - flashback arrestors - valve spanner - blowpipe - nozzle - lighter - safety equipment (personal)

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 2: METALWORK AND WELDING (CONTINUED)		
2.8 Arc welding	- understand precautionary measures in storing, handling, assembling and maintenance of equipment - know components of the arc welding equipment - understand the correct usage of welding equipment - know basic welding joints	- list the precautionary measures and safety rules to be taken in joining the metals with the arc-welding equipment: - personal - machines and equipment - firefighting equipment - identify the components of arc-welding equipment, including: - electrodes - chipping hammer - helmet - safety clothing - use welding equipment correctly - identify and draw basic welded joints: - square butt joint - T-joint - lap joint <i>(possible practical activity: dismantle and assemble components)</i>
2.9 Sheet metalwork	understand metalwork tools and equipment	- identify, name and state the uses of the following tools: - tin snips - folding bars - mallets - anvil - use sheet metalwork tools and equipment correctly

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 2: METALWORK AND WELDING (CONTINUED)		
2.9 Sheet metalwork (continued)	understand different edges and joints	- identify and draw the following edges and joints: - safe edge - wire edge - lap joint <i>(possible practical activity: cut shapes with tin snips)</i>
2.10 Metal finishing	know suitable finishes and their purpose	- identify, describe and apply the following finishing procedures: - filing - use of abrasives - painting - discuss the purpose of finishing <i>(possible practical activity: use the shapes cut in the previous activity and apply finishing)</i>

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 3: WOODWORK		
3.1 Safety and first aid	- understand safety rules and precautions in the workshop - understand basic first aid - know the ABC of first aid application	- explain and apply appropriate safety measures regarding NOSA with reference to: - personal safety or Personal Protective Equipment (PPE) - workshop and environmental safety - hand tools and machinery - portable electrical equipment - identify basic first aid procedures including: - treatment of bleeding wounds with HIV and AIDS in mind - electric shock - burns - list the contents of a first aid kit - apply the ABC (Airway, Breathing, Circulation) of first aid
3.2 Hand tools	- know the measuring tools - know the marking out tools	- identify, name and apply the following measuring tools: - steel rule - folding rule - tape measure - identify, name and apply the following marking out tools: - pencil - striking knife - marking gauge - mortise gauge - try square - sliding bevel - winged compasses/ dividers

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 3: WOODWORK (CONTINUED)		
3.2 Hand tools (continued)	understand the uses of hand tools	- explain and demonstrate the uses of holding, cutting, boring and shaping tools listed below: - clamps - vices - chisels - saws - drills and drill bits - files and rasps - planes - describe care and maintenance of the hand tools mentioned above
3.3 Machines	- recognise the different types and uses of portable power tools - learn how to care for and maintain portable tools - learn the different types and uses of stationary machines - understand how to care for and maintain stationary machines	- list the different types of portable power tools - explain the uses of the following portable power tools: - electric hand drill - orbital/belt sander - jig saw - explain the safe application of portable power tools - describe the care and maintenance procedures for the portable power tools mentioned above - list the different types of stationary machines - explain the uses of the following types of stationary machines: - circular saw - band saw - pillar drill - planing machine - describe the care and maintenance of the stationary machines mentioned above

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 3: WOODWORK (CONTINUED)		
3.4 Trees	understand trees	- differentiate between types of trees under the two major groups: - conifers (softwood: pine) - broad leafed trees (hardwood: meranti, oak, kiaat) - describe the signs of maturity in trees - describe the felling process of trees - explain the two forms of seasoning: - natural method - artificial or kiln method - draw and label the various parts of a tree trunk
3.5 Timber	- understand timber - be aware of defects in timber	- explain the following conversion methods: - plain sawing - quarter or radial sawing - explain “seasoning” - describe the properties and uses of listed timber. - hardwoods: Oak, Meranti, Mahogany - soft wood: S.A pine, Oregan pine, Genus pinus , Redwood - identify the following types of timber products: - hardboard - plywood - medium density fibre board (mdf) - chipboard - identify different defects and the causes for them (shakes, knots)

