

YEAR 2

SEMESTER 1

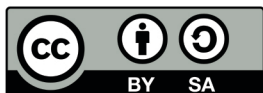
Four-Year B.Ed. Course Manual

TVET - WOODWORK TECHNOLOGY 1





The Government of Ghana



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FOREWORD

These Initial Teacher Education course manuals were developed by a team consisting of members from Colleges of Education and four universities namely 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 meet 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, NTECF, 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 these sets 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 copies 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 these 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 and 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

Course Manual Writing Guide

Resources for Course Manual Writing

- Soft copies of the CWG, New Four-Year B.Ed. Curriculum introduction
- Soft and hard copies of the course specifications for the subject for year one and two
- Soft and hard Course Manual Writing Guide (CMWG)
- Relevant subject texts

Target Audience

- College of Education Tutors
- Teacher Education University Lecturers
- Student Teachers
- Mentors

The purpose of course manuals

- To provide a lesson by lesson overview of the course, building on, adapting and developing the material in the course specifications
- To provide a resource to support professional development sessions for tutors/lecturers on how to plan for and teach courses from the New Four-Year B.Ed. Curriculum
- To inform tutors /lecturers, student teachers and others working with student teachers about:
 - what is to be taught and why
 - how it can be taught
 - how it should be assessed
- To support consistency in the implementation of the New Four-Year B.Ed. across institutions who train teachers
- To ensure that all **training** information on skills, processes, and other information necessary to perform the teaching task are together in one place.
- To operationalize the Teacher Education Reform Policy; the requirements of the NTS & NTECF and the Four-Year B.Ed.

Guiding principles of course manual writing

1. They are written with the learner, the student teacher, in mind: what they will *be able* to cope with and only include what student teachers need to know, understand, be able to do and be as a basic school teacher
2. They take in to consideration the learner's, the student teacher's, context and possible barriers to, and enablers for, learning
3. They are written with the tutors /lecturers who are going to teach the course in mind. Tutors must be able to adapt and develop the plans in course manuals to fit the context they are teaching in and to support their teaching
4. They are aligned to the key principles and practices of the Teacher Education Reform Policy: the NTS, the NTECF and the New Four-Year B.Ed.
5. They are written to provide opportunities for student teachers to develop and apply knowledge during supported teaching in school
6. They are written to reflect the stage of student teacher development, set out in the model for progress in the New Four-Year B.Ed.
7. They are written to support progress in student teacher learning, including building on prior learning from the previous programme or course/s and supporting progress to the next course.
8. They are to be used as self-study tools.
9. They are written to have the following characteristics: easy to read; uses active voice and avoids jargon; uses bullet points to offset text; uses images

What a teacher educator needs to know, understand and use to inform what they do

- The aims and structure of the education system and Education strategic Plan
- The Basic School Curriculum
- The Inclusion Policy
- The teacher education system: The National Teacher's Standards, the vision for teacher education and the core principles of the New Four-Year B.Ed.
- Andragogy, effective methods and practices for teaching adult learners
- Assessment Literacy. Assessment for, of and as learning -Educative Assessment

Guidance for completing the course manual writing proforma: two sections

A. Course Information

Title Page

- i. Woodwork Technology I
- ii. The vision for the New Four-Year B.Ed. Curriculum

"To transform initial teacher education and train highly qualified, motivated new teachers who are effective, engaging and fully prepared to teach the basic school curriculum and so improve the learning outcomes and life chances of all learners

they teach as set out in the National Teachers’ Standards. In doing this to instil 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. ”				
iii. Course Details: as in course specification unless important reason why not				
Pre-requisite/s	TVET related subjects from WASSCE/National Certificate II (Technical)			
Co-Requisites				
Course Level	200	Course Code	Credit Value	3
Table of contents				
Each manual will include:				
<ol style="list-style-type: none"> 1. The goal for the subject or learning area 2. Course description 3. Key contextual factors 4. Core and cross cutting issues, including equity and inclusion 5. Course Learning outcomes 6. Course content 7. Teaching and learning strategies 8. Course Assessment components 9. Reading and reference list 10. Handouts, power points and other resources for lessons 11. Plans for each lesson in the semester 				
A. Course information				
1. Goal for the Subject or Learning Area				
<i>Woodwork Technology I</i> is designed to introduce the student teacher to the concepts, foundations and history of the woodwork industry which dates back to the medieval era. The course is also intended for the student teacher to explore the nature of relevant tools and materials in the wood industry and to be introduced to foundational manipulative processes/skills in the wood industry.				
2. Key contextual factors				
The education system has focused on preparing students for examinations, instead of helping them to develop the relevant industry and entrepreneurial skills which could enable them function successfully in life.				
3. Course Description				
<p>This course is designed to introduce the student teacher to the concepts, foundations and history of the woodwork industry which dates back to the medieval era. The course is also intended for the student teacher to explore the nature of relevant tools and materials in the wood industry. Through guided demonstrations and simulations the student teacher will be introduced to foundational manipulative processes/skills in the wood industry. The topics covered are: wood as the main material, seasoning of timber, preservation of timber, conversion of timber, and manufactured boards. These areas will provide the student teacher with the understanding of various treatment processes which are necessary for efficient and effective utilization of wood and other related materials. Additionally, student teachers will have firm knowledge base and understanding for selecting timber and making decisions about alternatives to the main material wood. It also prepares the student teacher for work (practitioner) by equipping him/her with the knowledge and skills in problem-solving, critical thinking and creativity. The student teacher is expected to cultivate interest in hands-on learning and develop responsible citizenship to appreciate the dignity of work and contribute to sustainable society. Thus, the. The course will be delivered using the following methods: Discussion, presentations (group/individual), seminar, project work/practical work, demonstrations, brainstorming, simulation, and industrial visits. The following assessment modes will be used: Examination, tests, project work, class assignments and presentations, and portfolio.</p> <p>As part of the course requirements, the student teachers will be required to undertake various projects and produce artifacts. In the process of designing and producing the artifacts, the student teacher will be introduced to relevant issues of equity and inclusivity within the industry as well as the concept of greening TVET by way of considering recycling, re-designing or re-using waste.</p> <p>As part of developing teaching, the student teachers are also exposed to observation in the school environment where they are to reflect on their professional practice by engaging positively with colleagues, mentors, learners and other stakeholders and build a portfolio reflecting a better understanding of the JHS learner and the learning environment showing growing comprehension and application of the concepts of inclusivity, equity, access for all learners irrespective of ability, gender or socio-economic status and cultural background. During such reflections, student teachers are to relate their knowledge acquired in Wood Technology to the school environment. The course is designed to meet the following NTS and NTECF requirements: NTS pg. 14,c, j, 24e, f, 26 j, NTECF pg. 16, 29,33,38.</p>				
Core and transferable skills and cross cutting issues, including equity and inclusion				
Core and transferable skills: Critical thinking, problem solving, communication skills, and use of ICT				
Cross-cutting issues:				

