

YEAR 1

SEMESTER 2

Four-Year B.Ed. Course Manual

**INTRODUCTION TO INFORMATION AND
COMMUNICATIONS TECHNOLOGY (ICT)**





The Government of Ghana



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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-topics 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, NTECF, 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 the T-TEL Key Advisor, Dr. Eric Daniel Ananga 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 NC TE and Mr. Jerry Sarfo the Coordinator for the Colleges of Education, who in diverse ways supported during the Course Manual writing workshops. A special thanks goes to Dr. Adabo, Dr. Pepra-Mensah, Dr. Tamanja, Dr. Dzikunu, Mr. Tsadidey, and Mr Asamoah-Doudu who, as Editors, assisted in editing the first draft of the Year One Course Manuals.

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.

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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 CoEs 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 interest 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 topics 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 topics for weekly PD meetings where tutors/lecturers will situate the lessons in the contexts of their colleges and their student teachers, in order 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

INTRODUCTION TO INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)

COURSE DETAILS							
Course name	INTRODUCTION TO INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)						
Pre-requisite	None						
Course Level	100	Semester	2	Course Code		Credit Value	3

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.

GOAL FOR THE SUBJECT OR LEARNING AREA

The goal of the course is to introduce student teachers to 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 requirements. The course also aims to prepare the student teachers for using information and communications technologies in their teaching and for motivating their pupils to develop requisite ICT and 21st century skills and understanding.

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**).

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. There is an intra-national digital divide (Rich/Poor, Male/Female, Urban/Rural, SEND/Typical):

- a. Generally, there is low internet connectivity especially in the rural communities.
- b. The cost of access to the internet is high.
- c. Most schools lack computing facilities.
- d. Some schools do not have electricity supply.
- e. The ICT discipline is dominated by males.
- f. Existing facilities do not favour people with disability.

2. Low capacity for effective ICT teaching and Integration:

- a. Inadequate number of trained ICT teachers.
- b. Some teachers have low ICT competency and are not trained to integrate ICT into teaching and learning.
- c. Some students have a higher ICT competency than their teachers.
- d. Lack of skills to address the diverse needs of learners (e.g. learners with special needs).

3. 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. There is inadequate implementation of a nationwide ICT in education policy which requires ICT integration into teaching and learning.
- d. Low teacher motivation.
- e. Inadequate teaching and learning materials in ICT.
- f. Inadequate professional technology training opportunities and capacity building

4. Lack of authentic assessment:

- a. Most teachers use mainly the conventional test and quizzes to assess student learning outcomes. Little attention is given to project-, problem-solving, and enquiry-based assessment that would link theory with practice in real world settings
- b. Most teachers do not use learner-centered instructional strategies that require these authentic assessment tools

5. Socio-cultural perceptions of ICT:

- a. Sections of society have a negative perception of ICT and are hesitant in incorporating it into teaching and learning. The negative perception may include:
 - Unethical/immoral use of ICT
 - Insecurity of examination processes and student records
 - Job insecurity
 - There is more emphasis on ICT literacy than ICT integration into teaching and learning.

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 be fostered 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 by giving them the opportunity to examine, interrogate and make presentations on how 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
1. Demonstrate knowledge and understanding of the basic concepts of ICT and their impact on society, education and other developmental priorities.	1.1 Explain some basic concepts of ICT including: Computer, information, integration literacies, hardware, software. 1.2 Affordances of ICT tools. 1.3 Analyse and evaluate the changes brought about by the introduction of ICT.
1. Demonstrate basic ICT operations using ICT productivity tools.	2.1 Perform basic tasks using an operating system, e.g. create a folder. 2.2 Create, edit, format, save and print documents using various productivity tools. 2.3 Use the internet to search for information.
1. Demonstrate their own professional ICT needs in terms of professional knowledge, practice, values and attitudes – so as to meet the National Teachers Standard (NTS).	3.1 Explain ethical, intellectual property, privacy, security, social, inclusivity, equity and health and safety issues relating to the use of ICT. 3.2 Highlight the professional implications and applications of the above issues (3.1).

1. Course Content

Unit/ Week	Topics	Sub-topic (if any)	Teaching and learning activity to achieve the learning outcomes
1 CLO1, CLO3	The information society	<p>1.1 The advent of the information society.</p> <p>1.2 The role of the computer as the transforming agent in the information society.</p> <p>1.3 Requisite skills for the information society.</p>	<p>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 skills required 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 student teachers.</p> <p>Using creative approaches (such as games, storytelling, role play, songs and modelling) to stimulate and involve students when they interact with other students or during lessons.</p>
2 CLO1, CLO3	The promises of ICT	2.1 Potential benefits using ICT in education and national development	<p>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 discuss the impact of ICT in education. 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).</p>

Unit/ Week	Topics	Sub-topic (if any)	Teaching and learning activity to achieve the learning outcomes
3 CLO1, CLO3	The Conceptual Computer	3.1 Hardware 3.1.1 Input Units 3.1.2 Output Units 3.1.3 Central Processing Unit 3.1.4 Secondary Storage 3.2 Software (will be covered extensively in practical session) 3.2.1 The Systems Software Language Translators, Operating Systems, Device Drivers, Utility Programs (LODU), Software Development Environment and Languages 3.2.2 Application Software – Educational, Business (word spreadsheets, etc.) 3.3 Computer Networks and the Internet 3.3.1 Computer networks 3.3.2 Networking management tools 3.3.3 Background of the Internet 3.3.4 Getting connected – ISP 3.3.5 World Wide Web 3.3.6 Web browsing and searching resource 3.3.7 Using the internet: E-mail, searching resource	<p>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).</p> <p>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.</p>
4 CLO1, CLO3	Information Literacy	4.1 Locating and using information from different sources. 4.1.1 Information retrieval tools (abstracts, indexes, etc.) 4.1.2 Electronic resources/ TESSA OER (online databases, internet, MOOCS, CD-ROM, etc) 4.1.3 Reference sources (almanacs, encyclopaedias, dictionaries, etc.)	<p>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.</p> <p>These strategies must respond to inclusivity and equity for all pupils. (Self-awareness: biases, beliefs and practices, styles of learning, interests, etc.)</p>

Unit/ Week	Topics	Sub-topic (if any)	Teaching and learning activity to achieve the learning outcomes
		4.2 Issues relating to ICT use 4.2.1 Ethics (normative ethics, perspectives etc.) 4.2.2 Intellectual property issues perspectives etc.) 4.2.3 Privacy & security (fraud, computer crime) 4.2.4 Health and safety 4.2.5 Inclusivity & equity 4.2.6 Plagiarism & referencing/ citation	Student teachers to create a wiki on the subject "issues when relating to ICT use".
5 CLO2, CLO3	Basics of operating systems	5.1 Menus, windows, icons and dialog boxes, etc. 5.2 Files and folders (file systems, drives, folder and file attributes) 5.3 Tools: Explorer, print menu, accessories. Help facility (Help menu), control panel menu,	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 CLO2, CLO3	Word processors	6.1 Introduction to word-processing software 6.2 Word process menus, Home, Page Layout, Insert, References, Mailings, Review, View 6.3 Home: Font, Font size, Bullets, Numbering, Justification, etc. 6.4 Insert: Tables, Illustrations, Links, Header & Footer, Text, Symbols 6.5 Page Layout: Themes, Page Setup, Page Background, Paragraph, Arrange 6.6 References: Table of Content, Footnotes, Citations and Bibliography, Captions 6.7 Mailings: Mail Merge, Write & Insert fields, Preview results, Finish 6.8 Review: Proofing, Comments, Tracking, Changes, etc. 6.9 View: Document views, Show/Hide, Zoom, Window	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.

Unit/ Week	Topics	Sub-topic (if any)	Teaching and learning activity to achieve the learning outcomes
7 CLO2, CLO3		<p>7.1 Introduction to presentation software (its uses and advantages)</p> <p>7.2 Presentation Software Menus, Home, Page Layout, Formulas, Data, Review, View Home: Font, Font size, Bullets, Numbering, Justification, etc.</p> <p>7.3 Insert: Tables, Images, Charts, Links, Text, etc.</p> <p>7.4 Draw: use various word-processing tools</p> <p>7.5 Design: Slide design, slide size, format background, etc.</p> <p>7.6 Transition: Slide transition, sounds, slide advance, etc.</p> <p>7.7 Animation: Animation (entrance emphasis, exit), Timing, etc.</p> <p>7.8 View: presentation views, slide master, handout master, notes master, etc.</p>	<p>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).</p> <p>Student teachers to create a wiki on the use of Presentation software in education.</p>
8 CLO2, CLO3	Spreadsheets	<p>8.1 Introduction to spreadsheets (their uses and advantages)</p> <p>8.2 Spreadsheet Menus, Home, Page Layout, Formulas, Data, Review, View</p> <p>8.3 Home: Font, Font size, Alignment, Number, Style, Cells, Editing, etc.</p> <p>8.4 Insert: Tables, Illustrations, Charts, Links, Text</p> <p>8.5 Page Layout: Themes, Page Setup, Scale to fit, Sheet Options, Arrange</p> <p>8.6 Formulas: Function Library, Define Names, Formula Editing, Calculation</p> <p>8.7 Data: Connections, Sort & Filter, Data tools, Outline</p> <p>8.8 Review: Proofing, Comments, Changes, etc.</p> <p>8.9 View: Workbook view, Show/hide, Zoom, Window.</p>	<p>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.</p> <p>Interactive multimedia presentations, video analysis, e.g. using videos to support discussing the concepts and techniques for using spreadsheet software.</p> <p>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).</p> <p>Student teachers to create a wiki on the use of spreadsheet software in education.</p>

2. Teaching and Learning Strategies

- 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

Component 1: Written Assessment of 1500 words

Summary of Assessment Method:

Write a report which demonstrates knowledge and understanding of the basic concepts of ICT and their impact on society and education. Identify the key ICT concepts you, personally, want to develop further and why they will support your professional practice and teaching. CLO 1 and 3

NTS

1a) Critically and collectively reflects to improve teaching and learning.

