

# Four-Year B.Ed. Course Manual

# ICE FOMANIENANDEANDLABORAIORY MANAGEMENT



**Transforming Teacher Education and Learning** 





TreGoemertofChara



Published by the Ministry of Education; Ghana, under Creative Commons Attribution-Sharealike 4.0 International License.

### FOREWORD

These initial teacher education course manuals were developed by a team consisting of members from colleges of education, and four universities namely, university of Ghana, Kwame Nkrumah university of science and technology, university of education, Winneba, and university of development studies. this team was constituted to support the delivery of the new B.Ed. curriculum as part of Ghana's teacher education reforms supported by T-Tel with assistance from UK aid and overseen by the National Council for Tertiary Education (NCTE).

The course manuals have been produced for use as general guides for the delivery of the new four-year B.Ed. curriculum in colleges of education in collaboration with their affiliated universities. They are designed to support student teachers, tutors and lecturers in delivering a complete B.Ed. course for training student teachers which meets the requirements of the national Teachers' standards (NTS), thus enabling them to teach effectively in basic schools.

The structure and sequence of the manuals follows a process developed through a collaboration by key stakeholders. The first section is focused on the course information and vision for the new four-Year B.Ed. curriculum. The second section presents the course details, Goal for the subject or learning area, course description, Key contextual factors as well as core and transferable skills and cross-cutting issues, including equity and inclusion which will be addressed through the course. the third section is a list of course learning outcomes and their related learning Indicators. the fourth section presents the course content which is broken down into units for each week, the topic and sub-strands and their related teaching and learning activities to achieve the learning outcomes and the teaching and learning strategies. this is followed by course assessment components in section five. The relevant aspects of the national Teachers' standards to be assessed through each assessment are identified. each course is accompanied by the required reading and reference lists as well as teaching and learning resources. The final section presents course related professional development for tutors and lecturers to be able to use each section of the manual.

In all, there are 12 lessons for each course manual. The set of first year manuals present the general courses for the beginning teacher. The second, third and final year manuals deal with specialisms and specialist programmes for student teachers. The different manuals for each successive year cover beginning teaching, developing teaching, embedding teaching, and extending teaching.

field instructions to guide supported teaching in school are integrated into the course manuals to provide the student teacher with the nucleus of practicing and developing teaching throughout the entire period of study to be able to meet the requirements of the NTS and the National Teacher education curriculum framework (NTECF). To ensure maximum benefit the course manuals should be used in addition to other resources such as the NTS, NTCEF, assessment Policy and inclusion Policy. This will help to ensure that learning by student teachers' is integrated within the wider teacher education policy framework.

#### **Professor Mohammed Salifu Executive Secretary**

**National Council for Tertiary Education** 

### **ACKNOWLEDGEMENTS**

The course Manuals were developed over several months through the collaborative efforts of a team of individuals from colleges of education, university of Ghana, Kwame Nkrumah university of science and technology, university of education, Winneba, and university of development studies. they were produced in association with the national council for tertiary education of the Ministry of education, Ghana.

A participatory team approach was used to produce this set of resources for tutors/lecturers, mentors, and student teachers. We are grateful to the specialists who contributed their knowledge and expertise.

Special thanks to Professor Jophus Anamuah-Mensah - T-Tel Key Advisor, Dr. Eric Daniel Ananga - T-Tel Key Advisor for Curriculum reform and Beatrice Noble-Rogers who provided key editorial, review and content input and facilitated the process of drafting and finalising the course Manual.

Patricia Appiah-Boateng and Gameli Samuel Hahomene, served as typesetting and formatting coordinators and designed and produced the illustrations, tables, and other graphics which appear in the pages. they spent time and effort designing and redesigning the graphic layout and producing the camera-ready copy resulting in a set of materials that are easy to use, read, and reference.

Thanks also goes to all T-Tel staff members who worked to support production of these course manuals, particularly Beryl Opong-Agyei and Gideon Okai. Their frankness and co-operative attitude complimented the team approach used to produce this manual.

We are indebted to the Ministry of education and the national council for Tertiary education, (NCTE) for the general support and specific helpful advice provided during production of the course Manuals. recognition and thanks must go to chief technical advisor for T-TEL and Policy advisor to the national education reform secretariat, Prof. Mohammed Salifu the executive secretary of NCTE and Mr. Jerry Sarfo the coordinator for the colleges of education, who in diverse ways supported during the course Manual writing workshops.

In addition to all the staff who participated visibly in the development of these materials we would like to acknowledge all those people from the many colleges of education and universities in which we have worked who have, directly or indirectly, shared their views on the curriculum with us.

# **CORE WRITING TEAM**

Names of writers	Subject		Names of writers	Subject
Dr. Isaac Eshun			Cletus Ngaaso	Social Studies
Dr. Anthony Baabereyir			Mohammed Adam	
Ms. Shirley Dankwa	African Studies			
Prof. S.Y. Annor	Agriculture		Dr. Yaw Nyadu Offei	Special Education
Dr. Salome praise Otami			Prof. Samuel Hayford	
Dr. Samuel Frimpong			Dr. Awuni	
Robert Quansah	Early Grade		Rev.(Dr) Nyueko Avotri	Technical
Dr. Abraham Kwadwo Okrah	English Language		Elizabeth Lani Ashong	Vocational
Vivian Acquaye			Michael Tsorgali	Education and
Felix A. Odonkor			Frnacis Donkor	Training
Dr. Cecilia Esinam Agbeh			Dr. Maxwell Nyatsikor	
Ibrahim Osmanu	French		Prof. Salomey Essuman	
Dr. Kofi Adu-Boahen			Dr. Paul Kwadwo Addo	
Dr. M. Kusimi	-		Dr. Winston Kwame	-
Dr. M. Kusimi			Abroampa	
Dr. Aboagye Dacosta			Mr. Kwaku Esia-Donkoh	
Mr. Alexander Otoo	Geography		Mohammed Z. Abdulmumin	Pedagogy
Dr. Yvonne A.A. Ollennu	Ghanaian		Dr. Mohammed Hafiz	Arabic
Kwasi Adomako	Language		Iddris Mohammed	
Dr. Akwasi Kwarteng				
Amoako-Gyampah	-		Mohammed Almu Mahaman	-
Anitha Oforiwah Adu-				
Boahen	-		Murtada M. Muaz	
Gertrude Nkrumah	History		Dr M. Q. Adjahoe	Music
Prof Charles Owu-Ewie	Literacy		Prof Cosmas Mereku	
Dr. Ahmed Amihere			Prof. Reginald Ocansey	Physical Education
Zakaria Sadiq	Mathematics		Dr. Emmanuel Osei Sarpong	
Dr. R. Addai-Mununkum			E. Kwaku Kwaa-Aidoo	ICT
Dr Charles Nyarko Annobil			Victor Anyamful	
Mr. Owusu Afiriyie	RME			
Dr. V. Ankamah-Lomotey				
Jonathan Ayelsoma Samari				
Prof. Ruby Hanson	Science			

### **INTRODUCTION TO COURSE MANUALS**

Welcome to this B.Ed. Course manual.

Following the accreditation of the B.Ed. by the national accreditation Board with its recognition as a world class teacher education curriculum, the decision was taken to support effective implementation through the development of course manuals. the course manuals provide tutors and lecturers with the materials necessary to support teaching each of the B.Ed. courses. The manuals adhere directly to, and emphasise, the principles and standards set out in the NTS, NTECF and in the B.Ed. and will help ensure operationalising the Government's teacher education reform Policy.

The manuals serve the following purposes:

- they are the key educational agreements between the training institution and the student teachers. In this way student teachers know what the expectations are for them and for the training they will receive.
- they lay out the course outcomes, content, strategies, and assessment, thereby providing direction to and consistency in training and B.Ed. implementation among tutors across the country.
- they are explicit documents that provide other institutions with information on which to base transfer/ articulation decisions.

Specifically, they also:

- support coherent lesson planning and teaching which will enable student teachers to achieve the NTS and become good teachers who ensure all pupils' learning whilst offering tutors the flexibility for adaptation for local needs and contexts.
- Provide a lesson by lesson overview of the course, building on and developing the material in the course specifications.
- Inform tutors, student teachers and others working with student teachers about:
  - 1. What is to be taught and why.
  - 2. how it can be taught.
  - 3. how it should be assessed.
- Provide opportunities for student teachers to develop and apply knowledge during supported teaching in school, creating a strong bond between learning in school and in the training institution.
- Reflect the stage of student teacher development, set out in the model for progress across the four years of the B.Ed.
- Can be used as self-study tools by student teachers.
- Ensure that all information necessary to inform teacher training is in one place (serves as reference document).
- The manuals are the basis of the codes and university professional development sessions to ensure Principals, tutors, lecturers and heads of department are fully familiar with the details of: courses, outcomes, content, approaches, assessments and lessons.

Who are course manuals for:

- College of Education Tutors
- Teacher Education University Lecturers
- Student Teachers
- Mentors and Lead Mentors
- All Those with An Interested In Teacher Education.

### **USING THIS MANUAL**

Writers of the manuals engaged widely with colleagues in each subject area at each stage of development. Besides, writers envisaged themselves in varied contexts as they wrote, to suggest methodologies and strategies for teaching the strands which would ensure student teachers are enabled to achieve the learning outcomes. In view of our commitment to creativity, problem solving, collaboration and to lifelong learning, we expect that individual tutors will "own" their manuals and become user-developers. lessons in the manuals will be strands for weekly Pd meetings where tutors/lecturers will situate the lessons in the contexts of their colleges and their student teachers, to maximize the benefits.

It is also expected that tutors will model the best pedagogic practices for student teachers. Key among such practices is the communication of the importance of having a personal teaching philosophy. We expect that tutors and lecturers will explicitly communicate their personal teaching philosophies to their student teachers during the first meeting of every course. in preparation for this, we suggest you set out your personal teaching philosophy and how it will be demonstrated in your teaching using, or adapting, the sample sentence introductions below.

My teaching philosophy is .....

In view of this philosophy, I will facilitate this course by/through .....

### **Course Manual Writing Format**

#### A. Course Information

#### Title Page

#### The vision for the New Four-Year B.Ed. Curriculum

To transform initial teacher education and train highly qualified, motivated new teachers who are effective, engaging and fully prepared to teach the Basic School Curriculum and so improve the learning outcomes and life chances of all learners they teach as set out in the National Teachers' Standards. This is to instil in new teachers the Nation's core values of honesty, integrity, creativity and responsible citizenship in order to achieve inclusive, equitable, high quality education for all learners.

#### **Course Details**

Course	Laboratory Management and PC maintenance							
name								
Pre-	None	None						
requisite								
Course	400	Course Code		Credit Value	3		Semester	2
Level								
Table of cont	ents	•		•				

Table of contents

#### **Goal for the Subject or Learning Area**

The goal of the course is to introduce student teachers to the management of computer laboratories. They will also be introduced to compatibility issues relating to hardware specifications that are required to various run operating systems and various application program. The course will also provide students teachers with hands-on knowledge of computer hardware, enabling them to troubleshoot and fix the computer hardware, software problems. Student teachers will be required to actively participate in a computer laboratory setting to equip them with knowledge and skills used ICT facility management and maintenance

#### **Key Contextual Factors**

There is a high mobile communication device ownership in Ghanaian society. Most students and teachers have interest and experience in using these devices for social and personal interactions. However, the integration of ICT into teaching and learning is low in Ghanaian schools. Ghanaian schools, particularly the public schools, can be categorised as low technology learning environments.