This can be found in the course specification. Which core and transferable skills or cross cutting issues will be applied or developed through this course? This needs to be made explicit to student teachers. Are there specific issues to do with equity and inclusion which must be addressed so that all student teachers can fully take part? For example, issues related to gender and mathematics or science.

4. Course Learning Outcomes	5. Learning indicators
By the end of the course, Students teachers will be able to	
CLO.1 Demonstrate knowledge and understanding in the relevant foundational history, philosophy in Woodwork Technology and timber as the main material in woodwork	1.1 Prepare a Video recording from internet sources on the relevant foundational history and philosophies in woodwork technology. 1.2 Make a PowerPoint presentation on the medieval, industrial revolution and the modern eras of the wood industry. 1.3 Prepare a report and exhibits samples on the various species of timber used in woodwork. 1.4 Make a chart of the cross section of timber. 1.5 Prepare a report on the characteristics and properties of timber.
CLO.2 Demonstrate knowledge and understanding of conversion and seasoning of timber.	2.1 Make a video from internet sources on the following methods of conversion of timber: <ul style="list-style-type: none"> • Through and through • Quarter sawn • Tangential sawn • Radial sawn 2.2 Prepare a report on the natural (air) seasoning and artificial (kiln) seasoning of timber.
CLO.3 Demonstrate knowledge and understanding of preservation of timber and uses of manufactured boards.	3.1 Produce a report on the following ways of preservation of timber: <ul style="list-style-type: none"> • Pressure preservation • Non pressure preservation • Pressure impregnation 3.2 Make a Folio of samples of the following manufactured boards and their uses: <ul style="list-style-type: none"> • Plywood • Block board • Lamin board

6. Course content

In the course specification. This should provide an outline of the academic and / or practical content of the course. It should be clear how this content relates to the achievement of the intended learning outcomes. The name of each unit in the course should be *briefly* set out – the name should make it clear what the unit is about.

Unit	Topic	Sub-topic (If any)	Teaching and learning activities to achieve the learning outcome
1	The relevant foundational history, philosophy in Woodwork Technology and timber as the main material in woodwork	<ul style="list-style-type: none"> • The medieval, industrial revolution, and modern eras. • Philosophies • Concepts • Types of timber • Cross section of timber • Characteristics of timber • Properties of timber 	<ul style="list-style-type: none"> • Student teachers research from internet sources and present video recordings (groups or individual) and discuss the relevant foundational history and philosophies in woodwork technology. • Seminar on conceptual issues and the history of the medieval, industrial revolution, and the modern eras of the wood industry. • Student led discussion on: <ul style="list-style-type: none"> ○ the various species of timber ○ characteristics and properties of timber ○ Student teacher produce a portfolio of exhibits of: samples of various species of timber used in woodwork • Show a chart of the cross section of timber

2	Conversion and seasoning of timber.	<ul style="list-style-type: none"> • Through and through • Quarter sawn • Tangential sawn • Radial sawn • Natural/air seasoning • Artificial /kiln seasoning 	<ul style="list-style-type: none"> • Conduct a research from Internet sources and present a video on the following methods of conversion of timber: <ul style="list-style-type: none"> a. Through and through b. Quarter sawn c. Tangential sawn d. Radial sawn. • Conduct a research from Internet sources and present a video on natural (air) seasoning and artificial (kiln) seasoning
3	Preservation of Timber and uses of Manufactured boards	<ul style="list-style-type: none"> • Pressure preservation • Non pressure preservation • Pressure impregnation • Plywood • Block board • Lamin board 	<ul style="list-style-type: none"> • Seminar on the following ways of preserving timber: <ul style="list-style-type: none"> a. Pressure preservation b. Non pressure preservation c. Pressure impregnation • Produce a folio of samples of the following manufactured boards: <ul style="list-style-type: none"> a. Plywood b. Block board c. Lamin board <p>Student led discussion on types of manufactured boards</p>