2c) c) Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge for the school and grade they teach in.

3i) Explains concepts clearly using examples familiar to students.

3j) Produces and uses a variety of teaching and learning resources including ICT, to enhance learning.

Weighting: 30 %

Assesses Learning Outcome(s): CLO1

Component 2: Practical Assessment

Summary of Assessment Method:

Develop a timetable, a lesson presentation and a class gradebook for a class in your Supported Teaching in School (STS) school using a word processing software, a presentation software and a spreadsheet software respectively. You should take into consideration the techniques discussed in class.

NTS

2e) Understands how children develop and learn in diverse contexts and applies this in his or her teaching.

3b) Carries out small-scale action research to improve practice.

3e) Employs a variety of instructional strategies that encourages student participation and critical thinking.

3d) Manages behaviour and learning with small and large classes.

3n) Keeps meaningful records of every learner and communicates progress clearly to parents and learners.

Weighting: 50%

Assesses Learning Outcome(s): CLO 2 & CLO 3

Component 3: Portfolio Assessment

Summary of Assessment Method:

i. Create e-portfolios to contain

a. Artefacts from practical work and

b. Reports including wikis of observation of schools visit (Supported Teaching in School), etc.

Weighting: 20%

Assesses Learning Outcome(s): CLO 2 & CLO 3

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 (1st ed). Microsoft Press

O' Leary, T. J., & O' Leary L. I. (2017). Computing essentials, 26th 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. (7th 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], Udemey 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/courseera, 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

See PD Material on Year 1 Semester 2 Course on Introduction to Information and Communications Technology (ICT).

LESSON 1

DUPLICATE THE PLANNER FOR EACH LESSON

7. Plans for each lesson in the semester.

The following format should be completed for each lesson in the semester.

Year of B.Ed.	1	Semester	2	Place of lesson in semester	1 2 3 4 5 6 7 8 9 10 11 12
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Title of Lesson	The Information Society						Lesson Duration	3 hours
Lesson description	This focuses on the characteristics of the information age and on the role that ICT and the digital revolution have played in realizing the advent of the information age and on their impact on the emerging society, including on education. Student teachers will have an opportunity to examine the information society from an economic perspective. Functional participants need certain skills such as information literacy, technology literacy and visual literacy to compete effectively in the economy which has resulted from the information age.							
Previous student teacher knowledge, prior learning (assumed)	Student teachers would have observed technology and possibly interacted with such technology.							
Possible barriers to learning in the lesson	Large class sizes in some colleges and universities.							
Lesson Delivery - chosen to support student teachers in achieving the outcomes	Face-to-face √	Practical Activity √	Work-Based Learning	Seminars √	Independent Study √	e-learning opportunities √	Practicum	
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	<p>Face-to-face – Discussion, interactive lecturette.</p> <p>e-learning opportunities – Use multimedia (e.g. texts, audio and videos) to show impact of technology on modern societies. Multimedia contents should be shared on mobile devices for student teachers to access both prior to and in class and be able to cater for students with a variety of readiness levels, interests and learning profiles.</p> <p>Seminars: student and/or tutor led presentations to enable in-depth examination and analysis of issues to generate knowledge/</p> <p>Group work: Put the student teachers 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.</p> <p>Independent study: Any of the above methods will include an element of independent study to enable students to personally engage with relevant content. Tutors to direct student teachers to Open Educational Resources (e.g. YouTube, MOOCS-Udemy/courseera, Khan academy, TESSA) to support independent study.</p>							

<p>Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description.</p> <p>Write in full aspects of the NTS addressed</p>	<p>Student teachers should be able to demonstrate a clear understanding of the relevance of ICT in modern societies in general and education in particular (NTECF Crosscutting issue p.38 NTS 3J-p.14, 2C-p21, 3A-23).</p>
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<ul style="list-style-type: none"> Learning Outcome for the lesson, picked and developed from the course specification. Learning indicators for each learning outcome. 	Learning Outcomes	Learning Indicators	Identify which cross-cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?
	<p>Demonstrate knowledge and understanding of the basic concepts of ICT and its impact on society, education and national development.</p> <p>NTS: 1a, 1b, 2c, 2e/ NTECF: Pillar 1</p>	<ul style="list-style-type: none"> Identify the societal changes resulting from the introduction of ICT. Analyse and evaluate the changes brought about by the introduction of ICT in a written form: identify practical applications of ICT in society in general and education in particular. 	<p>Communication skills: through critiquing and presentations.</p> <p>Critical thinking: through the analysis of changes resulting from the introduction of ICT.</p> <p>Personal development: through presentations and developing of arguments.</p> <p>Respect and diversity: equity and inclusivity.</p>

Topic Title The Information Society	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
<p>Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent work</p>				
	The advent of the information society	Introduction: 20 minutes	<p>Face-to-face: Tutor engages student teachers in a discussion about what ICT is and how it manifests in our daily lives.</p> <p>Use of Multimedia: Tutor should initiate discussion with a video/ images of how things were before and after the introduction of ICT (PDP Theme 2).</p>	<p>Student teachers engage in a discussion with tutor on the concept of ICT.</p> <p>Student teachers to engage the teacher and each other in a discussion of the ideas/concepts of ICT identified from the videos and/or images shown to them and to reflect on their own experiences.</p>

Topic Title	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
	The role of ICT as the transforming agent in the information society	55 minutes	<p>Face-to-Face: Teacher guides the students through the timeline of changes from the agrarian era to the information age (PDP Theme 2).</p> <p>e-learning opportunities: Videos/images of the era are shown to enable analysis and deep thinking.</p>	<p>Student teachers develop reflective notes and ask questions to clarify thinking.</p> <p>Individual presentation: Student teachers individually present their reflective notes on their analysis of the videos and/or images shown to them.</p>
	Impact of the information age on society	55 minutes	<p>e-learning opportunities: Teacher shows videos/ images of the effects of technology.</p> <p>Group work: Teacher puts student teachers in small diverse groups to interact (PDP Theme 4):</p> <ul style="list-style-type: none"> Identify how ICT has changed society and how things are done. Identify the effects it has had on society and education in particular. Present their answers for discussion by all. 	<p>Group work: Student teachers undertake group discussions and makes notes and present the issues identified in a group. Develop a group wiki out of class (PDP Theme 4).</p> <p>Individual presentation: Student teachers individually present their reflective notes on their analysis of the videos and/or images shown to them.</p>
	Requisite skills for the information society	40 minutes	<p>Group work: Under the guidance of the teacher, groups resume their discussions to identify (PDP Theme 4).</p> <ul style="list-style-type: none"> The skills that are needed to be functional in the information age. Why it is important for teachers to have those skills. 	<p>Group work: Student teachers work in small groups to identify skills required to function in the information age and why it is important for teachers to have those skills (PDP Theme 4).</p>
	Lesson closure	10 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 – evaluation of learning: of, for and as learning within the lesson	<p>Formative Assessment: (Individual and Group Presentation). (NTS 3J-p.14, 2C-p21, 3A-23, 3B, 3E)</p> <ul style="list-style-type: none"> • Group presentations and wiki on the impact of ICT on society in general and education in particular. • Group presentations on the skills required to function in the information age and the need for teachers to have those skills. • Presentation of individual reflective notes on video analysis. • Core skills to be developed: critical thinking, collaboration and communicative skills, personal development
Instructional Resources	<p>Videos/images TESSA online education resource. Teacher education in Africa Laptops, projectors</p>
Required Text (core)	<p>O’ Leary, T. J., & O’ Leary L. I. (2017). Computing essentials, 26th edition. New York: McGraw Hill. Wempen, F. (2014) Computing Fundamentals: Introduction to Computers. New York: Wiley.</p>
Additional Reading List	<p><i>T-TEL (2015), Questioning, Handbook for PD Coordinators.</i> <i>T-TEL (2016), Group Work, Handbook for PD Coordinators.</i></p>
CPD needs	<p>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.</p>

LESSON 2

DUPLICATE THE PLANNER FOR EACH LESSON

Plans for each lesson in the semester.

The following format should be completed for each lesson in the semester.