The following challenges affect teaching and account for this low integration of ICT in teaching and learning:

- 1. Inadequate support
  - a. Most schools have inadequate technical support
  - b. Teachers also lack institutional support in their use of ICT for teaching and learning
  - c. Inadequate teaching and learning materials in ICT
  - d. Inadequate professional technology training opportunities and capacity building

#### **Course Description**

This course is designed to introduce student teachers to information and communication technologies, computer-based information systems, their applications, implications and issues surrounding their use. It provides student teachers with background information in the use of computers and serves to meet the general technology/computer literacy requirement (*National Teachers' Standard: 2c, 2e, 3a, 3e, 3h, 3i, 3k, 3p/ NTECF: Pillar 1, 2 & 3, crosscutting issues; Core skills, Assessment).* The course provides practical skills in various ways to incorporate technology into the student teacher's personal educational programme as well as integrating word processing, spreadsheets, presentation software, internet applications and services in teaching and learning (*National Teachers' Standard: 1a, 1b, 3b, 3c, 3e, 3d, 3n/NTECF: Pillar crosscutting issues; Core skills, Professional values and attitudes*). The course will also explore past and present developments in the field of ICT and expose student teachers to various issues surrounding the use of ICT including ethics, health and safety, privacy, security and intellectual property, inclusivity and equity and other social issues which come up when using ICT within the context of Ghanaian core values, such as honesty, creativity, informed citizenry and lifelong learning to inform professional practice. It adopts methodologies that incorporate authentic assessment and innovative teaching methods to prepare student teachers for operating in diverse learner and learning environments. (*National Teachers' Standard: 1a, 1b, 3b, 3c, 3e, 3d, 3n/NTECF: Pillar crosscutting issues; Core skills, Professional values and attitudes*).

#### Core and transferable skills and cross cutting issues, including equity and inclusion

**Technology literacy**of student teachers will be enhanced by giving them the opportunities to learn how to use various ICT tools to solve educational and national development problems (CLO 2).

**Critical thinking** will be developed by allowing student teachers to analyse issues relating to technology and to express their conceptions, misconceptions, biases and philosophies freely and to examine them (CLO 1, 2 and 3).

**Collaboration**will befostered through assigning group projects and presentations of various topics across units and thereby encouraging healthy team work (CLO 1, 2 and 3).

**Communicative skills** of student teachers would be enhanced bygiving them the opportunity to examine, interrogate and make presentations onhow to apply ICT in education and national life (CLO 1, 2 and 3).

**Respect for diversity** would be engendered in student teachers by examining how ICT could be used to enhance inclusivity and deal with diversity (CLO 1, 2 and 3).

**Commitment and passion for teaching**would be enhanced when student teachers use ICT to develop and deliver inclusive, innovative and creative interactive lessons (CLO 1, 2 and 3).

	Course Learning Outcomes Learning Indicators						
-	Identify computer	-	s of the various components of a computer				
	systems/subsystems and		s of the various components of a compater				
	discuss their functions						
	and interactions						
	Demonstrate knowledge	2.1 Assemble and dissem	ible computers				
	and understand of how						
	the various components						
	of a computer fit						
1	together						
3.	Install,	3.1 Install and configure	operating systems & device drivers				
	configure/customize	Install application softwa	are				
	system and application						
	software						
	Troubleshoot	4 1 Diagnose and recom	mend remedial action to computer malfunction				
	computers and						
	computerperipherals						
	such asprinters						
	·	E 1 Donais basis DC facility					
	Identify and apply	5.1 Repair basic PC faults					
	the tools and test						
	equipment						
	associated with PC						
	repair and maintenance						
-	activity.						
6. /	Apply the concepts and	6.1 Plan and execute pre	eventive and corrective maintenance				
+	techniques of						
1	cerningues of						
	maintenance						
:	maintenance 1. Course Content						
Unit	maintenance       1. Course Content       / Topic	Sub-topic if	Teaching and learning activity to achieve the learning outcomes				
:	maintenance 1. Course Content / Topic k	any)					
Unit	maintenance       1. Course Content       / Topic		Seminars (Talk for Learning) and interactive discussions (see				
Unit, Wee	maintenance 1. Course Content / Topic k	any)					
Unit, Wee	maintenance 1. Course Content / Topic k Components of	any) Introduction to the	Seminars (Talk for Learning) and interactive discussions (see				
Unit, Wee	maintenance 1. Course Content / Topic k Components of	any) Introduction to the course	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the				
Unit, Wee	maintenance 1. Course Content / Topic k Components of	any) Introduction to the course 1.1 System Boards	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired				
Unit, Wee	maintenance 1. Course Content / Topic k Components of	any) Introduction to the course 1.1 System Boards and Component	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia				
Unit, Wee	maintenance 1. Course Content / Topic k Components of	any) Introduction to the course 1.1 System Boards and Component Identification	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate				
Unit, Wee	maintenance 1. Course Content / Topic k Components of	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding				
Unit, Wee	maintenance 1. Course Content / Topic k Components of	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment,				
Unit, Wee	maintenance 1. Course Content / Topic k Components of	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when				
Unit, Wee	maintenance 1. Course Content / Topic k Components of	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when personal, cultural, and institutionalized discrimination are				
Unit, Wee	maintenance 1. Course Content / Topic k Components of	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when personal, cultural, and institutionalized discrimination are creating and/or sustaining barriers to learning for some				
Unit, Wee	maintenance 1. Course Content / Topic k Components of	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when personal, cultural, and institutionalized discrimination are				
Unit, Wee	maintenance 1. Course Content / Topic k Components of	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when personal, cultural, and institutionalized discrimination are creating and/or sustaining barriers to learning for some studentteachers.				
Unit, Wee	maintenance 1. Course Content / Topic k Components of	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when personal, cultural, and institutionalized discrimination are creating and/or sustaining barriers to learning for some studentteachers. Using creative approaches (such as games, storytelling, role play,				
Unit, Wee	maintenance 1. Course Content / Topic k Components of	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when personal, cultural, and institutionalized discrimination are creating and/or sustaining barriers to learning for some studentteachers. Using creative approaches (such as games, storytelling, role play, songs and modelling) to stimulate and involve students when they				
Unit, Wee 1	Maintenance         Course Content         / Topic         k         Components of computer	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding Memory	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when personal, cultural, and institutionalized discrimination are creating and/or sustaining barriers to learning for some studentteachers. Using creative approaches (such as games, storytelling, role play, songs and modelling) to stimulate and involve students when they interact with other students or duringlessons.				
Unit, Wee	Maintenance         Course Content         / Topic         k         Components of computer         Second state         Components of computer         Components of computer	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding Memory 1.3 Working with Disk	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when personal, cultural, and institutionalized discrimination are creating and/or sustaining barriers to learning for some studentteachers. Using creative approaches (such as games, storytelling, role play, songs and modelling) to stimulate and involve students when they interact with other students or duringlessons. Inquiry-based learning (questioning), seminars (Talk for Learning),				
Unit, Wee 1	Maintenance         Course Content         / Topic         k         Components of computer	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding Memory 1.3 Working with Disk Drives	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when personal, cultural, and institutionalized discrimination are creating and/or sustaining barriers to learning for some studentteachers. Using creative approaches (such as games, storytelling, role play, songs and modelling) to stimulate and involve students when they interact with other students or duringlessons. Inquiry-based learning (questioning), seminars (Talk for Learning), interactive discussions, interactive multimedia presentations to				
Unit, Wee 1	Maintenance         Course Content         / Topic         k         Components of computer         Second state         Components of computer         Components of computer	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding Memory  1.3 Working with Disk Drives 1.4 Installation and	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when personal, cultural, and institutionalized discrimination are creating and/or sustaining barriers to learning for some studentteachers. Using creative approaches (such as games, storytelling, role play, songs and modelling) to stimulate and involve students when they interact with other students or duringlessons. Inquiry-based learning (questioning), seminars (Talk for Learning), interactive discussions, interactive multimedia presentations to examine the affordances and effects of ICT in education, field trips				
Unit, Wee 1	Maintenance         Course Content         / Topic         k         Components of computer         Second state         Components of computer         Components of computer	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding Memory 1.3 Working with Disk Drives	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when personal, cultural, and institutionalized discrimination are creating and/or sustaining barriers to learning for some studentteachers. Using creative approaches (such as games, storytelling, role play, songs and modelling) to stimulate and involve students when they interact with other students or duringlessons. Inquiry-based learning (questioning), seminars (Talk for Learning), interactive discussions, interactive multimedia presentations to examine the affordances and effects of ICT in education, field trips to observe how ICT is transforming education and industry,				
Unit, Wee 1	Maintenance         Course Content         / Topic         k         Components of computer         Second state         Components of computer         Components of computer	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding Memory  1.3 Working with Disk Drives 1.4 Installation and	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when personal, cultural, and institutionalized discrimination are creating and/or sustaining barriers to learning for some studentteachers. Using creative approaches (such as games, storytelling, role play, songs and modelling) to stimulate and involve students when they interact with other students or duringlessons. Inquiry-based learning (questioning), seminars (Talk for Learning), interactive discussions, interactive multimedia presentations to examine the affordances and effects of ICT in education, field trips				
Unit, Wee 1	Maintenance         Course Content         / Topic         k         Components of computer         Second state         Components of computer         Components of computer	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding Memory I.3 Working with Disk Drives 1.4 Installation and Support of Hard	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when personal, cultural, and institutionalized discrimination are creating and/or sustaining barriers to learning for some studentteachers. Using creative approaches (such as games, storytelling, role play, songs and modelling) to stimulate and involve students when they interact with other students or duringlessons. Inquiry-based learning (questioning), seminars (Talk for Learning), interactive discussions, interactive multimedia presentations to examine the affordances and effects of ICT in education, field trips to observe how ICT is transforming education and industry,				
Unit, Wee 1	Maintenance         Course Content         / Topic         k         Components of computer         Second state         Components of computer         Components of computer	any) Introduction to the course 1.1 System Boards and Component Identification 1.2 Understanding Memory I.3 Working with Disk Drives 1.4 Installation and Support of Hard Drives	Seminars (Talk for Learning) and interactive discussions (see creative approaches below) to critically examine the advent of the information society, the role of ICT in society, the skillsrequired for the information society. Also, interactive multimedia presentations and video analysis (e.g. from YouTube) to evaluate the use of ICT in educational institutions. These strategies must respond to inclusivity and equity (should aim at expanding learning for diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Identification of the instances when personal, cultural, and institutionalized discrimination are creating and/or sustaining barriers to learning for some studentteachers. Using creative approaches (such as games, storytelling, role play, songs and modelling) to stimulate and involve students when they interact with other students or duringlessons. Inquiry-based learning (questioning), seminars (Talk for Learning), interactive discussions, interactive multimedia presentations to examine the affordances and effects of ICT in education, field trips to observe how ICT is transforming education and industry, tutorial and practical sessions, video analysis, e.g. YouTube to				

			learning to diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia).
3	Building/Upgrading a computer.	Assembling components 2.1 Motherboard 3.1.1 Assembling the parts (Installing Power supply, processor, cables, Memory, Optical drives, Using PCI slots, Hard drives, heat sink, fan)	Project-, problem- (group work) and inquiry-based learning (questioning) to Illustrate the basic block diagram of the computer system, seminars (Talk for Learning), interactive discussions, interactive multimedia presentations and practical sessions, video analysis, e.g. YouTube to discuss the characteristics of the conceptual computer. These strategies must respond to inclusivity and equity (i.e. ICT as a tool for expanding learning to diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia).
			Student teachers to create a wiki on "the state of ICT use in schools" during their school visits and to focus on how ICT is used in school. Wikis should also discuss barriers and possible solutions.
4	Software Installation	<ul><li>3.1 Formatting and partitioning of drives</li><li>3.2 Operating system installation,</li></ul>	Project- and problem-based (group work) learning to apply information skills, and inquiry-based learning (questioning), seminars (Talk for Learning), interactive discussions, interactive multimedia presentations, tutorial and practical sessions, video analysis, e.g. YouTube to identify and discuss and practise information literacy techniques. These strategies must respond to inclusivity and equity for all pupils. (Self-awareness: biases, beliefs and practices, styles of learning, interests, etc.)
			Studentteachers to create a wiki on the subject "issues when relating to ICT use".
5	Software Installation II	<ul> <li>3.2 Device and Driver installation</li> <li>3.3 Application Software installation Antivirus and other utility software installation</li> </ul>	Skills will be developed mainly through series of practical sessions to create educational artefacts, such as e-portfolios. Seminars (Talk for Learning), and interactive multimedia presentations to discuss project artefacts. Watching videos e.g. from YouTube to deepen understanding of the basics of operating systems. These strategies must respond to inclusivity and equity (i.e. ICT as a tool for expanding learning to diverse learners including people with differences in access to ICT, visual impairment, dyslexia, dysgraphia).
6	Troubleshooting common computer problems	<ul> <li>4.1 Tools, diagnostic procedures,</li> <li>4.2 troubleshooting techniques</li> <li>6.1 Fixing Common PC problems</li> </ul>	Skills will be developed mainly through series of practical exercises taught through project- and problem-based learning approaches and practical sessions (individual and group work) to create educational artefacts such as reports/lesson notes, newsletters, timetables. Interactive multimedia presentations, video analysis, e.g. YouTube, to discuss the concepts and techniques for using word processors. These strategies must respond to inclusivity and equity (i.e. ICT as a tool for expanding learning to diverse learners e.g. People with visual impairment, dyslexia, dysgraphia). Student teachers to create a wiki on "the use of word-processing software in education" based on information gathered during school visits and their personal experiences.