7. Course Assessment Components

In the course specification. The NTS and the NTECF require a move away from largely examination-based assessment to strategies to enable assessment of student teachers' skills, knowledge and understanding against the learning outcomes and through these the against the NTS

- There should be a maximum of 3 assessment components per 3 credit-course; to avoid over loading student and tutors/lecturers
- The learning outcomes to be assessed by each assessment component should be identified.
- Each assessment component should explicitly reference the NTS or aspects of the NTS it will assess.
- Each assessment component should include:
 - The category or type, for example: written, coursework or practical, teaching, examination, collaborative project or presentation, poster, TLM
 - The type of assessment: of, for and /or as.
 - An indication of the size of each assessment component (e.g. duration of exams, word limit of written submissions, length of presentations; whether presentations have an individual or group etc.).
 - The weighting of each assessment component should be expressed as a % of total course mark (overall in each course: 60% continuous assessment of course work, 40% examination of course work).
- Each assessment should be manageable and relevant to supporting the student teachers' development.

The guidance on assessing student teachers from the NTS, the NTECF the CWG and the New Four Year B.Ed. should be used.

Summary of Assessment Methods

Component 1: Examination

Assessment Type: Assessment of Learning

Category of Assessment: Written Examination

Maximum Duration: 3 hours

Students teachers are assessed by summative examination on:

- The relevant foundational history, philosophy in Woodwork Technology and timber as the main material in woodwork.
- Conversion and seasoning of timber.
- Preservation of timber and uses of manufactured boards

Learning Outcomes Assessed: CLO 1; CLO 2 & CLO 3; NTS pg. 14(c & j); pg. 24 (e & f); pg. 26 (j)

Weighting: 40%

Component 2: Continuous Assessment 1

Assessment Type: Assessment for and as Learning

Category of Assessment:

Student teachers assessed through **Presentations** and **Reportson**:

<ul style="list-style-type: none"> • The relevant foundational history, philosophy in Woodwork Technology and timber as the main material in woodwork. • Conversion and seasoning of timber. • Preservation of timber and uses of manufactured boards <p>Learning Outcomes Assessed: CLO 1; CLO 2 & CLO 3; NTS pg. 14 (b) Weighting: 30%</p>
<p>Component 3: Continuous Assessment 2 Student teachers assessed through Portfolio and Project Work on:</p> <ul style="list-style-type: none"> • The relevant foundational history, philosophy in Woodwork Technology and timber as the main material in woodwork. • Conversion and seasoning of timber. • Preservation of timber and uses of manufactured boards <p>Learning Outcomes Assessed: CLO 1; CLO 2 & CLO 3; NTS pg. 12 (a, b & c); pg. 13 (c); pg. 14 (b) Weighting: 30%</p>
<p>8. Teaching and learning strategies</p> <p>Detail in this section should show how the total learning hours will be used to achieve the intended learning outcomes, to provide a guide to the teaching and learning strategies to be used. Each teaching strategy should be selected as most appropriate to achieving the learning outcomes. This may include team teaching or additional tutors. As stated in the B.Ed. experiential learning and interactive teaching approaches are encouraged</p> <p>Discussion, presentations (group/individual), seminar, project work/practical work, demonstrations, brainstorming, simulation, and industrial visits</p>
<p>9. Required Reading and reference list</p> <p>One or two compulsory texts which must be made available to the student teachers and a SHORT list of 5 relevant references. These lists should be annotated with the key value of each text. Use APA style of writing.</p> <p>Amoakohene, S.K. et al (1998). <i>Technical skills and drawing for teacher training Book 2 (Tools and processes and methodology)</i>. Accra: Unimaxin association with Macmillan Educ. Ltd. Cambridge University Press. Oteng-Amoako, A. A. (2006). <i>100 tropical African trees in Ghana</i>. Kumasi: Graphic Packaging. Walker, J. C. F. (1993). <i>Primary wood processing principles</i>. London: Chapman & Hill.</p>
<p>10. Teaching and Learning Resources</p> <p>Instructional resources required to support learning during the course e.g.: TLMs, lab and workshop equipment, videos, projectors</p> <p>Basic woodwork tools and equipment, wood materials (timber boards, timber scantling/buttons, manufactured boards, adhesives, abrasives, nails, fastenings, etc.)</p> <p>Course related professional development for tutors/ lecturers</p> <p>This is not included in the course manual but professional development needs must be identified to ensure all tutors / lecturers are prepared to teach the course identify any specific topics or issues which may be challenging for tutors / lecturers.</p>

