



Republic of Malawi

Syllabus for

Initial Primary Teacher Education

Science and technology

Ministry of Education, Science and Technology

Syllabus for

Initial Primary Teacher Education

Science and technology

Ministry of Education, Science and Technology

Prepared and published by

Malawi Institute of Education PO Box 50
Domasi Malawi

email: miedirector@sdp.org.mw

website: www.mie.edu.mw

© Malawi Institute of Education 2017

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical, photocopying, recording or otherwise, without the permission of the copyright owner.

First edition 2017

Foreword

Education is the lifeblood of the nation. It is a prerequisite for individual, community and national development. Education prepares learners to play their roles effectively in efforts to promote and sustain a country's socio-economic development. Parents or guardians desire that their children develop into adults with sound minds and healthy bodies, through the acquisition of appropriate knowledge, skills and desirable attitudes to enable them to live productive and happy lives.

Education should, therefore, help learners to develop high standards of conduct, attitudes, judgment and a sense of responsibility. Student teachers have to be well prepared in order to be able to take this responsibility of teaching children effectively.

The provision of quality education is based on many factors and a good quality of teachers is one of them. Teachers play a central role because they are the key source of knowledge, responsible for facilitating the learning process and act as role models for the learners.

The function of initial teacher education in Malawi is to prepare student teachers in their aspiration of becoming teachers of high quality. This is achieved by helping the student teachers to acquire the right knowledge, skills and competences to enable them to effectively teach children. In view of this, the Initial Teacher Education curriculum has been reviewed to ensure that student teachers who graduate from this programme are well trained and prepared for their profession.

The process and implementation of this review has been guided by the Teacher Education Philosophy which states as follows:

'To produce a reflective, autonomous, lifelong learning teacher, able to display moral values and embrace learners' diversity.'

It is therefore hoped that Teacher Training Colleges will find this curriculum effective in helping the student teachers to build a solid foundation in their teaching profession.

Secretary for Education
Ministry of Education, Science and Technology

Writers

Austin Kalambo

Ruth Luhanga

Grace Mphandamkoko

Mike Mahamba

Malawi Institute of Education

Machinga Teachers Training college

Ministry of Education Science and Technology (DIAS)

Acknowledgements

The Ministry of Education, Science and Technology and the Malawi Institute of Education would like to thank all people who participated in various activities, stages and levels in the development of this syllabus.

Special thanks go to the Director of the Directorate of Inspectorate and Advisory Services (DIAS), Mr Raphael Agabu and his staff, the Executive Director of Malawi Institute of Education, Dr William Susuwele-Banda and his staff, Coordinator of the Initial Primary Teacher Education (IPTE) review process, Dr Ezekiel Kachisa and his team (Mr Edward G Mtonga and Ms Catrin Anderer) for coordinating the process of developing the syllabus.

The Ministry of Education, Science and Technology acknowledges technical and financial support which was generously provided by German Technical Cooperation (GIZ), United Nations Children's Fund (UNICEF), Food and Agriculture Organisation (FAO) and Open Society Foundation (OSF).

Production team

Editing	Anthony Malunga
Designer	Doreen Kachala-Bato
Editor-in-chief	Max J Iphani

Introduction

The purpose of primary teacher education is to produce and continually develop competent and responsive teachers who effectively deliver quality education to all learners under prevailing conditions and demands in primary schools and promote their desire for life-long learning. IPTE endeavors to educate teachers in sufficient numbers, continually develop their professionalism so that they are able to effectively and efficiently deliver quality and relevant education to primary school learners.

National goals for primary teacher education

The national goals of primary teacher education in Malawi are to produce teachers who are:

- academically well-grounded and professionally competent
- flexible and capable of adapting to the changing needs and environment of the Malawian society
- capable of adhering to and maintaining the ethics of the teaching profession
imaginative in adapting, creating and utilising locally available resources suitable for the needs of their learners

Teacher education philosophy

The following has been the guiding principle during the design, development and implementation of the IPTE curriculum.

To produce a reflective, autonomous, lifelong learning teacher, able to display moral values and embrace learners' diversity has been designed.

IPTE programme structure

The duration of the teacher education is two years. The general outlook of the two years is as follows:

Year 1			Year 2		
Term 1	Term 2	Term 3	Term 1	Term 2	Term 3
In college, learning subject content with a special focus on methods for lower classes	In college, learning subject content with special focus on methods for upper classes	Out in teaching practice schools, practising teaching mainly in the lower classes	Out in teaching practise schools, practising teaching mainly in the upper classes	In college, with special emphasis on reflection, inclusion and further practice on teaching methods	In college, with special emphasis on subject content, policies and frameworks

Unique features

The features of the reviewed curriculum are as follows:

- The curriculum design is based on reflective and practice principles.
- Early grade teaching methodologies are distinct.
- The delivery of the subject content follows the modular approach.
- Student teachers will be allowed to practise teaching both in the lower classes (Standards 1 to 4) as well as in upper classes (Standards 5-8).
- Cross cutting issues such as Assessment for Learning, ICT, Inclusive Education and Critical Thinking are integrated.

IPTE subject matrix

The new curriculum has adopted the reflective practitioner model of teacher education which connects practice and theory and integrates content and pedagogy in teaching and learning. In this structure, student-teachers will be in college for two terms of year 1 and be in primary schools for teaching practice in the third term of first year and first term of the second year. Student teachers will be back to colleges in terms 2 and 3 of year 2 to continue learning subject content, reflecting on their experiences of teaching practice and then wind up their studies.

This curriculum is designed in a modular structure and contains eleven subjects. These are Chichewa, English, Mathematics, Education Foundation Studies, Agriculture, Social Studies, Life Skills, Science and Technology, Expressive Arts, Religious Studies and

Human Ecology. In this modular design, a set of topics forms a module in a subject. A module consists of 40 hours contact time.

IPTE outcomes based curriculum

This outcomes-based curriculum is focused on student teachers' achievements. These achievements are teaching competencies. The teaching competencies student teachers develop from the IPTE programme will be seen when student teachers are able to transfer the knowledge and skills directly in primary schools.

Subject and core elements

The IPTE curriculum comprises of eleven subjects namely Agriculture, Science and Technology, Mathematics, Expressive Arts, Chichewa, English, Education Foundation Studies, Social studies, Life skills, Religious studies and Human Ecology. Each subject has a rationale from which core elements are derived.