7	Computer maintenance and optimisation I	<ul><li>5.1 Types of maintenance</li><li>7.1 Maintenance scheduling</li></ul>	Skills will be developed mainly through series of practical exercises taught through project- and problem-based learning approaches and practical sessions (individual and group work) to create educational artefacts, such as sample lessons, presentation of school visit. Interactive multimedia presentations, video analysis, e.g. YouTube, to discuss the concepts and techniques for using presentation software. These strategies must respond to inclusivity and equity (i.e. ICT as a tool for expanding learning to diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Student teachers to create a wiki on the use of Presentation software in education
8	Computer maintenance and optimisation II	8.1 5.3 Common maintenance activities	Skills will be developed mainly through series of practical exercises taught through project- and problem-based learning approaches and practical sessions (individual and group work) to create educational artefacts, such as gradebooks, budgeting for educational materials/field trips. Interactive multimedia presentations, video analysis, e.g. using videos to support discussing the concepts and techniques for using spreadsheet software. These strategies must respond to inclusivity and equity (i.e. ICT as a tool for expanding learning to diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Student teachers to create a wiki on the use of spreadsheet software in education
9	Computer maintenance and optimisation III	<ul> <li>5.2 Managing and Supporting basic operating systems problems</li> <li>5.2.1 The boot process issues</li> <li>5.2.2 MBR corruption</li> <li>5.2.3 Boot sector corruption</li> <li>5.2.4 System file corruption</li> <li>5.2.5 Crashes or hangs</li> <li>5.2.6 Driver or service startup failure</li> <li>8.2 Logon problems</li> </ul>	Skills will be developed mainly through series of practical exercises taught through project- and problem-based learning approaches and practical sessions (individual and group work) to create educational artefacts, such as gradebooks, budgeting for educational materials/field trips. Interactive multimedia presentations, video analysis, e.g. using videos to support discussing the concepts and techniques for using spreadsheet software. These strategies must respond to inclusivity and equity (i.e. ICT as a tool for expanding learning to diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia). Student teachers to create a wiki on the use of spreadsheet software in education
10	Laboratory Configuration and Management I	8.3 Laboratory configurations for teaching and learning	Skills will be developed mainly through series of practical exercises taught through project- and problem-based learning approaches and practical sessions (individual and group work) to create educational artefacts, such as gradebooks, budgeting for educational materials/field trips. Interactive multimedia presentations, video analysis, e.g. using videos to support discussing the concepts and techniques for using spreadsheet software. These strategies must respond to inclusivity and equity (i.e. ICT as a tool for expanding learning to diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia).

r		1		
				Student teachers to create a wiki on the use of spreadsheet
				software in education
11	Laboratory Configuration and Management III	8.4	Software tools to manage computer laboratories	Skills will be developed mainly through series of practical exercises taught through project- and problem-based learning approaches and practical sessions (individual and group work) to create educational artefacts, such as gradebooks, budgeting for educational materials/field trips. Interactive multimedia presentations, video analysis, e.g. using videos to support discussing the concepts and techniques for using spreadsheet software. These strategies must respond to inclusivity and equity (i.e. ICT as a tool for expanding learning to diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia).
				Student teachers to create a wiki on the use of spreadsheet software in education
12	Laboratory Configuration and Management III	1.1.	Health and safety when working with computers	Skills will be developed mainly through series of practical exercises taught through project- and problem-based learning approaches and practical sessions (individual and group work) to create educational artefacts, such as gradebooks, budgeting for educational materials/field trips. Interactive multimedia presentations, video analysis, e.g. using videos to support discussing the concepts and techniques for using spreadsheet software. These strategies must respond to inclusivity and equity (i.e. ICT as a tool for expanding learning to diverse learners, e.g. people with visual impairment, dyslexia, dysgraphia).
				Student teachers to create a wiki on the use of spreadsheet software in education

2.	Teaching and Learning Strategies
٠	Concept maps
•	Cooperative learning, group and individual projects
•	Individual and group presentations
•	Writing of reflective notes
•	Talk for learning approaches- always, sometimes, never true, convince yourself, convince a friend; pyramid
	discussion etc.
•	Questioning
3.	Course Assessment Components
Compo	onent 1: Portfolio Assessment: (30% overall score)
•	Selected items of students work (3 of them – 10% each)- 30%
•	Midterm Assessment – 20%
•	Reflective Journal – 40%
•	Organisation of subject portfolio – 10% (how it is presented/organized)
Summ	ary of Assessment Method:
Create	e-portfolios to contain but not limited to
a.	A maintenance plan developed by the student teacher
b.	reflective notes of their observation during school visit relating to how to maintain school computer laboratories
C.	Presentations from Video Analysis, individual and group work on assembly of computer components and installation of operating systems.

 d. One (1) test/ Assignment/group work/quiz/class exercise to examine their understanding PC maintenance and laboratory management concepts

Weighting: 30%

#### Assesses Learning Outcomes: CLO 3, CLO 4

Component 2: Subject Project (30% overall semester score)

• Introduction a clear statement of aim and purpose of the project – 10%

- Methodology: what the student teacher has done and why to achieve the purpose of the project 20%
- Substantive or main section 40%
- Conclusion 30%

### Summary of Assessment Method:

 Project-/problem-/inquiry-based assessment to develop application/database development skills: Identify, investigate, propose and create solutions using object-oriented concepts, use user interface design concepts, software testing and relational database design, entity-relationship diagrams, data normalization

### Weighting: 30%

### Assesses Learning Outcomes: CLO 3, CLO 4

### Component 3: End of Semester Examination – 40% overall

### Summary of Assessment Method:

A combination of these written assessment methods to assess student teachers knowledge and understanding:

- i. Practical examination to test their knowledge of database & OOP concepts.
- ii. Written examination to test their knowledge of database & OOP concepts.

### Weighting: 40 %

### Assesses Learning Outcomes: CLO1, CLO2

#### 4. Required Reading and Reference List

Hunt, M., & Clemens, B. (2017). *Illustrated Microsoft Office 365 & Office 2016: Fundamentals*. Boston, MA Lambert, J., Lambert, S., (2015). *Windows 10: Step by Step (1<sup>st</sup> ed)*. Microsoft Press

O' Leary, T. J., & O' Leary L. I. (2017). Computing essentials, 26<sup>th</sup> edition. New York: McGraw Hill.

Shelly, G. B., Vermaat, M. E. (2011). *Discovering computers 2012: Living in a digital world, Complete International Edition*. Boston, MA: Thompson Course Technology.

Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering Computers. Integrating Technology and Digital Media in the Classroom. (7<sup>th</sup> ed). Thomson Course Technology

Wempen, F. (2014). Computing Fundamentals: Introduction to Computers. New York: Wiley

\* Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA [www.tessafrica.net], Udemy etc)

### 5. Teaching and Learning Resources

- 1. Smartphones
- 2. Laptops
- 3. Desktop computers
- 4. Tablets
- 5. TV and Radio
- 6. Open Educational Resources (Including: YouTube, MOOCS-Udemy/coursera, Khan academy, TESSA)
- 7. The iBox (CENDLOS)
- 8. Productivity tools
- 9. Subject based application software
- 10. Instructional laboratories (with multimedia equipment and smartboards)
- 11. Maintenance and repair workshops
- 12. Microsoft Encarta (2018). 1993-2005 Microsoft Corporation.

### 6. Course related professional development for tutors/lecturers

Talk for learning approaches

Year of B.Ed.	4 Se	Semester 2 Place of lesson in semester				7 8 9 10 11 12				
Title of Lesson	Compon	ents of compute	Lesson Duration	3 hours						
Lesson description	an oppor introduc	This lesson focuses on the characteristics of the computer system unit. Student teachers will have an opportunity to examine the basic building blocks of the computer system unit. This first lesson introduces student teachers to the course learning outcomes and the 3 assessment components of the course								
Previous student teacher knowledge, prior learning (assumed)		Student teachers would have taken an introduction to ICT course								
Possible barriers to learning in the lesso	-	ss sizes in some	colleges and univer	sities						
Lesson Delivery – chosen to support student teachers in achieving the	Face- to-face [√]	Activity Bas	ork- Seminars sed [V] arning	Independent Study [V]	e-learning opportunities [√]	Practicum				
outcomes         Lesson Delivery –         main mode of delive         chosen to support         student teachers in         achieving the learning         outcomes.         • Overarching         outcome (what         the student	ery e-learnin technolo student i of readin Seminar issues to Group w to face c enable ti Indepen enable si Open Ed support	ng opportunities gy on modern so teachers to acce hess levels, intero s:student and/or generate knowl rork:Put the stud lass and online. them to interact of dent study:Any of tudentsto person ucational Resour independent stud teachers should	ocieties.Multimedia ss both prior to and ests and learning pr r tutor led presenta edge lent teachers in dive Create a social med outside class. of the above metho nally engage with re rces (e.g. YouTube, idy.	g. texts, audio contents should in class and be ofiles. tionsto enable in erse groups to ir ia group for eac ds will include a elevant content. MOOCS-Udemy rate a clear und	and videos) to show d be shared on mobi able to cater for stur n-depth examination herrogate various is h group (e.g. Whats/ un element of indepe Tutors to direct stur /coursera, Khan acad lerstanding of how th , 2C-p21, 3A-23).	le devices for dents with a variety n and analysis of sues both in a face App, Telegram) to endent study to dent teachers to demy, TESSA) to				
teachersare to achieve) serves basis for the learning outcomes. An expanded version of the description. Write in full aspects of the NTS addressed	on	Outcomes	Learning Indicators		Identify the cross of	rutting issues -				
<ul> <li>Learning outcor for the lesson, picked and developed from the course</li> </ul>		Learning Outcomes       Learning Indicators       Identify the cross cutting issues – core and transferable skills, inclusivity, equity and diversity. H will these be addressed or developed?								
specification • Learning indicators for each learning outcome		subsystems uss their s and	Explain the functior various component computer		Communication sk critiquing and pres Critical thinking: th of changes resultin introduction of ICT	entations. rough the analysis g from the				

<b>Topic Title:</b> • Components of	Sub-topic	Stage/time	Personal development: through presentations and developing of arguments.         Respect and diversity: equity and inclusivity         Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led			
computer			collaborative group work or inde	pendent work		
			Teacher Activity	Student Activity		
	Introduction to course	20 mins	Questioning: Tutor uses questioning to introduce the Course Manual, assessment components and review student teacher's experience with computers in general. (PDG Theme 2)	Student teachersengage in a discussion with tutor on their experience with computers.		
	1.1 System Boards and Component Identification	100minutes	Face-to-Face/ e-learning opportunities:Tutor shows video of the types of system boards, the compatible components and how the components fits on the board(PDP Theme 2)	Face-to-Face/ e- learning opportunities:Student teacherswatches video of the types of system boards, the compatible components and how the components fits on the board. Student teacherwrites reflective notes and ask questions to clarify thinking. Individual presentation: Student teachers individually present their reflective notes on their analysis of the videos and/ or images shown to them.		
	1.1 Understanding processors &Memory	100minutes	<ul> <li>e-learning opportunities: Teacher shows videos/images of the types of computer processors &amp;memory.</li> <li>Group work: Teacher puts student teachers in small diverse groups to interact (PDP Theme 4):</li> <li>Identify the differences in processors &amp;memory</li> <li>Identify the advantages and disadvantages of each type of processors &amp;memory</li> </ul>	Group work: Student teachersundertake group discussions and makes notes and present the issues identified in a group. Develop a group wiki out of class(PDP Theme 4). Individual presentation:Student teachersindividually present their reflective notes on their analysisof the videos and/ or images shown to them.		
	Lesson closure	20 minutes	Guide student teachers to recap their discussion and the points identified in their discussions.	Student teachers recap the ideas/concepts learnt in the lesson.		