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
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Title of Lesson	Foundational History of the Woodworking Industry						Lesson Duration	180 minutes
Lesson description	<p>This lesson focuses on the woodworking industry in the different eras of history (medieval era, industrial revolution era, and the modern era)</p> <p>This first lesson introduces student to the course learning outcomes and three 3 assessment components of the course.</p>							
Previous student teacher knowledge, prior learning (assumed)	<p>Student teachers are:</p> <ul style="list-style-type: none"> familiar with the fact that timber has been a raw material for the woodworking industry throughout mankind's existence aware that changes in technology affect the practices of various industries including the woodworking industry 							
Possible barriers to learning in the lesson	<ul style="list-style-type: none"> Stereotyping of woodwork as male occupation Large class size Ill equipped laboratories and workshops 							
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.	<ul style="list-style-type: none"> Research from internet sources and present video recordings /write-ups (groups or individual) and discuss the state of the woodworking industry and practices in the medieval, industrial revolution, and the modern eras. Seminar on history of the medieval, industrial revolution, and the modern eras of the woodworking industry, and sustainable use of timber. 							
<ul style="list-style-type: none"> 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 	<p>The purpose of this lesson is to introduce student teachers to the history of the medieval, industrial revolution, and the modern eras of the woodworking industry.</p>							
<ul style="list-style-type: none"> Learning Outcome for the lesson, picked and developed from the course specification Learning indicators for each learning outcome 	Learning Outcomes: By the end of the lesson, the student teacher will be able to:			Learning Indicators		Identify which cross cutting issues – core and transferable skills, equity and addressing diversity. How will these be addressed.		
	<ul style="list-style-type: none"> Demonstrate knowledge and understanding of the history of the medieval, industrial revolution, and the modern eras of the woodworking industry 			<ul style="list-style-type: none"> Prepare a video recording from internet sources on the practices and technologies of the woodworking industry for the medieval, industrial revolution, and the modern eras PowerPoint presentation on the medieval, industrial revolution and the modern eras of the woodworking industry 		<p>Crosscutting Issues to be addressed in the lesson:</p> <ul style="list-style-type: none"> Gender Issues of SEN (Special Education Needs) ICT skills <p>Transferable skills to addressed in the lesson:</p> <ul style="list-style-type: none"> Team work/collaborative skills Critical thinking skills Inquiry skills 		

Topic Title	Sub-topics (if any):	Stage/Time	Teaching and Learning Activity to achieve learning outcomes depending on the delivery mode selected. Teacher led, collaborative group work or independent	
			Teacher Activity	Student Activity
Preparations for use of course manual and Pre-Learning interactions	<p>Self-Introduction (If Tutor is new to the Class)</p> <p>Introduction to the Foundational History of the Woodworking Industry course manual</p> <p>Relevant Previous Knowledge</p>	1/ 30 Minutes	<p>Self-Introduction Through face-to-face interaction, Tutor and studentteachers introduce themselves</p> <p>Introduction of Course Manual Tutor initiates discussion on the course manual emphasizing on the objectives, learning outcomes, course content and reference materials</p> <p>Introduction of Lesson Tutor facilitates student teachers' revision of their knowledge of the lesson from pre-tertiary. Tutor asks the following questions:</p> <ol style="list-style-type: none"> 1. What has been the most common raw material for the woodworking industry throughout mankind's existence? 2. Have changes in technology affected the practices of the woodworking industry? 	<p>Self-Introduction Studentteachers do self-introduction (Tutor and studentteachers)</p> <p>Introduction of Course Manual Student teachers discuss the manual and what they expect to learn after studying the course</p> <p>Introduction of Lesson Student teachers answer questions and do brief discussions</p>
Foundational history of the woodworking industry	The woodworking industry in the medieval era	2/ 45 minutes	Discussion Tutor facilitates the use e-learning for videos/write-ups to prepare for discussion on the state of the woodworking industry and practices in the medieval era	Discussion Student teachers use e-learning resources to find videos, prepare write-ups and discuss the state of the woodworking industry and practices in the medieval era
	The woodworking industry in the industrial revolution era	3/ 45 minutes	Group Presentation Tutor facilitates the use e-learning for videos/write-ups to make a group presentation on the state of the woodworking industry and practices in the industrial revolution era	Group Presentation Student teachers use e-learning resources to find videos, prepare write-ups and make a group presentation on the state of the woodworking industry and practices in the industrial revolution era
	The woodworking industry in the modern era	4/ 50 minutes	Seminar Tutor facilitates the use e-learning for videos and write-ups to prepare a seminar on the state of the woodworking industry and practices in the modern era	Seminar Student teachers use e-learning resources to find videos and write-ups to prepare a seminar on the state of the woodworking industry and practices in the modern era

	Conclusion	5/ 10 minutes	Conclusion of Lesson Tutor reflects with student teachers on the lesson and summarize the key points of the lesson	Conclusion of Lesson Student teachers reflect with the tutor on the lesson and note down the key points of the lesson
Lesson assessments – evaluation of learning: of, for and as learning within the lesson (link to Learning Outcomes)	<p>In Lesson Assessment</p> <p>Component 1: Examination Assessment Type: Assessment of Learning Category of Assessment: Written Examination//Tests Students teachers are assessed by summative examination on:</p> <ul style="list-style-type: none"> The relevant foundational history, philosophy in Woodwork Technology and timber as the main material in woodwork. <p>NTS 2c (Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge)</p> <p>Learning Outcomes Assessed: CLO 1 Weighting: 40%</p> <p>Component 2: Continuous Assessment Assessment Type: Assessment for and as Learning Category of Assessment: Student teachers assessed through class assignment with oral Presentations and Reportson:</p> <ul style="list-style-type: none"> The state of the woodworking industry and practices in the medieval, industrial revolution and modern eras. <p>NTS 2c. (Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge) NTS 3j (Produces and uses a variety of teaching and learning resources including ICT, to enhance learning)</p> <p>Learning Outcomes Assessed: CLO 1 Weighting: 30%</p>			
Teaching and Learning Resources	<ul style="list-style-type: none"> Audio-visual equipment and video clips from the internet on the state of the woodworking industry and practices in the three eras of history. Braille, Scanner and Embosser Sign language (Resource Person) internet facility, laptop computer/PCs JHS Syllabus for Basic Design and Technology (Pre-Tech) 			
Required Text (core)	<p>Amoakohene, S.K. et al (1998). <i>Technical skills and drawing for teacher training Book 2 (Tools and processes and methodology)</i>. Accra: Unimaxin association with Macmillan Educ. Ltd. Cambridge University Press.</p> <p>Walker, J. C. F. (1993). <i>Primary wood processing principles</i>. London: Chapman & Hill.</p>			
Additional Reading List	<p>eng-Amoako, A. A. (2006). <i>100 tropical African trees in Ghana</i>. Kumasi: Graphic Packaging.</p>			
CPD Needs	<ul style="list-style-type: none"> Content knowledge/subject matter expertise Use of ICT in teaching Issues of SEN (Special Education Needs) Gender stereotyping/issues 			