Year of B.Ed.	1	Semester	2	Place of lesson in semester	1 2 3 4 5 6 7 8 9 10 11 12
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Title of Lesson	The Promises of ICT: Potential benefits using ICT in education and national development						Lesson Duration	3 hours
Lesson description	The lesson focuses on exploring the uses and impact of ICT on education and national development. Student teachers will be exposed to issues on how ICT affects work and support other goals such as inclusivity. This would enable the student teachers to reflect and interrogate their thinking, develop ways of addressing their misconceptions, removing the barriers to learning in order to develop positive orientations towards teaching learners with SEN. Lesson would be facilitated using various talk for learning approaches and video analyses.							
Previous student teacher knowledge, prior learning (assumed)	Student teachers have interacted and would have understood the basic concepts of ICT.							
Possible barriers to learning in the lesson	Negative views of ICT and large class sizes in some colleges and universities.							
Lesson Delivery - chosen to support student teachers in achieving the outcomes	Face-to-face √	Practical Activity √	Work-Based Learning	Seminars √	Independent Study √	E-learning opportunities √	Practicum	
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	<p>Face-to-face – student and/or tutor led discussion, interactive lecturettes.</p> <p>E-learning opportunities –Use multimedia (e.g. texts, audio and videos) to show affordances of technology and their ability to support development, teaching and learning. Multimedia contents should be shared on mobile devices for student teachers to access both prior to and in class and be able to cater for students with a variety in readiness levels, interests and learning profiles.</p> <p>Seminars: student and/or tutor led seminars to enable in-depth examination and analysis of issues to generate knowledge.</p> <p>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.</p> <p>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 student teachers to Open Educational Resources (e.g. YouTube, MOOCS-Udemy/courseera, Khan academy, TESSA) to support independent study.</p>							

<p>Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description.</p> <p>Write in full aspects of the NTS addressed</p>	<p>Student teachers should be able to demonstrate a clear understanding of the relevance of Information and Communications Technologies in modern societies in general and education in particular (NTECF Crosscutting issue p.38 NTS 3J-p.14, 2C-p21, 3A-23).</p>		
<ul style="list-style-type: none"> • Learning Outcome for the lesson, picked and developed from the course specification • Learning indicators for each learning outcome 	<p>Learning Outcomes</p>	<p>Learning Indicators</p>	<p>Identify which cross-cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?</p>
	<p>Demonstrate knowledge and understanding of the basic concepts of ICT and their impact on society, education and other developmental priorities.</p>	<p>1.1 Explain some basic concepts of ICT including: Computer, information, integration literacies, hardware, software.</p> <p>1.2 Affordances of ICT tools.</p> <p>1.3 Analyse and evaluate the changes brought by the introduction of ICT.</p>	<p>Communication skills: through critiquing and presentations</p> <p>Critical thinking: through the critical analysis of how ICT has contributed to solving developmental problems.</p> <p>Personal development: through presenting and developing arguments.</p> <p>Respect and diversity: equity and inclusivity.</p>

Topic Title	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
<p>Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent work.</p>				
<p>Potential benefits of using ICT in education and national development.</p>	<p>Introduction</p>	<p>10 minutes</p>	<p>Face-to-face: Tutor engages student teachers in a discussion on the affordances/ characteristics of artefacts and how these affordances make them suitable for various uses (PDP Theme 2)</p>	<p>Face-to-face: Student teachers identify and mention characteristics/ affordances of ICT and the suitability for various activities including teaching / learning and economic activities (PDP Theme 2).</p>

Topic Title	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
	Affordances of ICT	25 minutes	<p>Face-to-face: Having understood the nature of affordances, the tutor engages student teachers in an interactive discussion to identify the affordances of ICT (laptops, desktop, mobile and handheld devices, etc.) and how these affordances affect their use for various purposes especially education (PDP Theme 2).</p> <p>E-learning opportunities: Teacher shows videos/images on the affordances of ICT to enable students discuss these in their groups (PDP Theme 2).</p>	<p>Face-to-face: Student teachers participate in the discussion to identify the affordances of the various manifestations of ICT.</p> <p>E-learning Opportunities: Student teachers watch images/videos on the affordances of ICT and discuss within their groups.</p>
	Affordances of ICT for national development	30 minutes	<p>Face-to-face: Having identified the affordances of ICT the tutor engages student teachers in an interactive discussion to identify ways in which they can accelerate and upscale critical services in health, education, financial services, agriculture, and energy systems (PDP Theme 2).</p> <p>E-learning opportunities: Tutor/lecturer shows images/video on applications of ICT. Multimedia content should be shared to student mobile devices to enable them to interact with the content at their own pace (PDP Theme 2).</p>	<p>Student teachers engage in a discussion with tutor and among themselves on how ICT can be used in education and other economic activities.</p> <p>E-learning opportunities: Student teachers to engage the teacher and each other in a discussion of the ideas/concepts of ICT identified from the videos and/or images shown them.</p>

Topic Title	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
	Affordances of ICT for learning	45 minutes	<p>E-learning opportunities: Tutor/ lecturer to start discussion with video/ images for students to identify and discuss in their groups the affordances of ICT that enhance learning (PDP Theme 5).</p> <p>Face-to-face: Tutor elicits the affordances of ICT from the student teacher groups through an interactive discussion.</p> <p>Having identified the affordances of ICT the tutor engages student teachers to identify how ICT enhances constructivist methods of teaching and removes time and space as a barrier.</p>	Student teachers do a group presentation on the affordances of ICT in education and how to provide access.
	Justification of ICT for learning	30 minutes	<p>Face-to-face/group work: Tutor continues engaging the student groups to discuss how ICT when used in education can deepen and enhance the learning process through the active engagement with students, participation in groups, increased interaction and provision of feedback, among others (PDP Theme 2).</p>	<p>Face-to-face/group work: Student teachers participate in a group discussion and subsequently do a group presentation on how ICT can deepen and enhance the learning process through the active engagement with students, participation in groups, increased interaction and provision of feedback, among others. Develop a group wiki out of class.</p>

Topic Title	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
	Using technology for learning - integration	30 minutes	Face-to-face: Tutor leads an interactive discussion with the help of multimedia to introduce student teachers to the various modes of computer assisted instruction including drill-and-practice, educational games, tutorials, educational simulations, integrated learning systems, curriculum-specific software applications.	Student teachers engage in discussion with tutor on the modes of computer assisted instruction.
	Lesson closure	10 minutes	Tutor engages student teachers to recap lesson.	

Lesson assessments – evaluation of learning: of, for and as learning within the lesson	In-lesson Assessment (NTS 3J-p.14, 2C-p21). Group presentations and wiki on affordances of ICT and the suitability and application of these affordances for teaching/learning and other economic activities.
Instructional Resources	Images, videos. Laptop, projectors and mobile phones
Required Text (core)	<i>O' Leary, T. J., & O' Leary L. I. (2017). Computing essentials, 26th edition. New York: McGraw Hill.</i> <i>Wempen, F. (2014) Computing Fundamentals: Introduction to Computers. New York: Wiley.</i>
Additional Reading List	<i>T-TEL (2015), Questioning, Handbook for PD Coordinators.</i> <i>T-TEL (2016), Group Work, Handbook for PD Coordinators.</i>
CPD needs	See PD Material on Year 1 Semester 2 Course on Introduction to Information and Communications Technology (ICT).

LESSON 3

DUPLICATE THE PLANNER FOR EACH LESSON

Plans for each lesson in the semester.

The following format should be completed for each lesson in the semester.

Year of B.Ed.	1	Semester	2	Place of lesson in semester	12 3 4 5 6 7 8 9 10 11 12
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Title of Lesson	The Conceptual Computer 1						Lesson Duration	3 hours
Lesson description	This lesson is to expose student teachers to computer hardware and software and how they can be used for their teaching career or personal endeavours. It is to help the student teachers understand the capabilities of the various types of hardware and software and to better understand how computer components interact. It is also aimed at helping them be more effective in making decisions relating to technology and to be informed teachers.							
Previous student teacher knowledge, prior learning (assumed)	It is assumed that student teachers would have had prior exposure to some form of ICT in the form of telephones, televisions, computers, etc.							
Possible barriers to learning in the lesson	Student teachers may have had very limited prior experience of using ICT tools.							
Lesson Delivery - chosen to support student teachers in achieving the outcomes	Face-to-face √	Practical Activity √	Work-Based Learning	Seminars √	Independent Study √	E-learning opportunities √	Practicum	
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	<p>Face-to-face – Discussion (group), interactive lecturattes, reflection should be used in facilitating lessons.</p> <p>E-learning opportunities – Student teachers would surf the internet using computers/mobile devices etc. and download relevant literature required for presentations and analyse images and videos. Multimedia contents should be shared on mobile devices for them to access both in and out of class.</p> <p>Seminars – Student teachers would prepare and give presentations in groups and individually.</p> <p>Independent Study – Student teachers would be given themes and topics to research for presenting. Tutor to direct student teachers to open educational resources (e.g. YouTube, MOOCS-Udemy/coursera, Khan academy, TESSA) to support independent study.</p> <p>Group work: Student teachers to work in small 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.</p>							

<p>Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description. Write in full aspects of the NTS addressed</p>	<p>To exhibit sound knowledge and understanding of the basic components of a computer, to classify these components and to exhibit knowledge of how they are used in the various aspects of Education (NTS 2C).</p>		
<ul style="list-style-type: none"> • Learning Outcome for the lesson, picked and developed from the course specification • Learning indicators for each learning outcome 	<p>Learning Outcomes</p>	<p>Learning Indicators</p>	<p>Identify which cross-cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?</p>
	<p>Demonstrate knowledge and understanding of the basic concepts of ICT and their impact on society, education and other developmental priorities.</p>	<p>1.1 Explain some basic concepts of ICT including: Computer, information, integration literacies, hardware, software.</p> <p>1.2 Affordances of ICT tools.</p> <p>1.3 Analyse and evaluate the changes brought about by the introduction of ICT.</p>	<p>Communication skills: through critiquing and presentations</p> <p>Critical thinking: through the critical analysis of how ICT has contributed to solving developmental problems.</p> <p>Personal development: through presenting and developing arguments.</p> <p>Respect and diversity: equity and inclusivity</p>
	<p>Demonstrate basic ICT operations using ICT productivity tools.</p>	<p>2.1 Perform basic tasks using an operating system e.g. create a folder</p>	