Lesson assessments –	Formative Assessment: (Individual and Group Presentation). (NTS 3J-p.14, 2C-p21, 3A-23, 3B, 3E)
evaluation of	Group presentations and wiki on the impact of ICT on society in general and education in
learning: of, for and as	particular.
learning within the	Group presentations on the skills required to function in the information age and the need
lesson	for teachers to have those skills.
	<ul> <li>Presentation of individual reflective notes on video analysis.</li> </ul>
	• Core skills to be developed: critical thinking, collaboration and communicative skills,
	personal development
Instructional	Videos/images
resources	TESSA online education resource. Teacher education in Africa
	Laptops, projectors
Required text (core)	Andrews, J. (2007). A+ guide to managing and maintaining your PC: Comprehensive edition.
	Boston, MA: Thomson
	Mueller S. (2011) Upgrading and Repairing PCs (20th Ed) Pearson Education
	Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering Computers.
	Thomson Course Technology.
Additional reading list	Andrews, J., & Verge, T. (2007). A+ guide to managing and maintaining your PC: Comprehensive –
	Lab Manual. Boston, MA: Thomson
	Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA, Udemy etc)
	T-TEL (2015), Questioning, Handbook for PD Coordinators
	T-TEL (2016), Group Work, Handbook for PD Coordinators
CPD needs	Writing reflective notes
	Participating in a community of practice/conferences and accessing online magazines(E-zines) and
	journals to obtain up to date content. Team teaching and lesson observation to improve
	instructional strategies and practices.
	Supporting student teachers in collaborating in designing and developing a wiki.

Year of B.Ed. 4	Semester	mester 2 Place of lesson in semester 1			12	1 <b>2</b> 3 4 5 6 7 8 9 10 11 12		
Title of Lesson	Components	of comput	ter II				Lesson Duration	n 3 hours
Lesson description	dr	ives and po				-	them understand which ones are s	
Previous student teacher knowledge, prior learning (assumed)	Student teachers have interacted and would have understood the basic concepts of ICT.							s of ICT.
Possible barriers to learning in the lesson	Negative vie	ws of ICT a	nd large clas	s sizes in sor	me college	es and	universities.	
Lesson delivery – chosen to support student teachers in achieving the outcomes	Face-to- face [V]	Practical Activity	Work- Based Learning	Seminars [V]	Indeper Study	ndent	e-learning Opportunities [√]	Practicum
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes	<ul> <li>Face-to-face – student and/or tutor led discussion, interactive lecturettes</li> <li>e-learning opportunities –Use multimedia(e.g. texts, audio and videos) to show</li> <li>affordances of technology and their ability to support development, teaching and learning</li> <li>Multimedia contents should be shared on mobile devices for student teachers to access</li> <li>both prior to and in class and be able to cater for students with a variety in readiness levels</li> <li>interests and learning profiles.</li> <li>Seminars: student and/or tutor led seminars to enable in-depth examination and analysis of issues to generate knowledge</li> <li>Group work: put student teachers in small groups to examine various issues both in a face to face class and online. Create a social media group for each group (e.g. WhatsApp, Telegram) to enable them to interact outside class using their mobile or any other suitable device.</li> <li>Independent study: any of the above methods will include an element of independent study to enable students to personally engage with relevant content.Tutor to direct studer teachers to Open Educational Resources (e.g. YouTube, MOOCS-Udemy/coursera, Khan academy, TESSA) to support independent study.</li> </ul>							o access ness levels, d analysis n in a face opp, er suitable endent ect student a, Khan
<ul> <li>Overarching outcome (what the student teachers are to achieve) serves as basis for the learning outcomes. An expanded version of the description.</li> <li>Write in full aspects of the NTS addressed.</li> </ul>	Information	and Comm	unications T	echnologies	in moder	n socie	tanding of the rel eties in general ar 14, 2C-p21, 3A-2	nd
<ul> <li>Learning outcome for the lesson, picked and developed from the course specification</li> <li>Learning indicators for each learning outcome</li> </ul>	issues – core and transferable skill inclusivity, equity diversity. How w be addressed or developed?							d lls, ity and will these r
	Identify com systems/sub discuss their and interacti	systems ar functions	nd v	the functior various comp computer		of a	Communication through critiqui presentations Critical thinking the critical analy ICT has contribu solving develop problems Personal develop	ng and : through ysis of how Ited to mental

Topic: Components of computer II	Sub-topic	Stage/time 20 minutes		selected. Teacher-led
	Working with Disk Drives	60 minutes	e-learning opportunities: Tutor shows a video of the types of hard drives andengage the student teacher in a discussion of the types of hard drives identified from the videos and/or images shown to them	e-learning opportunities: Student teachers to engage the teacher and each other in a discussion of the types of hard drives identified from the videos and/or images shown to them and the types that are suitable in the school system
	Installation and Support of Hard Drives	60 minutes	e-learning opportunities/discussion: Tutor shows a video of the process of installing and managing hard drives andengage the student teacher in a discussion of the process of installing and managing of hard drives identified from the videos and/or images shown to them	e-learning/discussion: Student teachers to engage the teacher and each other in a discussion of the process of installing and managing hard drives identified from the videos and/or images shown to them
	Installation and Support of Power Supply units	60 minutes	e-learning opportunities/discussion: Tutor shows a video of the process of installing and managingpower supply units andbreak the class into groups to discussion of the process of installing and managing of power supply units identified from the videos and/or images shown to them	e-learning/discussion: Student teachers to engage the tutor and each other in a group discussion of the process of installing and managing power supply units identified from the videos and/or images shown to them
	Lesson closure	30 minutes	Tutor engages student teachers to recap lesson	Students engage in discussion to recap knowledge acquired in lesson. Student teachers develop wikis in their groups on "the types of hard drives and power supply units and their suitability to the school system"

In-lesson Assessment(NTS 3J-p.14, 2C-p21).
Group presentations and wiki on "the types of hard drives and power supply units and their
suitability to the school system"
Images, videos
Laptop, projectors and mobile phones
Andrews, J. (2007). A+ guide to managing and maintaining your PC: Comprehensive edition.
Boston, MA: Thomson
Mueller S. (2011) Upgrading and Repairing PCs (20th Ed) Pearson Education
Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering
Computers. Thomson Course Technology.
Andrews, J., & Verge, T. (2007). A+ guide to managing and maintaining your PC:
Comprehensive – Lab Manual. Boston, MA: Thomson
Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA,
Udemy etc)
T-TEL (2015), Questioning, Handbook for PD Coordinators
T-TEL (2016), Group Work, Handbook for PD Coordinators
Writing reflective notes
Participating in a community of practice/conferences and accessing online magazines(E-
zines) and journals to obtain up to date content. Team teaching and lesson observation to
improve instructional strategies and practices.

Year of B.Ed.	4	Semester	2	Place of lesson in semester		1 2 <b>3</b> 4 5 6 7 8 9 10 11 12				
Title of Lesson		Building/Upgrading a computer     Lesson     3 hours       Duration								
Lesson descriptio	n	This lesson is to expose student teachers to and help them assemble and or upgrade the components of a computer.								
Previous student		It is assumed tha	t student t	eachers wou	uld have had	understood	the previous lessons	s on the		
teacher knowledg	ge,	components that								
prior learning										
(assumed)										
Possible barriers		Student teachers	s may have	had very lin	nited prior e	xperience of	using ICT tools			
learning in the les		<b>F b f</b>	Duration	14/	<b>C</b>			Due et incom		
Lesson Delivery –		Face-to-face	Practical		Seminars [√]	Independe	-	Practicum		
chosen to suppor student teachers		[v]	Activity [√]	Based Learning	[v]	Study [√]	opportunities [√]			
achieving the			[v]	Learning		[v]	[v]			
outcomes										
Lesson Delivery –	main	Face-to-face – Di	scussion (	group), inter	active lectur	ettes, reflect	tion should be used i	n facilitating		
mode of delivery		lessons.		5 17		,		U		
chosen to suppor	t	e-learning oppor	tunities –	Student tead	cherswould s	surf the inter	rnet using computers	s/mobile		
student teachers	in	devices etc.and c	lownload i	elevant liter	ature requir	ed for prese	ntations and analyse	images and		
achieving the lear	rning	videos. Multimed	dia conten	ts should be	shared on m	nobile device	s for them to access	both in and		
outcomes.		out of class.								
				-		-	ons in groups and ind	-		
		-	-		-		nd topics to research			
					-		resources (e.g. Youl	ube, MOOCS-		
		Udemy/coursera		-		-	-			
		-					o interrogate various			
							r each group (e.g. W			
. Our much in a							obile or any other su			
Overarching	at the		-		-		nponents of a compu ed in the various asp			
outcome (wh student	atthe	Education(NTS 20			leuge of now	illey ale us	eu ill the valious asp			
teachersare t	0		c).							
achieve) serv										
basis for the										
learning outo	omes.									
An expanded										
version of the	e									
description.										
• Write in full										
aspects of the	e NTS									
addressed							<b>I</b>			
Learning out		Learning Outcom	nes		Learni	ing Indicator	-	-		
for the lessor	٦,						- core and tran			
picked and							skills, inclusivit			
developed fro	om	addressing diversity. How								
the course		will these be addressed o								
specification	cators	Demonstrato kas	wledge	h	21 Accom	hle and	developed?			
Learning indi     for each learn		Demonstrate knowledge and understand of how the various2.1 Assemble and dissemble computersCommunication skills through critiquing and								
outcome	шg	components of a			assemble	computers	presentations			
Jucome		together	computer				Critical thinking	: through the		
							critical analysis	-		
							has contributed			
							developmental	-		

					Personal development: through presenting and
					developing arguments. Respect and diversity: equity and inclusivity
			Теа	ching and learning activition	es to achieve outcomes
			-	ending on the delivery mo	
	Sub-topic	Stage/time	coll	aborative group work or ir	ndependent.
			Теа	cher Activity	Student Activity
<b>Topic Title:</b> Building/Upgrading a computer	Introduction Assembling components Motherboard	30 minutes 130 minutes	of w prev type pow suit syst stor issu <b>Prac</b> brea dive	e-to-Face:lead discussion vikis developed from the vious lesson on "the es of hard drives and ver supply units and their ability to the school em". Tutor leads brain ming session to discuss es raised in wiki	Face-to-Face:Studentteacher engages indiscussion of wikisdeveloped fromthe previous lessonon "the types ofhard drives andpower supply unitsand their suitabilityto the schoolsystem". Studentteacher engagesbrain stormingsession to discussissues raised in wikiPractical activity:Studentteacher work in groups in apractical activity to assemble
	Assembling the parts (Installing Power supply, processor, cables, Memory, Optical drives, Using PCI slots, Hard drives, heat sink, fan)		asse	n in a practical activity to mble the components of mputer	the components of a computer
	Closure	20 minutes	tead	or guides the student thers to recap the ussions for the day	Individual presentation: Student teachers individually make reflective notes on the process of assembling a computer
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	<ul><li>Practical ac</li><li>Presentation</li></ul>	ctivity of assembling on of individual refle	g a con lective	o Presentation) (NTS 1E, 20 nputer notes on the process of as collaboration and commun	sembling a computer.
Instructional Resources	Videos/images TESSA online educa Laptop, projectors				
Required Text	O' Leary, T. J., & O'	Leary L. I. (2017). Co	omput	ing essentials, 26th edition	. New York: McGraw Hill
(core)	Wempen, F. (2014)	Computing Fundam	nentals	: Introduction to Computer	rs. New York: Wiley
Additional Reading	T-TEL (2015), Quest				
List	T-TEL (2016), Group	-			
CPD needs	Writing reflective no				
	Participating in a co journals to obtain u	mmunity of practic p to date content o	on ICT t	-	ne magazines(E-zines) and es of hardware and software. es and practices.