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 8 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 3: WOODWORK (CONTINUED)		
3.6 Fastening and fitting	know the types and uses of fasteners and fittings	- identify and apply the following: - fasteners (nails, screws, bolts and nuts) - fittings (hinges, locks and catches, barrel bolt) - adhesives (Polyvinyl acetate [PVA])
3.7 Basic joints and constructions	know different types of joints and their basic construction	- name and draw the following types of woodwork joints: - half lap joints - T-joint - cross halving joints - corner joint - mitred joints - butt joints - mortise and tenon joints - dovetail joints - housing joints
3.8 Finishing and finishes	- recognise different finishes, its purpose and sundries - understand different finishing procedures	- explain the purpose of the following finishes and sundries: - sanding/abrasive paper; sanding sealer - painting/oiling, waxing, varnishing - stains - apply appropriate finishing procedures

9.2. Grade 9 learning content

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 1: BRICKLAYING AND PLASTERING		
1.1 Safety precautions and first aid measures	understand the importance of safety at the work site	- explain the importance of safety at the work site - apply first aid measures when handling injury - apply safety measures at a building site - identify suitable protective clothing and equipment when doing practical work
1.2 Tools and machinery	know the proper use and maintenance of tools and equipment	- explain the proper handling of tools - use different tools correctly - Use tools and equipment with care
1.3 Professions in the building industry	- recognise the professions within the building industry - understand the relationship between entrepreneurship and profession in the building industry	- identify and name different professions within the building industry - list the specific responsibilities of different professionals within the building industry - distinguish between the roles of different professionals within the building industry - select a profession and draw up a relevant business plan to start their own business
1.4 Building materials	- know basic quality control tests on building materials - understand how to calculate the quantities of materials needed and the cost of simple walls and structures	- test building materials for cleanliness, workability and absorbency - calculate quantities of materials and total cost for specific projects

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 1: BRICKLAYING AND PLASTERING (CONTINUED)		
1.5 Bricklaying skills	acquire skills in handling and laying of bricks	- lay bricks correctly to a building line - cut bricks to specific sizes - raise a corner using a gauge rod
1.6 Basic plastering	- know how to apply mortar in joints during the bricklaying process - know plastering materials	- spread mortar forming a uniform bed joint - select suitable plastering materials - sieve materials such as pit sand and river sand - gauge plastering materials using standard mixes
1.7 Setting out of building sites	understand setting out methods	- explain the procedure of setting out a building using the 3,4,5 and squaring methods - set out simple building projects
1.8 Setting out and excavation of foundations.	understand how to determine the position and size of foundation trenches	- explain the required depth and width of foundation trenches - set out simple foundations - check for squareness on the newly set out foundation - excavate simple building foundations - place and consolidate hardcore - mix and compact concrete slabs
1.9 Construction of ground floors and damp-proofing	- understand the construction of simple ground floors - know about the use of damp-proof materials	list the different damp-proof materials (dpm) used for solid ground floors
1.10 Types of roof structures	understand simple roof structures	- identify and name the types of roof structures used in the building industry - state advantages and disadvantages of different roof structures

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 2: METALWORK AND WELDING		
2.1 Health and safety	- understand NOSA (National Occupational Safety Occupation) safety measures - know basic first aid procedures	- identify and apply safety measures regarding NOSA with reference to: - personal safety or personal protective equipment (PPE) - sharp corners or edges - protection of eyes and body against radiation when welding - inadequate guards over machinery - misuse of compressed air and electricity - sharp tools - gas cylinders and leakages - rule regarding electricity - earthing of electrical equipment - working in confined spaces (for example arc and gas welding) - demonstrate basic first aid procedures in case of: - electrical shock - burns - demonstrate the ABC (Airway, Breathing, Circulation) of first aid application, namely
2.2 Measuring and marking out tools	- know different measuring and marking out tools - understand accurate measuring and marking by means of using different tools	- describe and draw the basic measuring tools: - measuring tape - steel rule - folding rule - engineer's square - describe and draw basic marking out tools: - scriber - punches - dividers - calipers - apply the listed measuring and marking out tools correctly

