YEAR 2

SEMESTER 1

Four-Year B.Ed. Course Manual

Early Grade Science

GHANA TERTIARY EDUCATION COMMISSION

NATIONAL TEACHING COUNCIL
NTC
Building Confidence, Raising Teaching Standards

GOVERNMENT OF GHANA

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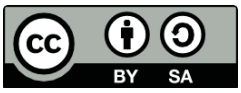

FOREWORD

These Initial Teacher Education course manuals were developed by a team consisting of members from Colleges of Education and four universities namely the University of Ghana, Kwame Nkrumah University of Science and Technology, University of Education, Winneba, and University for Development Studies. This team was originally constituted by the National Council for Tertiary Education (now the Ghana Tertiary Education Commission) in 2019 to support the delivery of the new B.Ed. curriculum with assistance from T-TEL and UK Aid. The revision, finalization and printing of these manuals took place in 2021 with support from T-TEL and Mastercard Foundation.

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, enabling them to teach effectively in basic schools.

The first section of the manuals is focused on the course information and vision for the 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. The third section is a list of course learning outcomes and their related learning indicators. The fourth section presents the course content which is broken down into units for each week, the topic and sub-strands and their related teaching and learning activities to achieve the learning outcomes and the teaching and learning strategies. This is followed by course assessment components in section five. Each manual contains a list of required reading and references 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.

Field instructions to guide Supported Teaching in School are integrated into the course manuals to provide the student teacher with guidance in developing teaching throughout the entire period of study to be able to meet the requirements of the National Teachers' Standards (NTS) and the National Teacher Education Curriculum Framework (NTECF). To ensure maximum benefit the course manuals should be used in addition to other resources such as the NTS, NTCEF, National Teacher Education & Assessment Policy and the National Teacher Education Gender Equality and Social Inclusion (GESI) Strategy and Action Plan.. This will help to ensure that student teachers' learning is integrated within the wider teacher education policy framework.

Professor Mohammed Salifu Director General, Ghana Tertiary Education Commission

ACKNOWLEDGEMENTS

The course manuals were developed 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 for Development Studies. They were produced in association with the Ghana Tertiary Education Commission of the Ministry of Education, Ghana.

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

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

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

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

We are indebted to the Ministry of Education and the Ghana Tertiary Education Commission (GTEC) 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, Akwasi Addae-Boahene, Prof. Mohammed Salifu, the Director General of GTEC and Mr. Jerry Sarfo the coordinator for the colleges of education, who in diverse ways supported during the course manual writing workshops.

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

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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 codes and university professional development sessions to ensure Principals, tutors, lecturers and heads of department are fully familiar with the details of: courses, outcomes, content, approaches, assessments and lessons.

Who are course manuals for:

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

USING THIS MANUAL

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

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

My teaching philosophy is ……..

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

Notes

This manual will be very useful to tutors it is very clear and easy to follow. A few points for consideration:

1. Identify which CLO addressed in which week/unit
2. The teaching and learning activities need to relate directly to what is being taught and learned in each unit in each week. E.g. in unit one 'Produce charts and illustrations of forms and sources of energy' has nothing to do with 'living things'. This needs to be clear for all topics in all units
3. There are three assessment components. An exam 40%: summative and two continuous assessment components totaling 60%. Tutors cannot assess work from each lesson there is not time. We need to be mindful of both tutor and student teacher work loadIf you want students to build up a portfolio of materials from each lesson as one assignment that is OK but not weekly tutor assessments. Suggest that you introduce the idea of the portfolio in week one, you can include weekly peer assessment, final session peer review and subsequent tutor assessment on submission of the portfolio of work. I have also added an example of a written report assessment component. Several lessons say they have 40% of the assessment marks for the semester – that is not possible. Also not sure what the 10 marks /20marks etc are in all lesson assessments.
4. In lessons e.g. 2. You refer to teaching and assessment strategies for early grade. Please can you provide some examples
5. I wonder why you do not introduce the school curriculum until lesson 10. Are the topics covered not in the Curriculum? Should it not be referred to throughout?
6. Lesson 12 is a mid semester review! I think this is a mistake!

A. Course Information

Introduction to Early Grade Science I

The vision for the New B.Ed. Curriculum

The vision is 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. This would improve the learning outcomes and life chances of all learners they teach as set out in the National Teachers' Standards. In doing this it would instill in new teachers the Nation's core values of honesty, integrity, creativity and responsible citizenship and to achieve inclusive, equitable, high quality education for all learners

Course Details

Course Name	**Introduction to Early Grade Science I**					
Pre-requisite	**Introduction to Integrated Science I and Introduction to Integrated Science II (from year 1)**					
Course Level	**200**	**Course Code**		**Credit Value**	**3**	

Goal for the Subject or Learning Area

The science programme is designed to transform the early grade teacher into one imbued with the right knowledge, technology, pedagogy, innovation, content and the core values and attitudes to promote inclusivity and inspire active learning at the early grade level.

Course Description

The Introduction to Early Grade Science I consolidates the basic science concepts of the student teacher on the nature of science and matter through appropriate pedagogies useful for early child education such as play/activity based, games (indigenous and foreign), storytelling and sharing, as well as field trips to identify important scientific scenes. Pyramid discussions, multimedia presentations, reflective writing and authentic assessments modes would be used to identify critical values and skills that student teachers must imbibe for practice. Some of the topical issues the course deals with are living and non-living things, measurement in science, Sun and Earth, Day and Night and Curriculum studies. It also introduces the student teacher to the essential attitudes and values of professional science teaching such as honesty, carefulness, accuracy and many more. The student teacher is also introduced to the child study styles, the new Basic school curriculum and how to begin developing the portfolio for their Student Reflective Journals (SRJ). Assessment procedures for this course will include written reports, making of models, short notes, charts for teaching and production of audio-visual materials. NTS, 1a, Pg. 12; NTS 2c, pg. 13, NTS 3b, 3e & 3g, pg. 14; NTECF pg. 20

Key Contextual Factors

- A number of on-going interventions have been initiated by government and other stakeholders which support the Early Child Education (ECE) sector, such as mainstreaming KG into compulsory basic education for all school-age children, school feeding programme, provision of free school uniforms, National Literacy Acceleration Programme (NALAP) and USAID support programmes (learning materials).
- However, current research shows that early childhood education is still facing a number of challenges. Some of these include: public prejudice about the relevance of early childhood education, lack of commitment and involvement of parents, financial constraints and inadequate infrastructure.
- Other challenges include: cultural and linguistic barriers; mode of assessment of pupils and a lack of conducive learning environments.

- Another major challenge is the lack of qualified early childhood teachers, leading to rote-based learning in Ghanaian early years` settings.
- The current training for early childhood teachers does not prepare them sufficiently to identify, manage and support the learning challenges of children; including those with special educational needs.
- Early childhood education is perceived by society as women's field and also not regarded as important as Primary and JHS.
- There is a low competency level of early childhood teachers in integrating ICT into their teaching and learning process.

Also

- The learners' primary environment provides primary resources to make science learning relevant, interactive and enjoyable.
- There is extensive literature to make appropriate improvisations and innovations towards improving science learning.
- Innovations make it easy for every student, irrespective of their social, physical and mental ability, to participate in science learning.
- There is human resource at the training, supporting and mentoring institutions to build capacity that can drive the intervention that this manual presents.

Play-based pedagogy, introduced by the 2012 Programme to Scale Up Quality Kindergarten Education Nationwide, requires all teachers to adopt the play-based approach. Noting that;

- learning activities have to be structured in such a manner that all learners will be able to work in free, collaborative and engaging environments to build logical and sequenced concepts from their personal (but guided) experiences. This will imply engaging in integrated teaching- bringing in ideas to facilitate concept formation from various disciplines, cultures and activities.
- Since science is practical, learners must be engaged in hands-on activities, with or without standard laboratories. The introduction of (universal/adaptable) laboratories through micro science kits would be very useful.
- Text and content materials as well as assessment tools must be modelled to take into consideration, the different cultures and gender issues bordering on learning science. The new teacher must be gender sensitive with a sense of inclusivity in their teaching strategies.

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

Critical and Independent Thinking, Equity and Inclusivity, Social Collaboration/Team work, Creativity, Innovation, Problem solving, Manipulation, Reflection, developing scientific process skills and Inquiry.

Course Learning Outcomes	**Learning Indicators**
CLO 1. Identify creative ways to present plant and animal and their uses to early grade learners (NTS, 2c, Pg. 13; 3j, pg.12)	• Develop science related games children can play and learn about plant and animal uses.
CLO2. Demonstrate adequate knowledge and understanding that Sunlight is a basic need for plants and animals CLO3. Mention some uses/importance of sunlight. (NTS, 2c, Pg. 13)	• Create song and rhymes about sun, the moon and their influence on plant and animal life

CLO4. Understand the important influence of parents and/or careers, working in partnership with them to support the child's wellbeing, learning and development and collaborate with stakeholders to participate effectively in the early years` education (NTS 1e, pg. 12)	• Role play in a mini drama to demonstrate the collaboration of the teacher, parent and stakeholders in caring for the wellbeing of the child.
CLO5. Develop and use developmentally appropriate TLMs from locally available materials for early years` education (NTS 3j, pg. 14)	• Prepare improvised materials for teaching at the early grade level
CLO6. Demonstrate how to wash their hands, clean their teeth, bath their body, keep their nails short and clean, care for their hair together with their importance to the human body. (NTS, 2c & 3e, Pg. 14 finger & 24)	• Role play the process of Washing hands, cleaning the teeth and care of the hair and nails. • Demonstrate the process and present a concept cartoon on the bathing
CLO 7. Demonstrate knowledge and application of the Teachers' Standards, Early Childhood Education Curriculum, laws protecting children and all relevant regulations, and model positive values, attitudes and behaviours. student teacher will be working towards meeting the NTS. (NTS 1b p14 & 18, 14)	• Provide a checklist to identify values such as patience, critical thinking, precision and accuracy in a peer review exercise • Prepare a list of some examples of professional needs and some characteristics of professional teachers