Year of B.Ed. 4	Semes	ster 2	Place of les	on in semester	1234567	7 8 9 10 11 12			
Title of Lesson	Software Installation I Lesson Duration 3 hours								
Lesson description	Student teacherswill be exposed to the nature of computer networks, the internet and the world wide web. They will have the opportunity to interrogate how these networks have changed the way people gather information, conduct research and learn, and how they have been used in teaching and learning. They will develop skills in using the tools which ran on these networks to interact with other learners and locate learning resources.								
Previous student teacher knowledge,	Student teac machines, et		rved or used co	nputer network	s in the form of mobile	e phones, ATM			
prior learning	indefinites) et								
(assumed) Possible barriers to learning in the lesson	Student teac	chers have little	personal experi	ence in the use o	of a wide range of con	nputer networks			
Lesson Delivery – chosen to support student teachers in achieving the outcomes		ractical Work- ctivity Based Learni	[v]	Independent Study [V]	e-learning opportunities [√]	Practicum			
<ul> <li>Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.</li> <li>Overarching outcome (what the student teachersare to achieve) serves as basis for the learning outcomes. An expanded version of the</li> </ul>	Face-to-face – Discussion, lecturette, individual and group work should be used in facilitating lessons.         e-learning opportunities – Student teacherswould surf the internet and download relevant literature and multimedia required for presentations and discussions. Multimedia contents should be shared on mobile devices for them to access both in and out of class.         Seminars – Student teacherswould prepare and givepresentations in groups and individuals.         Independent Study – Student teacherswould be given themes and topics to research for presentation and also develop their own teaching philosophies. Tutor to direct student teachers to Open Educational Resources (e.g. YouTube, MOOCS-Udemy/coursera, Khan academy, TESSA) to support independent study.         Group work: Student teachers to work in diverse groups to interrogate various issues both in a face to face class and online. Create a social media group for each group (e.g. WhatsApp, Telegram) to enable them to interact outside class using their mobile or any other suitable device.         Exhibit sound knowledge and understanding of what computer networks are, how they are classified and how touse the internet to find teaching and learning resources(NTECF p.68, NTS 2C, 1f).								
<ul> <li>Write in full aspects of the NTS addressed</li> <li>Learning outcome for the lesson, picked and developed from the course</li> </ul>	ects of the addressedLearning OutcomesLearning IndicatorsIdentify cross cutting issues – and transferable skills, inclusi equity and addressing diversit will these be addressed or developed?course cification rning cators for n learningInstall, configure/customize system and application3.4 Install and configure operating systems & device drivers Install applicationCommunication skills: through critiquing and presentations Digital literacy: surfing the inter relevant information on theme								
<ul> <li>specification</li> <li>Learning indicators for each learning outcome</li> </ul>									

			pres argu Res inclu	onal development: through enting and developing of iments. bect and diversity: equity and isivity				
Software	Sub-topic	Stage/time	Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent work.					
Installation I			Teacher Activity	Student Activity				
	Introduction	10 minutes	Face-to-face: Tutor/lecture reviews students'knowledg of assembling computers through questioning					
	Formatting and partitioning of drives	50 minutes	Face-to-Face: Tutorintroduces student teacherto the formatting andpartitioning drives and whyit is necessary to format orpartition.E-learning: Tutor showsimages/videos on theprocess of formatting andpartitioning drives. Tutorputs student teachersintosmall groups based on arandom criterion like the daor month of birth and tasksthem to discuss howformatting may be used inschool to support work inschool computerlaboratories	provide relevant responses Student teacherswork in smaller groups to discuss theaspects of formatting and partitioning drivesassigned to them and givea presentation to the class.				
	Operating system installation,	30 minutes	Face-to-Face: Tutorintroduces student teacherto the process of installingan operating system onto acomputer.E-learning: Tutor showsimages/videos on theprocess of installing anoperating system onto acomputer. Tutor putsstudent teachersinto smallgroups based on a randomcriterion like the day ormonth of birth and tasksthem to discuss the optionsto choose when installing aoperating system onto acomputer in school tosupport work in schoolcomputer laboratories	provide relevant responses Student teacherswork in smaller groups to discuss theaspects of installing an operating system onto a computer assigned to them and give a presentation to the class.				
	Formatting and partitioning of drives Operating system installation,	80 minutes	<b>practical:</b> Tutor guides students to format, partitio and install an operating system on a computer	Student teachers under the guidance of the tutor format, partition and install an operating system on a computer				

	Closure	10 minutes	Tutor guides the student	Individual presentation:			
			teachers to recap the	Student teachers individually			
			discussions for the day	make their reflective notes			
			· · · · · · · · · · · · · · · · · · ·	on the discussions for the			
				day.			
Lesson	In-lesson Assessmer	nt: (NTS 2C, 3B, 3N	)	· · · ·			
assessments –	Individual and group	presentations of o	discussions in class to be assesse	ed by student teachers			
evaluation of	themselves.						
learning: of, for							
and as learning							
within the lesson							
Instructional	Images and videos						
Resources	Projectors, compute	rs and internet cor	nnectivity				
Required Text	Andrews, J. (2007). A	A+ guide to manag	ng and maintaining your PC: Co	mprehensive edition. Boston,			
(core)	MA: Thomson						
	Mueller S. (2011) Up	grading and Repa	<i>ring PCs (20th Ed)</i> Pearson Educ	ation			
	Shelly, R., Cashman,	T.J., Gunter, G.A.,	and Gunter, R.E. (2013). Teache	rs Discovering Computers.			
	Thomson Course Teo	chnology.					
Additional Reading	Andrews, J., & Verge	, T. (2007). A+ gui	le to managing and maintaining	your PC: Comprehensive – Lab			
List	Manual. Boston, MA	: Thomson					
	Selected articles and	online resources	youtube.com, MOOCs: Khan Ac	ademy, TESSA, Udemy etc)			
	T-TEL (2015), Questi	oning, Handbook f	or PD Coordinators				
	T-TEL (2016), Group Work, Handbook for PD Coordinators						
CPD needs	Writing reflective no	tes					
	Participating in a cor	nmunity of practic	e/conferences and accessing on	line magazines(E-zines) and			
	journals to obtain up	to date content o	n current e-learning models and	l methods.			

Year of B.Ed.	Semester	Semester 2 Place of lesson in semester					10 11 12			
Title of Lesson	Software Installat	tion II		Lesson Duration	3 hours					
Lesson description	applica	Student teachers will be exposed to the processes for installing an application/utility/antivirus software on a computer. They will have a hands-on segment to install some software onto computers								
Previous student	Student teachers									
teacher knowledge,										
prior learning										
(assumed)										
Possible barriers to	Colleges of educa	ition and univ	versities may	have large o	class sizes that h	inder practical le	ssons.			
learning in the lesson										
Lesson Delivery –	Face-to-face	Practical	Work-	Seminars	Independent	e-learning	Practicum			
chosen to support	[v]	Activity	Based	[V]	Study	opportunities				
student teachers in			Learning		[v]	[v]				
achieving the										
outcomes			<u> </u>							
Lesson Delivery –	Face-to-face – Di		-			-				
main mode of	Role Play – Stude					•				
delivery chosen to	e-learning oppor									
support student teachers in achieving	literature require experienced teac	-		-		-				
the learning	both in and out o					e devices for the	in to access			
outcomes	Independent Stu		teachers wo	uld he given	themes and tor	nics to research fo	or.			
outcomes	presentation and	-		-	-					
	open educational									
	support independ		.5. 1001000		enty, coursera, i					
		· · · · · · <b>,</b>								
	Group work: Stud	dent teachers	to work in d	diverse small	groups to inter	rogate various iss	ues both in a			
	face to face class					-				
	to enable them to	o interact out	side class us	ing their mo	bile or any othe	r suitable device	to deal with			
	large class sizes.									
Overarching	Student teachers	should be ab	le to exhibit	sound know	ledge and unde	rstanding of relev	vant issues			
outcome (what	including ethics, i	-	operty prot	ection, healt	h and safety, se	curity and privacy	/ arising as a			
the student	result of the use	of ICT.								
teachers are to										
achieve) serves										
as basis for the										
learning										
outcomes. An										
expanded version of the										
<ul><li>description.</li><li>Write in full</li></ul>										
aspects of the NTS addressed										
Learning	Learning Outcom		Loarn	ing Indicato	rs	Identify cross c	utting issues			
Learning     Outcome for the		163	Lealli	ing mulcato	13	– core and tran	-			
lesson, picked										
and developed		skills, inclusivity, equity and addressing diversity. How								
from the course						will these be ac				
specification						developed?				
Learning	Install, configure	e/customize	3.5 Instal	l and config	ure operating	Communication	ı skills:			
indicators for	system and appl			ms & device		through critiqui				
each learning	software		-	l application		presentations	J			
outcome						Digital literacy:				
	l		I							

				understanding surfing the internet for relevant information on themes to be discussed. Personal development: through presenting and developing of arguments. Respect and diversity: using group activities with members having diverse characteristics.
	Sub-topic	Stage/time	Teaching and learning activi depending on the delivery r collaborative group work or	node selected. Teacher-led
			Teacher Activity	Student Activity
	Introduction	20 minutes	<b>Face-to-face:</b> Tutor engages student teachers in a discussion onformatting and partitioning of drives and installation of operating systems to recap knowledge from previous lesson (PDP Theme 2)	<b>Face-to-face:</b> Student teachers discusses with each other and tutor discussion onformatting and partitioning of drives and installation of operating systems to recap knowledge from previous lesson(PDP Theme 2).
Topic Title: Software Installation II	<ul> <li>3.7 Device and Driver installation</li> <li>3.8 Application Software installation</li> <li>3.9 Antivirus and other utility</li> </ul>	40 minutes	<ul> <li>Face-to-face: tutor/lecturer leads a review of the previous week's practical to ensure all operating systems are installed properly.</li> <li>eLearning: Tutor then shows student teacher videos of different instances on how to install application/utility/antivirus software .</li> </ul>	Student teachersengage the review of previous week assignment and review of RPK. Student teachers engage in role play and in doing so identify the issues that determine the nature of ethics and how it manifests in teaching and learning. Examples could be obtained from student experiences during their supported teaching in school (PDP Theme 1).
	software installation		<b>practical:</b> Tutor guides students to format, partition and install an application/utility/antivirus software on a computer	Student teachers under the guidance of the tutor install application/utility/antivirus software on a computer
	Lesson closure	20 minutes	Tutor engages student teachers to recap lesson	Students engage in discussion to recap knowledge acquired in lesson. Student teachers develop wikis in their groups on "the processes for installingan application/utility/antivirus software on a computer"
2Lesson assessments – evaluation of learning: of, for and as learning within the lesson	• software applicat	evaluate know e Group develo ion/utility/ant	ledge on Installing system and application opment of a wiki on <i>"the processes for in ivirus software on a computer"</i> chers develop reflective notes and ask qu	stalling an

Note: Wikis and reflective notes to go into portfolio
Images/ videos
Projectors and computers
Andrews, J. (2007). A+ guide to managing and maintaining your PC: Comprehensive edition. Boston, MA: Thomson
Mueller S. (2011) Upgrading and Repairing PCs (20th Ed) Pearson Education
Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering Computers.
Thomson Course Technology.
Andrews, J., & Verge, T. (2007). A+ guide to managing and maintaining your PC: Comprehensive –
Lab Manual. Boston, MA: Thomson
Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA, Udemy etc) T-TEL (2015), Questioning, Handbook for PD Coordinators
T-TEL (2016), Group Work, Handbook for PD Coordinators
Writing reflective notes
Participating in a community of practice/conferences and accessing online magazines(E-zines) and journals to obtain up to date content on the various issues including ethics, privacy and security, health and safety etc. arising out of the use of ICT.