Teacher education core element outcomes

Teacher education core element outcomes are descriptions of the competencies to be acquired by the student teacher for successful teaching.

IPTE assessment procedures

In Outcomes-Based Education (OBE), assessment is a significant part of the teaching and learning process. The main purpose of assessment is to facilitate learning by constant monitoring of the progress of individual student teachers. The process is ongoing and it uses clearly defined criteria with a variety of tools, methods and techniques in different situations and contexts. This helps to gather valid and reliable information on the student teachers' achievement of outcomes.

Assessment in initial primary teacher education in Malawi comprises two major components: continuous and summative assessment. Both modes involve assessment tasks that measure the student teachers' achievement of knowledge, skills, values and attitudes. These tasks include oral presentations, practical and reflective tasks, reports, researches, tests and examinations.

In the reviewed curriculum, the weighting of continuous assessment in the final grade will be *60% continuous assessment* and *40% summative assessment*.

The continuous assessment will comprise:

- two grades based on each module
- end of module examinations excluding terms 2 and 3 of year 2
- teaching practice grades
- school experience journal grade

While the summative assessment will comprise:

- moderated grade from teaching practice in term 1 of year 2
- national examinations to be administered in term 3 of year 2 based on the modules of terms 2 and 3 of year 2.

Scope and sequence for terms 2 and 3

	Year 1	Year 2
Core Element	Term 2	Term 3
The teaching of basic scientific knowledge, skills and attitudes	Introduction to science and technology (2 hrs) <ul style="list-style-type: none"> • meaning of <ul style="list-style-type: none"> – science – technology importance of <ul style="list-style-type: none"> – science – technology • relationship between 	Teaching of the human digestive system (4 hrs) <ul style="list-style-type: none"> • the human digestive system <ul style="list-style-type: none"> - parts - functions • process of digestion Teaching of the human circulatory system (4 hrs)

	Year 1	Year 2
Core Element	Term 2	Term 3
	<ul style="list-style-type: none"> - science and technology • rationale for teaching science and technology • scientific skills and attitudes 	<ul style="list-style-type: none"> • The human circulatory system <ul style="list-style-type: none"> - parts - functions - component of blood - problems and care • blood transfusion <p>Teaching of the human respiratory system (4 hrs)</p> <ul style="list-style-type: none"> • the human respiratory system <ul style="list-style-type: none"> - parts - function - breathing mechanism - gaseous exchange in lungs - problems of the respiratory system <p>Teaching of the human reproductive systems (4 hrs)</p> <ul style="list-style-type: none"> • male reproductive system <ul style="list-style-type: none"> - parts - function - care • female reproductive system <ul style="list-style-type: none"> - parts - function

	Year 1	Year 2
Core Element	Term 2	Term 3
		<ul style="list-style-type: none"> - menstrual cycle - care • human development <ul style="list-style-type: none"> - stages of development from conception to birth • problems associated with reproduction

	Year 1	Year 2
Core Element	Term 2	Term 3
Scientific investigation for application	<p>Teaching of scientific and technological processes (5 hrs)</p> <ul style="list-style-type: none"> • safety in the laboratory • scientific and technological investigations <ul style="list-style-type: none"> – meaning – importance – stages – conducting investigations <p>Teaching and learning resources (2 hrs)</p> <ul style="list-style-type: none"> • resources in the environment • improvisation <ul style="list-style-type: none"> – meaning – Importance • care • storage • pressing plant materials • science corner • nature table 	<p>Teaching of common parasites in human beings (4 hrs)</p> <ul style="list-style-type: none"> • common parasites in human beings <ul style="list-style-type: none"> - tape worms, hook worms, round worms, bed bugs and migrant worms <ul style="list-style-type: none"> ○ life cycle ○ signs ○ symptoms ○ effects ○ ways of prevention <p>Teaching of common infectious diseases (4 hrs)</p> <ul style="list-style-type: none"> • common infectious diseases <ul style="list-style-type: none"> - polio, tuberculosis, trachoma, meningitis, bilharzia, pneumonia, malaria, diarrhoea, cholera, dysentery, typhoid <ul style="list-style-type: none"> ○ modes of transmission ○ signs and symptoms ○ prevention ○ treatment <p>Teaching of sexually transmitted infections (4 hrs)</p> <ul style="list-style-type: none"> • common sexually transmitted infections <ul style="list-style-type: none"> - syphilis, gonorrhoea, HIV and AIDS, candidiasis, genital warts, cervical cancer- HPV (human papiloma virus), vaginal discharged with odours <ul style="list-style-type: none"> ○ modes of transmission ○ signs and symptoms

	Year 1	Year 2
Core Element	Term 2	Term 3
		<ul style="list-style-type: none">○ prevention○ treatment

	Year 1	Year 2
Core Element	Term 2	Term 3
Basic scientific knowledge, skills and attitudes	Teaching of plants and their environments (6) <ul style="list-style-type: none"> • classification of plants • external and internal parts of the seed • conditions for seed germination • plant growth and development • photosynthesis • conditions for photosynthesis • transport in plants <ul style="list-style-type: none"> - internal structure of roots, stems and leaves - movement of water in stems - loss of water in leaves (transpiration) • modes of reproduction in plants • seed and fruit dispersal Teaching of animals and their environment (3 hrs)	<ul style="list-style-type: none"> • relationship between STI, HIV and AIDS

	Year 1	Year 2
Core Element	Term 2	Term 3
	<ul style="list-style-type: none"> • classifications of animals • survival mechanism of animals <ul style="list-style-type: none"> - protective mechanisms - life cycle of invertebrates - hibernation - feeding habits of plants and animals <p>Teaching of interdependence among living things (1 hr)</p> <ul style="list-style-type: none"> • food chains • food webs • ecological pyramids <ul style="list-style-type: none"> - food pyramids <p>Teaching of the human skeleton (2 hrs)</p> <ul style="list-style-type: none"> • parts • functions • types of joints • muscles and movement • problems of skeletal system 	

	Year 1	Year 2
Core Element	Term 2	Term 3
	<p>Teaching of coordination (4 hrs)</p> <ul style="list-style-type: none"> • sense organs <ul style="list-style-type: none"> - the eye - the ear - the skin - the tongue - the nose • the nervous system <p>Teaching of properties of matter (3 hrs)</p> <ul style="list-style-type: none"> • properties of <ul style="list-style-type: none"> - solids - liquids - gases • changes of states of matter • applications of properties of matter in everyday life <p>Teaching of Mixtures (3 hrs)</p> <ul style="list-style-type: none"> • mixtures <ul style="list-style-type: none"> - meaning - types • solutions <ul style="list-style-type: none"> - solute - solvent - factors affecting solubility 	