LESSON 2

Year of B.Ed.	2	Semester	1	Place of lesson in semester	1 2 3 4 5 6 7 8 9 10 11 12
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Title of Lesson	The philosophy of sustainable use of timber					Lesson Duration	180 minutes
Lesson description	This lesson focuses on the philosophy of sustainable use of timber.						
Previous student teacher knowledge, prior learning (assumed)	Student teachers are: <ul style="list-style-type: none"> ▪ familiar with the fact that timber has been a raw material for the woodworking industry throughout mankind’s existence ▪ aware that there will be no woodworking industry without timber and therefore the need for sustainable use of timber 						
Possible barriers to learning in the lesson	<ul style="list-style-type: none"> • Stereotyping of woodwork as male occupation • Large class size • Ill equipped laboratories and workshops 						
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.	<ul style="list-style-type: none"> • Research from internet sources and present video recordings /write-ups (groups or individual) and student led discussion on the sustainable use of timber. • Seminar/PowerPoint presentation on the sustainable use of timber 						
<ul style="list-style-type: none"> • 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 	The purpose of this lesson is to introduce student teachers to the to the philosophy of sustainable use of timber such as wood products recycling and reuse, and afforestation						
<ul style="list-style-type: none"> • Learning Outcome for the lesson, picked and developed from the course specification Learning indicators for each learning outcome 	Learning Outcomes: By the end of the lesson, the student teacher will be able to:		Learning Indicators		Identify which cross cutting issues – core and transferable skills, equity and addressing diversity. How will these be addressed.		
	<ul style="list-style-type: none"> • Demonstrate knowledge and understanding of the concept of conservation and sustainability of timber • Demonstrate knowledge and understanding of sustainable practices needed to conserve timber • Demonstrate knowledge and understanding of timber as a recyclable resource 		<ul style="list-style-type: none"> • Prepare a video recording from internet sources on the concept of conservation and sustainabilityof timber forstudent-led discussion • Discuss sustainable practices needed to conserve timber • Prepare a report on recycling and re-use of wood products, and afforestation 		Crosscutting Issues to be addressed in the lesson: <ul style="list-style-type: none"> • Gender • Issues of SEN (Special Education Needs) • ICT skills Transferable skills to addressed in the lesson: <ul style="list-style-type: none"> • Team work/collaborative skills • Critical thinking skills • Inquiry skills 		

Topic Title	Sub-topics (if any):	Stage/Time	Teaching and Learning Activity to achieve learning outcomes depending on the delivery mode selected. Teacher led, collaborative group work or independent	
			Teacher Activity	Student Activity
Philosophy of conservation and sustainable use of timber	Relevant Previous Knowledge	1/ 10 Minutes	Introduction of Lesson Tutor facilitates student teachers' revision of their knowledge of the lesson from pre-tertiary. Tutor asks the following questions: 1. What has been the major raw material for the woodworking industry throughout mankind's existence? 2. What do stakeholders need to do in order to have reliable and sustainable supply of raw materials?	Introduction of Lesson Students answer questions and do brief discussions
	The concept of conservation and sustainability	2/ 50 minutes	Student-Led Discussion Tutor facilitates the use e-learning for videos/write-ups for seminar presentation/student-led discussion on the concept of conservation and sustainability	Student-Led Discussion Student teachers use e-learning resources to find videos, prepare write-ups, discuss and present the concept of conservation and sustainability
	Plantation /cultivation and harvesting of timber	3/ 55 minutes	PowerPoint Presentation Tutor facilitates the use e-learning for videos/write-ups to prepare a PowerPoint Presentation on plantation/cultivation and harvesting of timber	PowerPoint Presentation Student teachers use e-learning resources to find videos/write-ups to discuss and make a PowerPoint presentation on plantation/cultivation and harvesting of timber
	Timber as a recyclable resource	4/ 55 minutes	Student-Led Discussion Tutor facilitates the use e-learning for videos/write-ups for seminar presentation/discussion on timber as a recyclable resource	Student-Led Discussion Student teachers use e-learning resources to find videos and prepare write-ups for student-led discussion on timber as a recyclable resource
	Conclusion	5/ 10 minutes	Conclusion of Lesson Tutor reflects with student teachers on the lesson and summarize the key points of the lesson	Conclusion of Lesson Student teachers reflect with the tutor on the lesson and note down the key points of the lesson
Lesson assessments – evaluation of learning: of, for and as learning within the lesson (link to Learning Outcomes)	<p>Component 2: Continuous Assessment Assessment Type: Assessment for and as Learning Category of Assessment: Student teachers assessed through class assignment with PowerPoint Presentations and Reportson:</p> <ul style="list-style-type: none"> Philosophy of sustainable use of timber. <p>NTS 2c. (Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge) NTS 3j (Produces and uses a variety of teaching and learning resources including ICT, to enhance learning)</p> <p>Learning Outcomes Assessed: CLO 1 Weighting: 30%</p>			
Teaching and Learning Resources	<ul style="list-style-type: none"> Audio-visual equipment and video clips from the internet on conservation and sustainable ways of using timber Braille, Scanner and Embosser Sign language (Resource Person) internet facility, laptop computer/PCs 			