Course Content

Unit (Week)	Topic	Subtopic (if any)	Teaching and learning activity to achieve the learning outcomes
Week 1	• Review of Year 1 Integrated Science • Teaching Living and Non Living things	• Recap of year 1 lessons and challenges thereof. • Introducing Year 2 Specialism CM • concepts of living and non-living things • Characteristics and Differences between living and non-living things	• Demonstrations and discussions of Y1 CM and specialism of Early grade science CM • Reflections, presentations and designing Maps on challenges and unique nature of Y1 CM and Y2 Specialism Early Grade CM • Role playing/song creations of concepts of Living and nonliving things • Simulations, video and Computer presentation of Characteristics of Living and nonliving things • Produce charts and illustrations of differences of living and nonliving things
Week 2	How to teach Living and Non Living things I	• Plants and animals and their uses	• Demonstrations and group discussions of previous lessons • Reflections, presentations and designing/game development on plants and animal uses • Concept mapping to show plants and animal uses • Simulations, video and Computer presentation on plant and animal uses
Week 3	How to teach Living and Non Living things II	• Developing activities and Assessment strategies to teach early grade living and nonliving things	**Face-to Face:** Discussion, Role Playing, Construction of games, Designing rhymes, creating songs about plants and animals

			e-learning: Video and Computer simulation on teaching activities and assessment strategies for living and nonliving things
Week 4	Measurement in Science	• Measuring mass and Length • Measuring Volume and time	**Face-to-face:** Mixed group discussions and demonstrations/role plays on everyday measurement activities Concept Mapping and Cartooning on measurement of quantities. **e-learning/Reflections:** Video presentations from MOOCs with reflections on values such as Honesty, Accuracy, Precision and critical thinking in measurement.
Week 5	Teaching Measurement in Science	• Developing early grade science activities and assessments on measurement	**Face-to-face:** Discussion, Talk for learning approaches with student teacher presentations on Activities for teaching Early grade measurement in science **Independent Face-to-face:** Discussion, Talk for learning approaches with student teacher presentations, on Assessments strategies for measurement in science **Independent Study:** problem-based teaching and assessment of measurement in science **e-learning opportunities:** multimedia presentations, problem-based teaching on measurement in science
Week 6)	Course Review I with STS seminar	• Reviewing and reflecting on lessons 1-5 • STS Seminar	**Face-to-face:** Discussion, Talk for learning approaches with student teacher presentations to review lessons learnt form week 1- week 5. **Independent Study:** Problem-based learning on National Teacher's Standards and reflection on observations made during STS between week 1 – week 5.
Week 7	Exploring Sun and Earth	• Objects in the sky: sun, moon, and stars • The Sun • The Earth	**Face-to-Face:** Pyramid discussions, Presentations on the sun, Earth, sky and Stars **e-learning:** OERs and MOOCs on the sun, Earth, Sky and stars.
Week 8	Day and Night I	• Position of the sun • Causes of day and night	**Face-to-face:**Discussions, demonstration, mixed group work on the positions of the sun and

			how day and night are formed Computer simulations and OERs sources on the positions of the sun, formation of day and night.
Week 9	Day and Night II	• Effect of day and night • Day and night cycle on human activities	**Independent Study:** Inquiry and reflections on previous lesson and on the effects of day and night **Face-to-Face:** Discussions, Role playing and Rhyme designing on day and night cycle activities
Week 10	Early Grade Science Curriculum Studies I	• The nature of the Early Grade curriculum and science learning	**Face-to-Face:** Think, Pair, Share, share discussions, Reflections and rhyming on the nature of early grade curriculum and science learning **e-learning:** OERs and MOOCs with report writing about early grade science learning.
Week 11	Early Grade Science Curriculum Studies II	• Modelling Inclusivity, Values and appropriate attitudes in the Science lessons on the Early grade curriculum	**Face-to-Face:** Modelling, Role playing and Rhyming on the values in the Early grade curriculum
Week 12	Course Review II with STS seminar	• Reviewing and reflecting on lessons 7-11 • STS Seminar	**Face-to-face:** Discussion, talk for learning approaches with student teacher presentations on lessons learnt from week 7 – week 11 **Independent Study:** problem-based learning on National Teacher's Standards and reflection on observations made during STS between week 7 – week 11

Teaching and Learning Strategies:

Think, Pair, Share, Square, group Discussions, Checklist, Role Play activities, Multimedia presentations, Concept mapping, concept cartoons, video presentations, simulations and Computer assisted instructions, inquiry learning and field trips and seminars, rhyming and song constructions

Course Assessment Components:

Component 1: Assessment as Learning Review of Reports/Portfolio
Summary of Assessment Method: Peer Review documents/ Evidence of report from school (STS) visits for portfolio/Reflective notes and as prescribed by University of Affiliation
Core skills to be acquired: Pedagogical, observational and cooperative skills
Weighting: 30% (of the 70% based on the NTEAP)
Write a 1500-word report on what strategies need to be used in science teaching to ensure all learners are included and that the teaching is appropriate to the typical characteristics of the upper primarylearner. Include reference: to examples of teaching you have observed and taken part in in school; topics covered during the course and The Basic School Science Curriculum
CLO4, CLO5, CLO6 and CLO7
NTS:
1a) Critically and collectively reflects to improve teaching and learning
2c) Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge for the school and grade they teach in.
3m) Identifies and remediates learners' difficulties or misconceptions, referring learners whose needs lie outside the competency of the teacher.

Component 2: Assessment for Learning Presentations/Portfolio
Summary of Assessment Method: Peer Review / Tutor assessment of portfolio of materials and resources amassed during the course:
Component 1 and 2 Coursework : teaching and learning portfolio

In the final session of the course student teachers present the teaching and learning portfolios they have developed during the course for peer review and then tutor assessment. The final portfolio should include: all the items added throughout the

course: presentations, TLMs, example plans for lessons and an up-dated personal teaching philosophy for teaching early grade science, a list of key lessons learned during the course and three targets for developing their skills, knowledge and understanding of teaching and learning further
Weighting: 30 %(of the 70% based on the NTEAP)
CLO 4, CLO5, CLO6 and CLO7
NTS:
1b) Improves personal and professional development through lifelong learning and Continuous Professional Development.
1d) Is guided by legal and ethical teacher codes of conduct in his or her development as a professional teacher.
1g) Sees his or her role as a potential agent of change in the school, community and country
2b) Has comprehensive knowledge of the official school curriculum, including learning outcomes
2c) Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge for the school and grade they teach in.
3e) Employs a variety of instructional strategies that encourages student participation and critical thinking.
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

Component 3: Summary of Assessment Method: **End of Semester Examination on key concepts as shown in the lessonsand as prescribed by the University of affiliation.**
Core skills to be acquired: Cognitive, literacy, numeracy, writing and reading
Weighting: 40% (of the 70% from the NTEAP)
CLO1-CLO7
NTS
1
Professional Development
The Teacher(s):
a) Critically and collectively reflects to improve teaching and learning.
b) Improves personal and professional development through lifelong learning and Continuous Professional Development.
Community of Practice
The Teacher:
d) Is guided by legal and ethical teacher codes of conduct in his or her development
as a professional teacher.
2
Knowledge of educational frameworks and curriculum
The Teacher:
a) Demonstrates familiarity with the education system and key policies guiding it. b) Has comprehensive knowledge of the official school curriculum, including
learning outcomes.
c) Has secure content knowledge, pedagogical knowledge and pedagogical content
knowledge for the school and grade they teach in.
Managing the learning environment
The Teacher:
a) Plans and delivers varied and challenging lessons, showing a clear grasp of the
intended outcomes of their teaching.
3
Managing the learning environment
The Teacher:
a) Plans and delivers varied and challenging lessons, showing a clear grasp of the
intended outcomes of their teaching.
Assessment
The Teacher:
k) Integrates a variety of assessment modes into teaching to support learning.

Required Reading and Reference List

Abbey, T. K., Alhassan, M. B., Ameyibor, K., Essiah, J. W., Fometu, E., &Wiredu, M.B. (2008). *Ghana association of science teachers integrated science for senior high schools*. Accra: Unimax MacMillan.

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Teaching and Learning resources

Smartphones, Tablets, Productivity tools (software that allow teachers to work better), Subject based instructional tools/applications, Instructional laboratories, Smart boards, projectors, Smart screens, Open ERs – YouTube, Coursera, Khan Academy, TESSA and UNESCO OERs, iBox, and standard laboratories

Course related professional development for tutors/ lecturers

- Development of Concept Maps/ Concept cartoons Charts/ technical/action research report writing/
- Training in Use of CMs/ Appreciating the place of the Cross-cutting issues in the CLOs and Teaching -Learning Activities/ Assessment component requirement for active learning/ model teaching to reflect the desired PCK students-teachers are required to learn.

LESSON 1

Year of B.Ed.	2	Semester	1	Place of lesson in semester	1 2 3 4 5 6 7 8 9 10 11 12

Title of Lesson	Review of Year 1 Integrated Science and Teaching Living and Non Living things					Lesson Duration	3 Hours
Lesson description	This lesson reviews the year integrated science course with the view to help the student teacher transition into the early grade science specialism. It introduces student teachers to the concept of living and non-living things with the view to identifying appropriate pedagogies that can be used to teach the main characteristics and differences of living and non-living things to early grade learners.						
Previous student teacher knowledge, prior learning (assumed)	Student teachers have gone through the Integrated Science courses at year 1.						
Possible barriers to learning in the lesson	Possible misconceptions that student-teachers may bring to the classroom. For example, confusing the characteristics of some non-living things which move with living things and thus assuming that those objects are living things, e.g. shadows, the sun and moon.						
Lesson Delivery – chosen to support students 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.	**Face-to face:** Discussions, demonstrations and observations, rhyming and singing **Practical Activities:** Group work and composing songs and rhymes, Nature walk Seminar: STS seminar presentations and reflections Independent Study: Reflections e-learning Opportunities: Simulations, video presentations						
Purpose for the lesson, 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**	• Get the conceptual understanding of living and non-living things • Discard the common misconceptions that student-teachers have about living and non-living things • Designing activities to teach living and non-living things (NTS) 2c: Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge for the school and grade they teach in. 2e: Understands how children develop and learn in diverse contexts and applies this in his or her teaching. 3d: Manages behaviour and learning with small and large classes)						
• **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**	
	• Link concepts from year 1 to new concepts in living and non-living things • Distinguish between the characteristics of living and non-living things • Identify the differences between living and non-living things within the environment			• Develop Concept Maps to link concepts from year 1 to new concepts yet to be developed. • Explain in four sentences for each the main characteristics of living and non-living things respectively. • Role play to		Through discussions and sharing of ideas in class student-teachers develop the skills of communication, collaboration and mutual respect while appreciating individual difference and abilities. They also acquire skills in handling devices, develop critical thinking, honesty, accuracy and responsibility through active participation in group work/discussion.	

	• Erase misconceptions about the differences between living and non-living things. • Demonstrate understanding of living and non-living things and be able to teach the subject matter		demonstrate the concepts of living and non-living (PD Theme 1, pg. 44; PD Theme 4, pg. 112) • Present charts and models of the differences between living and non-living things within the environment (PD Theme 5, pg. 37) • Designed activities that can be used to teach living and non-living things.	