	Year 1	Year 2
Core Element	Term 2	Term 3
	<ul style="list-style-type: none"> • methods of separating components of mixtures <ul style="list-style-type: none"> - filtration - evaporation - distillation - magnetism • uses of mixtures • applications of mixture separation techniques <p>Teaching of force and pressure (2 hrs)</p> <ul style="list-style-type: none"> • force <ul style="list-style-type: none"> - meaning - effects - application • pressure <ul style="list-style-type: none"> - meaning - effects - application 	

	Year 1	Year 2
Core Element	Term 2	Term 3
	<p>Teaching of energy (7 hrs)</p> <ul style="list-style-type: none"> • energy <ul style="list-style-type: none"> - forms - sources - properties • light <ul style="list-style-type: none"> - properties - application of properties of light • heat transfer <ul style="list-style-type: none"> - conduction - convection - radiation - application of modes of heat transfer - expansion of solids, liquids and gases - contraction of solids, liquids and gases - application of expansion and contraction • sound <ul style="list-style-type: none"> - transfer in solids, liquids and gases - reflection 	<p>Teaching of energy (7 hrs)</p> <ul style="list-style-type: none"> • energy <ul style="list-style-type: none"> - forms - sources - properties • light <ul style="list-style-type: none"> - properties - application of properties of light • heat transfer <ul style="list-style-type: none"> - conduction - convection - radiation - application of modes of heat transfer - expansion of solids, liquids and gases - contraction of solids, liquids and gases - application of expansion and contraction • sound <ul style="list-style-type: none"> - transfer in solids, liquids and gases - reflection - application of transmission and reflection of sound • electricity <ul style="list-style-type: none"> - transmission - effects <ul style="list-style-type: none"> ○ heating

	Year 1	Year 2
Core Element	Term 2	Term 3
	<ul style="list-style-type: none"> - application of transmission and reflection of sound • electricity <ul style="list-style-type: none"> - transmission - effects <ul style="list-style-type: none"> ○ heating ○ lighting ○ magnetic ○ chemical <p>application of effects of electricity</p>	<ul style="list-style-type: none"> ○ lighting ○ magnetic ○ chemical <p>application of effects of electricity</p>

	Year 1	Year 2
Core Element	Term 2	Term 3
Knowledge for development		<p>Teaching of simple machines (6 hrs)</p> <ul style="list-style-type: none"> • design process <ul style="list-style-type: none"> - meaning - steps - designing solutions • simple machines <ul style="list-style-type: none"> - meaning - types; levers, pulleys, wheel and axle - classification of levers <ul style="list-style-type: none"> - mechanical advantage of machines <p>applications of simple machines</p>
Technology innovation		<p>Teaching of technology (6 hrs)</p> <ul style="list-style-type: none"> • indigenous and modern • impact of technology on peoples' lives • technology innovation (examples of local innovations) <ul style="list-style-type: none"> - drawing - metal technology - wood technology <ul style="list-style-type: none"> - building technology. • sustainability and climate change. • gender and technology

Term 2

Core element Teaching of basic scientific knowledge, skills and attitudes

Core element outcome The student teachers will be able to demonstrate appropriate teaching, learning, assessment and class management strategies to enable learners apply scientific knowledge, skills and values to solve everyday problems and provide a base for further learning.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> demonstrate an understanding of the rationale for teaching and learning of science and technology in the primary school 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> explain the importance of science and technology 	<p>Introduction to the teaching of science and technology in the primary school</p>	<ul style="list-style-type: none"> reflecting on use of science and technology in own lives analysing the importance of science and technology using examples from everyday life. discussing the relationship between science and technology 	<ul style="list-style-type: none"> quick write discussion group work demonstration walk around talk around peer assessment T- chart games field visits written exercises experimentation 	<ul style="list-style-type: none"> IPTE module student experiences pictures NPC syllabuses, learners' books and teachers' guides the science teachers' handbook resource persons braille materials raised diagrams

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>2 analyse the rationale for the teaching and learning of science and technology in the primary school</p> <p>3 identify skills and attitudes that can be developed from science and technology</p>		<ul style="list-style-type: none"> • discussing the rationale for teaching and learning science and technology in the primary school • recognising scientific and technological skills and attitudes skills <ul style="list-style-type: none"> - observing - measuring - experimentation - predicting - hypothesizing attitudes <ul style="list-style-type: none"> - curiosity - honesty - humility - open mindedness - objectivity - creativity - innovation 	<ul style="list-style-type: none"> • K-W- L • discussion web • one stay three astray • discussion • peer assessment • summarising • jig-saw • visual presentation • discussion • group research • reading • summarising • interpreting • know, want to know, learnt (KWL) • reading articles • comprehension questions • discussion 	<ul style="list-style-type: none"> • NPC curriculum document for Science and Technology • Science and technology syllabuses for standards 5 to 8, Agriculture, Science and technology syllabus for standard 4 • teaching primary science in Macmillan series • Active Learning in Science (2009) InWent series • On-line articles on teaching primary science • Internet • articles on active learning

Core element**Scientific investigation for application****Core element outcome**

The student teachers will be able to demonstrate appropriate teaching, learning, assessment and class management strategies to enable the primary school learner investigate relationships, identify and solve practical problems in science and technology.

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> • demonstrate an understanding of the different ways in which scientific investigations and technological processes can be taught 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> 1 create resources for developing learners' conceptualization of scientific and technological processes. 	<p>Teaching of scientific and technological processes.</p>	<ul style="list-style-type: none"> • analysing safety measures required in scientific and technological activities • researching the key steps that must be followed in scientific investigations <ul style="list-style-type: none"> - problem identification - hypothesizing - planning the investigations - setting up and carrying out investigations - data collection - data analysis 	<ul style="list-style-type: none"> • group work • oral and written questions • K-W-L • Gallery walk • projects • excursion • demonstration • practice • research • discussion 	<ul style="list-style-type: none"> • students' experiences • IPTE handbooks • NPC teachers' guides, learners' books and syllabuses • Internet (to research scientific processes) • Computer programs • braille materials • raised diagrams • candles • sugar • salt • pendulum • containers