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 2: METALWORK AND WELDING (CONTINUED)		
2.3 Hand tools	• know different basic hand tools and their uses • understand how to store and maintain the hand tools concerned	• describe, draw and identify parts of various hand tools and name their uses: - driving tools (hammers, screwdrivers, hand drills) - cutting tools (hack saw, tin snips, side cutters, shears, drill bits, chisels) - holding devices (bench vice, clamps) - shaping tools (files, hammer, mallets: rubber, copper, folding bars) • describe the storage and maintenance of the listed tools • how to store and maintain hand tools correctly • identify different power tools and its uses • use the following power tools safely: - angle grinder - electric hand drill - bench grinder - jig saw - soldering iron
2.4 Power tools	• know different power tools and its uses	
2.5 Metals	• know the three classes and types of metals	• explain the tests to identify the different types of metals • name and list properties and uses of: - ferrous metals (containing iron) - mild steel - galvanised sheet - tool steel - non-ferrous metals: - lead - zinc - copper - tin • list properties and uses of alloys (mixture of non-ferrous metals)

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 2: METALWORK AND WELDING (CONTINUED)		
2.5 Metals (continued)	understand the heat treatment processes	- explain the following heat treatment processes: - annealing - hardening - tempering
2.6 Joining methods	understand basic joining methods	- identify and simulate (demonstrate) the correct procedure of temporary joining methods: - screws - bolts - nuts - rivets - identify and simulate (demonstrate) the correct procedure of permanent joining methods: - welding (arc welding, soldering, brazing, oxy-acetylene welding) - riveting (hand riveting, pop riveting)
2.7 Oxy-acetylene	- understand the safety measures regarding the use of oxy-acetylene equipment - be aware of precautionary measures in storing, handling assembling and maintenance of equipment - know different types flame	- list the precautionary measures and safety rules to be taken in joining metals: storage, handling, maintenance - identify the difference in screw threads and colour coding (cylinders) - discuss the process of testing gas leaks - differentiate between back flashing and back firing and their causes - discuss the dangers of welding on containers with flammable gases or liquids - apply precautionary measures in storing, handling assembling and maintenance of equipment - identify, name and draw the different flames and describe the uses of each

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 2: METALWORK AND WELDING (CONTINUED)		
2.8 Arc welding	• know precautionary measures in handling and assembling of equipment • understand the correct usage of welding equipment • know basic welding joints • know the elements in a protective arc weld • understand welding defects	• list the precautionary measures and safety rules to be taken in joining the metals with the arc welding equipment: - personal - machines and equipment - firefighting equipment • list the components of arc welding equipment: - electrodes - chipping hammer - helmet - safety clothing • draw basic welded joints: - square butt joint - T-joint - lap joint • use sketches to explain the following elements in a protective arc weld: - weld pool - electrode - base metal - arc length - slag coating - gas shield • distinguish between the following welding defects: - spatter - undercutting - distortion

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 2: METALWORK AND WELDING (CONTINUED)		
2.9 Sheet metalwork	• know sheet metalwork tools and equipment • understand different edges and joints	• identify, name and state the uses the following tools: - tin snips - folding bars - bench shears - mallets • correctly use the following tools: - tin snips - folding bars - bench shears - mallets • apply the following edges and joints: - safe edge - wire edge - lap joint
2.10 Finishing of metals	• know the correct surface finishing applications	• identify and describe finishes (painting, polishing) • apply appropriate finishing procedures

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 3: WOODWORK		
3.1 Health and safety	- understand NOSA safety measures - know basic first aid procedures	- identify and apply safety measures regarding NOSA with reference to: - personal safety or Personal Protective Equipment (PPE) - workshop and environmental safety - hand tools and machinery - portable electrical equipment - obstruction - sharp corners or edges - protection of eyes and body - inadequate guards over machinery - misuse of compressed air and electricity - sharp tools - rule regarding electricity - earthing of electrical equipment - apply basic first aid procedures (by using a first aid kit) with regards to: - treatment of bleeding wounds with HIV and AIDS in mind - electrical shock - burns - describe the ABC (airway, breathing, circulation) of first aid