Topic/Title	**Sub Topic**	**Time or Stage**	**Teaching and learning to achieve learning outcomes: depending on delivery mode selected. Teacher led, collaborative group work or independent study**	
			Teacher Activity	**Student Activity**
Review of Year 1 integrated science and Teaching Living and Non Living things	Introduction to Early Grade Year 2 Course Manual	20 minutes	**Face-to-face:** Tutor initiates discussions with the student teachers on the expectations of Early Grade Year 2 Course Manual	**Face-to-face:** Students come out with their own expectations with the Early Grade Year 2 Course Manual drawing experience from Year 1 course manual
	Recap of year 1 lessons and challenges thereof. **(KG1.1.5)**	40 minutes	**Face-to-face/Group activity:** Teacher initiates a Pyramid discussion on the year 1 concepts with student teachers, and encourages them to reflect on the new concepts, the challenges and unique lessons	**Face-to-face/Group activity:** Student teachers work individually and in groups to discuss year one lessons, the challenges, unique values and produce a concept map of possible expectations in the content of early grade science lessons.
	Concepts of living and non-living things **(KG1.1.5)**	60 minutes	**Face-to-face/Group activity:** Teacher allows students-teachers to work in mixed ability (inclusivity)groups to arrange and compose songs and rhymes about the concepts of living and non-living things.	**Face-to-face/Group activity:** students-teachers to work in mixed ability (inclusivity)groups to arrange and compose songs and rhymes about the concepts of living and non-living things. living and non-living things using any of the following; concept maps, simulations and multimedia (PD Theme 8, pg. 40; PD Theme 4, pg. 23-46)

	Characteristics and Differences between living and non-living things **(KG1.1.5)**	**60 minutes**	**Face-to-face/Group activity:** Tutor provides multimedia presentations to show the characteristics of living and non-living things. Tutor instructs student -teachers to work in groups (in mixed ability) to use either concept maps, simulations or multimedia presentations to design games and/or rhymes that can make early grade learners learn the characteristics of living and non-living things and the differences between them.	**Face-to-face/Group activity:**Student-teachers working in groups (in mixed ability) use concepts learned from multimedia presentations to design either concept maps, simulations or multimedia games and/or rhymes that can make early grade learners learn the characteristics of living and non-living things and the differences between them. The Concept maps, rhymes and games are cross shared to be reviewed by their peers.
Which cross cutting issues will be addressed or developed and how	Equity and SEN: through setting ground rules to protect vulnerable student-teachers and establishing an interactive and inclusive classroom atmosphere and encourage collaboration and mutual respect. Innovation and creativity through arranging and composition of songs and rhymes, designing and construction of games.			
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	• Assessment as learning: student teachers provide songs, rhymes which are peer reviewed and placed in portfolios. (20 marks) Assessment for learning: games or multimedia design of the concepts and differences between living and non-living things by students for portfolio (weight = 10 marks)			
Teaching Learning Resources	Copies of Early Grade year 2 course manuals, Phones, tablets, desktop computers with internet access. http://www.softschools.com/language_arts/reading_comprehension/science/21/living_and_non_living_things/			
Required Text (core)	NaCCA, MoE. (2019; September). *Kindergarten Curriculum (KG1&2) for Preschool*. Accra: Ministry of Education Abbey, T. K., Alhassan, B., Ameyibor, K., Essiah, J. W., Fometu, E., &Wiredu, M.B. (2008). *Ghana association of science teachers integrated science for senior high schools*. Accra: Unimax MacMillan; Handbook for PD Coordinators Themes 1 – 10.			
Additional Reading List	Abbey, T. K., &Essiah, J.W. (1995). *Ghana association of science teachers physics for senior high schools*. Accra: Unimax Macmillan. Ameyibor, K., &Wiredu, M. B. (2006). *Ghana association of science teachers: chemistry for senior high schools*. Accra: Unimax MacMillan. Asabere-Ameyaw, A., &Oppong, E. K. (2013). *Integrated science for the basic school teacher I*. Winneba: IEDE. Oddoye, E. O. K., Taale, K. D., Ngman-Wara, E., Samlafo, V.&Obeng-Ofori, D. (2011). *SWL integrated science for senior high schools: Students book*. Accra, Ghana; Sam-Woode Ltd.			
CPD Requirement	CoE Tutors need training on arranging and composing rhymes and songs as well as game construction			

LESSON 1

Year of B.Ed.	2	Semester	1	Place of lesson in semester	1 **2** 3 4 5 6 7 8 9 10 11 12

Title of Lesson	How to teach Living and Non Living things I				Lesson Duration	3 Hours
Lesson description	This lesson further enforces student teachers' knowledge and skills on the basics of developing teaching and learning strategies for teaching the concept of living and non-living things with particular reference to plants and animals and the main differences between them.					
Previous student teacher knowledge, prior learning (assumed)	Student-teachers are aware of the characteristics of living and non-living things from the previous lesson (Lesson 1)					
Possible barriers to learning in the lesson	Misconceptions about plant and animal behaviours. For example, that plants do not respire or move since they are usually seen only at one point.					
Lesson Delivery – chosen to support students 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.	Face-to face: Discussions, demonstrations and observations, Group work and designing Work-based learning: Independent Study: Reflections, field inquiry (walking round the compound to observe for plants and animals) e-learning Opportunities: Simulations, video presentations					
Purpose for the lesson, 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**	• Get the conceptual understanding of the differences between plants and animals • Discard the common misconceptions that student-teachers have about plants and animals • Designing activities to teach plants and animals (NTS 2c: Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge for the school and grade they teach in. 2e: Understands how children develop and learn in diverse contexts and applies this in his or her teaching. 3d: Manages behaviour and learning with small and large classes)					
• **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**	
	• Design appropriate learning strategies to teach early grade plants and animals and the characteristics of plants and animals • Identify the differences between plants and animals and the uses.		• Produce Examples of appropriate teaching strategies (Games, Rhymes, models, multimedia and videos) to teach Plants and animals and their main characteristics of plants and animals. (PD Theme 1, pg. 44; PD Theme 4, pg. 112)		Through discussions and sharing of ideas in class student-teachers develop the skills of communication, collaboration and mutual respect while appreciating individual difference and abilities. They also acquire skills in handling devices, develop critical thinking, honesty, accuracy and responsibility through active participation in group work/discussion.	
	• Explain away misconceptions about the differences between plants and animals.		• Present charts and models of the differences between plants and animals and the uses (PD Theme 5, pg. 37)			

Topic/Title	Sub Topic	Time or Stage	Teaching and learning to achieve learning outcomes: depending on delivery mode selected. Teacher led, collaborative group work or independent study	
			Teacher Activity	**Student Activity**
Teaching Living and Non-Living Things II	Introduction and recap of lesson 1	40 minutes	**Face to face:** Teacher initiates discussion and forms mixed ability groups of students to use rhymes or songs from lesson 1 to recap the main concepts in lesson- with regards to plants and animals.	**Face-to-face:**Student-teachers work in groups of twos, fours and eights to sing or rhyme while producing concept maps of the characteristics of living things using plant and animal examples.
	Plants and animals and their uses (Demonstration phase) **(KG1.1.5)**	60 minutes	**Face-to-face:** Teacher introduce to student teachers an outline to develop teaching and assessment strategies though demonstration and discussion of those strategies espoused in the themes (6 and 8)	**Face-to-face:** Student-teachers observe and discuss the outline for developing teaching strategies for early grade teaching and assessment. (PD Theme 8, pg. 40; PD Theme 4, pg. 23-46)
	Plants and animals and their uses (Reflection and Development phase) **(KG1.1.5)**	80 minutes	**Face-to-face/Group activity:** Tutor instructs student -teachers to work in groups (in mixed ability) to use either concept maps, simulations or multimedia presentations on the uses of plants and animals.	**Face-to-face/Group activity:** Student-teachers prepare workbooks, charts and models outlining the main uses of plants and animals that can be used for early grade learning. Student teachers are then put in groups to peer review the materials they prepared
Which cross cutting issues will be addressed or developed and how	Equity and SEN: through setting ground rules to protect vulnerable student-teachers and establishing an interactive, inclusive, innovative and creativity in the classroom atmosphere			
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	• Assessment of learning: student teachers Presents models, charts, workbooks on the uses of plants and animals. (10 marks) • Assessment for learning: student-teachers peer review chats and models from group work showing the differences between plants and animals. (20 marks)			
Teaching Learning Resources	Cardboards, poster papers, poster colours, phones, tablets, desktop computers with internet access.			
Required Text (core)	NaCCA, MoE. (2019; September). *Kindergarten Curriculum (KG1&2) for Preschool*. Accra: Ministry of Education Handbook for PD Coordinators Themes 1- 10 Abbey, T. K., Alhassan, B., Ameyibor, K., Essiah, J. W., Fometu, E., &Wiredu, M.B. (2008). *Ghana association of science teachers integrated science for senior high schools*. Accra: Unimax MacMillan.			
Additional Reading List	Abbey, T. K., &Essiah, J.W. (1995). *Ghana association of science teachers physics for senior high schools*. Accra: Unimax Macmillan. Ameyibor, K., &Wiredu, M. B. (2006). *Ghana association of science teachers: chemistry for senior high schools*. Accra: Unimax MacMillan. Asabere-Ameyaw, A., &Oppong, E. K. (2013). *Integrated science for the basic school teacher I*. Winneba: IEDE. Oddoye, E. O. K., Taale, K. D., Ngman-Wara, E., Samlafo, V.&Obeng-Ofori, D. (2011). *SWL integrated science for senior high schools: Students book*. Accra, Ghana; Sam-Woode Ltd.			
CPD Requirement	Training on Early Grade teaching and assessment strategies			

LESSON 3

Year of B.Ed.	2	Semester	1	Place of lesson in semester	1 2 **3** 4 5 6 7 8 9 10 11 12

Title of Lesson	How to teach Living and Non Living things II					Lesson Duration	3 Hours
Lesson description	The lesson involves teacher led face-to-face discussions, practical activities, work-based learning on how to teach. This is to further reinforce methods used in the previous lessons (Lessons 1 & 2) to enable student-teachers acquire relevant pedagogic skills in the teaching of living and non-living things, plants and animals						
Previous student teacher knowledge, prior learning (assumed)	Student-teachers are aware of the characteristics of living and non-living things, plants and animals from the previous lessons (Lessons 1 & 2)						
Possible barriers to learning in the lesson	Student-teachers might stick to the exact activities and methods used in teaching them and therefore may not be creative enough to add other activities.						
Lesson Delivery – chosen to support students 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.	Face-to face: Discussions, demonstrations and observations Practical Activities: Group presentations of sub-topics from previous lessons Work-based learning: student-teachers engage in peer teaching e-learning Opportunities: Simulations, video presentations						
Purpose for the lesson, 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**	This lesson is intended to help student-teachers to acquire practical skills of teaching living and non-living things, plants and animals along the lines of the two previous lessons (Lessons 1 & 2). NTS 2e: Understands how children develop and learn in diverse contexts and applies						