<p>Topic Title The Conceptual Computer</p>	<p>Sub-Topic:</p>	<p>Stage/ time</p>	<p>Teacher Activity</p>	<p>Student Activity</p>
<p>Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.</p>				
	<p>Introduction to concept of hardware</p>	<p>15 minutes</p>	<p>Face-to-Face: Discussion of wikis developed from the previous lesson and linking these to previous knowledge of student teachers. Tutor leads brain storming session to define and identify the key points in defining computer software and hardware. Use concepts maps to link the key points.</p>	

Topic Title	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
	Hardware: Input Units Output Units Central Processing Unit Secondary Storage.	40 minutes	e-learning: Tutor/ lecturer to start discussion with video/ images for students to identify and discuss in groups the various hardware components and classify them (PDP Theme 2 & 4). Face-to-Face: Tutor then breaks class into groups to classify various computer hardware.	Face-to-face: Student teachers to search the internet to find the types of hardware and their classification. They will also engage in a group discussion to classify computer hardware and what it is used for.
	The Systems Software – Language Translators, Operating Systems, Device Drivers, Utility Programs (LODU).	45 minutes	Face-to-face: Having discussed what hardware is and the different types of hardware, the tutor engages student teachers in an interactive discussion and uses questioning to explain that without system software a hardware will have no function and that system software is required as a platform for other software. Tutor also engages students in a discussion on how software is developed in terms of programming languages, logic and algorithms. Group study: Student teachers review some literature and multimedia and gives direction to student teachers to help them identify the types of system software, what they are used for and examples of each in their groups. Practical work: Tutor leads student teachers to download and install a system software (e.g. antivirus, utility software)	Face-to-face: Student teachers engage in class discussion and answer questions to gain understanding of how system software is used to manage hardware and how the function as a platform for other software. Student teachers engage in a class discussion of how software is developed in terms of programming languages, logic and algorithms. Group Study: Student teachers go through materials provided by tutor and identify the types of system software, uses and examples of each in their groups (PDP Theme 4). Practical work: Student teachers participate in downloading and installing a system software (e.g. antivirus, utility software).

Topic Title	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
	Application Software – Educational, Business (word processors, spreadsheets, etc.)	30 minutes	<p>Face-to-Face: Tutor introduces student teachers to the various types of application software.</p> <p>Tutor then leads student teachers in an interactive discussion and questioning on how administrators, teachers, students, and other individuals use personal computers in today's society.</p>	<p>Face-to-Face: Student teachers engage in discussions and answer questions to provide examples of how administrators, teachers, students, and other individuals use personal computers in today's society and especially in schools.</p>
	Adaptive and assistive technologies New and emerging technologies	30 minutes	<p>e-learning: Tutor/ lecturer to start discussion with video/ images for students to identify and discuss in groups how current and emerging technology tools can assist in inclusivity and equity in education. (PDP Theme 4).</p> <p>Face to Face: Tutor leads an interactive discussion with student teachers on how information technologies can support Special Needs Education. Discussion will also focus on new and emerging technologies and their application in education (PDP Theme 2).</p>	<p>Student teachers undertake group discussions and note and present their answers on how current and emerging technology tools can enhance inclusivity and equity in education.</p>
	Closure	20 minutes	<p>Tutor guides the student teachers to recap the discussions for the day and to discuss how the conceptual computer is used or can be used in school.</p>	<p>Individual presentation: Student teachers individually make reflective notes on the discussions and how the ICT tools discussed can support their profession as a teacher.</p>

Lesson assessments – evaluation of learning: of, for and as learning within the lesson	<p>Formative Assessment: (Individual and Group Presentation) (NTS 1E, 2C, 3B)</p> <ul style="list-style-type: none"> • Group presentations on the types of hardware and software and their uses in education in particular. • Presentation of individual reflective notes on the conceptual computer and its application in school. <p>Core skills to be developed: critical thinking, collaboration and communicative skills, personal development.</p>
Instructional Resources	<p>Videos/images TESSA online education resource. Teacher education in Africa. Laptop, projectors.</p>
Required Text (core)	<p><i>O’ Leary, T. J., & O’ Leary L. I. (2017). Computing essentials, 26th edition. New York: McGraw Hill.</i> <i>Wempen, F. (2014) Computing Fundamentals: Introduction to Computers. New York: Wiley.</i></p>
Additional Reading List	<p><i>T-TEL (2015), Questioning, Handbook for PD Coordinators.</i> <i>T-TEL (2016), Group Work, Handbook for PD Coordinators.</i></p>
CPD needs	<p>See PD Material on Year 1 Semester 2 Course on Introduction to Information and Communications Technology (ICT).</p>

LESSON 4

DUPLICATE THE PLANNER FOR EACH LESSON

Plans for each lesson in the semester.

The following format should be completed for each lesson in the semester.

Year of B.Ed.	1	Semester	2	Place of lesson in semester	12 3 4 5 6 7 8 9 10 11 12
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Title of Lesson	Computer Networks, Internet and Information Literacy				Lesson Duration	3 hours	
Lesson description	Student teachers will 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, prior learning (assumed)	Student teachers have observed or used computer networks in the form of mobile phones, ATM machines, etc.						
Possible barriers to learning in the lesson	Student teachers have little personal experience in the use of a wide range of computer networks.						
Lesson Delivery - chosen to support student teachers in achieving the outcomes	Face-to-face √	Practical Activity √	Work-Based Learning	Seminars √	Independent Study √	E-learning opportunities √	Practicum
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	<p>Face-to-face – Discussion, lecturette, individual and group work should be used in facilitating lessons.</p> <p>E-learning opportunities – Student teachers would 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.</p> <p>Seminars – Student teachers would prepare and give presentations in groups and individuals.</p> <p>Independent Study – Student teachers would 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/courseera, Khan academy, TESSA) to support independent study.</p> <p>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.</p>						

<p>Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description. Write in full aspects of the NTS addressed</p>	<p>Exhibit sound knowledge and understanding of what computer networks are, how they are classified and how to use the internet to find teaching and learning resources (NTECF p.68, NTS 2C, 1f).</p>		
<ul style="list-style-type: none"> • Learning Outcome for the lesson, picked and developed from the course specification • Learning indicators for each learning outcome 	<p>Learning Outcomes</p>	<p>Learning Indicators</p>	<p>Identify which cross-cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?</p>
	<p>Demonstrate knowledge and understanding of the basic concepts of ICT and their impact on society, education and other developmental priorities.</p>	<p>1.1 Explain some basic concepts of ICT including: computer, information, integration literacies, hardware, software.</p> <p>1.2 Affordances of ICT tools.</p>	<p>Communication skills: through critiquing and presentations.</p> <p>Digital literacy: surfing the internet for relevant information on themes to be discussed.</p> <p>Personal development: through presenting and developing of arguments.</p> <p>Respect and diversity: equity and inclusivity.</p>
	<p>Demonstrate basic ICT operations using ICT productivity tools.</p>	<p>2.1 Explain the basics of a computer network and the internet.</p> <p>2.2 Use the internet to search for information.</p>	

Topic Title:	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
<p>Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent work.</p>				
<p>Computer Networks, Internet and Information Literacy</p>	<p>Introduction</p>	<p>10 minutes</p>	<p>Face-to-face: Tutor/ lecturer reviews students' experience with a computer network through questions and links it to the topic for discussion. (PDP Theme 2).</p>	

Topic Title	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
	<p>Computer Networks and the Internet: Computer networks Networking management tools Background of the internet Getting connected – ISPs World Wide Web Web browsing and searching resource Using the internet: email, file transfers/ downloading.</p>	1 hour	<p>Face-to-Face: Tutor introduces student teachers to the structure of a computer network and the internet and how they work using an interactive presentation. Use tools e.g. concepts maps to link the key points (PDP Theme 2).</p> <p>E-learning: Tutor shows images/videos on the manifestation of computer networks and the internet in the day to day lives of the students. Tutor puts student teachers into small groups based on a random criterion like the day or month of birth and assigns to them different aspects of computer networks/ internet to discuss and give a presentation (PDP Theme 4).</p>	<p>Student teachers engage in the interactive discussion and provide relevant responses .</p> <p>Student teachers work in smaller groups on the aspects of computer networks/internet assigned to them and give a presentation to the class.</p>
	Online and web mobile based learning	20 minutes	<p>Face-to-Face: Tutor leads brain storming session to identify and classify how computer networks can support learning. Tutor leads a discussion of how social media/networking and mobile devices are used and support teaching/ learning.</p>	<p>Student teachers engage in the brainstorming session and answer questions to classify computer network.</p> <p>They also identify how social media/ networking and mobile devices are used and support teaching/ learning.</p>