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
			<ul style="list-style-type: none"> - interpretation of data - making conclusions • adapting the steps that must be followed in scientific investigations to the level of primary school learners • researching the key steps that must be followed in solving technological problems. <ul style="list-style-type: none"> - problem identification - design brief - investigation - alternative solutions - development of best solution - realization testing - evaluation. • adapting the key steps that must be followed in solving technological problems to the level of primary school learners 		<ul style="list-style-type: none"> • burners • beakers • cylinders • spatula

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	2 develop strategies for teaching scientific investigatio		<ul style="list-style-type: none"> • analysing the importance of scientific and technological processes in social economic development. • producing materials for teaching scientific investigations. • discussing different teaching strategies that are gender responsive. • observing learners undertaking experiments to ensure that all learners participate equally. • use assessment for learning strategies to ensure equity • discussing different teaching strategies that 		

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>ns and technological processes.</p> <p>3 assess learners' skills in scientific investigations and technological processes.</p>		<p>are gender responsive</p> <ul style="list-style-type: none"> • preparing schemes of work and lesson plan for teaching scientific investigation • microteaching the lessons • evaluating the lessons <ul style="list-style-type: none"> • observing learners understanding of experiments to ensure that all learners participate equally • use assess offer learning strategies to ensure equity 		

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> develop an understanding of teaching and learning resources and how they can be applied in lessons 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> prepare teaching and learning resources for science and technology. 	<p>Teaching and learning resources for science and technology.</p>	<ul style="list-style-type: none"> identifying appropriate teaching and learning resources for science and technology making teaching and learning resources from locally available materials without destroying the environment improving the teaching and learning resources discussing how to care and store teaching and learning resources discussing the importance of the science and technology corner and nature table identifying materials that can be placed in a science and technology corner and nature table constructing a nature table 	<ul style="list-style-type: none"> question and answer discussion field trip demonstration practice gallery tour RAFT group work oral and written exercises jig saw gallery walk discussion 	<ul style="list-style-type: none"> students' experiences IPTE handbooks local environment nature table science corner strings nails cardboard chart paper braille materials raised diagrams NPC syllabuses, learners book and teachers guides specimens of living things and non-living things IPTE lecturers book the science teachers' handbook

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	2 Utilise a science corner and nature table to teach aspects of science and technology		<ul style="list-style-type: none"> • displaying teaching and learning resources in a science and technology corner and nature table • discussing teaching strategies that involve the use of the science corner and nature table • listing ideas for managing the science corner and nature table 		

Core element

Teaching of basic scientific knowledge, skills and attitudes

Core element outcome The student teachers will be able to demonstrate an understanding of how they will utilize appropriate teaching, learning, assessment and class management strategies to enable the primary school learner to understand and apply scientific knowledge, skills and values to solve everyday problems and provide a base for further learning

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: <ul style="list-style-type: none"> • apply appropriate teaching, and learning assessment methodologies when teaching about plants 	Student teachers must be able to: <ol style="list-style-type: none"> 1 explain the concept of teaching plants and their environment 2 use appropriate teaching and learning 	Teaching of plants and their environment	<ul style="list-style-type: none"> • analysing teacher’s book, syllabus and teacher’s guide on plants and their environment • reflecting on why it is important to teach plants and their environment to primary school learners. • researching teaching methods using a range of resources for the teaching of plants and 	<ul style="list-style-type: none"> • discussion • group work • dual entry • authors chair • mind mapping • field trip • question and answer • group discussion • give one take one 	<ul style="list-style-type: none"> • charts • NPC syllabuses, teachers’ guides and learners’ books • school calendar • sample lesson plans • schemes of work • students’ experiences • simulated records of work • checklists • styluses • hand frames

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	methodologies to teach plants and their environment.		their environment <ul style="list-style-type: none"> • describing ways to find out learners' prior knowledge of plants • discussing different ways of teaching characteristics of plants. • planning an excursion to observe plants in their environment 		<ul style="list-style-type: none"> • feathers • braille materials • raised diagrams • annual calendar • the science teachers' handbook • learners' work

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
			<ul style="list-style-type: none"> • analysing learners' observation of plants – written work and drawings • preparing schemes and records of work for teaching about plants and their environment. • preparing a lesson plan to teach about the relationship of plants to their environment. • micro teaching the lesson • evaluating the micro teaching. 		

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 assess learners knowledge of plants and their environment		<ul style="list-style-type: none"> • analysing varied ways of assessing learners' knowledge of plants and their environment • evaluating existing assessment items. • developing assessment items on the teaching of plants and their environment. 		

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> • Apply appropriate teaching, learning and assessment methodologies when teaching about animals and their environment. 	<p>Student teachers must be able to:</p> <p>1 describe a concept of teaching animals and their environment</p> <p>2 analyse challenges in teaching of animals and their environment</p>	<p>Teaching of animals and their environment</p>	<ul style="list-style-type: none"> • analysing teacher’s book, syllabus and teacher’s guide on animals and their environment • reflecting on why it is important to teach primary school learners about animals and their environment • analysing survival mechanisms of animals in their environment. • researching on challenges learners have on understanding metamorphosis and survival mechanism in animals. • discussing strategies on how to overcome the challenges 	<ul style="list-style-type: none"> • discussion • group work • dual entry • authors chair • map minding • field trip • question and answer • group discussion • give one take one • Research 	<ul style="list-style-type: none"> • charts • NPC syllabuses, teachers’ guides and learners’ books • school calendar • sample lesson plans • schemes of work • students’ experiences • simulated records of work • checklists • styluses • hand frames • feathers • braille materials • raised diagrams • annual calendar • the science teachers’ handbook • Spread sheets

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>3 use appropriate teaching and learning methodologies to teach learners about animals and their environment.</p> <p>4 assess learners' ability to understand the relationship between animals and their environment.</p>		<ul style="list-style-type: none"> • researching teaching methods using a range of resources for teaching of animals and their environment • discussing different ways of teaching classification of animals. • planning an excursion to observe animals in their environment • analysing learners' observation of animals – written work and drawings • analysing varied ways of assessing learners taking account of the challenges of large classes • developing assessment items on the teaching of animals and their environment. 		