• **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**
	• Student-teachers to prepare lessons on living and non-living things, plants and animals to teach in class.	• Prepared lesson plans which incorporates student activities, individual work, group work, use of e-resources, practical activity and face-to-face	Through discussions and sharing of ideas in class student-teachers develop the skills of communication, collaboration and mutual respect while appreciating individual difference and abilities. They also acquire skills in handling devices, develop critical thinking, honesty, accuracy and responsibility through active participation in group work/discussion.
	• Demonstrate identify the core values of critical thinking, inclusivity, collaboration in group work and independent reflection in designing teaching and assessment strategies for teaching early grade living things and non-living things.	• Develop checklist to use for observing teacher demonstrate how to design teaching learning strategies for Early Grade teaching	

	• Developing activities and Assessment strategies to teach early grade living and nonliving things, plants and animals	• Present reflective reports on inclusivity and Models, Rhymes or any appropriate teaching and assessment strategies that can be used to teach early grade living and non-living things	

Topic/Title	**Sub Topic**	**Time or Stage**	**Teaching and learning to achieve learning outcomes: depending on delivery mode selected. Teacher led, collaborative group work or independent study**	
			Teacher Activity	**Student Activity**
How to teach Living and Non Living things II	Recap of Lesson 2 and Introduction to lesson 3	40 minutes	**Face-to-face:** Invite individual student-teachers to make 3 minutes presentations on sub-topics from Lesson 1 & and 2	**Face-to-face:** Observe and critique the presentations made by individual students
	Developing activities and Assessment strategies to teach early grade living and non-living things (demonstration Phase)	60 minutes	**Face-to-face:** Teacher introduce to student teachers an outline to develop teaching and assessment strategies though demonstration and discussion for early grade teaching	**Face-to-face:** Student-teachers observe using a checklist for the purpose designed by student teachers and their tutor, and discuss the outline for developing teaching strategies for early grade teaching and assessment. (PD Theme 8, pg. 40; PD Theme 4, pg. 23-46)
	Developing activities and assessment strategies to teach early grade living and nonliving things, plants and animals	80 minutes	**Face-to-face/Group activity:** Tutor instructs student -teachers to work in groups (in mixed ability) to design teaching and learning strategies to teach and assess early grade living and non-living things. After which each group will write and present a reflective report on inclusivity on the designed activities.	**Face-to-face:** Student-teachers (working in mixed ability groups) prepare workbooks, charts and models outlining How to teach and assess the concepts of living and non-living things to early grade learning. Student teachers are then put in groups to peer review reflective reports on inclusivity in the strategies designed.
Which cross cutting issues will be addressed or developed and how	Equity and SEN: through appropriate gender and equity sensitive group work to protect vulnerable student-teachers, establish an interactive and inclusive classroom atmosphere.			
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	• Assessment of learning: Models, work books, charts (all collected in the teaching portfolio) serves as assessment of learning. (10 marks) • Assessment as learning: student teachers reflective report presentation serves as assessment as learning (20 marks) • Assessment for Learning: Designed worksheets serves as assessment for learning. (20 marks)			
Teaching Learning Resources	Cardboards, poster papers, poster colours, phones, tablets, desktop computers with internet access.			

Required Text (core)	NaCCA, MoE. (2019; September). *Kindergarten Curriculum (KG1&2) for Preschool*. Accra: Ministry of Education Abbey, T. K., Alhassan, B., Ameyibor, K., Essiah, J. W., Fometu, E., &Wiredu, M.B. (2008). *Ghana association of science teachers integrated science for senior high schools*. Accra: Unimax MacMillan; Handbook for PD Coordinators Themes 1 – 10.
Additional Reading List	Abbey, T. K., &Essiah, J.W. (1995). *Ghana association of science teachers physics for senior high schools*. Accra: Unimax Macmillan. Ameyibor, K., &Wiredu, M. B. (2006). *Ghana association of science teachers: chemistry for senior high schools*. Accra: Unimax MacMillan. Asabere-Ameyaw, A., &Oppong, E. K. (2013). *Integrated science for the basic school teacher I*. Winneba: IEDE. Oddoye, E. O. K., Taale, K. D., Ngman-Wara, E., Samlafo, V.&Obeng-Ofori, D. (2011). *SWL integrated science for senior high schools: Students book*. Accra, Ghana; Sam-Woode Ltd.
CPD Requirement	Training on Observation checklist construction.

LESSON 4

Year of B.Ed.	2	Semester	1	Place of lesson in semester	1 2 3 **4** 5 6 7 8 9 10 11 12

Title of Lesson	Measurement and Science				Lesson Duration		3
Lesson description	This lesson introduces students to the very important concept of Measurement and Science. Tutor guides student teaches to acquire pedagogic content knowledge of the different units assigned to measured objects to develop conceptual understanding and procedural understanding. Student teachers are taken through the design of growth charts.						
Previous student teacher knowledge, prior learning (assumed)	Student teachers have been observing growth phenomena within their environment. They have also been using measuring instruments such as rulers, mathematical sets and bathroom scale.						
Possible barriers to learning in the lesson	Possible misconceptions that student teachers may bring to classroom. For example, about the units of measurement						
Lesson Delivery – chosen to support students 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.	Face-to face: Discussions, demonstrations and observations, Group work and designing Independent Study: Reflections e-learning Opportunities: Simulations, video presentations						
Purpose for the lesson, 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**	• Get the conceptual and procedural understanding of measurement • Discard the common misconceptions that student teachers have about measurement and its units • Designing activities to teach measurement to early grade learners (NTS) 2c: Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge for the school and grade they teach in. 2e: Understands how children develop and learn in diverse contexts and applies this in his or her teaching. 3d: Manages behaviour and learning with small and large classes)						
• **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 conceptual understanding of the concept of measurement. • Use direct comparison to compare objects based on their shapes. • Design simple methods to teach various methods of measurement.		• Role play to demonstrate the concepts of measuring the lengths, masses and volumes. • Present charts on types of shapes • Designed activities that can be used to teach measurement. • Video shows in relation to measurement,		Sharing ideas in class, the Student-teachers develop the skills of communication, collaboration and mutual respect why appreciating individual difference and abilities, critical thinking and responsibility through careful participation in group work/discussion, well handling of devices, honesty and accuracy.		

Topic/Title	Sub Topic	Time or Stage	Teaching and learning to achieve learning outcomes: depending on delivery mode selected. Teacher led, collaborative group work or independent study	
			Teacher Activity	**Student Activity**
Measurement and Science	Recap of lesson 3	**20 minutes**	**Face-to-face:** Teacher allows student teachers to work in mixed ability groups to discuss previous lesson and assists them with areas that need further attention	**Face-to-face:** Student teachers discuss previous lesson and list areas that need further attention for discussion with tutor.
	Measuring mass and Length (Kindergarten Curriculum, N3)	**30 minutes** 40 minutes	**Face-to-face/Independent Study:** Teacher allows student teachers to reflect on various types of measurement, put them in mixed ability groups to perform simple measurement tasks **Face-to-face:** Teacher provides student teachers with appropriate multimedia simulations/videos showing different forms of measurement of mass and length	**Face-to-face/Independent Study:** Student teachers work in groups of 3 members in an inclusive, multi age, and developmentally to reflect, role play, discuss and perform various methods of measurement. **Face-to-face:** Student teachers work in their groups to make presentations on the methods of measurement. Student teachers measure objects using everyday household items: paper clips, toothpicks, pen, pencil and more. They will work on choosing the right measuring tool for the size of the object, not mixing tools while measuring an object, and starting to measure at the end of an object not in the middle
	Measuring Volume and time	90 minutes	**Face-to-face:** Teacher guides the student teachers to prepare charts/make videos of activities that measure volumes. Time: Check time of day and how clock or digital is moving/changing. Students perform pencil and paper activities. I.e., to record what measurement they taking. They should explain the process for the measurement and record the name of the object and its shape. Teacher discusses with student teachers' ideas on the misconceptions/ incorrect ideas on volume measurement. For example, measuring the volume of	**Face-to-face:** Student teachers prepare videos, charts and models to demonstrate systems that facilitate measurement of volumes. Student teachers may use mangos, stones and other pieces of objects to show how to measure and record weight. Student teachers discuss units of time, and how to measure time and the units associated.

			mango which is of irregular shape.	
Which cross cutting issues will be addressed or developed and how	Equity and SEN: through setting ground rules to protect vulnerable student-teachers and establishing an interactive and inclusive classroom atmosphere. Through the use of measuring devices to measure objects/things, student–teachers' acquire the skill of accuracy and carefulness.			
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	• Assessment as learning: Student teachers produce simple measuring devices suitable for teaching Early Grade science (20 marks) • Assessment of learning: Student – Teachers draw concept maps on physical quantities and their units. (10 marks)			
Teaching Learning Resources	Clock, rulers, tape measure, measuring cylinders, paper clips, toothpicks, pen, pencil.			
Required Text (core)	NaCCA, MoE. (2019; September). *Kindergarten Curriculum (KG1&2) for Preschool*. Accra: Ministry of Education Abbey, T. K., Alhassan, B., Ameyibor, K., Essiah, J. W., Fometu, E., &Wiredu, M.B. (2008). *Ghana association of science teachers integrated science for senior high schools*. Accra: Unimax MacMillan.			
Additional Reading List	Abbey, T. K., &Essiah, J.W. (1995). *Ghana association of science teachers' physics for senior high schools*. Accra: Unimax Macmillan. Ameyibor, K., &Wiredu, M. B. (2006). *Ghana association of science teachers: chemistry for senior high schools*. Accra: Unimax MacMillan. Asabere-Ameyaw, A., &Oppong, E. K. (2013). *Integrated science for the basic school teacher I*. Winneba: IEDE. Oddoye, E. O. K., Taale, K. D., Ngman-Wara, E., Samlafo, V., &Obeng-Ofori, D. (2011). *SWL integrated science for senior high schools: Students book*. Accra, Ghana; Sam-Woode Ltd.			
CPD Requirement	Training in improvisation and design of simple measuring instruments.			

LESSON 5

Year of B.Ed.	2	Semester	1	Place of lesson in semester	1 2 3 4 **5** 6 7 8 9 10 11 12

Title of Lesson	Teaching Measurement in Science	Lesson Duration	3 Hours
Lesson description	This lesson draws on the elements of the lesson 4 and introduces students-teachers to simple activities that can be developed to teach the concepts of Measurement and Science to early grade learners. This will help the student-teacher to understand how they need to use the everyday materials around children and with what they play with and are used to, in learning measurement in science. Children have their own "scientific concepts", therefore student-teacher will enhance their knowledge in their future expectations.		
Previous student teacher knowledge, prior learning (assumed)	Lesson four (4) introduced student-teachers to the nature of the concept measurement in science.		
Possible barriers to learning in the lesson	Perceptions that teaching science requires sophisticated materials that student-teachers may bring to classroom. For example, conversion of units, especially from imperial system to the SI units.		