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 3: WOODWORK (CONTINUED)		
3.2 Hand tools	- understand the correct and safe use, care, maintenance and storage of measuring tools and marking out tools - understand the correct and safe use, care, maintenance and storage of hand tools	- describe how to care for, maintain and store measuring tools - apply the following measuring tools correctly: - steel rule - folding rule - tape measure - describe how to care for, maintain and store marking out tools - apply the following marking out tools correctly: - striking knife - pencil - marking gauge - mortise gauge - cutting gauge - spirit level - try square - sliding bevel - winged compasses/ dividers - explain the uses of holding, cutting, boring and shaping tools listed below: - holding (bench vice, hand vice, clamps, bench hook) - cutting tools (saws) - shaping tools (chisels, files and rasps, planes) - boring tools (drills and drill bits) - apply, care for and maintain the hand tools mentioned above

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 3: WOODWORK (CONTINUED)		
3.3 Machines	- understand the safe application of and care for portable power tools - understand the safe application of and care for stationary machines	- describe the care and safe use of: - jig saw - electric hand drill - orbital/belt sander - describe the care and safe use of: - circular saw - band saw - pillar drill - planing machine - differentiate between the following timber conversion methods: - plain sawing - quarter or radial sawing - explain the two methods of seasoning: - natural method - artificial (e.g. kiln method) - describe the advantages and disadvantages of the two forms of seasoning: - compare the origin, properties and uses of listed timber: - hardwoods: oak, Meranti, Mahogany, Imbua - soft wood: S.A pine, Oregon pine, Genus pinus , Redwood - use the following types of timber products: - press board - veneers - laminated board - block board
3.4 Timber	know different processes of timber	

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 3: WOODWORK (CONTINUED)		
3.4 Timber(continued)	understand defects in timber	- explain: - natural defects (knots, shakes) - artificial defects (twisting) - distinguish between different defects and their causes: - natural defects (insect attacks, fungal attacks) - artificial defects (poor felling and seasoning)
3.5 Fastenings and fittings	know about fasteners and fittings	- use correctly: - fasteners (nails, screws, bolts and nuts) - fittings (hinges, locks and catches, barrel bolt) - adhesives (PVA, Pattex) - explain the advantages of fasteners - list the information necessary when ordering screws to the work at hand - select appropriate timber for different joints - apply correctly for basic joints: - marking out procedures - planing procedure - cutting - chiseling procedure - assembly - apply the knowledge and skills by using joints as a method of construction to demonstrate the correct handling of tools
3.6. Basic joints and constructions	- know how to put in an order of fasteners - understand basic joints and constructions	

TOPIC	GENERAL OBJECTIVES <i>Learners will:</i>	GRADE 9 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
MODULE 3: WOODWORK (CONTINUED)		
3.6. Basic joints and constructions (continued)	understand basic joints and constructions	- apply the following basic skills: - measuring - planning - sawing - chiseling - drilling - make the prescribed joints: - dovetail halving - drawer dovetail - haunch mortise and tenon (M&T) with groove - long and short shoulder mortise and tenon (M&T) ratchet joint
3.7 Finishing and finishes	be familiar with finishing and finishes	- explain and apply the procedures of the following finishes and sundries: - sanding/abrasive paper; sanding sealer - painting/oiling, waxing, varnishing, lacquer vanishing - stains - apply appropriate finishing procedures and edging

10. ASSESSMENT

A learner-centred curriculum and learner-centred teaching encompass a broad range of knowledge and skills which are relevant to the knowledge-based society. The specific objectives in the syllabus state what understanding and skills a learner must demonstrate as a result of this teaching-learning process, and which objectives will be assessed. However, it is intended that the curriculum should focus on learning, not on assessment and examination. Assessment and examination are only to support learning.

10.1 Types and methods of assessment

Continuous assessment

In order to capture the full range and levels of competence, a variety of formal and informal continuous assessment situations are needed to give a complete picture of the learner's progress and achievements in all subjects. Continuous assessment must be clear, simple and manageable, and explicitly anchored in learner-centered principles and practice. Teachers must provide a reliable and valid assessment of the learner's performance in the specific objectives. The information gathered about the learners' progress and achievements should be used to give feedback to the learners about their strong and weak points, i.e. where they are doing well, and why, and where, how and why they need to improve. The parents should be informed regularly about the progress of their children in all subjects, be encouraged to acknowledge achievements, and given suggestions as to how they can support the child's learning activities. The learner's progress and achievements in this subject must be reported to parents in the school report.