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> • Use appropriate methodologies in teaching, learning and assessment of interdependence among living things 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> 1 describe the relationship between plants and animals 2 apply different strategies on the teaching of interdependence between plants and animals 	<p>Teaching of interdependence between plants and animals.</p>	<ul style="list-style-type: none"> • finding out what learners should learn about interdependence among living things. • researching on the interdependence among living things (food chain, food web, feeding levels and food pyramid) • designing an illustration for teaching interdependence among living things. • designing strategies to teach interdependence to learners with different needs. • planning field trips to the parks. 	<ul style="list-style-type: none"> • research • group work • discussion • excursion • save the last word for me • raft • paired reading • ball bearing • value clarification • field trips • experimentation 	<ul style="list-style-type: none"> • internet • graphics software • students' experiences • animals • plants • reports • feathers • raised diagrams • posters • the science teachers handbook • active learning in primary science

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 assess learners' ability to develop models to demonstrate their understanding of food chains and food webs		<ul style="list-style-type: none"> • discussing how learners can be assessed on the topic interdependence. • developing assessment tools to assess learners' ability in designing models of interdependence 		

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> Analyse and apply teaching learning and assessment strategies when teaching human skeleton and develop continuous assessment items. 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> develop a model of the human skeleton explain challenges learners would face in understanding human skeleton 	<p>Teaching of human skeleton</p>	<ul style="list-style-type: none"> researching on how the topic is taught in primary schools by analysing primary syllabus, teachers' guides and learners' books. discussing the importance for learners to learn about the human skeleton researching on parts of the human skeleton and their functions modelling the human skeleton researching on challenges learners have in understanding the human skeleton 	<ul style="list-style-type: none"> ball game discussion group work demonstration question and answer fish bowl card collection and clustering written exercises 	<ul style="list-style-type: none"> charts NPC syllabuses, teachers' guides and learners' books resource persons braille materials raised diagrams models of human skeleton

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>3 demonstrate different strategies on the teaching of the human skeleton</p> <p>4 assess learner's performance on the topic</p>		<ul style="list-style-type: none"> • discussing appropriate strategies on how to overcome the challenges in an inclusive classroom • researching on how the topic can be linked to prior knowledge of learners • analysing different strategies of teaching human skeleton • preparing lesson plans • presenting lesson plans • evaluating lesson plans • analysing ways of assessing learners • analysing assessment items (for example from demonstration school) • developing assessment items on the teaching of the " human skeleton". 		

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> develop an understanding of methodologies in the teaching, learning and assessment of Coordination in human beings. 	<p>Student teachers must be able to:</p> <p>1 describe the concepts of teaching coordination in human beings</p>	<p>The teaching of coordination in human beings</p>	<ul style="list-style-type: none"> analysing learners books, syllabuses and teachers guides on the topic coordination and draw labelled diagrams reflecting on why it is important to teach coordination to primary school learners. discussing the relationship between the nervous system and the sense organs. 	<ul style="list-style-type: none"> discussion group work devil's advocate demonstration practice written and oral questions experimentation futures wheels character rating 	<ul style="list-style-type: none"> NPC syllabuses, teachers' guides and learners' books drawing programs to produce labelled diagrams braille materials charts students' experiences resource persons models of sense organs active learning in primary science the science teacher handbook

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>2 use appropriate teaching and learning methodologies to teach coordination</p> <p>assess learners' understanding of the relationship between the five senses and the nervous system.</p>		<ul style="list-style-type: none"> • developing different strategies on how to teach coordination (eg designing experiments) • making models of sense organs and nervous system. • micro-teaching a lesson on coordination. • analysing the micro-teaching of coordination. • discussing challenges and their solutions in teaching of coordination • analysing varied ways of assessing the learners in a large class e.g. peer assessment • developing tools to assess the teaching of coordination 		

Core element

Basic scientific knowledge, skills and attitudes

Core element outcome

The student teachers will be able to demonstrate an understanding of how they will utilize appropriate teaching, learning, assessment and class management strategies to enable the primary school learner to understand and apply scientific knowledge, skills and values to solve everyday problems and provide a base for further learning.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> demonstrate an understanding of the methodologies of teaching, learning and assessment of properties of matter and how the knowledge of the properties can be applied to everyday life 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> link the teaching of properties of matter to prior knowledge of learners 	<p>Teaching of Properties of matter</p>	<ul style="list-style-type: none"> researching on the topic of properties of matter. finding out what learners should learn about properties of matter. discussing reasons why it is important for learners to learn about properties of matter. investigating how the topic can be linked to prior knowledge of learners. 	<ul style="list-style-type: none"> brainstorming discussion experimentation group work seven line dialogue question and answer T- chart directed listening thinking activity field trip the baobab tree competition 	<ul style="list-style-type: none"> NPC syllabuses, teachers' guides and learners' books Balloons Marbles syringe ice beakers pair of tongs pumps boiling tubes distillation apparatus rubber tubing glass tubing corks ether/perfume naphthalene (moth balls) beakers

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>2 analyse challenges learners would face in understanding properties of matter.</p> <p>3 explain different strategies on the teaching of the properties matter.</p>		<ul style="list-style-type: none"> • discussing or researching on challenges learners have in understanding the properties of matter (e.g. it is abstract). • discussing appropriate strategies on how to overcome the challenges in an inclusive classroom. • analysing different strategies of teaching of properties of matter. • designing models for teaching properties of matter. 		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	4 develop assessment items on properties of matter		<ul style="list-style-type: none"> • analysing assessment items (e.g. from other schools) • developing assessment items on the teaching of the properties of matter. 		

Core element

Basic scientific knowledge, skills and attitudes

Outcome

The student teachers will be able to demonstrate an understanding of how they will utilize appropriate teaching, learning, and apply scientific learning.

The student teachers will be able to demonstrate an understanding of how they will utilize appropriate assessment and class management strategies to enable the primary school learner to understand knowledge, skills and values to solve everyday problems and provide a base for further learning.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> • apply effective teaching, learning and assessment strategies to enable learners to develop knowledge and skills required to combine substances and separate mixtures. 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> 1 design experiments which would enable learners investigate ways of separating components in a mixture. 2 analyse challenges that learners face in understanding how to separate a solute from a solvent in a solution. 	Teaching of mixtures	<ul style="list-style-type: none"> • eliciting learners' prior knowledge on mixtures as they are used in everyday life. • establishing the rationale to learn about mixtures. • designing investigations on separating component parts of mixtures. • discussing challenges learners might face in learning about mixtures by utilizing knowledge of child development. 	<ul style="list-style-type: none"> • group work • oral and written questions • K-W-L • Gallery walk • projects • excursion • demonstration • practice • research • discussion 	<ul style="list-style-type: none"> • online demonstrations of mixing and separating compounds. • syllabuses and science learners' books, such as 'active learning in primary science' • salt • sugar • maize flour • bean seeds • sand • paraffin • alcohol • water • braille materials

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> • Apply effective teaching, learning and assessment strategies to enable learners to develop knowledge and skills required to combine substances and separate mixtures. 	<p>3 apply appropriate methodologies when teaching methods of separating component parts of a mixture.</p> <p>4 use appropriate assessment strategies to evaluate learners' skills and knowledge associated with the mixtures.</p>		<ul style="list-style-type: none"> • discussing why some strategies may be more suitable than others for teaching mixtures. • prepare a lesson and micro-teach on mixtures. • develop strategies to assess learners' skills in separating mixtures. • develop items to assess learners understanding of concepts related to mixtures including items on applications of mixtures. 		