	<ul style="list-style-type: none"> • JHS Syllabus for Basic Design and Technology (Pre-Tech)
Required Text (core)	<p>Amoakohene, S.K. et al (1998). <i>Technical skills and drawing for teacher training Book 2 (Tools and processes and methodology)</i>. Accra: Unimaxin association with Macmillan Educ. Ltd. Cambridge University Press.</p> <p>Walker, J. C. F. (1993). <i>Primary wood processing principles</i>. London: Chapman & Hill.</p>
Additional Reading List	<p>ng-Amoako, A. A. (2006). <i>100 tropical African trees in Ghana</i>. Kumasi: Graphic Packaging.</p>
CPD Needs	<ul style="list-style-type: none"> • Content knowledge/subject matter expertise • Use of ICT in teaching • Issues of SEN (Special Education Needs) • Gender stereotyping/issues

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
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Title of Lesson	Timber as the main material in the woodworking industry – types of timber and their uses, and cross section of timber				Lesson Duration	180 minutes	
Lesson description	This lesson focuses on the timber as the main materials used in the woodworking industry and covers types of timber, their uses and cross section of timber						
Previous student teacher knowledge, prior learning (assumed)	Student Teachers: <ul style="list-style-type: none"> Are familiar with some types of timber that exist in nature. 						
Possible barriers to learning in the lesson	<ul style="list-style-type: none"> Stereotyping of woodwork as male occupation Large class size Ill equipped laboratories and workshops 						
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.	<ul style="list-style-type: none"> Use audio-visual (video clip) to enable student teachers to discuss the various species of timber and their uses Use audio-visual (video clip) to enable student teachers to discuss the cross section of timber 						
<ul style="list-style-type: none"> 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 	The purpose of this lesson is to introduce student teachers to timber as the main material used in the woodworking industry and to enable them to discuss the types of timber and their uses, and draw the cross section of timber						
<ul style="list-style-type: none"> Learning Outcome for the lesson, picked and developed from the course specification Learning indicators for each learning outcome 	Learning Outcomes: By the end of the lesson, the student teacher will be able to:		Learning Indicators		Identify which cross cutting issues – core and transferable skills, equity and addressing diversity. How will these be addressed.		
	<ul style="list-style-type: none"> Demonstrate knowledge timber species and their uses Demonstrate knowledge of the cross section of timber 		<ul style="list-style-type: none"> Prepare a report on the various species of timber and their uses Make a chart of the cross section of timber Prepare a portfolio exhibits of samples of various species of timber used in woodwork 		Crosscutting Issues to be addressed in the lesson: <ul style="list-style-type: none"> Gender Issues of SEN (Special Education Needs) ICT skills Transferable skills to addressed in the lesson: <ul style="list-style-type: none"> Team work/collaborative skills Critical thinking skills Inquiry skills 		

Topic Title	Sub-topics (if any):	Stage/Time	Teaching and Learning Activity to achieve learning outcomes depending on the delivery mode selected. Teacher led, collaborative group work or independent	
			Teacher Activity	Student Activity
Timber as the main material in the woodworking industry – types of timber and their uses, and cross section of timber	Relevant Previous Knowledge	1/ 10 Minutes	Introduction of Lesson Tutor facilitates student teachers' revision of their knowledge of the lesson from pre-tertiary. Tutor asks the following question: 1. What are some of the types of timber that exist in nature?	Introduction of Lesson Students answer questions and do brief discussions
	Timber species and their uses	2/ 80 minutes	Portfolio Presentation Tutor facilitates the use e-learning facilities for images/videos and write-ups to prepare a portfolio of various species of timber used in woodwork	Portfolio Presentation Student teachers use e-learning facilities for images /videos and write-ups of various species of wood to prepare a portfolio of various species of timber used in woodwork and discuss the uses of the various species of wood
	The cross section of timber	3/ 80 minutes	Seminar Presentation Tutor asks student teachers to research and make a chart of the cross section of timber for seminar presentation.	Seminar Presentation Student teachers, working as individuals, research and make a chart of the cross section of timber for seminar presentation.
	Conclusion	4/ 10 minutes	Conclusion of Lesson Tutor reflects with student teachers on the lesson and summarize the key points of the lesson	Conclusion of Lesson Student teachers reflect with the tutor on the lesson and note down the key points of the lesson
Lesson assessments – evaluation of learning: of, for and as learning within the lesson (link to Learning Outcomes)	<p>In Lesson Assessment: Assessment for and as Learning Component 2: Continuous Assessment Assessment Type: Assessment for and as Learning Category of Assessment: Student teachers assessed through class assignment with oral Presentations and Reports:</p> <ul style="list-style-type: none"> Prepare a report on the various species of timber and their uses Make a chart of the cross section of timber. <p>NTS 2c (Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge) NTS 3j (Produces and uses a variety of teaching and learning resources including ICT, to enhance learning)</p> <p>Learning Outcomes Assessed: CLO 1 Weighting: 30%</p> <p>Component 3: Continuous Assessment Assessment Type: Assessment for and as Learning Category of Assessment: Student teachers assessed through Portfolio on:</p> <ul style="list-style-type: none"> Exhibits of samples of various species of timber used in woodwork <p>NTS 2c. (Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge) NTS 3j (Produces and uses a variety of teaching and learning resources including ICT, to enhance learning)</p> <p>Learning Outcomes Assessed: CLO 1 Weighting: 30%</p>			
Teaching Learning Resources	<ul style="list-style-type: none"> Audio-visual equipment and images /videos of various species of wood A chart of the cross section of timber. 			