Informal and formal methods

The teacher must assess how well each learner is mastering the specific objectives described in the syllabus and from this gain a picture of the all-round progress of the learner. To a large extent, this can be done in an informal way and in their participation in general, through structured observation of each learner's progress in learning and practice situations while they are investigating things, interpreting phenomena and data, applying knowledge, communicating and making value judgements.

When it is necessary to structure assessment more formally, the teacher should as far as possible use situations similar to ordinary learning and practice situations to assess the competency of the learner. Formal written and oral tests can be used to assess only a limited range of specific objectives and therefore should not take up a great deal of time. Short tests should be limited to part of a lesson and only in exceptional cases use up a whole lesson.

Formative and summative assessment

The two modes of assessment used are formative continuous assessment and summative assessment. Formative continuous assessment is any assessment made during the school year in order to improve learning and to help shape and direct the teaching-learning process. Assessment has a formative role for learners if and when:

- it is used to motivate them to extend their knowledge and skills, establish sound values, and to promote healthy habits of study
- assessment tasks help learners to solve problems intelligently by using what they have learnt
- the teacher uses the information to improve teaching methods and learning materials

Summative assessment is an assessment made at the end of the school year based on the accumulated total of the progress and achievements of the learner throughout the year in a given subject, together with any end-of-year tests or examinations. The result of summative assessment is a single end-of-year promotion grade.

Evaluation

Information from informal and formal continuous assessment is to be used by the teacher to ascertain where it is necessary to adapt methods and material to the individual progress and needs of each learner. At the end of each main unit of teaching and at the end of each term, the teacher, together with the learners, should evaluate the learning-teaching process in terms of tasks completed, participation, what the learners have learnt, and what can be done to improve the working atmosphere in and achievements of the class.

Criterion-referenced grades

When grades are awarded in continuous assessment, it is essential that they reflect the learner's actual level of achievement in the specific objectives, and are not related to how well other learners are achieving these objectives or to the idea that a fixed percentage of the learners must always be awarded a Grade A, B, C, and so on (norm-referencing). In criterion-referenced assessment, each letter grade must have a descriptor for what the learner must demonstrate in order to be awarded the grade. Grade descriptors must be developed for each subject for each year. It is important that teachers in each department/section work together to have a shared understanding of what the grade descriptors mean, and how to apply them in continuous assessment, so that grades are awarded correctly and consistently across subjects. Only then will the assessment results be reliable.

10.2 Grade descriptors

The learner's summative achievement in the specific objectives will be shown in letter grades A to E, where A is the highest and E the lowest grade for learners achieving minimum competency level. In cases where a learner has not reached the minimum level of competency a U will be awarded. When letter grades are awarded, it is essential that they reflect the learner's actual level of achievement in relation to the specific objectives. The relation between the letter grades and specific objectives is shown in the table below.

Grade	% Range	Grade descriptions
A	80%+	Achieved objectives exceptionally well. The learner is outstanding in all areas of competency.
B	70-79%	Achieved objectives very well. The learner's achievement lies substantially above average requirements and the learner is highly proficient in most areas of competency.
C	60-69%	Achieved objectives well. The learner has mastered the specific objectives and can apply them in unknown situations and contexts.
D	50-59%	Achieved objectives satisfactorily. The learner's achievement corresponds to average requirements. The learner may be in need of learning support in some areas.
E	40-49%	Achieved the minimum number of objectives to be considered competent. The learner may not have achieved all the specific objectives, but the learner's achievement is sufficient to exceed the minimum competency level. The learner is in need of learning support in most areas.
U	0-39%	Ungraded. The learner has not been able to reach a minimum level of competency in the objectives, even with extensive help from the teacher. The learner is seriously in need of learning support.

10.3 Assessment objectives

The assessment objectives for Technical Studies A are:

Assessment objective A: Knowledge with understanding

Learners should be able to:

- demonstrate the ability to state facts, recall and name items, recall and describe processes
- demonstrate the ability to apply and relate knowledge to basic design and manufacturing
- make reasoned arguments and anticipate consequences about outcomes of the design and realisation process;
- demonstrate a crucial awareness of the interrelationship between design and the needs of society.