Lesson Delivery – chosen to support students in achieving the outcomes	Face-to-face √	Practical Activity √	Work-Based Learning	Seminar √	Independent Study √	e-learning opportunities √	Practicum
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	• Face-to-face: Discussion, Demonstrations, Sorting • Practical Activities: Observing, Manipulation and Drawing • Seminar: Presentations and role playing activities • Independent Study: Inquiry learning • E-learning: OERs and MOOCs						

Purpose for the lesson, 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**	• Get the conceptual understanding of the use of every day material to engage early learners to learn science. • Practical hands-on in developing learning activities for specifically early grade learners in measurement. • Discard the common misconceptions that student-teachers have on measurement. • Designing activities to teach simple measurements.		
• **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**
	• Identify and select grade specific, gender sensitive and appropriate materials for teaching the concept of measurement in early grade.	• Present a collage of materials that can be used to prepare activities for early grade learning • Present reports on activities developed for early grade classroom teaching	Sharing ideas in class, the Student-teachers develop the skills of communication, collaboration and mutual respect why appreciating individual difference and abilities, critical thinking and responsibility through careful participation in group work/discussion, well handling of devices, honesty and accuracy.
	• Design appropriate activities for early grade learners to play and learn measurement in science	• Demonstrate how to teach the activity developed in peer teaching activities.	

Topic/Title	Sub Topic	Time or Stage	Teaching and learning to achieve learning outcomes: depending on delivery mode selected. Teacher led, collaborative group work or independent study	
			Teacher Activity	**Student Activity**
Teaching Measurement in Science	• Recap of Lesson 4	**30 minutes**	**Face-to-Face:** Tutor Discussion on measurement of time, volume and mass and their units to review the previous lesson.	**Face-to-Face:** Student teachers reflect and discuss measurement quantities of time, volume and mass with their units and measuring devices.
	• Developing early grade science activities for teaching Measurement in Science	**40 minutes** **60 minutes** **50 minutes**	**Face-to-Face/e-learning:** Teacher Introduces the Student Teachers to identifying and selecting materials that are grade specific, gender sensitive and readily available in the environment through Demonstration and from videos presentations or OERs **Face-to-Face/e-learning:** Teacher models how to form groups with student teachers, into inclusive multi age and developmentally appropriate groups (with the help of videos - https://www.youtube.com/watch?v=pzr5x2cLljg and PD theme 4) and task them to collect materials from the environment and use them to design activities for teaching the grade specific lessons **Face-to-face:** Students are allowed to role play their activities in a seminar style, to their peers through peer teaching (10 minutes per group)	**Face-to-Face/e-learning:**Student-teachers Views demonstrations and using a checklist for appropriateness, compare the materials observed from videos. **Face-to-Face/e-learning:** Student Teachers practice putting themselves in into an inclusive, multi-age, and developmentally appropriate groups, to discuss and design the activities for teaching and assessing measurement in science. **Face-to-face:** Student teachers role play their activities in a seminar style, to their peers through peer teaching (10 minutes per group)
Which cross cutting issues will be addressed or developed and how	Equity and SEN: through setting ground rules to protect vulnerable student-teachers and establishing an interactive and inclusive classroom atmosphere. Through nature walk and inquiry, student teachers develop critical thinking and collaboration. The observe nature and identify diversity.			
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	• Student–Teachers present reports on activities designed will be assessed as learning and score for 10 marks. The reports are preserved as part of portfolio. • Assessment of learning: Student – Teachers peer teaching to demonstrate how activities are used for teaching and assessment (30 marks)			
Teaching Learning Resources	Videos, https://www.youtube.com/watch?v=pzr5x2cLljg or similar videos (retrieved on 18 -06-2019), Readily available materials in environment. Unifix cubes, leafs, papers, pens, pencils, crab shells and others.			
Required Text (core)	NaCCA, MoE. (2019; September). *Kindergarten Curriculum (KG1&2) for Preschool*. Accra: Ministry of Education Abbey, T. K., Alhassan, B., Ameyibor, K., Essiah, J. W., Fometu, E., &Wiredu, M.B. (2008). *Ghana association of science teachers integrated science for senior high schools*. Accra: Unimax MacMillan.			

Additional Reading List	Abbey, T. K., &Essiah, J.W. (1995). *Ghana association of science teachers physics for senior high schools*. Accra: Unimax Macmillan. Ameyibor, K., &Wiredu, M. B. (2006). *Ghana association of science teachers: chemistry for senior high schools*. Accra: Unimax MacMillan. Asabere-Ameyaw, A., &Oppong, E. K. (2013). *Integrated science for the basic school teacher I*. Winneba: IEDE. Oddoye, E. O. K., Taale, K. D., Ngman-Wara, E., Samlafo, V.&Obeng-Ofori, D. (2011). *SWL integrated science for senior high schools: Students book*. Accra, Ghana; Sam-Woode Ltd.
CPD Requirement	• Training in lesson activity designing for grade specific lessons. • Practicing to measure accurately and carefully using measuring devices • Training in peer teaching styles and grouping for grade specific activities

LESSON 6

Year of B.Ed.	2	Semester	1	Place of lesson in semester	1 2 3 4 5 **6** 7 8 9 10 11 12

Title of Lesson	Course Review I with STS seminar				Lesson Duration	3 hours
Lesson description	This lesson is a review and audit of the lessons for the first half of the semester as well as review and discussion of lessons learned, reflection on observations made during the supported teaching in schools (STS).					
Previous student teacher knowledge, prior learning (assumed)	Lessons learnt from lesson 1 through lesson 5 in all learning approaches and observations/experiences during STS.					
Possible barriers to learning in the lesson	Misconception to some concepts not adequately dealt with. Lessons not appropriately understood by student - teachers.					
Lesson Delivery – chosen to support students 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.	**Face-to-Face:** Discussion, group work in same ability group works. **Practical Activity:** Modelling, Concept Mapping and Cartooning. **Independent Study:** Tutor and student teacher reflections (individually and collectively) **e-learning Opportunities:** OERs and Video presentations					
• **Purpose for the lesson, 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**	• Ascertain the level of understanding of concepts. • Test various skills and cross – cutting issues • Provide remedial tuition/tutorials on where necessary for experiences during STS • Correct misconceptions and misinformation • Build the necessary support going forward on SEN and Gender issue					

• **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**
	• Identify weakness and strengths in learning the science lesson for the period under review	• Make a list of Weaknesses and strengths on poster papers for sharing	Collaborations, Communication and Research: Through group work and presentation
	• Be able to reflect on lessons learnt so far STS and state new insights and/or grey areas needing remedies	• Provide a reflection report on STS and demonstrations and illustrations on a given media of lessons learnt so far	Equity and Reflection is developed from reflective activities
	• Correct misconception/misinformation for earlier (lesson 1 – 5) lessons	• Present concept maps and/or models linking misconceptions/misinformation to new insights	Creativity and critical thinking is developed in developing models and concept maps

Content of lesson picked and developed from the course specification	Sub Topic	Time or Stage	Teaching and learning to achieve learning outcomes: depending on delivery mode selected. Teacher led, collaborative group work or independent study	
Topic Title			**Teacher Activity** Facilitate and provides the necessary tool for students activities.	**Student Activity**
Course Review 1 with STS seminar	Reviewing the understanding of lessons on Living and Non-living things I and II, How to teach Living and Non-Living things, how to teach measurement in science and discussion of observations during STS	60 minutes 90 minutes	**Face-to-face:**Teacher led brainstorming session with student teachers to unearth the weaknesses and strengths of student teachers in the lessons 1 – 5. Initiate discussion/Talk for learning approach using groupings (Same ability and then mixed groups) to identify student teachers' strengths and weakness in the lessons learnt so far. **STS Seminar:** Teacher allows two or three resource persons to make presentations on STS based on the NTS. Tutor then guides student teachers through problem-based learning on National Teacher's Standards and reflection on observations made during STS.	**Face-to-face:**Student teachers discuss their problems in the previous lessons and provide a checklist to identify and record all possible weaknesses and strengths. **STS Seminar:**Student teachers listen to various presentations from their observation in STS on how science learning is conducted in the schools. Student teachers then discuss observations made during STS based on the National Teacher's Standards, reflect and provide a checklist of lessons learned and problems identified and how they can be addressed. Student teachers then provide a reflection report on STS.
	Remedies to course topics	30 minutes	**Face-to-face:** Teacher groups student teachers according to remedy need and provide specific task assistance in the areas on concept needing remedy.	**Face-to-face:** Students work in the special groups (Same remedy need group) on tasks to remedy their learning need. They then present concept maps and/or models linking misconceptions/misinformation to new insights.
Which cross cutting issues will be addressed or developed and how	Equity and SEN: through mixed and same group work to protect vulnerable student - Teachers and establishing an interactive and inclusive classroom atmosphere. Through modelling and group work, collaboration is established.			
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	• Student teachers' presentations during group work and model work presentation helps to assess them of learning (20 marks) • Assessment for and as learning: Student teachers working in groups on remedial tutoring helps to assess them for and as learning (20 marks)			
Teaching Learning Resources	Cardboards, Course manual, Poster paper			
Required Text (core)	NaCCA, MoE. (2019; September). *Kindergarten Curriculum (KG1&2) for Preschool*. Accra: Ministry of Education Abbey, T. K., Alhassan, M. B., Ameyibor, K., Essiah, J. W., Fometu, E., &Wiredu, M.B. (2008). *Ghana association of science teachers integrated science for senior high schools*. Accra: Unimax MacMillan.			