Topic Title	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
	<p>Locating and using information from different sources: Information retrieval tools (abstracts, indexes, etc.) Electronic resources/ TESSA OER (online databases, internet, MOOCS, CD-ROM, etc.) Reference sources (almanacs, encyclopaedias, dictionaries, etc.)</p>	50 minutes	<p>Independent study: Tutor asks students to search the internet using their mobile devices for specific teaching and learning resources and to report on the search (PDP Theme 5).</p>	<p>Student teachers give independent presentation on the resources they have been asked to present on.</p>
	Closure	20 minutes	<p>Tutor guides the student teachers to recap the discussions for the day and discuss how computer networks and the internet/computer is used or can be used in school (PDP Theme 3).</p> <p>Tutor gives an assignment for student teachers to observe and write notes on the use of ICT teaching resources found on the internet noting the ones that are morally good and the ones that are morally bad.</p>	<p>Individual presentation: Student teachers individually make their reflective notes on the discussions and how the computer networks, including the internet, can support their profession as a teacher (PDP Theme 3).</p> <p>Student teachers to do an assignment observing and writing notes on the use of ICT teaching resources found on the internet noting the ones that are morally good and the ones that are morally bad.</p>

Lesson assessments – evaluation of learning: of, for and as learning within the lesson	In-lesson Assessment: (NTS 2C, 3B, 3N) Individual and group presentations of exercises in class to be assessed by student teachers themselves.
Instructional Resources	Images and videos. Projectors, computers and internet connectivity.
Required Text (core)	<i>Shelly, G. B., Vermaat, M. E. (2011). Discovering computers 2012: Living in a digital world, Complete International Edition. Boston, MA: Thompson Course Technology.</i>
Additional Reading List	<i>Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering Computers; Integrating Technology and Digital Media in the Classroom. (7th ed). Thomson Course Technology.</i> <i>Wempen, F. (2014) Computing Fundamentals: Introduction to Computers. New York: Wiley</i> <i>* Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA [www.tessafrica.net], Udemy etc).</i>
CPD needs	See PD Material on Year 1 Semester 2 Course on Introduction to Information and Communications Technology (ICT).

LESSON 5

DUPLICATE THE PLANNER FOR EACH LESSON

Plans for each lesson in the semester.

The following format should be completed for each lesson in the semester.

Year of B.Ed.	1	Semester	2	Place of lesson in semester	12 3 4 5 6 7 8 9 10 11 12
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Title of Lesson	Issues relating to ICT use						Lesson Duration	3 hours
Lesson description	Student teachers will be exposed to various issues that arise as a result of using ICT for our day to day activities. They will have the opportunity to examine various health, safety, security and privacy risks and their mitigation mechanisms. They will also have the opportunity to interrogate and critique various ethical perspectives, equity and inclusivity issues and intellectual property protections available. This is to enable them to appreciate and develop a professional approach to the use of ICT in their career.							
Previous student teacher knowledge, prior learning (assumed)	Student teachers have been exposed to and used ICT.							
Possible barriers to learning in the lesson	Colleges of education and universities may have large class sizes.							
Lesson Delivery - chosen to support student teachers in achieving the outcomes	Face-to-face √	Practical Activity √	Work-Based Learning	Seminars √	Independent Study √	E-learning opportunities √	Practicum	
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	<p>Face-to-face – Discussion, lecturette, think, pair share should be used in facilitating lessons.</p> <p>Role Play – Student teachers will act out scenarios as a technique to elicit points for discussion.</p> <p>E-learning opportunities – Student teachers would surf the internet and download relevant literature required for presentations and analyse videos of teaching philosophies shared by experienced teachers. Multimedia contents should be shared on mobile devices for them to access both in and out of class.</p> <p>Independent Study – Student teachers would 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/coursea, Khan academy, TESSA) to support independent study.</p> <p>Group work: Student teachers to work in diverse small 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 to deal with large class sizes.</p>							

<p>Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description. Write in full aspects of the NTS addressed</p>	<p>Student teachers should be able to exhibit sound knowledge and understanding of relevant issues including ethics, intellectual property protection, health and safety, security and privacy arising as a result of the use of ICT.</p>		
<ul style="list-style-type: none"> • Learning Outcome for the lesson, picked and developed from the course specification • Learning indicators for each learning outcome 	<p>Learning Outcomes</p>	<p>Learning Indicators</p>	<p>Identify which cross-cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?</p>
	<p>Demonstrate knowledge and understanding of issues arising in ICT use (NTS 1C, D, F, G, 2C).</p>	<p>4.1.1 Explain the basic concepts of ethics (normative ethics, ethical perspectives etc.)</p> <p>4.1.2 Explain the basic concepts of intellectual property and describe the types of intellectual property protection available (copyrights, patents, etc.).</p> <p>4.1.3 Explain the basic concepts of privacy and security (fraud, computer crime).</p> <p>4.1.4 Explain the basic concepts of health and safety relevant to ICT use.</p> <p>4.1.5 Explain the basic concepts of inclusivity and equity relative to ICT use.</p> <p>4.1.6 Explain the basic concepts of plagiarism and referencing/ citation.</p>	<p>Communication skills: through critiquing and presentations.</p> <p>Digital literacy: understanding surfing the internet for relevant information on themes to be discussed.</p> <p>Personal development: through presenting and developing of arguments.</p> <p>Respect and diversity: using group activities with members having diverse characteristics.</p>

Topic:	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent work.				
Issues relating to ICT use	Ethics: Normative ethics, Ethical perspectives Ethical issues relating to the use of ICT Plagiarism and referencing/citation.	45 minutes	<p>Face-to-face: tutor/ lecturer leads a review of the previous week's assignment and discusses how morally good/bad the use of some ICT teaching resources are. Tutor further reviews previous knowledge through questioning and guides student teacher role play to initiate an interactive discussion on the actions that are morally good/bad depending on "the actor", "the action" or "the consequences".</p> <p>The discussions should focus on how ethical/ unethical behavior including plagiarism occurs in an ICT environment and its applications in teaching and learning (PDP Theme 1).</p>	<p>Student teachers engage the review of previous week assignment and review of RPK.</p> <p>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.</p> <p>Examples could be obtained from student experiences during their supported teaching in school (PDP Theme 1).</p>
	Intellectual property issues: Copyrights Patents Trademarks	40 minutes	<p>Face-to-face: tutor uses questioning and initiates an interactive discussion on the need for intellectual property protection (PDP Theme 2).</p> <p>E-learning: tutor shows images/animation/ video to elicit ideas on the types of intellectual property protections available and how these protections apply to the ICT environment and their applications in teaching and learning</p>	Student teachers work in their groups to identify the types of intellectual property protections available and give a presentation (PDP Theme 3).

Topic Title	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
	Privacy and security Fraud Computer crime Protecting information and privacy	50 minutes	<p>E-learning: tutor shows electronic news / newspaper articles/ images/animation/ video to demonstrate and elicit ideas on the types of privacy and security incidents and how to mitigate and protect against such incidents, especially in the education and school environment (PDP Theme 3).</p> <p>Face-to-face: tutor uses questioning and initiates an interactive discussion on the risks and mitigation measures for privacy and security incidents.</p>	Student teachers work in their groups to identify the types of privacy and security risks, mitigation mechanisms available and give a presentation (PDP Theme 3).
	Health and safety Inclusivity and equity issues in ICT use	45 minutes	<p>E-learning: Tutor shows images/video to demonstrate the risks relating to health, safety, inclusivity and equity in the use of ICT.</p> <p>Face-to-face: tutor uses questioning and initiates an interactive discussion on the risks and mitigation measures for health, safety, inclusivity and equity (PDP Theme 2).</p>	Student teachers work in their groups to research and identify the risks of health and safety and the mitigation measures available and give a presentation. Student teachers develop individual reflective notes and ask questions to clarify thinking (PDP Theme 2).

Lesson assessments – evaluation of learning: of, for and as learning within the lesson	<p>In-lesson Assessment: Individual and group work (NTS: 1C, 1D, 1F, 1G, 2C, 3B) Group presentation and wiki on issues relating to the use of ICT.</p> <p>Individual student teachers develop reflective notes and ask questions to clarify thinking.</p> <p>Semester Project: Revised presentations should be resubmitted as end of semester project.</p>
Instructional Resources	<p>Images/ videos. Projectors and computers.</p>
Required Text (core)	<p><i>Reynolds, G. (2007). <u>Ethics in Information Technology</u>. Thompson Course Technology.</i></p>
Additional Reading List	<p><i>Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA [www.tessafrica.net], Udemy etc).</i></p>
CPD needs	<p>See PD Material on Year 1 Semester 2 Course on Introduction to Information and Communications Technology (ICT).</p>

LESSON 6

DUPLICATE THE PLANNER FOR EACH LESSON

Plans for each lesson in the semester.

The following format should be completed for each lesson in the semester.