Assessment objective B: Design problem solving

Learners should be able to:

- identify clearly, from a situation, a specific need for which a solution is required and compose a design brief;
- analyse a problem by considering any relevant functional, aesthetic, human, economic and environmental design issues and draw up a design specification;
- generate a range of outline solutions to a design problem, giving consideration to the constraints of time, skills and resources;
- test and refine the functional and aesthetic effectiveness of design solutions.

Assessment objective C: Design communication

Learners should be able to:

- recognise information in one form and where necessary change it into a more applicable

- form;
- propose and communicate ideas graphically;
- develop ideas and represent details of form, shape, constructive movement, size and structure through graphical presentation.

Assessment objective D: Realisation

Learners should be able to:

- plan and organise the work procedure involved in the realisation of a solution;
- select, from a range of resources, those appropriate for the realisation of the product;
- demonstrate appropriate manipulative skills by showing an understanding of materials and their characteristics in relation to their use;
- demonstrate appropriate manipulative skills by showing the ability to correctly and efficiently use instruments and tools used in the realisation of a product.

10.4 Continuous assessment: detailed guidelines

A specified number of continuous assessment activities per term should be selected, graded and recorded. Not more than three assessments per term are to be topic tests. These continuous assessments must be carefully planned and marked according to a marking scheme, marking criteria or memorandum. The criteria used to assess activities other than tests should be given to the learner before the assessment activity. Evidence of the work produced by good, average and low-achieving learners, as well as the written assignment and marking scheme, has to be kept at school until the end of the next year. Teachers can choose to grade and/or record more than the required continuous assessments if it is necessary for formative purposes. An end- of-year summative grade will be based only on the assessment tasks described in the syllabus. Not more than 40% of the continuous assessment may be based on tests, which include topic tests and end-of-term tests.

Types of continuous assessment tasks

In Technical Studies A in the Junior Secondary phase the continuous assessment tasks are as follows:

Topic tasks: These are activities that most teachers already use in their day-to-day teaching. These are recorded, assessed activities that could introduce a topic, be used during the teaching of a topic and /or revision of a topic. They may well include assessment involving specific objectives to do with locating information, conducting surveys, analysing information or presenting information. This will involve assessments of specific objectives in all assessment objectives; however, not all assessment objectives need to be present in every topic task.

Practicals: These are assessments of practical skills done during a practical activity where learners are required to plan and to carry out investigations and to collect, report and analyse information. After each topic, a practical exercise should be conducted to evaluate learners' skills.

Topic tests: Completed topics should be concluded with a test indicating the achievements of the learners in these topics.

End-of-term test: This will be a more comprehensive topic test of the term's work. Teaching should continue, but no homework should be assigned during the time of writing the end-of-term tests.

Summary of continuous assessment tasks

Continuous assessment Grade 8						
	Term 1		Term 2		Term 3	
Components	Number & marks	Total	Number & marks	Total	Number & marks	Total
Observations/reports/worksheets/topic tasks	3×20	60	3×20	60	3×20	60
Practicals	3×30	90	3×30	90	3×30	90
Topic tests	3×20	60	3×20	60	3×20	60
End-of-term tests	100÷2	50	100÷2	50		
Term marks		260		260		210
Weighted term marks (report marks)		(260÷2.6) 100		(260÷2.6) 100		

Continuous assessment Grade 9						
	Term 1		Term 2		Term 3	
Components	Number & marks	Total	Number & marks	Total	Number & marks	Total
Observations/reports/worksheets/topic tasks	3×20	60	3×20	60	1×20	20
Practicals	3×30	90	3×30	90	1×30	30
Topic tests	3×20	60	3×20	60	1×20	20
End-of-term tests	100÷2	50	100÷2	50		
Term marks		260		260		70
Weighted term marks (report marks)		(260÷2.6) 100		(260÷2.6) 100		

The continuous assessment (CA) marks for one term is converted to a mark out of 100 (weighted term mark). Only this mark should be used for the report at the end of term 1 and term 2. Learners should not write an examination at the end of the first 2 terms, but only an end-of-term test which is part of the CA and part of the weighted term mark.

10.5 End-of-year examinations: detailed guidelines

At the end of Grade 8 and 9 there will be an end-of-year examination. The Grade 9 papers will be set by DNEA/Regions and marked regionally. The purpose of this examination is to focus on how well learners can demonstrate their thinking, communication, and problem-solving skills related to the areas of the syllabus which are most essential for continuing in the next grade. Preparing for and conducting these examinations should not take up more than two weeks altogether right at the end of the year.