Additional Reading List	Abbey, T. K., &Essiah, J.W. (1995). *Ghana association of science teachers physics for senior high schools*. Accra: Unimax Macmillan. Ameyibor, K., &Wiredu, M. B. (2006). *Ghana association of science teachers chemistry for senior high schools*. Accra: Unimax MacMillan. Asabere-Ameyaw, A., &Oppong, E. K. (2013). *Integrated science for the basic school teacher I*. Winneba: IEDE. Oddoye, E. O. K., Taale, K. D., Ngman-Wara, E., Samlafo, V., &Obeng-Ofori, D. (2011). *SWL integrated science for senior high schools: Students book*. Accra, Ghana; Sam-Woode Ltd.
CPD Requirement	Training on preparation of checklist and Reflection guides

LESSON 7

Year of B.Ed.	2	Semester	1	Place of lesson in semester	1 2 3 4 5 6 **7** 8 9 10 11 12

Title of Lesson	Sun and Earth					**Lesson Duration**	3 Hours
Lesson description	In this lesson, the Tutor will assist the student-teacher to review previous knowledge on the Solar system and its components aspects of which were studied in senior high school. The lesson will then deepen their understanding of the apparent movement of the Sun to be able to explain away the belief that the Sun moves. Similarly, they would able to explain to their future pupils the shape of the earth as against cultural belief that the earth is flat. The student-teacher will also appreciate the relationship among the sun, moon and the sun and the effect on humans.						
Previous student teacher knowledge, prior learning (assumed)	Student-teachers have studied the solar system, including their effect on humans at the senior high school level.						
Possible barriers to learning in the lesson	Student-teacher might still have some unscientific ideas about the sun, earth, moon and stars and the activities of these bodies on humans.						
Lesson Delivery – chosen to support students in achieving the outcomes	**Face-to-face √**	**Practical Activity √**	**Work-Based Learning**	**Seminar**	**Independent Study**	**e-learning opportunities √**	**Practicum**
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	**Face-to-face:** Discussion, Talk for learning approaches with student-teacher presentations, ICT and multimedia presentations. **Practical activity:** student teachers work in groups to produce samples of exercises on the heaven bodies in their work books and summarise their ideas on the apparent movement of the sun.						
Purpose for the lesson, 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	Deepen student-teachers' level of understanding of concepts about the Sun, moon, earth and movement of the earth and the moon; and the effect of the movement of the earth on humans. Correct misconceptions and incorrect ideas about heavenly bodies Build the necessary support going forward on SEN and Gender issue The student-teacher will develop skills of data collection and presentation on the apparent movement of the sun and the effects of the movement of the earth on humans. The lesson should help the student-teacher develop skills of data collection and report writing Provide student teacher with the requisite knowledge and skills to be able to teach the topic 'Sun and Earth'						
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**	
	Enumerate objects in the sky			Produce samples of exercises in student teachers' workbooks on heavenly bodies		Develop skills for construction of diagnostic tests to identify pupils' misconceptions about diseases, skills of communication	
	Demonstrate understanding of the apparent movement of the Sun.			Prepare summarized notes on the apparent movement of the Sun by student teachers		Develop Skills of summary writing	
	Demonstrate knowledge and understanding of the shape of the Earth			Mold the shape of the Earth using Mache paper Produce audio-recordings on the description of the shape of the Earth		Develop skills of construction of model of the earth	
	critically and collectively reflect on the formation of day and night and its effect on human activities.			Prepare/Write notes on the formation of day and night. Produce a report on effects of day and night on human		Develop skills for construction of model of the earth, report writing on effects of day and night on humans' activities	

		activities Demonstrate knowledge and skills to teach the topic	Developing Social collaboration and attention and care to individual needs (SEN) through role play

Content of lesson picked and developed from the course specification **Topic Title**	**Sub Topic**	**Time or Stage**	**Teaching and learning to achieve learning outcomes: depending on delivery mode selected. Teacher led, collaborative group work or independent study** **Teacher Activity**	**Student Activity**
Humans and their environment	Teaching objects in the sky: sun, moon, and stars (K1.6.8)	10 minutes	**Face-to-face:**Tutor discuss perceptions about objects in the sky	**Face-to-face:** Student teachers to in diverse groups discuss their perceptions about the objects in the sky and present their reports for further discussion
		15 minutes	**Face-to-face:**Tutor to present a video on the objects in the sky and guide student-teachers to discuss their observations	**Face-to-face:**Studentteachers identify and discuss their observations from the video
	Sun (K1.6.8)	35 minutes	**Face-to-face:**Tutor to ask student-teachers to researchinformation from the internet and textbooks on apparent movement o: the sun before the lesson.	**Face-to-face:**Student-teachers to present reports on their researchfindings on the apparent movement of the sun in the sky
			Face-to-face: The Tutor presents a video on the movement of the planets and lead students to discuss their reports on the apparent movement of the sun in the sky	**Face-to-face:**Student-teachers to relate their research findings with their observations from the video and the apparent movement of the sun and discuss their findings
	The Earth	30 minutes	**Face-to-face:**Tutor to present an Audio-visual/video on the shape of the earth to student-teachers and guide them to discuss their observations	**Face-to-face:**Student-teachers to discuss their observation from the audio-visual presentation on the shape of the earth
		60 minutes	**Face-to-face:**Tutor to assist student-teachers to use paper Marche to show the shape of the earth	**Face-to-face/Group activity:**Student-teachers in diverse groups produce shape of the earth from the use of paper Mache

Which cross cutting issues will be addressed or developed and how	**Equity and SEN:** through setting ground rules to protect vulnerable student - Teachers and establishing an interactive and inclusive classroom atmosphere. Student – Teachers specific weakness and Strengths will be identified and catered for**.**
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	Assessment as learning: Student – Teachers to prepares Marche paper models of the sun and the earth for their portfolios (10 marks) Assessment for Learning: Student Presentations of 5 minutes each (20 marks)
Teaching Learning Resources	The Course Manual, Computer, projectors, Flip Charts, Pens, Pencils, 'A' 4 sheets, markers, health cards, work sheets, slides, videos**.**
Required Text (core)	NaCCA, MoE. (2019; September). *Kindergarten Curriculum (KG1&2) for Preschool*. Accra: Ministry of Education

	Abbey, T. K., Alhassan, B., Ameyibor, K., Essiah, J. W., Fometu, E., &Wiredu, M.B. (2008). *Ghana association of science teachers integrated science for senior high schools*. Accra: Unimax MacMillan. Oddoye, E. O. K., Taale, K. D., Ngman-Wara, E., Samlafo, V.&Obeng-Ofori, D. (2011). *SWL integrated science for senior high schools: Students book*. Accra, Ghana; Sam-Woode Ltd
Additional Reading List	Yeboah, S. K., Ahordji, &Mensah, S. K. (2016).*Science for primary schools: Pupil's book 5,* Accra: Sam-Woode Ltd. Available Primary and Junior high school science textbooks
CPD Requirement	Training on construction of models and development of observational skills; skills development for writing for note taking and summary writing

LESSON 8

Year of B.Ed.	2	Semester	1	Place of lesson in semester	1 2 3 4 5 6 7 8 **9** 10 11 12

Title of Lesson	Night and Day I				Lesson Duration	3 Hours
Lesson description	In this lesson, the Tutor will assist the student-teacher to review previous knowledge on the Sun and the movement of the Earth and causes of day and night, aspects of which were studied in senior high school. The lesson will then deepen their understanding of the position of the sun in the universe and the movement of the earth in relation to the sun, causing day and night and seasons. The lesson would expose them to teaching strategies and material so that they will effectively handle similar topics for early grade science classrooms. The student-teacher will also appreciate the relationship between humans and the sun and the earth as their activities have effects on humans					
Previous student teacher knowledge, prior learning (assumed)	Student-teachers have studied the solar system at the senior high school level.					
Possible barriers to learning in the lesson	Student-teacher might still have some unscientific ideas about especially the position of the Sun and the movement of the earth					
Lesson Delivery – chosen to support students 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.	**Face-to-face:** Discussion, Talk for learning approaches with student-teacher presentations, problem-based teaching, and multimedia presentations. **Practical activity:** student teachers work in groups and present charts and reports **Independent study:** student-teachers would search for information from internet and textbooks on the position of the sun and movement of the earth in relation to causes of day and night and seasons					
• **Purpose for the lesson, 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**	• Deepen student-teachers' level of understanding of the position of the sun and movement of the earth in relation to day and night and seasons. • Correct misconceptions and incorrect ideas about position of the sun and movement of the earth • Build the necessary support going forward on SEN and Gender issue • The student-teacher will develop skills of searching for information from the internet and the library • The lesson should help the student-teacher develop a model as a product of their understanding of the subtopics • Provide student teachers with the requisite knowledge and skills to be able to teach the topic 'position of the sun and causes of day and night NTS: 1a- Critically and collectively reflects to improve teaching and learning. 1f-Develops a positive teacher identity and acts as a good role model for students 2b-Has comprehensive knowledge of the official school curriculum, including learning outcomes					
• **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 knowledge on the position of the Sun in the universe			• Student teacher to present a written report on the position of the sun as gathered from a search from textbooks and the internet		Develop skills for writing a report based on information obtained through internet search and from textbooks

	• critically and collectively reflect on the formation of day and night	• Student teachers should submit a chart/models to explain formation of day and night		Develop skills for preparation of charts/models
	• Demonstrate with globe and light the rotation of the earth to explain causes of day and night	• Student teacher should submit a chart on the rotation of the earth to explain the causes of day and night		• Develop skills of making charts and demonstration of natural phenomena
	• Prepare/Write notes on the formation of day and night	• Student teacher provides prepared report or written notes on the formation of day and night • Demonstrate knowledge and skills to teach the topic		• develop skills for report writing • Developing Social collaboration and attention and care to individual needs (SEN) through role play
Content of lesson picked and developed from the course specification	**Sub Topic**	**Time or Stage**	**Teaching and learning to achieve learning outcomes: depending on delivery mode selected. Teacher led, collaborative group work or independent study**	
Topic Title			**Teacher Activity**	**Student Activity**
Sun and Earth	Teaching the Position of the Sun	10 minutes	**Face-to-face:**Tutor through question to review student-teachers' to prior knowledge/unscientific ideas about the position of the sun	**Face-to-face:** Student teachers reflect to come out with their ideas about the position of the sun
		50 minutes	**Face-to-face:**Tutor present video on and pictures taken satellites from space on the arrangements of the planets in relation to the sun and lead the student-teachers to discuss their observations.	**Face-to-face:** Student teachers in groups compare their prior ideas about the position of the sun with their observations from the videos and present written reports for further class discussion
	Causes of Day and Night (K1.6.8)	15 minutes	**Face-to-face:**Tutor through questioning identify student-teachers' misconceptions about causes of day and night	**Face-to-face:** Student teachers to in groups present designs of diagnostic tool to unearth learners' misconceptions about the causes of day and night
		35 minutes	**Face-to-face:**Tutor shows a video from international space station on the rotation of the earth which causes day and night and use animation to show formation of day and night Tutor guides discussion of student-teachers' observations	**Face-to-face:**Student teachers to think critically about what is happening in the video and how the earth moves from day to night and back. They should report their observations in their work book/journal
		40 minutes	**Face-to-face:**Tutor to assist student-teachers to demonstrate the rotation of the earth using a globe and flash light to explain the causes of day and night	**Face-to-face:** Student teachers, in groups of 5-9 prepare and present chart to explain the causes of day and night