	<ul style="list-style-type: none"> • Braille, Scanner and Embosser Sign language (Resource Person). • internet facility, laptop computer/PCs • JHS Syllabus for Basic Design and Technology (Pre-Tech)
Required Text (core)	<p>Amoakohene, S.K. et al (1998). <i>Technical skills and drawing for teacher training Book 2 (Tools and processes and methodology)</i>. Accra: Unimaxin association with Macmillan Educ. Ltd. Cambridge University Press.</p> <p>Walker, J. C. F. (1993). <i>Primary wood processing principles</i>. London: Chapman & Hill.</p>
Additional Reading List	<p>Oteng-Amoako, A. A. (2006). <i>100 tropical African trees in Ghana</i>. Kumasi: Graphic Packaging.</p>
CPD Needs	<ul style="list-style-type: none"> • Use of ICT in teaching • Issues of SEN (Special Education Needs) • Gender stereotyping/issues

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
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Title of Lesson	Timber as the main material in the woodworking industry – characteristics and properties of timber				Lesson Duration	180 minutes
Lesson description	This lesson focuses on the timber as the main materials used in the woodworking industry and covers the characteristics and properties of timber					
Previous student teacher knowledge, prior learning (assumed)	Student Teachers: <ul style="list-style-type: none"> Are familiar with the fact that wood workers prefer to use different types of timber for different products (furniture, cabinets, doors, windows). 					
Possible barriers to learning in the lesson	<ul style="list-style-type: none"> Stereotyping of woodwork as male occupation Large class size Ill equipped laboratories and workshops 					
Lesson Delivery – chosen to support students in achieving the outcomes	Face-to-face √	Practical Activity	Work-Based Learning √	Seminars √	Independent Study √	e-learning opportunities √
Lesson Delivery – main mode of delivery chosen to support student teachers in achieving the learning outcomes.	<ul style="list-style-type: none"> Use Cooperative Learning Techniques (Learning Together Model) to enable student teachers to discuss, in groups, characteristics and properties of timber 					
<ul style="list-style-type: none"> 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 	The purpose of this lesson is to introduce student teachers to timber as the main material used in the woodworking industry and to enable them to discuss the characteristics and properties of timber					
<ul style="list-style-type: none"> Learning Outcome for the lesson, picked and developed from the course specification Learning indicators for each learning outcome 	Learning Outcomes: By the end of the lesson, the student teacher will be able to: <ul style="list-style-type: none"> Demonstrate knowledge and understanding of characteristics of timber Demonstrate knowledge and understanding of properties of timber 		Learning Indicators <ul style="list-style-type: none"> Prepare a report on the characteristics and properties of timber. Prepare a report on the properties of timber. 		Identify which cross cutting issues – core and transferable skills, equity and addressing diversity. How will these be addressed.	
					Crosscutting Issues to be addressed in the lesson: <ul style="list-style-type: none"> Gender Issues of SEN (Special Education Needs) ICT skills Transferable skills to addressed in the lesson: <ul style="list-style-type: none"> Team work/collaborative skills Critical thinking skills Inquiry skills 	

Topic Title	Sub-topics (if any):	Stage/Time	Teaching and Learning Activity to achieve learning outcomes depending on the delivery mode selected. Teacher led, collaborative group work or independent	
			Teacher Activity	Student Activity
Timber as the main material in the woodworking industry – characteristics and properties of timber	Relevant Previous Knowledge	1/10 Minutes	Introduction of Lesson Tutor facilitates student teachers' revision of their knowledge of the lesson from pre-tertiary. Tutor asks the following questions: 1. Why do wood workers prefer to use different types of timber for different products(furniture, cabinets, doors, windows)?	Introduction of Lesson Students answer questions and do brief discussions
	Characteristics of timber	2/80 minutes	Report Presentation Tutor asks student teachers to form small groups (five or six members each) and task them to research and prepare a report on the characteristics of timber and share with the class NB: consider mixed ability, gender and SEN in the grouping of students	Report Presentation Working in small groups, student teachers research and prepare a report on the characteristics of timber Groups share their work with the class
	Properties of timber	3/80 Minutes	PowerPoint Presentation Tutor asks student teachers to form small groups (five or six members each) and task them to research and prepare a PowerPoint presentation on the properties of timber NB: consider mixed ability, gender and SEN in the grouping of students	PowerPoint Presentation Working in small groups, student teachers research and prepare a PowerPoint presentation on the properties of timber.
	Conclusion	3/10 Minutes	Conclusion of Lesson <ul style="list-style-type: none"> Tutor reflects with student teachers on the lesson and summarize the key points of the lesson Tutor tasks student teachers to look out for how the knowledge and skills acquired over the period are being applied in the school environment by their mentors during the period of Supported Teaching 	Conclusion of Lesson <ul style="list-style-type: none"> Student teachers reflect with the tutor on the lesson and note down the key points of the lesson Student teachers perform the task during the next Supported Teaching visit to the school and write a report
Lesson assessments – evaluation of learning: of, for and as learning within the lesson (link to Learning Outcomes)	In Lesson Assessment: Assessment for and as Learning Component 2: Continuous Assessment Assessment Type: Assessment for and as Learning Category of Assessment: Student teachers assessed through class assignment with PowerPoint Presentations and			