Year of B.Ed.	4	Semester	2	Place of
---------------	---	----------	---	----------

ce of lesson in semester

1 2 3 4 5 **6** 7 8 9 10 11 12

Title of Lesson	Troublesho	oting commo		Lesson Duration	3 hours						
Lesson description	9	Student teachers would be introduced to the basics of troubleshooting a computer.									
Previous student teacher knowledge, prior learning (assumed) Possible barriers to	Students have an understanding of what a computer is and what its components are. Students may have misconceptions about policies and their effects on teaching and learning in										
learning in the lesson	Ghana.										
Lesson Delivery – chosen to support student teachers in achieving the outcomes	Ghana.Face-to- face [V]Practical ActivityWork- Based LearningSeminars [V]Independent Study [V]e-learning opportunities [V]Practice Practice										
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	e-learning	opportunitie	<b>s –</b> Student	teachers be	given some	e multir	in facilitating less media contents.N ooth in and out o	Aultimedia			
Overarching outcome	<ul> <li>Seminars – Student teachers would prepare and givepresentations in groups and individuals.</li> <li>Independent Study – Student teachers would be given themes and topics to research for presentation. Tutors to direct student teachers to open educational resources (e.g. YouTube, MOOCS-Udemy/coursera, Khan academy, TESSA) to support independent study.</li> <li>Group work: Student teachers to work in diverse groups to interrogate various issues both in a face to face class and online. Create a social media group for each group (e.g. WhatsApp, Telegram) to enable them to interact outside class using their mobile or any other suitable device.</li> </ul>										
<ul> <li>Overarching outcome (what the student teachers are to achieve) serves as basis for the learning outcomes. An expanded version of the description.</li> <li>Write in full aspects of the NTS addressed</li> </ul>	To be able to demonstrate an understanding of the basics of a computer operating system and how it is used to manage the resources of a computer system.										
<ul> <li>Learning Outcome for the lesson, picked and developed from the course specification</li> <li>Learning indicators for</li> </ul>	Learning Outcomes       Learning Indicators       Identify cross cutting issues – co and transferable skills, inclusivit equity and addressing diversity.         How will these be addressed or developed?							inclusivity, liversity.			
each learning outcome		pot compute uter periphe nters	rals	Diagnose recommend remedial ac computer malfunction	and ction to	Commu critiquin Digital I tasks on the ope Persona present argume Respect activitie	inication skills: th ng and presentat literacy: to perfo n a computer sys erating system. al development: ting and develop	tions rm basic tem using Through ing of sing group			

Topic Title	Sub-topic	Stage/time	Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.			
			Teacher Activity	Student Activity		
	Introduction	30 minutes	Face-to-Face: lead discussion of wikis developed from the previous lesson on <i>"the</i> <i>processes for installingan</i> <i>application/utility/antivirus</i> <i>software on a computer"</i> . Tutor leads brain storming session to discuss issues raised in wiki. Tutor introduces student teachers to computer repair and maintenance	<b>Face-to-Face:</b> Student teacher engages in discussion of wikis developed from the previous lesson on "the processes for installing an application/utility/antivirus software on a computer". Student teacher engages brain storming session to discuss issues raised in wiki		
	4.3 Tools, diagnostic procedures,	50 Minutes	<b>E-learning:</b> Tutor shows images/videos on the tools and diagnostic procedures for troubleshooting. Tutor puts student teachersinto small groups based on a random criterion like the day or month of birth and tasks them to discuss the characteristics and uses of diagnostic tools and diagnostic procedures for troubleshooting	Student teachers engage in the interactive discussion and provide relevant responses Student teacherswork in smaller groups to discuss characteristics and uses of diagnostic tools and diagnostic procedures for troubleshooting.		
Troubleshooting common computer problems	4.4 troubleshooting techniques	40 Minutes	E-learning: Tutor shows videos, e.g. from YouTube to deepen understanding of the other troubleshooting techniques.	Student teachers follow the video tutorial and have group discussions deepen understanding of the other troubleshooting techniques		
	4.5 Fixing Common PC problems	40 Minutes	<b>E-learning:</b> Tutor shows images/videos on common PC problems and their fixes. Tutor puts student teachersinto small groups based on a random criterion like the day or month of birth and tasks them to discuss their experiences with some common PC problems and their fixes.	Student teachers engage in the interactive discussion and provide relevant responses Student teacherswork in smaller groups to discuss their experiences with some common PC problems and their fixes.		
	4.6	20 minutes	Tutor guides the student teachers to recap the discussions for the day	Individual presentation: Student teachers individually make reflective notes on tools, diagnostic procedures, troubleshooting techniques, common PC problems and their fixes		

Lesson assessments –	Formative Assessment:
evaluation of learning: of,	Student teacher produce reflective notes on "diagnostic tools, diagnostic procedures,
for and as learning within	troubleshooting techniques, common PC problems and their fixes"
the lesson	
Instructional Resources	Images/ videos
	Projectors and computers
Required Text (core)	Andrews, J. (2007). A+ guide to managing and maintaining your PC: Comprehensive edition.
	Boston, MA: Thomson
	Mueller S. (2011) Upgrading and Repairing PCs (20th Ed) Pearson Education
	Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering
	Computers. Thomson Course Technology.
Additional Reading List	Andrews, J., & Verge, T. (2007). A+ guide to managing and maintaining your PC:
	Comprehensive – Lab Manual. Boston, MA: Thomson
	Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA, Udemy etc)
	T-TEL (2015), Questioning, Handbook for PD Coordinators
	T-TEL (2016), Group Work, Handbook for PD Coordinators
CPD needs	Writing reflective notes
	Participating in a community of practice/conferences and accessing up to date tutorials, online
	magazines(E-zines) and journals to obtain content and software updates. Team teaching and
	lesson observation to improve instructional strategies and practices.
	Supporting student teachers in creating e-portfolios.

Year of B.Ed. 4	Semester	2	Place of	mester	123456 <b>7</b> 89	9 10 11 12				
Title of Lesson	Computer maintenance and optimisation I Lesson 3 hours Duration									
Lesson description	The purpose of th	The purpose of this lesson is to introduce student teachers to a word processing package								
Previous student teacher knowledge, prior learning (assumed)	Student teachers have an understanding of maintenance. Student teachers will be introduced preventive and corrective maintenance and they will plan for maintenance for their STS school.									
Possible barriers to learning in the lesson	Some student tea	achers ma	y have very I	imited skill a	ind experience	e using a computer.				
Lesson Delivery – chosen to support student teachers in achieving the	Face-to-face [√]	Practical Activity [√]	Work- Based Learning	Seminars	Independen Study [√]	t e-learning opportunities [V]	Practicum			
outcomes Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	Face-to-face:Using a tutor to guide students to explore a word processing package and create an educational artefact. There will be an opportunity for student teachers to explore other uses of a word processing software.Practical work:to enable student teachers to perform simple word processing tasksE-learning opportunities – This will involve providing the student teachers with access to multimedia tutorials to support their learning. Multimedia tutorials can be shared with students (e.g. via mobile platforms) prior to class to enable student teachers with limited exposure to familiarise themselves with the content before the face to face session.Independent study:Tutor to direct student teachers to Open Educational Resources (e.g. YouTube, MOOCS-Udemy/coursera, Khan academy, TESSA) to support independent study and									
<ul> <li>Overarching outcome (what the student teachers are to achieve) serves as basis for the learning outcomes. An expanded version of the description.</li> <li>Write in full aspects of the NTS addressed</li> </ul>	practice both in a Be able to use a v			ation to crea	ate simple doc	uments(NTS 2C, 2D	), 3J).			
Learning Outcome for the lesson, picked and developed from the course specification	Learning Outcomes Learning Indicators Identify cross cutting issues - core and transferable skills, inclusivity, equity and addressing diversity. How wi these be addressed or developed?									
Learning indicators for each learning outcome	equipment	and associ C re	<ul> <li>apply the d test associated repair</li> <li>5.1 Repair basic PC faults</li> <li>Computer literacy skills: th creating educational artefa Respect and diversity: usin group activities with membra</li> </ul>							

Topic Title	Sub-topic	Stage/time	Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led				
			collaborative group work or Teacher Activity	independent. Student Activity			
	introduction	20 minutes	Face-to face: Tutor/lecturer uses questions to initiate discussion on what word processors are, their use in teaching and learning and the need to train teachers to use it.Tutor guides student teachers to explore the uses (PDP	Student teachers engage in discussions on what word processors are, what they are used for and provide responses to questions asked (PDP Theme 2).			
	Types of maintenance	50 minutes	Theme 2).E-learning: Tutor shows a video tutorial on the types of maintenance. Tutor then engages student teachers in a discussion on the types of maintenance and when they are needed	Student teachers follow the video and identify the types of maintenance. Student teacher then engages student teachers in a discussion on the types of maintenance and when they are needed			
Computer maintenance and optimisation I			group practical work: Tutor divides the class into groups and tasks them to identify maintenance issues required in their school computer laboratory.				
	Maintenance scheduling	50 minutes	<b>E-learning:</b> Tutor shows a video tutorial on the maintenance scheduling. Tutor then engages student teachers in a discussion on the types of maintenance and when they are needed	Student teachers follow the video and identifiedissues to develop a maintenanceplan in their school computer laboratory.			
			group practical work: Tutor divides the class into groups and tasks them to use identify maintenance issues to develop a maintenance plan in their school computer laboratory.				
	Closure	20 minutes	Tutor guides the student teachers to recap the discussions for the day	Individual presentation: Student teachers individually make reflective notes on the process of assembling a computer			
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	Student produ Students write	reflective notes o	2D, 3J) plan for a school computer labo n maintaining school computer				
Instructional Resources	Images/ videos Projectors and						
Required Text (core)	Andrews, J. (20 Boston, MA: Tl	007). A+ guide to n homson	nanaging and maintaining your Repairing PCs (20th Ed) Pearsc				

	Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering Computers. Thomson Course Technology.
Additional Reading List	Andrews, J., & Verge, T. (2007). A+ guide to managing and maintaining your PC: Comprehensive – Lab Manual. Boston, MA: Thomson Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA, Udemy etc) T-TEL (2015), Questioning, Handbook for PD Coordinators T-TEL (2016), Group Work, Handbook for PD Coordinators
CPD needs	Writing reflective notes Participating in a community of practice/conferences and accessing up to date tutorials, online magazines(E-zines) and journals to obtain content and software updates. Team teaching and lesson observation to improve instructional strategies and practices.