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> • apply appropriate teaching learning and assessment methodologies when teaching forces and pressure 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> 1 explain the concept of force and pressure to support learners to understand their relationship 2 demonstrate different strategies on the teaching of forces and pressure 	<p>Teaching of Forces and pressure</p>	<ul style="list-style-type: none"> • conducting individual book research on forces and pressure. • finding out what learners should learn about the forces and pressure in primary school. • discussing why it is important for learners to understand scientific principles related to forces and pressure. • exploring applications of forces and pressure in everyday life. • discussing different strategies of teaching forces and pressure in an inclusive classroom • designing and conducting scientific investigations for teaching forces and pressure. 	<ul style="list-style-type: none"> • demonstration • fish bowl • bus stop • field trips • give one take one • gallery walk • survey • trade a problem • peer assessment • discussion 	<ul style="list-style-type: none"> • items for illustrating forces and pressure such as bicycle pumps, tins, rubber suckers, drinking straws, water, balls, see-saw nail balances rubber bands, spring balances, beakers wheelbarrows • resource persons • students' experiences • learners' ideas about forces • NPC syllabuses, learners book and teachers guides

Assessment standards	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 assess learners' understanding of key concepts related to forces and pressure.		<ul style="list-style-type: none"> • analysing the scientific investigations conducted • undertaking discussions with learners to evaluate their understanding of the importance of forces and pressure in everyday life. • developing assessment tools to evaluate learners' understanding of the key concepts related to forces and pressure. 		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> utilize appropriate methodologies 'on teaching, learning and assessment of energy 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> explain the concepts on teaching of forms and sources of energy. 	<p>Teaching of Energy</p>	<ul style="list-style-type: none"> researching on the topic energy (light, heat, sound, biogas and electricity) finding out what learners should learn about energy. discussing reasons why it is important for learners to learn about energy. developing circuit boards for teaching electricity. investigating different types of experiments on energy e.g. refraction, conduction, echo and effect of electric current discussing how the topic of energy could be linked to the daily lives of learners. solving energy related 	<ul style="list-style-type: none"> research discussion experimentation group work question and answer card collection and clustering 	<ul style="list-style-type: none"> internet sources of heat torches cells bulbs connecting wires or paper clips drums dynamos bulb holders or TALULAR bulb holders whistles tuning folks sonometers thermometers magnets

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>2 use appropriate teaching and learning methodologies to teach energy</p> <p>3 analyse challenges learners would face in understanding energy and how the challenges could be overcome</p>		<p>problems affecting their homes.</p> <ul style="list-style-type: none"> • researching on different methodologies on the teaching of energy. • designing experiments for teaching energy • preparing lesson plans on different concepts on energy. • analysing the lesson plans. • researching challenges learners have in understanding energy. • discussing appropriate strategies on how to overcome the challenges. 		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	4 assess learners' understanding of energy and their ability to demonstrate the different ways in which it is produced		<ul style="list-style-type: none"> • discussing different strategies of assessing learners' understanding of different forms of energy and how they are produced • observing lessons to assess if learners are using scientific skills and appropriate language related to energy 		

Term 6

Core element: Basic scientific knowledge, skills and attitudes

Core element outcome: The student teachers will be able to utilise appropriate teaching, learning, assessment and class management strategies to enable the primary school learner to understand and apply scientific knowledge, skills and values to solve everyday problems and provide a base for further learning.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: demonstrate a sound knowledge of how to teach and assess learners' understanding of the digestive system	Student teachers must be able to: 1 develop a model of the human digestive system	Teaching of digestive system	<ul style="list-style-type: none"> dissecting and identifying parts of the digestive system of small mammals drawing and labelling parts of the digestive system of small mammals researching on the human digestive system (parts, functions, problems and care) developing a model of human digestive system for teaching the topic 	<ul style="list-style-type: none"> think –ink- pair-share discussion group work question and answer jig saw walk around talk around written exercises make an appointment demonstration practice 	<ul style="list-style-type: none"> charts Online video clips methylated spirit razor blades local environment raised diagrams model of digestive system The science Teacher's handbook NPC syllabuses, Teacher's guides and learners'

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>1 explain challenges learners would face in understanding the human digestive system.</p> <p>2 design teaching strategies to support learners in Learning about the human digestive system</p>		<ul style="list-style-type: none"> • reflect on difficulties encountered when learning about aspects of the human digestive system. • finding out appropriate strategies on how to overcome the challenges faced by learners in understanding the human digestive system • developing different strategies on how to teach human digestive system. 		<ul style="list-style-type: none"> • books • Chicken • Rabbits

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 assess learners' understanding of the digestive system.		<ul style="list-style-type: none"> • developing materials for teaching the human digestive system • categorize varied ways on assessing learners on human digestive system. • developing items to assess learners understanding of the digestive system. evaluate the effectiveness of the assessment items 		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> • Apply appropriate teaching, learning and assessment methodologies when teaching human circulatory system. 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> 1 describe the concepts for teaching the human circulatory system 	<p>Teaching of the human circulatory system</p>	<ul style="list-style-type: none"> • researching on the topic of the human circulatory system (parts, functions, problems and care) • discussing the reasons why it is important for learners to learn about the human circulatory system. • dissecting the heart of a goat or a chicken to identify the parts • modelling the human circulatory system • researching on blood (components, functions, blood transfusion) • modelling blood cells 	<ul style="list-style-type: none"> • research • pens in the middle • discussion • group work • question and answer • one stay, three stray • trade a problem • written exercises 	<ul style="list-style-type: none"> • charts of human circulatory system • NPC syllabuses, learners book and teachers guide • models of human circulatory system • microscopes • prepared slides of blood cells • specimens of parts of the circulatory system of animals • models of blood cells • raised diagrams • braille materials • The science teachers' handbook • Checklists • Rubrics • Observation schedules