Year of B.Ed.	1	Semester	2	Place of lesson in semester	1 2 3 4 5 6 7 8 9 10 11 12
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Title of Lesson	Basics of Computer Operating Systems				Lesson Duration	3 hours	
Lesson description	Student teachers would be introduced to the basics of an operating system. They will discuss what an operating system does and why it is required for a computer to work properly and perform some basic tasks that an operating system is able to do.						
Previous student teacher knowledge, prior learning (assumed)	Students have an understanding of what a computer is and what its components are.						
Possible barriers to learning in the lesson	Students may have misconceptions about policies and their effects on teaching and learning in Ghana.						
Lesson Delivery - chosen to support student teachers in achieving the outcomes	Face-to-face √	Practical Activity √	Work-Based Learning	Seminars √	Independent Study	E-learning opportunities √	Practicum
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	<p>Face-to-face – Discussion, interactive lecturattes, should be used in facilitating lessons.</p> <p>E-learning opportunities – Student teachers be given some multimedia contents. Multimedia contents should be shared on mobile devices for them to access both in and out of class.</p> <p>Seminars – Student teachers would prepare and give presentations in groups and individuals.</p> <p>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.</p> <p>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.</p>						

<p>Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description. Write in full aspects of the NTS addressed</p>	<p>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.</p>		
<ul style="list-style-type: none"> • Learning Outcome for the lesson, picked and developed from the course specification • Learning indicators for each learning outcome 	<p>Learning Outcomes</p>	<p>Learning Indicators</p>	<p>Identify which cross-cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?</p>
	<p>Demonstrate basic knowledge of an operating system (NTS 2C, 2D).</p>	<p>Perform basic tasks using an operating system, e.g. create a folder.</p>	<p>Communication skills: through critiquing and presentations. Digital literacy: to perform basic tasks on a computer system using the operating system. Personal development: Through presenting and developing of arguments. Respect and diversity: using group activities with members having diverse characteristics.</p>

Topic:	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.				
Basics of operating systems	Menus, windows, icons and dialogue boxes, etc.	1 hour	E-learning: Tutor/ lecturer uses images/ videos to introduce students to an operating system. Leads interactive discussion and questioning to explain the relevance and the basics of an operating system (PDP Theme 2).	Student teachers analyse videos/ images, engage in the discussions and provide answers to probing questions.
	Files and folders (file systems, drives, folder and file attributes)	1 hour	Tutor leads student through a practical session to individually create educational artefacts, such as e-portfolios.	Student teachers create the folder structure of their e-portfolio.
	Tools: Explorer, Print menu, Accessories. Help facility (Help menu), Control panel menu.	1 hour	Watching videos, e.g. from YouTube to deepen understanding of the other features of the operating systems.	Student teachers follow the video tutorial and explore the feature of the operating system and add customisation to their e-portfolio.
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	Formative Assessment: Artefact (e-portfolio) produced by student teachers (NTS 2C, 2D, 3J).			
Instructional Resources	Images/ videos. Projectors and computers.			
Required Text (core)	<i>Lambert, J., Lambert, S., (2015) Windows 10: Step by Step (1st ed).Microsoft Press</i> <i>O’ Leary, T. J., & O’ Leary L. I. (2017). Computing essentials, 26th edition. New York: McGraw Hill.</i>			
Additional Reading List	<i>Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering Computers. Integrating Technology and Digital Media in the Classroom. (7th ed). Thomson Course Technology.</i> <i>**Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA [www.tessafrica.net], Udemy etc).</i>			
CPD needs	See PD Material on Year 1 Semester 2 Course on Introduction to Information and Communications Technology (ICT).			

LESSON 7

DUPLICATE THE PLANNER FOR EACH LESSON

Plans for each lesson in the semester.

The following format should be completed for each lesson in the semester.

Year of B.Ed.	1	Semester	2	Place of lesson in semester	12 3 4 5 6 7 8 9 10 11 12
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Title of Lesson	Word processors I					Lesson Duration	3 hours
Lesson description	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 how computers work in terms of hardware and software (system software and application software).						
Possible barriers to learning in the lesson	Some student teachers may have very limited skill and experience using a computer.						
Lesson Delivery - chosen to support student teachers in achieving the outcomes	Face-to-face √	Practical Activity √	Work-Based Learning	Seminars √	Independent Study	e-learning opportunities √	Practicum
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	<p>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.</p> <p>Practical work: to enable student teachers to perform simple word processing tasks.</p> <p>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.</p> <p>Independent study: Tutor to direct student teachers to Open Educational Resources (e.g. YouTube, MOOCS-Udemy/coursea, Khan academy, TESSA) to support independent study and practice both in and outside of class.</p>						

<p>Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description.</p> <p>Write in full aspects of the NTS addressed</p>	<p>Be able to use a word processing application to create simple documents (NTS 2C, 2D, 3J).</p>			
<ul style="list-style-type: none"> • Learning Outcome for the lesson, picked and developed from the course specification • Learning indicators for each learning outcome 	<p>Learning Outcomes</p>	<p>Learning Indicators</p>	<p>Identify which cross-cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?</p>	
	<p>Demonstrate basic ICT operations using ICT productivity tools (Word Processing Application) (NTS 2C, 2D, 3J).</p>	<ul style="list-style-type: none"> • Perform basic tasks using a word processing application. • Create, edit, format, save and print documents using a word processing application. 	<p>Computer literacy skills: through creating educational artefacts</p> <p>Respect and diversity: using group activities with members having diverse characteristics.</p>	
<p>Topic:</p>	<p>Sub-Topic:</p>	<p>Stage/ time</p>	<p>Teacher Activity</p>	<p>Student Activity</p>
<p>Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.</p>				
<p>Word processors I</p>	<p>Introduction to word processing software</p>	<p>15 minutes</p>	<p>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 Theme 2).</p>	<p>Student teachers engage in discussions on what word processors are, what they are used for and provide responses to questions asked (PDP Theme 2).</p>
	<p>Creating a text document Word process menus, Home, Page Layout, Insert, References, Mailings, Review, View</p>	<p>45 minutes</p>	<p>E-learning: Tutor shows a video tutorial on how to use various relevant word menus.</p> <p>Individual practical work: Tutor gives an individual practical exercise to create.</p>	<p>Student teachers follow the video and identify where the menus are. Then they practise by individually developing an educational artefact (e.g. teaching notes/ reports/lesson notes,</p>

Topic:	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
			educational artefacts like teaching notes/ reports/lesson notes, newsletters, timetables.	newsletters, timetable) assigned to them by the tutor.
	Home: Font type, Font size, Bullets, Numbering, Justification, etc.	2 hours	Practical Session: Tutor guides student teachers to apply the word processing tools to their artefact to make it more impactful.	Students teachers apply the word processing tools to their artefact.
	Insert: Insertion of Tables, Illustrations, Links, Inserting Header & Footer, Inserting Symbols.			
	Page Layout: Using Themes, Page Setup, Page Background, Indentation and line spacing.			

Lesson assessments – evaluation of learning: of, for and as learning within the lesson	Formative Assessment: (NTS 2C, 2D, 3J) Artefact produced by student teachers.
Instructional Resources	Images/ videos. Projectors and computers.
Required Text (core)	<i>Hunt, M., & Clemens, B. (2017). Illustrated Microsoft Office 365 & Office 2016: Fundamentals. Boston, MA:</i> <i>O’ Leary, T. J., & O’ Leary L. I. (2017). Computing essentials, 26th edition. New York: McGraw Hill.</i>
Additional Reading List	<i>Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering Computers. Integrating Technology and Digital Media in the Classroom. (7th ed). Thomson Course Technology</i> <i>**Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA [www.tessafrica.net], Udemy etc).</i>
CPD needs	See PD Material on Year 1 Semester 2 Course on Introduction to Information and Communications Technology (ICT).

LESSON 8

DUPLICATE THE PLANNER FOR EACH LESSON

Plans for each lesson in the semester.

The following format should be completed for each lesson in the semester.

Year of B.Ed.	1	Semester	2	Place of lesson in semester	12 3 4 5 6 7 8 9 10 11 12
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Title of Lesson	Word processors II						Lesson Duration	3 hours
Lesson description	The purpose of this lesson is to develop student teachers' ability to work with more advanced word processing features.							
Previous student teacher knowledge, prior learning (assumed)	Student teachers have the ability to use basic word processing features.							
Possible barriers to learning in the lesson	Some student teachers may not have enough basic skills to use word processing software.							
Lesson Delivery - chosen to support student teachers in achieving the outcomes	Face-to-face √	Practical Activity √	Work-Based Learning	Seminars √	Independent Study	E-learning opportunities √	Practicum	
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	<p>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.</p> <p>Practical work: to enable student teachers to perform advanced word processing tasks.</p> <p>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.</p> <p>Independent study: Tutor to direct student teachers to open educational resources (e.g. YouTube, MOOCs-Udemy/coursea, Khan academy, TESSA) to support independent study and practice both in and outside of class.</p>							

<p>Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description.</p> <p>Write in full aspects of the NTS addressed</p>	<p>Demonstrate their ability to use advanced features of word processing applications to enhance their professional work, improve productivity, demonstrate professionalism and save time in the creation, production, review, and distribution of documents (NTS 2C, 2D, 3J).</p>		
<ul style="list-style-type: none"> • Learning Outcome for the lesson, picked and developed from the course specification • Learning indicators for each learning outcome 	<p>Learning Outcomes</p>	<p>Learning Indicators</p>	<p>Identify which cross-cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?</p> <p>Computer literacy skills: through creating educational artefacts.</p> <p>Respect and diversity: using group activities with members having diverse characteristics.</p> <p>Exhibit professionalism in producing documents for teaching.</p>
	<p>Demonstrate advances in ICT operations using word processing application tools (NTS 2C, 2D, 3J).</p>	<ul style="list-style-type: none"> • Work with mail merge features. • Work with referencing features like footnotes, endnotes and captions. Manage citations and bibliography using a chosen citation style. Create tables of contents, indexes and cross-references. • Be able to review a document. 	