Year of B.Ed. 4	Semester	2	Place of	lesson in sei	nester	12345678	9 10 11 12		
Title of Lesson	Computer maintenance and optimisation II Lesson 3 hours								
	Duration           The purpose of this lesson is to develop student teachers' ability toperform specific								
Lesson description					ent teachers ly hands on s		ecific		
Previous student teacher				-	•	ssing features			
knowledge, prior learning			,						
(assumed)									
Possible barriers to learning	Some stud	ent teache	rs may not	have enough	h basic skills	to use word processi	ng software.		
in the lesson	<b>.</b> .	<b>D</b>		. ·					
Lesson Delivery – chosen to support student teachers in	Face-to- face [√]	Practica	Work- Based	Seminar s	Independe Study	nt e-learning opportunities	Practicum		
achieving the outcomes	Iace [V]	ı Activity	Learning	3	[v]	[V]			
		[V]							
Lesson Delivery – main mode	Face-to-fa	ce: Using a	a tutor to gu	uide students	s to explore a	a word processing pa	ckage and		
of delivery chosen to support					an opportun	ity for student teach	ers to explore		
student teachers in achieving			processing		r				
the learning outcomes.					-	lvanced word proces student teachers wit	-		
	-				-	tutorials can be sha			
					-	le student teachers v			
		-	-			re the face to face se			
					-	pen educational reso			
			-		ademy, TESS	A) to support indepe	ndent study		
O contraction of the sector of			and outside				tions to		
Overarching outcome     (what the student						rd processing applica emonstrate professio			
teachers are to achieve)						ution of documents(I			
serves as basis for the	3J).			,	,		,,		
learning outcomes. An									
expanded version of the									
description.									
Write in full aspects of the NTS addressed									
Learning Outcome for the	Learning C	Outcomes		Learning Ind	icators	Identify cross cuttin	g issues –		
lesson, picked and					lators	core and transferab	-		
developed from the						inclusivity, equity a			
course specification						diversity. How will t			
Learning indicators for						addressed or develo			
each learning outcome		concepts :		Plan and		Computer literacy sl	•		
	technique maintena			preventive corrective	and	creating educationa Respect and diversit			
				maintenance	2	group activities with			
						having diverse chara			
						Exhibit professionali	ism in		
						producing documen	ts for		
						teaching			

Topic Title	Sub-topic	Stage/time	Teaching and learning activi depending on the delivery n collaborative group work or	node selected. Teacher-led			
			Teacher Activity	Student Activity			
		20 minutes	Questioning: Tutor/lecturer uses questions to review maintenance concepts discussed in the last lesson	Student teachers provide responses to questions posed (PDP Theme 2)			
Computer maintenance and optimisation II	5.3 Common maintenance activities	140 minutes	E-learning: Tutor shows a video tutorial on how perform various maintenance tasks (blowing, updating system and application utilities, optimisation etc). Practical Work: Tutor guides student teachers to perform each task on a computer system	Student teachers follow the video and perform various maintenance task on a computer system			
		20 minutes	Tutor guides the student teachers to recap the discussions for the day	Individual presentation: Student teachers individually make reflective notes on the computer maintenance			
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	Formative Assessm processing applicat		tudent teachers write reflective school.	e notes on how word			
Instructional	Images/ videos						
Resources	Projectors and com						
Required Text (core)	Boston, MA: Thoms Mueller S. (2011) U Shelly, R., Cashman Thomson Course Te	son pgrading and Repa , T.J., Gunter, G.A., echnology.	ging and maintaining your PC: C niring PCs (20th Ed) Pearson Ed and Gunter, R.E. (2013). Teach	ucation ners Discovering Computers.			
Additional Reading List	Lab Manual. Bostor Selected articles an T-TEL (2015), Quest	& Verge, T. (2007). A+ guide to managing and maintaining your PC: Comprehensive – Boston, MA: Thomson cles and online resources (youtube.com, MOOCs: Khan Academy, TESSA, Udemy etc) Questioning, Handbook for PD Coordinators Group Work, Handbook for PD Coordinators					
CPD needs	Writing reflective notes Participating in a community of practice/conferences and accessing up to date tutorials, online magazines(E-zines) and journals to obtain content and software updates. Team teaching and lesson observation to improve instructional strategies and practices.						

Year of B.Ed. 4	Semester	2	Place of lesson in semester				12345678	<b>9</b> 10 11 12	
Title of Lesson	Computer	Computer maintenance and optimisation III Lesson 3 hou Duration							
Lesson description		The purpose of this lesson is to introduce student teachers to a presentation application.							
Previous student teacher knowledge, prior learning (assumed)		Student teachers have an understanding of how computers work in terms of hardware and software (system software and application software).							
Possible barriers to learning in the lesson	Some stude	ent teache	rs may ha	ve ver	y limited s	killsand prac	ctice time using a co	omputer.	
Lesson Delivery – chosen to support student teachers in achieving the outcomes	Face-to- face [√]	Practical Activity [v]	Work- Based Learnir	s	eminar	Independe Study [√]	nt e-learning opportunities [V]	Practicum	
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	educationa of a word p Independe E-learning multimedia students (e exposure to Independe	<ul> <li>Face-to-face:Tutor guides students to explore a word processing package and create an educational artefact. There will be an opportunity for student teachers to explore other uses of a word processing software.</li> <li>Independent study: to enable student teachers to perform simple word processing tasks</li> <li>E-learning opportunities – This will involve providing the student teachers with access to multimedia tutorials to support their learning. Multimedia tutorials can be shared with students (e.g. via mobile platforms) prior to class to enable student teachers with limited exposure to familiarise themselves with the content before the face to face session.</li> <li>Independent study:Tutor to direct student teachers to open educational resources (e.g. YouTube, MOOCS-Udemy/coursera, Khan academy, TESSA) to support independent study</li> </ul>							
<ul> <li>Overarching outcome (what the student teachers are to achieve) serves as basis for the learning outcomes. An expanded version of the description.</li> <li>Write in full aspects of the NTS addressed</li> </ul>	שפ מטופ נס ו	יזאר א huese	entation a	hhirg		eate simple c	ocuments.		
<ul> <li>Learning Outcome for the lesson, picked and developed from the course specification</li> <li>Learning indicators for each learning outcome</li> </ul>	Learning O	utcomes		Lear	ning Indic	ators	Identify cross cut core and transfer inclusivity, equity addressing divers these be address developed?	able skills, / and sity. How will	
	tools and equipmer with PC r	Identify and apply the tools and test5.1 Repair basic PC faultsComputer literacy skills: through creating educationa artefactsequipment associated with PC repair and maintenance activity.• 5.1 Repair basic PC faultsComputer literacy skills: through creating educationa artefactsgroup activities with member having diverse characteristics						educational rsity: using vith members	
Topic Title	Sub-topic		Stage/time         Teaching and learning activities to achieve outcom depending on the delivery mode selected. Teacher led collaborative group work or independent wor           Teacher Activity         Student Activity					eve outcomes ed. Teacher- ndent work.	
Computer maintenance and optimisation III	Introductio presentatio software (u advantages presentatio software)	on ises and s of	20 mir	20 minutes questions to recap maintenance tasks and concepts		ecturer uses ns to recap nance tasks	Student teachers discussion and qu toto recap mainte and concepts	estions and	

	E 2 Managing and	140minuto	a learning. Tutor	
	5.3 Managing and	140minute	e-learning: Tutor shows a video	
	Supporting basic	S		Drastical Marky Student
	operating		tutorial on various	Practical Work: Student
	systems		operating system	teachers follow videoand
	problems		problems including	engages in a discussion of
	5.3.1 The boot		boot process	managing the various operating
	process		issues, MBR	system issues.
	issues		corruption, Boot	
	5.3.2 MBR		sector corruption,	
	corruption		System file	
	5.3.3 Boot sector		corruption	
	corruption		Crashes or hangs,	
	5.3.4 System file		Driver or service	
	corruption		start-up failure and	
	5.3.5 Crashes or		Logon problems.	
	hangs			
	5.3.6 Driver or		Individual practical	
	service		work: Tutor then	
	startup		engages in a	
	failure		discussion of	
	5.3.7 Logon		managing the	
	problems		various operating	
			system issues.	
	Closure	20 minutes	Tutor guides the	Individual presentation:
			student teachers to	Student teachers individually
			recap the	make reflective notes on
			discussions for the	operating system problems
			day	
Lesson assessments –	Formative Assessment	: (NTS 2C, 2D,	3J)	
evaluation of learning: of,	Student teachers produ			ems problems
for and as learning within				-
the lesson				
Instructional Resources	Images/ videos			
	Projectors and comput	ers		
Required Text (core)	Andrews, J. (2007). A+	guide to mana	ging and maintaining y	our PC: Comprehensive edition.
	Boston, MA: Thomson			
	Mueller S. (2011) Upgr	ading and Rep	airing PCs (20th Ed) Pe	arson Education
	Shelly, R., Cashman, T.J	l., Gunter, G.A	., and Gunter, R.E. (201	.3). Teachers Discovering
	Computers. Thomson C			
Additional Reading List	Andrews, J., & Verge, T			naintaining your PC:
	Comprehensive – Lab N			
		nline resource	s (youtube.com, MOOC	Cs: Khan Academy, TESSA, Udemy
	etc)			
	T-TEL (2015), Question			
	T-TEL (2016), Group W	ork, Handbook	for PD Coordinators	
CPD needs	Writing reflective notes		· · · / · · · · f · · · ·	
				ccessing up to date tutorials,
				d software updates. Team
	teaching and lesson ob	servation to in	nprove instructional sti	rategies and practices.

Year of B.Ed.	4	Semest	ter 2		Place of lesson in semester			ter 123456789 <b>10</b> 1112			0 11 12
Title of Lesson		Laborator	Laboratory Configuration and Management I     Lesson Duration     3 hours						ours		
Lesson description			The purpose of this lesson is to develop student teachers' ability to work with more advanced presentation software features.								with more
Previous student tea	cher	Student te	Student teachers have the ability to use basic presentation application features								
knowledge, prior lea	rning										
(assumed)											
Possible barriers to		Some stud	lent teacher	s may	not ha	ve enough ba	sic pres	entation	application sk	cills.	
learning in the lessor											<b>a</b> .:
Lesson Delivery – cho	osen	Face-to-	Practical	Wo		Seminars		endent	e-learning		Practicum
to support student		face [V]	Activity	Bas			Study		opportunit	les	
teachers in achieving outcomes	gune		[v]	Lea	rning		[v]		[v]		
Lesson Delivery – ma	in	Face-to-fa	re. Using a	tutor	to guid	e students to	evnlore	a nresen	tation nackag	re and	create a
mode of delivery cho			-		-	l be an opport	•	-			
to support student	Joen	•	presentation			i se un oppor	carriey is	or student		chpioi	conci
teachers in achieving	the					teachers to pe	erform a	advanced	word process	sing ta	isks
learning outcomes.	,					involve provi			-	-	
		multimedi	a tutorials to	o supp	ort the	ir learning. M	lultimed	dia tutoria	ls can be sha	red w	ith students
		(e.g. via m	obile platfo	rms) p	rior to	class to enabl	e stude	nt teache	rs with limite	d exp	osure to
		familiarise	themselves	with	the cor	itent before t	he face	to face se	ssion.		
		Independ	<b>ent study:</b> Tu	itor to	direct	student teach	ners to d	open edu	ational resou	urces	e.g.
		YouTube,	MOOCS-Ude	emy/co	oursera	a, Khan acade	my, TES	SA) to sup	port indeper	ndent	study and
			oth in and o								
Overarching				-		effective, hig	-		-		
outcome (what t		better eng	gage and inv	olve ai	n audie	ence using adv	anced	oresentat	on applicatio	n feat	tures.
student teachers											
to achieve) serve											
basis for the lear	rning										
outcomes. An											
expanded versio	on of										
the description.	acto										
<ul> <li>Write in full aspending of the NTS address</li> </ul>											
Learning Outcon		Learning (	Dutcomes			earning		dentify c	oss cutting is	SUIDS	- core and
for the lesson, p		Learning	Juccomes			ndicators		-	ble skills, incl		
and developed f						indicators			essing diversi		
the course									ddressed or	-	
specification		Install,			3.10	nstall			literacy skills		-
Learning indicate	ors		/customize			configure		-	, ducational ar		-
for each learning		-	nd application	on	(	operating syst		-	nd diversity:		
outcome	-	software			8	& device drive	rs a	activities	with member	s havi	ng diverse
					•	nstall applicat	tion	character	stics.		
					9	oftware		-	ofessionalism	-	oducing
									s for teachin		
Topic Title	Sub-t	opic	Stage/time			Teaching and		-			
						depending of		-		Teac	ner-led
				-		collaborative	group	work or i	-		•-
				Tea	cher A	ctivity			Studen	t Acti	vity
Laboratory	Reca	o of	20 minutes	Fac	e-to fa	<b>ce:</b> Tutor/lect	urer us	es Stud	ent teachers	listen	and answer
Configuration and	know	ledge of		que	estions	to review kno	wledge	ques	tions.		
Management I	opera	-		of c	operati	ng systems pr	oblems				
	syste										
1	probl	ems									