The description of the various papers for the written examination is as follows:

Written examination			
Grade	Description of papers	Duration	Marks
8	This paper will consist of three sections: Section A: Section A will consist of ten short answer compulsory questions intended to assess knowledge of all three modules (10 marks). Section B: Section B will consist of six questions of which a learner will be required to answer one question from each of the three modules (20 marks x 3 = 60 marks). Section C: Section C will consist of three structured questions, one from each of the three modules, of which a learner will be required to answer one question (30 marks).	2 h 30 min	100
9	This paper will consist of three sections: Section A: Section A will consist of ten short answer compulsory questions intended to assess knowledge of all three modules (10 marks). Section B: Section B will consist of six questions of which a learner will be required to answer one question from each of the three modules (20 marks x 3 = 60 marks). Section C: Section C will consist of three structured questions, one from each of the three modules of which a learner will be required to answer one question (30 marks).	2 h 30 min	100

Promotion mark

For Technical Studies A in Grades 8 – 9 continuous assessment contributes 50% to the promotion mark and the end-of-year examination contributes 50%. The weighting of each assessment component is as follows:

Component	Description	Marks	Weighting
Written examination	Section A: Section B: Section C:	10 60 30	50%
Continuous assessment	Observation/report/work sheets, practical, topic tests, end-of-term test	100	50%
Total marks		200	100%

The promotion marks are calculated as follows:

Promotion mark Grade 8				
	Term 1	Term 2	Term 3	Total
Term mark	210	210	210	630
CA mark	$(630 \div 6.3)$			100
End-of-year examination				100
Promotion mark	$(\text{CA mark} + \text{end-of-year examination}) \div 2$ $(200 \div 2)$			100

Promotion mark Grade 9				
	Term 1	Term 2	Term 3	Total
Term mark	210	210	70	490
CA mark	$(490 \div 4.9)$			100
End-of-year examination				100
Promotion mark	$(\text{CA mark} + \text{end-of-year examination}) \div 2$ $(200 \div 2)$			100

10.6 Specification grid

The Specification grid below indicates the weighting allocated to each objective for both continuous assessment and for the written examination.

Components	Weighting	Total (marks)
Assessment objectives for written examination		
Objective A Knowledge with understanding	40%	40
Objective B Design problem solving	16%	16
Objective C Design communication	22%	22
Objective D Realisation	22%	22
Assessment objectives for continuous assessment		
Objective A Knowledge with understanding	16%	16
Objective B Design problem solving	42%	42
Objective C Design communication	16%	16
Objective D Realisation	26%	26

ANNEXE 1: GLOSSARY OF TERMS

aesthetics	how something looks, especially when considering how pleasing it is
analyse	examine information in detail to discover patterns or relationships
axonometric	used to describe a method of drawing a 3-dimensional object so that the vertical and horizontal axes are drawn to scale but the curves and diagonals appear distorted
CAD	Computer Aided Drafting, used to make sketches with the help of a computer e.g. building plans
calculate	a numerical answer is required - working must be shown
CAM	Computer Aided Manufacturing, used where instructions for manufacturing is given via a computer
communication (graphical)	the exchange of information between individuals, by means of speaking or using a system of signs or behaviour (drawing)
ergonomics	the study of how a workplace and the equipment used there can best be designed for comfort, safety, efficiency and productivity
evaluate	use the information provided to make a judgement about something
give/state/write	write down your answer
M&T	mortise and tenon which is a type of joint
media	the various means of mass communication thought of as a whole, including radio, television, magazines and newspapers, together with the people involved in their production
NOSA	National Occupational Safety Association which set safety standards for industry
oblique	sloping or joining something at an angle that is not a rightangle
PVA	polyvinyl acetate is a component of a widely used glue type, commonly referred to as wood glue, white glue, carpenter's glue, school glue or PVA glue
pictorial	containing illustrations or photographs as opposed to written text (3-D sketches)
principle	the basic way something works
scale	a ratio representing the size of an illustration or reproduction, especially a map or a model, in relation to the object it represents

sketch	in case of diagrams, make a simple, freehand drawing and in graph work, the shape and/or position of the curve should be given
specification	a detailed description of a particular thing, especially one detailed enough to provide somebody with the information needed to make that thing
technology	scientific knowledge used in practical ways in industry
time management	to plan and execute a task within a given period
triangulation	a navigation technique that uses the trigonometric properties of triangles to determine a location or course by means of compass bearings from two points a known distant apart.
wasting	misuse / use to no purpose / extravagant or ineffective use of an asset or materials