Topic:	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.				
Word processors II	Recap of basics of word processing software.	20 minutes	Face-to face: Tutor/ lecturer uses questions to review RPK uses of word processing software and how the various menus work (PDP Theme 2).	Student teachers provide responses to questions posed (PDP Theme 2).
	<p>References: Table of Content Footnotes Citations Bibliography Captions.</p> <p>Mailings: Mail Merge Write & Insert fields Preview results Finish</p>	2 hour 40 minutes	<p>E-learning: Tutor shows a video tutorial on how to use various relevant word processing menus. Tutor then gives an individual practical exercise to create educational artefacts such as reports/lesson notes, newsletters, timetables.</p> <p>Practical Work: Tutor gives an individual practical exercise to create educational artefacts such as reports/end of term reports using mail merge and to subsequently review the document using the various word processing tools.</p>	Student teachers apply advanced features to the word processing artefact developed from the previous lesson to complete the artefact that is usable in their STS school.
	<p>Review: Proofing Comments Tracking Changes</p> <p>View: Document views Show/hide Zoom Dealing with Windows</p>			

Lesson assessments – evaluation of learning: of, for and as learning within the lesson	<p>Summative Assessment: (NTS 2C, 2D, 3B, 3J) Final version of word processing artefact produced by student teachers.</p> <p>Reflection Student teachers write reflective notes on how word processing applications can be used in school.</p>
Instructional Resources	Images/ videos. Projectors and computers.
Required Text (core)	<p><i>Hunt, M., & Clemens, B. (2017). Illustrated Microsoft Office 365 & Office 2016: Fundamentals. Boston, MA:</i></p> <p><i>O’ Leary, T. J., & O’ Leary L. I. (2017). Computing essentials, 26th edition. New York: McGraw Hill.</i></p>
Additional Reading List	<p><i>Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering Computers. Integrating Technology and Digital Media in the Classroom. (7th ed). Thomson Course Technology.</i></p> <p><i>**Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA [www.tessafrica.net], Udemy etc).</i></p>
CPD needs	See PD Material on Year 1 Semester 2 Course on Introduction to Information and Communications Technology (ICT).

LESSON 9

DUPLICATE THE PLANNER FOR EACH LESSON

Plans for each lesson in the semester.

The following format should be completed for each lesson in the semester.

Year of B.Ed.	1	Semester	2	Place of lesson in semester	12 3 4 5 6 7 8 9 10 11 12
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Title of Lesson	Presentation software I						Lesson Duration	3 hours
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 student teachers may have very limited skills and practice time using a computer.							
Lesson Delivery - chosen to support student teachers in achieving the outcomes	Face-to-face √	Practical Activity √	Work-Based Learning	Seminars √	Independent Study	E-learning opportunities √	Practicum	
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	<p>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.</p> <p>Independent study: to enable student teachers to perform simple word processing tasks.</p> <p>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.</p> <p>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 practice both in and outside of class.</p>							

<ul style="list-style-type: none"> • Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description. • Write in full aspects of the NTS addressed 	<p>Be able to use a presentation application to create simple documents.</p>		
<ul style="list-style-type: none"> • Learning Outcome for the lesson, picked and developed from the course specification • Learning indicators for each learning outcome 	<p>Learning Outcomes</p>	<p>Learning Indicators</p>	<p>Identify which cross-cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?</p>
	<p>Demonstrate basic ICT operations using ICT productivity tools (presentation application) (NTS 2C, 2D, 3J).</p>	<ul style="list-style-type: none"> • Perform basic tasks using a presentation application. • Create, edit, format, save and print documents using a presentation application. 	<p>Computer literacy skills: through creating educational artefacts. Respect and diversity: using group activities with members having diverse characteristics.</p>

Topic Title	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.				
Presentation software I	Introduction to presentation software (uses and advantages of presentation software).	15 minutes	Face-to face: Tutor/ lecturer uses questions to initiate discussion on what a presentation software is, its use in teaching and learning and the need to train teachers to use it. Tutor guides student teachers to explore the uses (PDP Theme 2).	Student teachers to engage in discussion and questions and to share experiences on uses of presentation software (PDP Theme 2).
	Creating a presentation	45 minutes	E-learning: Tutor shows a video tutorial on how to use various relevant presentation software menus. Individual practical work: Tutor then gives an individual practical exercise to create educational artefacts such as an interactive lesson/presentation.	Student teachers work in groups to decide and plan creating a presentation. Practical Work: Student teachers follow video to identify where the menus are and practise by individually developing an educational artefact assigned to them by the tutor.
	Presentation Software Menus: Home Page Layout Formulas Data Review View	1 hour 15 minutes	Face to Face: Tutor guides student teachers through their individual practical exercise to apply the presentation software menus and tools to improve the educational artefacts.	Student teachers prepare individual PowerPoint slides and present. Presentation will be a recreation of any lesson observed in school. Student will attempt to use presentation software tools to introduce improvements to the lesson.
	Home: Font, Font size, Bullets, Numbering, Justification, etc.			
	Insert: Tables, Images, Charts, Links, Text, etc.			

	Draw: Use various presentation tools to design: Slide design, slide size, format background, etc.	45 minutes	Tutor gives individual practice work to design template.	
	Draw: use various presentation tools			
	Design: Slide design, slide size, format background, etc.			

Lesson assessments – evaluation of learning: of, for and as learning within the lesson	Formative Assessment: (NTS 2C, 2D, 3J) Artefact produced by student teachers.
Instructional Resources	Images/ videos. Projectors and computers.
Required Text (core)	<i>Hunt, M., & Clemens, B. (2017). Illustrated Microsoft Office 365 & Office 2016: Fundamentals. Boston, MA:</i> <i>O’ Leary, T. J., & O’ Leary L. I. (2017). Computing essentials, 26th edition. New York: McGraw Hill.</i>
Additional Reading List	<i>Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering Computers. Integrating Technology and Digital Media in the Classroom. (7th ed). Thomson Course Technology.</i> <i>**Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA [www.tessafrica.net], Udemy etc.)</i>
CPD needs	See PD Material on Year 1 Semester 2 Course on Introduction to Information and Communications Technology (ICT).

LESSON 10

DUPLICATE THE PLANNER FOR EACH LESSON

Plans for each lesson in the semester.

The following format should be completed for each lesson in the semester.

Year of B.Ed.	1	Semester	2	Place of lesson in semester	1 2 3 4 5 6 7 8 9 10 11 12
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Title of Lesson	Presentation software II					Lesson Duration	3 hours
Lesson description	The purpose of this lesson is to develop student teachers' ability to work with more advanced presentation software features.						
Previous student teacher knowledge, prior learning (assumed)	Student teachers have the ability to use basic presentation application features.						
Possible barriers to learning in the lesson	Some student teachers may not have enough basic presentation application skills.						
Lesson Delivery - chosen to support student teachers in achieving the outcomes	Face-to-face √	Practical Activity √	Work-Based Learning	Seminars √	Independent Study	E-learning opportunities √	Practicum
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	<p>Face-to-face: Using a 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.</p> <p>Practical work: to enable student teachers to perform advanced word processing tasks.</p> <p>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.</p> <p>Independent study: Tutor to direct student teachers to open educational resources (e.g. YouTube, MOOCs-Udemy/coursea, Khan academy, TESSA) to support independent study and practice both in and outside of class.</p>						

<ul style="list-style-type: none"> • Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description. • Write in full aspects of the NTS addressed 	<p>Demonstrate their ability to create effective, high-impact and interactive presentations that will better engage and involve an audience using advanced presentation application features.</p>		
<ul style="list-style-type: none"> • Learning Outcome for the lesson, picked and developed from the course specification • Learning indicators for each learning outcome 	<p>Learning Outcomes</p>	<p>Learning Indicators</p>	<p>Identify which cross-cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?</p>
	<p>Demonstrate advanced ICT operations using presentation application tools (NTS 2C, 2D, 3J).</p>	<ul style="list-style-type: none"> • Create and modify templates and themes, and work with slide master layouts. • Enhance a presentation using built-in drawing and image tools and create animation. Use alternative text for accessibility. • Apply advanced chart formatting features and create and edit diagrams. • Insert audio and video, create audio and screen recordings, and apply built-in animation features. • Work with custom slide shows and apply slide show settings. Use presenter view and control a slide show. 	<p>Computer literacy skills: through creating educational artefacts.</p> <p>Respect and diversity: using group activities with members having diverse characteristics.</p> <p>Exhibit professionalism in producing documents for teaching.</p>

Topic Title	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.				
Presentation software II	Recap of basics of presentation software.	20 minutes	Face-to face: Tutor/ lecturer uses questions to review RPK uses of presentation software and how the various menus work (PDP Theme 4).	Student teachers listen and answer questions.
	Transition: Slide transition, sounds, slide advance, etc.	2 hours 40 minutes	E-learning: Tutor shows a video tutorial on how to use relevant presentation menus to make presentations more impactful. Practical Session: Tutor guides student teachers to apply the presentation software menus and tools to their artefact to make it more impactful. Tutor to give an assignment on how multimedia presentations can be used to improve learning in school.	Student teachers apply advanced features to the presentation application artefact developed from the previous lesson. This should take into account lesson pacing, catering for all types of learners by using different elements of multimedia (text, images, video, animation etc). Student teachers to create a group wiki on how multimedia presentations can be used to improve learning in school.
	Animation: Animation (entrance emphasis and exit) Timing, etc.			
	View: Presentation views Slide master, handout master, notes master, etc.			