	Laboratory	140	E-learning: Tutor shows a video	E-learning: student teacher watch
	configurations	minutes	tutorial on the different	video tutorial on the different
	for teaching		configurations of computer	configurations of computer
	and learning		laboratories in school and how	laboratories in school.
	0		advantages and disadvantages in	
			supporting learning.	Discussions: Student teacher in
				their groups discuss the computer
			Discussions: Tutor put class into	laboratory configuration in their
			small diverse groups and guides	school and how it is working and
			student teachers to discusses	how they can be improved.
			the computer laboratory	
			configuration in their school and	
			how it is working and how they	
			can be improved.	
		20 minutes	Tutor guides the student	Individual presentation: Student
			teachers to recap the	teachers in groups develop a wiki
			discussions for the day	on the <i>"advantages and</i>
				disadvantages of various computer laboratory configurations"
				aboratory conjugarations
Lesson			Group wiki on <i>"advantages and disc</i>	advantages of various computer
assessments –	laboratory conf	igurations.		
evaluation of				
learning: of, for				
and as learning				
within the lesson				
Instructional	Images/ videos			
Resources	Projectors and o	-		C. Community addition Destan
Required Text (core)	MA: Thomson	J7). A+ guide t	o managing and maintaining your P	C: Comprehensive edition. Boston,
		1) Unaradina d	and Repairing PCs (20th Ed) Pearson	Education
			er, G.A., and Gunter, R.E. (2013). Te	
	Thomson Cours			
Additional Reading				aining your PC: Comprehensive – Lab
List	Manual. Boston			
			sources (youtube.com, MOOCs: Kh	an Academy, TESSA, Udemy etc)
			ndbook for PD Coordinators	
		-	ndbook for PD Coordinators	
CPD needs	Writing reflectiv	ve notes		
-			of practice/conferences and accessi	ng up to date tutorials, online
			als to obtain content and software u	•
	observation to i	mprove instru	ctional strategies and practices.	

Year of B.Ed. 4	Semester	2	2 Place of lesson in semester			1 2 3 4 5 6 7 8 9 10 <b>11</b> 12			
Title of Lesson	Laborate	ory Configu	Lesson Duration	3 hours					
Lesson description		The purp application		esson is to in	troduce studen	t teachers to a spi	readsheet		
Previous student teacher	Student			rstanding of	how computers	work in terms of	hardware		
knowledge, prior learning (assumed)	and soft	ware (syste	em software	and applicat	ion software).				
Possible barriers to learning in the lesson	Some st	udent teacl	ners may hav	ve very limite	ed skill and expe	erience using a co	mputer.		
Lesson Delivery – chosen to	Face-	Practical	Work-	Seminar	Independent	e-learning	Practicum		
support student teachers in	to-	Activity [	Based	S	Study	opportunities			
achieving the outcomes	face [	√]	Learning		[v]	[V]			
	<b>v</b> ]	<u> </u>				<u> </u>			
Lesson Delivery – main mode of delivery chosen to support						cessing package a ent teachers to exp			
student teachers in achieving			cessing softw			int teachers to exp			
the learning outcomes.			-		hers to perform	simple word pro	cessing tasks		
	-	-			-	udent teachers wi	-		
	multime	edia tutorial	s to support	their learnir	ng. Multimedia	tutorials can be sh	ared with		
	student	s (e.g. via m	obile platfo	rms) prior to	class to enable	student teachers	with limited		
	-					the face to face s			
	-	-			•	en educational res			
			-		cademy, TESSA)	to support indep	endent study		
2	-		n and outsid				20.21		
Overarching outcome     (what the student	Be able	to use a spr	eadsneetap	plication to d	create simple do	ocuments (NTS 2C	, 2D, 3J).		
(what the student teachers are to achieve)									
serves as basis for the									
learning outcomes. An									
expanded version of the									
description.									
• Write in full aspects of the									
NTS addressed									
Learning Outcome for the	Learning	g Outcomes	5		Learning	Identify cross	-		
lesson, picked and					Indicators	issues – core			
developed from the						transferable s			
course specification						inclusivity, ec			
Learning indicators for						addressing di	-		
each learning outcome						will these be developed?	addressed or		
	Install.	configure/	customize	3.11	Install an		racy skills:		
	-	•	ation softw		configure	through creat			
					operating	educational a	•		
						& Respect and c	liversity:		
					device drivers	using group a			
				•	Install	members hav	-		
					application	characteristic	s.		
					software				

Topic Title	Sub-topic	Stage/time	Teaching and learning a outcomes depending or selected. Teacher-led co or independent. Teacher Activity				
			reacher Activity	Activity			
	Introduction	20 minutes	Questrioning: Tutor/lecturer uses questions to recap concepts of laboratory configuration to support teaching and learning.	Student teachers provide responses to questions posed (PDP Theme 2).			
Laboratory Configuration and Management III	1.1. Software tools to manage computer laboratories	120 minutes	E-learning: Tutor shows a video tutorial on computer laboratory management software. Individual practical work: Tutor puts student teachers into groups to discuss how such software can be used to manage activities in the computer laboratory in the STS school	Student teachers follow video, identify the feature of the computer laboratory software and discuss in their groups how such software can be used to manage activities in the computer laboratory in the STS school.			
	Closure	20 minutes	Tutor guides the student teachers to recap the discussions for the day	Individual presentation: Student teachers individually make reflective notes "using computer laboratory management software to manage their STS school computer laboratory".			
Lesson assessments –	Formative Assessment:	(NTS 2C, 2D, 3	<u>}</u> ])				
evaluation of learning: of, for and as learning within the lesson		reflective note	s "using computer laborat	tory management software			
Instructional Resources	Images/ videos Projectors and compute	ers					
Required Text (core)	Andrews, J. (2007). A+ guide to managing and maintaining your PC: Comprehensive edition. Boston, MA: Thomson Mueller S. (2011) <i>Upgrading and Repairing PCs (20th Ed)</i> Pearson Education Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering						
Additional Reading List	Computers. Thomson Course Technology.Andrews, J., & Verge, T. (2007). A+ guide to managing and maintaining your PC:Comprehensive – Lab Manual. Boston, MA: ThomsonSelected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA,Udemy etc)T-TEL (2015), Questioning, Handbook for PD CoordinatorsT-TEL (2016), Group Work, Handbook for PD Coordinators						
CPD needs	online magazines(E-zine	unity of practions of practions (the second se	ce/conferences and access s to obtain content and so prove instructional strates	ftware updates. Team			

Year of B.Ed. 4 S	Semester 2	Place of lesson in semester		mester 1	1 2 3 4 5 6 7 8 9 10 11 <b>12</b>			
Title of Lesson Laboratory		Configuration and Management III			Lesson Duration	3 hours		
Lesson description	The purpose of this lesson is to develop student teachers' ability to work with more advanced spreadsheet software features.							
Previous student teacher knowledge, prior learning (assumed)	Student teachers have the ability to use basic spreadsheet application features.							
Possible barriers to learning in the lesson Lesson Delivery – chosen to	Some student teachers may not have enough basic spreadsheet application skills.         Face-       Practical       Work-       Seminar       Independent       e-learning       Practicum							
support student teachers in achieving the outcomes	to-face Activit [√] [√]	y Based Learning	s	Study [v]	opportunities [√]			
<ul> <li>Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.</li> <li>Overarching outcome (what the student teachers are to achieve) serves as basis for the learning outcomes. An expanded version of the description.</li> <li>Write in full aspects of the NTS addressed</li> </ul>	[V][V]Learning[V][V]Face-to-face: Tutor to guide students to explore a presentation package and create a presentation for a lesson. There will be an opportunity for student teachers to explore other uses of a presentation software.Practical work: to enable student teachers to perform advanced word processing tasks E-learning opportunities – This will involve providing the student teachers with access to multimedia tutorials to support their learning. Multimedia tutorials can be shared with students (e.g. via mobile platforms) prior to class to enable student teachers with limited exposure to familiarise themselves with the content before the face to face session. Independent study: Tutors to direct student teachers to open educational resources (e.g. YouTube, MOOCS-Udemy/coursera, Khan academy, TESSA) to support independent study and practice both in and outside of class.Demonstrate the ability to use more advanced functions of spreadsheet applications which enable them to produce more sophisticated reports and to perform more advanced mathematical and statistical calculations, thus saving time and improving productivity(NTS 2C, 2D, 3J).							
<ul> <li>Learning Outcome for the lesson, picked and developed from the course specification</li> <li>Learning indicators for each learning outcome</li> </ul>	Learning Outcon		Learning Inc	co in au th de	lentify cross cuttir ore and transferab iclusivity, equity a ddressing diversity nese be addressed eveloped?	ole skills, nd y. How will or		
	Install, configure/custo system and application soft	mize	2Install and operating s device drive Install applic software	systems & cr rs R cation gr ha Ez pr	omputer literacy s reating educationa espect and diversit roup activities with aving diverse chara khibit professional roducing documen eaching.	Il artefacts ty: using n members acteristics. ism in		

Topic Title	Sub-topic	Stage/time	Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.			
			Teacher Activity	Student Activity		
	Recap of knowledge of computer laboratory management software	20 minutes	Face-to face: Tutor/lecturer uses questions to review knowledge of computer laboratory management software	Student teachers provide responses to questions posed (PDP Theme 2)		
Laboratory Configuration and Management III	Health and safety when working with computers	140 minutes	<ul> <li>E-learning: Tutor shows a video tutorial on the risks when repairing computers and how to mitigate those risks.</li> <li>Practical Session: Tutor guides student teachers to practice the risk mitigation measure.</li> </ul>	Student teacherswatch videos on the risks when repairing computers and how to mitigate those risks.Students write reflective notes on "risks exposed to when repairing computers and their mitigation measure"		
	<b>Review:</b> Proofing, Comments, Changes, etc.	20 minutes	Tutor guides the student teachers to recap the discussions for the day	Individual presentation: Student teachers individually make reflective notes on "risks exposed to when repairing computers and their mitigation measure"		
Lesson	formative Assessm	ent: (NTS 2C, 2D,	3B, 3J)			
assessments –		-	on Installing system and applic			
evaluation of learning: of, for and as learning within the lesson	Students v     mitigation		tes on "risks exposed to when re	epairing computers and their		
Instructional	Images/ videos					
Resources	Projectors and computers					
Required Text (core)	Boston, MA: Thom Mueller S. (2011) U Shelly, R., Cashman Thomson Course Te	son <i>pgrading and Rep</i> , T.J., Gunter, G.A echnology.	aging and maintaining your PC: ( pairing PCs (20th Ed) Pearson Ed , and Gunter, R.E. (2013). Teacl	ucation hers Discovering Computers.		
Additional Reading List	Andrews, J., & Verge, T. (2007). A+ guide to managing and maintaining your PC: Comprehensive – Lab Manual. Boston, MA: Thomson Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA, Udemy etc) T-TEL (2015), Questioning, Handbook for PD Coordinators T-TEL (2016), Group Work, Handbook for PD Coordinators					
CPD needs	magazines(E-zines) lesson observation	ommunity of pract and journals to o to improve instru	tice/conferences and accessing btain content and software upd ctional strategies and practices.	ates. Team teaching and		
Course			t: (30% overall score)			
assessment	Midterm A     Reflective     Organisati <sup>2</sup> Component 2: Sub	Assessment – 20% Journal – 40% on of subject port J <b>ject Project (30%</b>	tfolio – 10% (how it is presented 5 <b>overall semester score)</b>	l/organized)		
	Introducti	on a clear stateme	ent of aim and purpose of the p	roject – 10%		

<sup>&</sup>lt;sup>1</sup> See rubric on Subject Portfolio Assessment in Annex 6 of NTEAP <sup>2</sup> See rubric on Subject Project Assessment in Annex 6 of NTEAP

<ul> <li>Methodology: what the student teacher has done and why to achieve the purpose of the project - 20%</li> <li>Substantive or main section - 40%</li> <li>Conclusion - 30%</li> </ul>
Component 3: End of Semester Examination – 40% overall

www.t-tel.org