ANNEXE 2: LIST OF TOOLS, EQUIPMENT AND MATERIALS

Bricklaying and Plastering

Setting out tools

- steel rule
- steel square
- tape measure
- building line

Bricklaying tools

- trowel
- spirit level
- builders bucket
- spade/ shovel
- jointer
- gauge rod

Cutting tools

- club hammer
- bolster
- comb hammer
- cold chisel

Digging tools

- mattock
- pick
- shovel
- spade

Plastering tools

- plastering trowel
- wooden float
- hawk
- corner tools

Metalwork and Welding

Marking out tools

- steel rule
- folding rule
- tape measure
- the try square

Basic hand tools

- files and rasps
- saws
- hammers
- boring tools
- screwdrivers
- pincers

Machines

- electrical hand drill
- drill stand machine
- welding machine

Materials

- steel
- copper
- angle iron

Woodwork

Marking out tools

- steel rule
- folding rule
- tape measure
- winged compasses and compasses
- striking knife and pencil
- try square
- sliding bevel

Basic hand tools

- files and rasps
- saws
- planes
- chisels and gouges
- hammers and mallets
- boring tools
- screwdrivers
- pincers

Machines

- electrical hand drill
- jig saw
- orbital sander
- belt sander
- circular saw
- sanding machine
- band saw
- pillar/pedestal drill

Materials

- hardboard
- plywood
- SA pine
- chip board
- mahogany
- oak
- fibre board
- screws
- nails
- bolts and nuts
- hinges

ANNEXE 3: ASSESSMENT RECORD SHEET FOR GRADE 8

Assessment record sheet: Technical Studies A

Grade 8:

Year:

School:

Teacher:

Name of Learner	Term	Observations/ Reports/ Worksheets			Practicals			Topic tests			CA Marks	End-of-term test	Term mark (CA + end of term test)	Weighted term mark (260÷2.6)	Total of CA marks	CA mark (630÷6.3)	End-of-year examination	(CA + Examination)	Promotion mark (200÷2)
		20	20	20	30	30	30	20	20	20	210	50	260	100	630	100	100	200	100
	1																		
	2																		
	3																		
	1																		
	2																		
	3																		
	1																		
	2																		
	3																		
	1																		
	2																		
	3																		
	1																		
	2																		
	3																		
	1																		
	2																		
	3																		

Term 1

Term 2

Term 3

Moderator: Rank:

Moderator: Rank:

Moderator: Rank:

Signature: Date:

Signature: Date:

Signature: Date:

Technical Studies A syllabus, Grade 8 & 9, NIED 2024

ANNEXE 4: ASSESSMENT RECORD SHEET FOR GRADE 9
Assessment record sheet: Technical Studies A
Grade 9:
Year:
School:
Teacher:

Name of Learner	Term	Observations / Reports/ Worksheets			Practicals			Topic tests			CA marks		End-of-term test	Term mark (CA + end of term test)	Weighted term mark (260÷2.6)	Total CA marks	CA mark (490÷4.9)	End-of-year examination	(CA + Examination)	Promotion mark (200÷2)
		20	20	20	30	30	30	20	20	20	210	70	50	260	100	490	100	100	200	100
	1																			
	2																			
	3																			
	1																			
	2																			
	3																			
	1																			
	2																			
	3																			
	1																			
	2																			
	3																			
	1																			
	2																			
	3																			

Term 1
Term 2
Term 3

Moderator: Rank:

Moderator: Rank:

Moderator: Rank:

Signature: Date:

Signature: Date:

Signature: Date:



The National Institute for Educational Development

P/Bag 2034

Okahandja

NAMIBIA

Telephone: +264 62 509000

Facsimile: +264 62 509073

E-mail: info@nied.edu.na

Website: <http://www.nied.edu.na>