		30 minutes	**Face-to-face:**Tutor assists student-teachers to write notes on formation of day and night as from their observation of the video on the rotation of the earth and the demonstration using the globe and flashlight to explain causes of day and night	**Face-to-face:** Student teachers to present their write up on the formation of day and night
Which cross cutting issues will be addressed or developed and how	Equity and SEN: through setting ground rules to protect vulnerable student teachers and establishing an interactive and inclusive classroom atmosphere. Student teachers specific weakness and Strengths will be identified and catered for.			
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	• Assessment for learning: Student teachers to provide written report on the position of the sun in the universe(20 marks) • Assessment as learning: Student teachers present chart and a written report to explain the formation of day and night(20 marks)			
Teaching Learning Resources	The Course Manual, Computer, projectors, Flip Charts, Pens, Pencils, 'A' 4 sheets, markers, work sheets, videos, globe, flashlight			
Required Text (core)	NaCCA, MoE. (2019; September). *Kindergarten Curriculum (KG1&2) for Preschool*. Accra: Ministry of Education Abbey, T. K., Alhassan, B., Ameyibor, K., Essiah, J. W., Fometu, E., &Wiredu, M.B. (2008). *Ghana association of science teachers integrated science for senior high schools*. Accra: Unimax MacMillan. Oddoye, E. O. K., Taale, K. D., Ngman-Wara, E., Samlafo, V.&Obeng-Ofori, D. (2011). *SWL integrated science for senior high schools: Students book*. Accra, Ghana; Sam-Woode Ltd			
Additional Reading List	Yeboah, S. K., Ahordji, &Mensah, S. K. (2016).*Science for primary schools: Pupil's book 5,* Accra: Sam-Woode Ltd. Available Primary and Junior high school science textbooks			
Lesson Policy				
CPD Requirement	Training on critical thinking, skills development on construction of charts and demonstrations of natural phenomena and report writing skills			

LESSON 9

Year of B.Ed.	2	Semester	1	Place of lesson in semester	1 2 3 4 5 6 7 8 **9** 10 11 12

Title of Lesson	Day and Night II			Lesson Duration	3 Hours		
Lesson description	In this lesson, the Tutor will assist the student-teacher to identify human activities that are influenced by the cycle of day and night and model play based activities that will be used to teach early grade learner. The student-teacher would acquire knowledge and pedagogic skills to teach the effect of the cycle of day and night on human activities classrooms.						
Previous student teacher knowledge, prior learning (assumed)	Student-teachers have studied some concepts of natural resources and their uses and human activities that degrade the environment at junior high school level.						
Possible barriers to learning in the lesson	Student-teacher might still have some unscientific ideas about the cycle of day and night on human activities						
Lesson Delivery – chosen to support students 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.	**Face-to-face:** Discussion, multimedia presentations, group presentations **Practical activity:** producing lists from personal experiences, nature walk and videos **Work-Based learning:** Nature walk to observe human activities during the day						
• **Purpose for the lesson, 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**	• To deepen student-teacher understanding of effect of cycle of day and night on human activities and note the cyclical nature of human activities in relation to cycle of day and night • Test various skills and cross – cutting issue • Build the necessary support going forward on SEN and Gender issue • The lesson should help the student-teacher to carry out a mini-project to map out natural resources and their uses in the community and to investigate some effects of human activities on the environment. • To develop the knowledge and skills to teach the topic NTS: 1a- Critically and collectively reflects to improve teaching and learning. 1f-Develops a positive teacher identity and acts as a good role model for students 2b-Has comprehensive knowledge of the official school curriculum, including learning outcomes						
• **Learning Outcome for the lesson, picked and developed from the course specification** • **Learning indicators for Teaching and 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**	
	• Describe the effect of the cycle of day and night on human activities			• Student-teacher to present written report on effect of cycle of day and night on human activities		Develop skills notes taking, and report writing	
	• Prepare list of human activities during the day and night respectively and note the cyclical nature of these activities			• Student – Teacher in groups present flash cards of human activities during the day and night respectively • Demonstrate knowledge and teaching skills for the topic		Developing Social collaboration and attention and care to individual needs (SEN) through role play	

Content of lesson picked and developed from the course specification Topic Title	Sub Topic	Time or Stage	Teaching and learning to achieve learning outcomes: depending on delivery mode selected. Teacher led, collaborative group work or independent study Teacher Activity	 Student Activity
Sun and Earth	**Teaching the effect of day and night on cycle of human activities** (K1.6.8)	**120 minutes**	**Face-to-face:** Tutor to let student teachers undertake nature walk around the community to note various activities humans are engaged in during the day Video on human activities such as from farm, market places, and local indigenous factories,	**Face-to-face:** Student teachers in class and in groups prepare a list of observed human activities from nature walk and the video and explain how these activities take place during the day and explain the cyclical nature of these activities
		60 minutes	**Face-to-face:**Tutor to assist student teachers to enumerate from their experiences human activities that take place during the night	**Face-to-face:** Student teachers in diverse groups prepare summaries of human's activities that take place in the night and explain the cyclical nature of these activities
Which cross cutting issues will be addressed or developed and how	Equity and SEN: through setting ground rules to protect vulnerable student teachers and establishing an interactive and inclusive classroom atmosphere. Through the game of "Tell it", Student teachers specific weakness and Strengths will be identified and catered for.			
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	• Assessment for learning: Student teachers to provide list of human activities that take place during the day time(20 marks) • Assessment as learning: Student teachers present summaries on human activities that take place during the night (20 marks)			
Teaching Learning Resources	The course manual, Flip Charts, Pens, Pencils, 'A' 4 sheets, markers, videos on human activities that take place during the day			
Required Text (core)	NaCCA, MoE. (2019; September). *Kindergarten Curriculum (KG1&2) for Preschool*. Accra: Ministry of Education Abbey, T. K., Alhassan, B., Ameyibor, K., Essiah, J. W., Fometu, E., &Wiredu, M.B. (2008). *Ghana association of science teachers integrated science for senior high schools*. Accra: Unimax MacMillan. Oddoye, E. O. K., Taale, K. D., Ngman-Wara, E., Samlafo, V.&Obeng-Ofori, D. (2011). *SWL integrated science for senior high schools: Students book*. Accra, Ghana; Sam-Woode Ltd			
Additional Reading List	Yeboah, S. K., Ahordji, ,&Mensah, S. K. (2016).*Science for primary schools: Pupil's book 5,* Accra: Sam-Woode Ltd. Available Primary and Junior high school science textbooks			
CPD Requirement	Training on note-taking and report writing, skills development on construction of T-charts and collage making			

LESSON 10

Year of B.Ed.	2	Semester	1	Place of lesson in semester	1 2 3 4 5 6 7 8 9 **10** 11 12

Title of Lesson	Early Grade Science Curriculum I				Lesson Duration	3 Hours
Lesson description **EGE Science 1**	In this lesson, the Tutor introduces the Science Curriculum and discusses the major features with student teachers. The importance of understanding the curriculum is sequenced and its role within the training of the early grade child is also discussed. This will enable student teachers to conceptualize their own roles as teachers in the life of the early grade child in a holistic manner. Furthermore, the science course will enable young student teachers to create inclusive learning environments by providing the necessary adaptable and safe environment for the study of science.					
Previous student teacher knowledge, prior learning (assumed)	Student teachers have been taken through the introduction to the integrated science course SCE 121					
Possible barriers to learning in the lesson	Student teachers may lack knowledge about the features of early grade science.					
Lesson Delivery – chosen to support students in achieving the outcomes	**Face-to-face** **√**	**Practical Activity**	**Work-Based Learning**	**Seminar** **√**	**Independent Study**	**e-learning opportunities** **√**	**Practicum**
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	Discussion: student teachers make presentations (in mixed ability groups) on what they consider as important variables in early grade science Seminar: Presentations for the development of research, collaboration and communication skills					
• **Purpose for the lesson, 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**	• Introduce the student teacher to the essential attitudes and values of professional science teaching such as honesty, carefulness, accuracy and many more. • Introduce child study styles • Peruse the new Early grade science curriculum and how to begin developing themes. • Acquire the skills to compile/document academic work and other educational evidence. • Acquire skills to evaluate coursework, learning progress and academic achievement. NTS: 1a: Critically and collectively reflects to improve teaching and learning 2c: Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge for the school and grade they teach in. 3b: Carries out small-scale action research to improve practice. 3e: Employs a variety of instructional strategies that encourages student participation and critical thinking. 3g: Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes)					
• **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.**	
	Demonstrate the characteristics of an inclusive teacher (values & attitudes) in class engagements. (NTS, 2e, Pg. 13)		• Provide a checklist to identify the values of patience, critical thinking, tolerance, accommodation and fortitude, characteristic of an early grade teacher. • Write a reflective report on the characteristics of an inclusive teacher as observed in class engagements.		Providing checklist of communication, collaboration and mutual respect while appreciating individual difference and abilities, critical thinking and responsibility through careful participation in group discussion.	

Topic/Title	Sub Topic	Time or Stage	Teaching and learning to achieve learning outcomes: depending on delivery mode selected. Teacher led, collaborative group work or independent study	
			Teacher Activity	**Student Activity**
Early Grade Science Curriculum Studies I	Review of lesson 9 The nature of the Early Grade Curriculum and Science learning	20 minutes 160 minutes	**Face-to-face:**Tutor allows student teachers to work in mixed ability groups to discuss previous lesson and assists them with areas that need further attention **Face-to face:**Tutor introduces the lesson by asking student teachers tell what they learned about science in Year 1 **Face-to-face:** Tutor led discussions with student teachers on appropriateness of those science concepts for early grade learners **Face-to-face/Group activity:** Tutor allows student teachers to form groups of mixed abilities, to peruse the EGE science syllabus PD Theme 4, pg 23-30	**Discussion:**Student teachers discuss previous lesson and list areas that need further attention for discussion with tutor. **Group activity:**Student teachers engage in Think, Pair, Share, share discussions, reflections and rhyming. Use OERs and MOOCs and write a report. **Face-to-face:** Student teachers reflect and talk about science concepts learned in Year 1. Student teachers then discuss with tutor the appropriateness of their science course for early grade learners **Face-to-face/Group activity:** Student teachers in groups of mixed abilities peruse the EGE science syllabus PD Theme 4, 35-46
Which cross cutting issues will be addressed or developed and how	Equity and SEN: Through the establishment of an interactive and inclusive classroom atmosphere. By practicing how to develop skills in reviewing, differentiating and categorizing early grade science activities into workable themes			
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	• Student teachers' in groups use developed checklist to identify common sequenced themes suitable for EG learners(20 marks) • Student teachers write sequenced science themes in an inclusive, multi-age, and developmentally appropriate manner (Assessment of learning).(20 marks)			
Teaching Learning Resources	The EGE Science syllabus, pens and papers.			
Required Text (core)	NaCCA, MoE. (2019; September). *Kindergarten Curriculum (KG1&2) for Preschool*. Accra: Ministry of Education Handbook for PD Coordinators Themes 1- 10			
CPD Requirement	• Improving teaching and educational development. • Practicing how to interpret and categorise appropriately. That is, knowing the appropriate compilation of documents to illustrate what a teacher understands • Perseverance and accuracy in compiling data			

LESSON 11

Year of B.Ed.	2	Semester	1	Place of lesson in semester	1 2 3 4 5 6 7 8 9 10 **11** 12

Title of Lesson	Early Grade Science Curriculum Studies II	**Lesson Duration**	**3 Hours**
Lesson description **EGE Science 1**	In this lesson, the Tutor further discusses the nuances embedded in the Early Grade Science Curriculum and how it could be translated practically. The importance of understanding the way it is sequenced and its role within the training of the early grade child is emphasised. This will enable student-teachers to conceptualise their own roles as teachers in the life of the early grade child in a more holistic manner as it will enable young student-teachers to create inclusive learning environments by providing the necessary adaptable and safe environment for the early grade learner.		
Previous student teacher knowledge, prior learning	Student teachers have already been introduced to the science curriculum studies course, EGE 211		
Possible barriers to learning in the lesson	Student-teachers may lack knowledge about the features of early grade science.		