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>2 analyse challenges learners would face in understanding the topic</p> <p>3 deploy different strategies on the teaching of the human circulatory system.</p>		<ul style="list-style-type: none"> • discussing the challenges learners would face in understanding the concept of heart, blood vessels and blood transfusion • finding solutions to the challenges. • exploring the strategies to be used in the teaching of the human circulatory system taking into account the challenges of working in large classes. • microteaching a lesson on human circulatory system. • evaluating the lesson on human circulatory system 		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>4 assess learners' understanding of how the circulatory system works.</p>		<ul style="list-style-type: none"> • using assessment tools effectively to evaluate learners' understanding of the circulatory system. • developing appropriate assessment items to suit different learning styles 		

Core element: Basic scientific knowledge, skills and attitudes

Outcome:

The student teachers will be able to utilise appropriate teaching, learning, assessment and class management strategies to enable the primary school learner to understand and apply scientific knowledge, skills and values to solve everyday problems and provide a base for further learning.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> Apply effective teaching, learning and assessment strategies to enable learners to develop an understanding of how the respiratory system Works. 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> design a model of a human respiratory system using locally available resources analyse the difficulties learners may experience in 	<p>Teaching of the human respiratory system</p>	<ul style="list-style-type: none"> researching how the organs of the human respiratory system relate to each other. making a model of the respiratory system using different resources investigate how the respiratory system is linked to the circulatory system. observing learners' engagement in a lesson at demonstration school gathering learners' views on respiration. 	<ul style="list-style-type: none"> research group work observations interviews pair work discussion debate video record micro-teaching. peer-review paired brainstorming. workstation 	<ul style="list-style-type: none"> teaching and learning guides. Internet. TALULAR manual locally available resources. word processing package pro forma for recording observations. interview schedule. flip charts markers prior knowledge teaching and

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>understanding concepts on human respiratory system</p> <p>3 apply appropriate methodologies when teaching theoretical and practical aspects of human respiratory system</p>		<ul style="list-style-type: none"> • analysing the challenges observed and suggest solutions • researching methodologies that can be used to teach human respiratory system • discussing why some methodologies would be more effective than others in teaching of human respiratory system • micro-teaching a lesson on human respiratory system • developing items to assess learners knowledge in the breathing mechanism • developing assessment 		<p>learning guides.</p> <ul style="list-style-type: none"> • think ink pair share. • video recording equipment. • student notes from foundation studies. • sample assessment items. • markers • flip charts

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>4 use appropriate assessment strategies to evaluate learners' knowledge of respiration.</p>		<p>tools to assess learners' knowledge on breathing mechanism</p> <ul style="list-style-type: none"> evaluating tools to assess learners' understanding on breathing mechanism 		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> • Demonstrate an understanding of how to teach human development 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> 1 link prior knowledge to the teaching of the human reproductive system. 	<p>Teaching of the human reproductive system</p>	<ul style="list-style-type: none"> • researching on the topic of human reproductive system (parts, function, menstrual cycle, human development, problems and care) • analysing primary school books what learners should learn about the human reproductive system and family planning • discussing reasons why it is important for learners to learn about the human reproductive system 	<ul style="list-style-type: none"> • M- chart • discussion • group work • demonstration • practice • value clarification • debate • written exercises • research • reporting • seven line dialogue • field visit • project • discussion • question and answer • group work • oral and written questions • educational visit • self-assessment 	<ul style="list-style-type: none"> • charts of human reproductive system • models of human reproductive system • IPTE student handbooks • braille materials • raised diagrams • NPC syllabuses, learners book and teachers guide • resource persons (eg medical professionals) • clinic • IPTE lecturers' book • The science teacher's handbook

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>2 deploy different strategies on the teaching of the human reproductive system.</p> <p>3 assess learners' knowledge of the different parts of the human reproductive system and their functions.</p>		<ul style="list-style-type: none"> • exploring the strategies to be used in the teaching of the human reproductive system. • discussing the sensitivity involved in the teaching of the human reproductive system. • microteaching a lesson on the human reproductive system. • evaluating the teaching of the human reproductive system. • using assessment tools effectively to assess learners' knowledge of the different parts of the reproductive system 	<ul style="list-style-type: none"> • construction blocks • ball bearing 	

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
			<ul style="list-style-type: none"> developing assessment items, taking into account of different learning styles, to evaluate learners' understanding of the topic human reproductive system 		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> • Demonstrate the importance of teaching about common parasites and diseases in the community 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> 1 describe concepts of common parasites in human beings 2 demonstrate different strategies on the teaching of the common parasites in human beings 	<p>Teaching of Common parasites in human beings</p>	<ul style="list-style-type: none"> • researching different types of common parasites which affect human beings <ul style="list-style-type: none"> - tapeworms - hookworms - roundworms - migrant worms - bed bugs • identifying challenges in teaching about outbreak of parasites. • designing opportunities for learners to undertake investigations into how to eradicate common parasites • debating on how to control bed bugs 	<ul style="list-style-type: none"> • discussion • question and answer • group work • value clarification • M chart • educational visit • I. N.S.E.R.T. • research • assignments • debate 	<ul style="list-style-type: none"> • braille materials • charts • students' experiences • specimens • NPC syllabuses, teachers' guides and learners' books • the science teachers' handbook • video clips

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 assess learners' knowledge of common parasites		<ul style="list-style-type: none"> • planning interventions for the control of bed bugs. • categorize varied ways of assessing learners on common parasites. • developing items to assess learners understanding of the control of common parasite. • evaluate the effectiveness of the assessment items. 		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <p>Analyse appropriate teaching, learning and assessment methodologies in the teaching of common infectious diseases</p>	<p>Student teachers must be able to:</p> <p>1 explain the concepts on common infectious disease.</p> <p>2 demonstrate different teaching strategies in the teaching of common</p>	<p>Teaching of Common infectious diseases</p>	<ul style="list-style-type: none"> • researching on the common infectious diseases (types, causes, modes of transmission, signs and symptoms, prevention and treatment) • discussing reasons why it is important for learners to learn about common infectious diseases. • discussing how the topic can be linked to learners prior knowledge of common infectious diseases 	<ul style="list-style-type: none"> • dual entry • discussion • group work • quick write • author’s chair • visit hospitals or clinics 	<ul style="list-style-type: none"> • internet • resource persons such as medical staff • chart • NPC syllabuses, learners book and teachers guide • raised diagrams • braille materials • the science teachers’ handbook