Lesson assessments – evaluation of learning: of, for and as learning within the lesson	<p>Summative Assessment: (NTS 2C, 2D, 3B, 3J) Final version of lesson presentation produced by student teachers.</p> <p>Reflection Students write reflective notes on how presentation applications can be used to produce interactive and impactful lessons in school.</p> <p>Wiki Group wiki on how multimedia presentations can improve learning.</p>
Instructional Resources	<p>Images/ videos. Projectors and computers.</p>
Required Text (core)	<p><i>Hunt, M., & Clemens, B. (2017). Illustrated Microsoft Office 365 & Office 2016: Fundamentals. Boston, MA.</i> <i>O’ Leary, T. J., & O’ Leary L. I. (2017). Computing essentials, 26th edition. New York: McGraw Hill.</i></p>
Additional Reading List	<p><i>Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering Computers. Integrating Technology and Digital Media in the Classroom. (7th ed). Thomson Course Technology.</i> <i>**Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA [www.tessafrica.net], Udemy etc).</i></p>
CPD needs	<p>See PD Material on Year 1 Semester 2 Course on Introduction to Information and Communications Technology (ICT).</p>

LESSON 11

DUPLICATE THE PLANNER FOR EACH LESSON

Plans for each lesson in the semester.

The following format should be completed for each lesson in the semester.

Year of B.Ed.	1	Semester	2	Place of lesson in semester	12 3 4 5 6 7 8 9 10 11 12
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Title of Lesson	Spreadsheets I						Lesson Duration	3 hours
Lesson description	The purpose of this lesson is to introduce student teachers to a spreadsheet 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 student teachers may have very limited skill and experience using a computer.							
Lesson Delivery - chosen to support student teachers in achieving the outcomes	Face-to-face √	Practical Activity √	Work-Based Learning	Seminars √	Independent Study	E-learning opportunities √	Practicum	
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	<p>Face-to-face: 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.</p> <p>Independent study: to enable student teachers to perform simple word processing tasks.</p> <p>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.</p> <p>Independent study: Tutors to direct student teachers to open educational resources (e.g. YouTube, MOOCs-Udemy/coursea, Khan academy, TESSA) to support independent study and practice both in and outside of class.</p>							

<ul style="list-style-type: none"> • Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description. • Write in full aspects of the NTS addressed 	Be able to use a spreadsheet application to create simple documents (NTS 2C, 2D, 3J).		
<ul style="list-style-type: none"> • Learning Outcome for the lesson, picked and developed from the course specification • Learning indicators for each learning outcome 	Learning Outcomes	Learning Indicators	Identify which cross-cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?
	Demonstrate basic ICT operations using ICT productivity tools (spreadsheet application) (NTS 2C, 2D, 3J).	<ul style="list-style-type: none"> • Perform basic tasks using a Spreadsheet Application. • Create, edit, format, save and print documents using a Spreadsheet Application. 	Computer literacy skills: through creating educational artefacts Respect and diversity: using group activities with members having diverse characteristics.

Topic Title	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.				
Spreadsheets I	Introduction to spreadsheets (uses and advantages of spreadsheets).	15 minutes	Face-to face: Tutor/ lecturer uses questions to initiate discussion on what spreadsheets 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 Theme 2).	Student teachers provide responses to questions posed (PDP Theme 2).
	Spreadsheet Menus: Home, Page Layout, Formulas, Data, Review, View	45 minutes	E-learning: Tutor shows a video tutorial on how to use relevant spreadsheet menus. Individual practical work: Tutor gives an individual practical exercise to create educational artefacts such as a gradebook.	Student teachers follow video, identify where the menus are and practise by individually developing an educational artefact assigned to them by the tutor. This could be a gradebook of pupils' scores from the STS school.
	Home: Font, Font size, Alignment, Number, Style, Cells, Editing, etc.	2 hours	Face-to-Face: Tutor guides student teachers through their individual practical exercise to apply the spreadsheet menus and tools to improve the educational artefacts. (PDP Theme 2).	Students teachers apply the spreadsheet tools to their artefact.
	Insert: Tables, Illustrations, Charts, Links, Text			
	Page Layout: Themes, Page Setup, Scale to fit, Sheet Options, Arrange			

Lesson assessments – evaluation of learning: of, for and as learning within the lesson	Formative Assessment: (NTS 2C, 2D, 3J) Spreadsheet artefact produced by student teachers.
Instructional Resources	Images/ videos Projectors and computers
Required Text (core)	<i>Hunt, M., & Clemens, B. (2017). Illustrated Microsoft Office 365 & Office 2016: Fundamentals. Boston, MA:</i> <i>O’ Leary, T. J., & O’ Leary L. I. (2017). Computing essentials, 26th edition. New York: McGraw Hill.</i>
Additional Reading List	<i>Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering Computers. Integrating Technology and Digital Media in the Classroom. (7th ed). Thomson Course Technology</i> <i>**Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA [www.tessafrica.net], Udemy etc)</i>
CPD needs	See PD Material on Year 1 Semester 2 Course on Introduction to Information and Communications Technology (ICT).

LESSON 12

DUPLICATE THE PLANNER FOR EACH LESSON

Plans for each lesson in the semester.

The following format should be completed for each lesson in the semester.

Year of B.Ed.	1	Semester	2	Place of lesson in semester	12 3 4 5 6 7 8 9 10 11 12
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Title of Lesson	Spreadsheets II						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	Some student teachers may not have enough basic spreadsheet application skills.							
Lesson Delivery - chosen to support student teachers in achieving the outcomes	Face-to-face √	Practical Activity √	Work-Based Learning	Seminars √	Independent Study √	E-learning opportunities √	Practicum	
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	<p>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.</p> <p>Practical work: to enable student teachers to perform advanced word processing tasks.</p> <p>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.</p> <p>Independent study: Tutors to direct student teachers to open educational resources (e.g. YouTube, MOOCs-Udemy/coursea, Khan academy, TESSA) to support independent study and practice both in and outside of class.</p>							

<ul style="list-style-type: none"> • Overarching outcome, what you want the students to achieve, serves as basis for the learning outcomes. An expanded version of the description. • Write in full aspects of the NTS addressed 	<p>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).</p>		
<ul style="list-style-type: none"> • Learning Outcome for the lesson, picked and developed from the course specification • Learning indicators for each learning outcome 	<p>Learning Outcomes</p>	<p>Learning Indicators</p>	<p>Identify which cross-cutting issues – core and transferable skills, inclusivity, equity and addressing diversity. How will these be addressed or developed?</p>
	<p>Demonstrate advanced ICT operations using spreadsheet application tools.</p>	<ul style="list-style-type: none"> • Apply advanced formatting options such as conditional formatting. • Use functions such as those associated with logical, statistical, financial and mathematical operations. • Work with tables and lists to analyse, filter and sort data. Create and use scenarios. • Validate and audit spreadsheet data. 	<p>Computer literacy skills: through creating educational artefacts</p> <p>Respect and diversity: using group activities with members having diverse characteristics. Exhibit professionalism in producing documents for teaching.</p>

Topic Title	Sub-Topic:	Stage/ time	Teacher Activity	Student Activity
Teaching and learning activities to achieve outcomes depending on the delivery mode selected. Teacher-led collaborative group work or independent.				
Spreadsheets II	Recap of basics of spreadsheet software.	20 minutes	<p>Face-to face: Tutor/ lecturer uses questions to review RPK uses of spreadsheet software and how the various menus work (PDP Theme 2).</p> <p>E-learning: Tutor shows a video tutorial on how to use various relevant spreadsheet menus to make spreadsheets more impactful.</p> <p>Practical Session: Tutor guides student teachers to apply the spreadsheet software menus and tools to their artefact to make it more impactful.</p>	Student teachers provide responses to questions posed (PDP Theme 2).
	Formulas: Function Library, Define Names, Formula Editing, Calculation			Student teachers apply advanced features to the spreadsheet artefact developed from the previous lesson. A final version of the spreadsheet usable in the STS school should be produced.
	Data: Connections, Sort & Filter, Data tools, Outline	2 hours 40 minutes		
	Review: Proofing, Comments, Changes, etc.			
	View: Workbook view, Show/hide, Zoom, Window			

Lesson assessments – evaluation of learning: of, for and as learning within the lesson	Summative Assessment: (NTS 2C, 2D, 3B, 3J) Final version of spreadsheet artefact produced by student teachers. Reflection Students write reflective notes on how spreadsheet application can be used in school.
Instructional Resources	Images/ videos. Projectors and computers.
Required Text (core)	<i>Hunt, M., & Clemens, B. (2017). Illustrated Microsoft Office 365 & Office 2016: Fundamentals. Boston, MA:</i> <i>O’ Leary, T. J., & O’ Leary L. I. (2017). Computing essentials, 26th edition. New York: McGraw Hill.</i>
Additional Reading List	<i>Shelly, R., Cashman, T.J., Gunter, G.A., and Gunter, R.E. (2013). Teachers Discovering Computers. Integrating Technology and Digital Media in the Classroom. (7th ed). Thomson Course Technology</i> <i>**Selected articles and online resources (youtube.com, MOOCs: Khan Academy, TESSA [www.tessafrica.net], Udemy etc).</i>
CPD needs	See PD Material on Year 1 Semester 2 Course on Introduction to Information and Communications Technology (ICT).