Lesson Delivery – chosen to support students in achieving the outcomes	**Face-to-face √**	**Practical Activity**	**Work-Based Learning**	**Seminar √**	**Independent Study**	**e-learning opportunities**	**Practicum**

Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes	Discussion: student-teachers make presentations (in mixed ability groups) on what they consider as important variables in early grade science
• **Purpose for the lesson, 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**	• Accentuate the student teacher to the essential attitudes and values of professional science teaching such as honesty, carefulness, accuracy and many more. • Emphasise child study styles taking into consideration cultural and gender issues • Appreciation of gender responsive and child-adaptive teaching strategies • Continue to peruse the new Early grade science curriculum and how to interpret the requirements • Acquire the skills to compile/document academic work and other educational evidence for portfolios • Acquire skills to evaluate coursework, learning progress and academic achievement NTS: 1a: Critically and collectively reflects to improve teaching and learning 2c: Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge for the school and grade they teach in. 3b: Carries out small-scale action research to improve practice. 3e: Employs a variety of instructional strategies that encourages student participation and critical thinking. 3g: Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes)

• **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.**
	Demonstrate the characteristics of an inclusive science teacher (values & attitudes) in class engagements. (NTS, 2e, Pg. 13)	• Provide a checklist to identify the values of patience, critical thinking, tolerance, accommodation and fortitude, characteristic of an early grade teacher	Providing checklist of communication, collaboration and mutual respect while appreciating young learners' individual difference and abilities, critical thinking and

		• Make a reflective presentation on the characteristics of an inclusive science teacher as observed in EG class engagements		responsibility through careful participation in group discussion.
Topic/Title	**Sub Topic**	**Time or Stage**	**Teaching and learning to achieve learning outcomes: depending on delivery mode selected. Teacher led, collaborative group work or independent study**	
			Teacher Activity	**Student Activity**
Early Science Curriculum Studies II	Modelling Inclusivity, Values and appropriate attitudes in the Science lessons on the Early Grade curriculum	**180 minutes**	**Face-to face:** Tutor introduces the lesson by asking student-teachers to recall some of the themes/concepts they studied in Lesson 10 **Face-to-face:**Tutor led modelling, role playing and rhyming followed by discussions with student teachers on the development of scientific skills as enshrined in the EGE Science curriculum **Face-to-face/Group activity:** Tutor allows student teachers to form groups of mixed abilities, to peruse the EGE science syllabus and translate it practically PD Theme 4, pg 23-30	**Face-to-face:** Student-teachers reflect and recall science concepts learned in Lesson 10 **Face-to-face/Group activity:**Student teachers engage in modelling, role playing and rhyming and then discuss with tutor processes for the actualisation of SEN-responsive scientific skills **Face-to-face/Group activity:** Student-teachers in groups of mixed abilities peruse the EGE science syllabus and translate it through presentations and modelling PD Theme 4, 35-46
Which cross cutting issues will be addressed or developed and how	Equity and SEN: Through the establishment of an interactive, inclusive and demonstrative classroom atmosphere.			
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	• Student teachers' in groups use developed checklist to identify scientific learning skills that colleague trainees are demonstrating (20 marks) • Student-Teachers write sequenced science themes in an inclusive, multi-age, and developmentally appropriate manner (Assessment of learning). (20 marks)			
Teaching Learning Resources	The EGE Science syllabus, pens and papers.			
Required Text (core)	NaCCA, MoE. (2019; September). *Kindergarten Curriculum (KG1&2) for Preschool*. Accra: Ministry of Education Handbook for PD Coordinators Themes 1- 10			
CPD Requirement	• Improving teaching and educational development in resource and Assessment strategies. • Practicing how to interpret and categorise appropriately. That is, knowing the appropriate compilation of documents to illustrate what a teacher understands • Learning perseverance and accuracy in compiling data			

LESSON 12

Year of B.Ed.	2	Semester	1	Place of lesson in semester	1 2 3 4 5 6 7 8 9 10 11 **12**

Title of Lesson	Course Review II with STS seminar				Lesson Duration	3 hours
Lesson description	This lesson is a review and audit of the lessons for the first half of the semester as well as review and discussion of lessons learned, reflection on the supported teaching in schools (STS) and peer review of teaching and learning portfolios.					
Previous student teacher knowledge, prior learning (assumed)	Lessons learnt from lesson 1 through lesson 5 in all learning approaches and observations/experiences during STS.					
Possible barriers to learning in the lesson	Misconception to some concepts not adequately dealt with. Lessons not appropriately understood by student - teachers.					
Lesson Delivery – chosen to support students 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.	Face-to-Face: Discussion, group work in same ability group works. Practical Activity: Modelling, Concept Mapping and Cartooning. Independent Study: Tutor and student teacher reflections (individually and collectively) e-learning Opportunities: OERs and Video presentations						
• **Purpose for the lesson, 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**	• Ascertain the level of understanding of concepts. • Test various skills and cross – cutting issues • Provide remedial tuition/tutorials on where necessary for experiences during STS • Correct misconceptions and misinformation • Build the necessary support going forward on SEN and Gender issue (NTS 1a: Critically and collectively reflects to improve teaching and learning 2c: Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge for the school and grade they teach in. 3b: Carries out small-scale action research to improve practice. 3e: Employs a variety of instructional strategies that encourages student participation and critical thinking. 3g: Employs instructional strategies appropriate for mixed ability, multilingual and multi-age classes)						
• **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**	
	• Identify weakness and strengths in learning the science lesson for the period under review		• Make a list of Weaknesses and strengths on poster papers for sharing		Collaborations, Communication and Research: Through group work and presentation	
	• Be able to reflect on lessons learnt so far STS and state new insights and/or grey areas needing remedies • Peer review teaching and learning portfolios		• Provide a reflection report on STS and demonstrations and illustrations on a given media of lessons learnt so far • Present teaching and learning portfolios developed throughout semester.		Equity and Reflection is developed from reflective activities	

	• Correct misconception/misinformation for earlier (lesson 7 – 11) lessons	• Present concept maps and/or models linking misconceptions/misinformation to new insights		Creativity and critical thinking is developed in developing models and concept maps
Content of lesson picked and developed from the course specification **Topic Title** **Course Review 1 with STS seminar**	**Sub Topic** Reviewing the understanding of lessons on teaching concepts in Sun and Earth, Day and Night I, Day and Night II, Early Grade Curriculum Studies I, Early Grade Curriculum Studies II and discussion of observations during STS since week 6.	**Time or Stage** 60 minutes 30 minutes 60 minutes	**Teaching and learning to achieve learning outcomes: depending on delivery mode selected. Teacher led, collaborative group work or independent study** **Teacher Activity** Facilitate and provides the necessary tool for students activities. **Face-to-face:** Tutor led brainstorming session with student teachers to unearth the weaknesses and strengths of student teachers in the lessons 7 – 11. Initiate discussion/Talk for learning approach using groupings (Same ability and then mixed groups) to identify student teachers' strengths and weakness in the lessons learnt so far. **STS Seminar:** Teacher allows two or three resource persons to make presentations on STS based on the NTS. Tutor then guides student teachers through problem-based learning on National Teacher's Standards and reflection on observations made during STS. **Seminar**: Student teachers peer review teaching and learning portfolios.	**Student Activity** **Face-to-face:** Student teachers discuss their problems in the previous lessons and provide a checklist to identify and record all possible weaknesses and strengths. **STS Seminar:** Student teachers listen to various presentations from their observation in STS on how science learning is conducted in the schools. Student teachers then discuss observations made during STS based on the National Teacher's Standards, reflect and provide a checklist of lessons learned and problems identified and how they can be addressed. Student teachers then provide a reflection report on STS. **Seminar**: Student teachers peer review their teaching learning portfolios as they cross share their portfolios

	Remedies to course topics	30 minutes	**Face-to-face:** Teacher groups student teachers according to remedy need and provide specific task assistance in the areas on concept needing remedy.	**Face-to-face:** Students work in the special groups (Same remedy need group) on tasks to remedy their learning need. They then present concept maps and/or models linking misconceptions/misinformation to new insights.
Which cross cutting issues will be addressed or developed and how	Equity and SEN: through mixed and same group work to protect vulnerable student teachers and establishing an interactive and inclusive classroom atmosphere. Through modelling and group work, collaboration is established.			
Lesson assessments – evaluation of learning: of, for and as learning within the lesson	• Student teachers' presentations during group work and model work presentation helps to assess them of learning • Assessment for and as learning: Student teachers working in groups on remedial tutoring helps to assess them for and as learning			
Teaching Learning Resources	Cardboards, Course manual, Poster paper			
Required Text (core)	NaCCA, MoE. (2019; September). *Kindergarten Curriculum (KG1&2) for Preschool*. Accra: Ministry of Education Abbey, T. K., Alhassan, M. B., Ameyibor, K., Essiah, J. W., Fometu, E., &Wiredu, M.B. (2008). *Ghana association of science teachers integrated science for senior high schools*. Accra: Unimax MacMillan.			
Additional Reading List	Abbey, T. K., &Essiah, J.W. (1995). *Ghana association of science teachers physics for senior high schools*. Accra: Unimax Macmillan. Ameyibor, K., &Wiredu, M. B. (2006). *Ghana association of sacienceteachers chemistry for senior high schools*. Accra: Unimax MacMillan. Asabere-Ameyaw, A., &Oppong, E. K. (2013). *Integrated science for the basic school teacher I*. Winneba: IEDE. Oddoye, E. O. K., Taale, K. D., Ngman-Wara, E., Samlafo, V., &Obeng-Ofori, D. (2011). *SWL integrated science for senior high schools: Students book*. Accra, Ghana; Sam-Woode Ltd.			
CPD Requirement	Workshop on preparation of checklist and Reflection guides.			