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>infectious diseases.</p> <p>3 assess learners' performance on the common infectious diseases</p>		<ul style="list-style-type: none"> • analysing different strategies of teaching common infectious diseases • preparing lesson plans for teaching infectious diseases. • evaluating the lesson plans. • analysing different ways of assessing the learners. • critiquing assessment items from demonstration schools. • developing assessment items on the teaching of the infectious diseases. • evaluating the 		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
			effectiveness of the items produced.		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> Develop strategies for learning, teaching and assessing learners' knowledge of sexually transmitted infections 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> describe sexually transmitted infections demonstrate different strategies on teaching of sexually transmitted infections. 	<p>Teaching of sexually transmitted infection.</p>	<ul style="list-style-type: none"> researching on the sexually transmitted infections (types, models of transmission, signs and symptoms, prevention and treatment) researching on ARVs (use, effects and accessibility) discussing on different strategies for the teaching of sexually transmitted infections exploring challenges when teaching about STIs and HIV. micro-teaching lessons on sexually transmitted infections. evaluating the lessons 	<ul style="list-style-type: none"> peer assessment jig – saw trade a problem M- chart discussion mix –freeze-pair 	<ul style="list-style-type: none"> resource person video clips IPTE student hand book NPC syllabus, learners book and teachers guide Charts IPTE lecturers book

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 assess learners' knowledge of sexually transmitted infections		<ul style="list-style-type: none"> • developing tools to assess learners' knowledge on sexually transmitted infections • using the assessment tools effectively to assess learners' understanding on sexually transmitted infections. • developing assessment items. • evaluating the assessment items 		

Core element: Scientific knowledge for sustainable development

Outcome: The student teachers will be able to use appropriate teaching, learning, assessment and class management strategies to enable the primary school learner to interpret and apply scientific and technological knowledge with ethical responsibility towards the environment as well as to make improvements in the quality of life and develop interest in scientific and technological occupations.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<p>We will know this when student teachers are able to:</p> <ul style="list-style-type: none"> • Demonstrate an understanding of the importance of being able to design and make simple machines for use in everyday life 	<p>Student teachers must be able to:</p> <ol style="list-style-type: none"> 1 explain the concepts of design process and simple machines 	<p>Teaching of simple machines</p>	<ul style="list-style-type: none"> • researching the design process and solutions • researching simple machines and how they work • reflecting on prior knowledge about simple machines • Identifying situations for design within their local contexts 	<ul style="list-style-type: none"> • online demonstration • Debate • Peer-review • Question and answer • Gallery walk • Think-ink-pair-shair 	<ul style="list-style-type: none"> • Prior knowledge Teaching and learning guides. • Internet. • TALULAR manual • Locally available resources • Pro forma for recording observations. • Interview schedule. • Flip charts • Markers

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>2 design activities to enable learners to experiment in using different materials to make simple machines</p> <p>3 demonstrate different strategies in the teaching of design processes and simple machines</p>		<ul style="list-style-type: none"> • researching on materials, including recyclable materials, for production and their properties (metal, wood, plastic, clay, paper) • investigating a range of suitable problems for learners to explore in the classroom on the materials to make simple machines • developing tasks to enable learners to make simple machines to address the problems • evaluating the appropriateness of the tasks • designing strategies on how to teach design processes and simple machines • micro- teaching lessons on design 		<ul style="list-style-type: none"> • Teaching and learning guides. • Think ink pair • Computer programs

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>4 use appropriate assessment strategies to evaluate learners' engagement in the design and production of simple machines.</p>		<p>process and simple machines</p> <ul style="list-style-type: none"> • discussing varied ways on assessing learners on the design of simple machines taking into account of large classes • develop items to assess learners understanding of simple machines • evaluating the effectiveness of the assessment items • observing learners to evaluate their competence in following steps in the design process 		

Core element: Technology Innovation

Core element outcome:

The student teachers will be able to apply appropriate teaching, learning, assessment and class management strategies to enable the primary school learner to understand innovations and management of scientific and technological changes in all contexts with particular reference to science and technology in Malawi.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
<ul style="list-style-type: none"> We will know this when student teachers are able to: Apply scientific and technological knowledge to everyday life activities 	Student teachers must be able to: 1 describe the ways in which technologies have changed over time 2 design activities to enable learners to undertake the technological processes using different materials	Teaching of Technology	<ul style="list-style-type: none"> surveying indigenous and modern technologies. Analysing ways in which teaching has developed. designing some technologies to improve aspects in everyday life. 	<ul style="list-style-type: none"> group work discussions field trips cartoon futures wheels character rating demonstration research practice projects discussion 	<ul style="list-style-type: none"> NPC syllabuses, learners book and teachers guides Indigenous technology, e.g. hoe, bow and arrow, mortar and pestle, bee hives, grinding stone, ox-cart modern technology, e.g. sewing machines, computers, radios, cell phones, TV, wind mills, incubators

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
			<ul style="list-style-type: none"> exploring ways in making prototypes of some technologies (toy cars, bird nets, <i>nkhali yowira</i>, tin smith) for teaching the topic technologies. 		<ul style="list-style-type: none"> examples of local innovation in Malawi (video clips, articles, TED talk)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	<p>3 develop strategies to teach learners how to communicate through drawing</p> <p>4 describe the ways in which technology have impacted on people's lives</p>		<ul style="list-style-type: none"> • developing a strategy for testing the designed technologies. • identifying required steps for improving the designed technologies for teaching design. • researching skills in sketching of simple objects in various projections, shapes and colours. • producing drawings (basic engineering and architectural) • discussing the impact of technology and its effect on sustainable development and climate change 		<ul style="list-style-type: none"> • local environment • resource persons • Braille materials

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	5 demonstrate the importance of addressing gender issues in the teaching of technology		<ul style="list-style-type: none"> • discussing challenges in ensuring equal participation of girls and boys in technology • Discussing the effects of gender bias in technology participation • Planning learning activities which ensure equal participation of boys and girls 		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	6 assess learners on their technological knowledge and capabilities		<ul style="list-style-type: none"> • explaining varied ways on assessing learners on the design of simple technology • developing items to assess learners' understanding of technology • evaluating the effectiveness of the assessment items • observing learners to evaluate their competence in making proto types ensuring equal participation of learners 		