	<p>Reportson:</p> <ul style="list-style-type: none"> • Prepare a report on the characteristics and properties of timber. • Prepare a PowerPoint on the properties of timber.
	<p>NTS 2c. (Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge)</p> <p>NTS 3j (Produces and uses a variety of teaching and learning resources including ICT, to enhance learning)</p> <p>Learning Outcomes Assessed: CLO 1</p> <p>Weighting: 30%</p>
Teaching Learning Resources	<ul style="list-style-type: none"> • Audio-visual equipment and images /videos depicting characteristics and properties of timber • A chart of the cross section of timber. • Braille, Scanner and Embosser Sign language (Resource Person). • internet facility, laptop computer/PCs • JHS Syllabus for Basic Design and Technology (Pre-Tech)
Required Text (core)	<p>Amoakohene, S.K. et al (1998). <i>Technical skills and drawing for teacher training Book 2 (Tools and processes and methodology)</i>. Accra: Unimaxin association with Macmillan Educ. Ltd. Cambridge University Press.</p> <p>Walker, J. C. F. (1993). <i>Primary wood processing principles</i>. London: Chapman & Hill.</p>
Additional Reading List	<p>Oteng-Amoako, A. A. (2006). <i>100 tropical African trees in Ghana</i>. Kumasi: Graphic Packaging.</p>
CPD Needs	<ul style="list-style-type: none"> • Use of ICT in teaching • Issues of SEN (Special Education Needs) • Gender stereotyping/issues • Teaching mixed ability group

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
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Title of Lesson	Conversion of timber - through and through, and quarter sawn				Lesson Duration	180	Minutes
Lesson description	This lesson focuses on the conversion of timber with emphasis on the following methods of conversion of timber: Through and through, and quarter sawn						
Previous student teacher knowledge, prior learning (assumed)	Student Teacher are: <ul style="list-style-type: none"> Familiar with the fact that timber has to be converted before being used in the woodworking industry 						
Possible barriers to learning in the lesson	<ul style="list-style-type: none"> Stereotyping of woodwork as male occupation Large class size Ill equipped laboratories and workshops 						
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.	<ul style="list-style-type: none"> Use audio-visual (video clip) from internet sources to enable student teachers to discuss through and through, and quarter sawn methods of timber conversion 						
<ul style="list-style-type: none"> 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 	The purpose of this lesson is to predispose student teachers to the concept of conversion of timber with focus on through and through, and quarter sawn methods of timber conversion						
<ul style="list-style-type: none"> Learning Outcome for the lesson, picked and developed from the course specification Learning indicators for each learning outcome 	Learning Outcomes: By the end of the lesson, the student teacher will be able to:		Learning Indicators		Identify which cross cutting issues – core and transferable skills, equity and addressing diversity. How will these be addressed.		
	<ul style="list-style-type: none"> Demonstrate knowledge and understanding of through and through method of conversion of timber Demonstrate knowledge and understanding of quarter sawn method of conversion of timber 	Make a video from internet sources on the following methods of conversion of timber: <ul style="list-style-type: none"> Through and through Quarter sawn 	Crosscutting Issues to be addressed in the lesson: <ul style="list-style-type: none"> Gender Issues of SEN (Special Education Needs) ICT skills Transferable skills to be addressed in the lesson: <ul style="list-style-type: none"> Team work/collaborative skills Critical thinking skills Inquiry skills 				

Topic Title	Sub-topics (if any):	Stage/Time	Teaching and Learning Activity to achieve learning outcomes depending on the delivery mode selected. Teacher led, collaborative group work or independent	
			Teacher Activity	Student Activity
Conversion of timber - through and through, and quarter sawn	Relevant Previous Knowledge	1/ 10 minutes	Introduction of Lesson Tutor facilitates student teachers' revision of their knowledge of the lesson from pre-tertiary. Tutor asks the following question: 1. What needs to be done to timber before it could be used in the woodworking industry?	Introduction of Lesson Students answer questions and do brief discussions
	Through and through	2/ 80 minutes	Student-Led Discussion Tutor facilitates the use e-learning facilities for videos and write-ups to prepare a discussion on the method <i>through and through</i>	Student-Led Discussion Student teachers use e-learning facilities for videos and write-ups to prepare a for discussion on the method <i>through and through</i>
	Quarter Sawn	3/ 80 minutes	Presentation Tutor facilitates the use e-learning facilities for videos and write-ups to prepare a presentation on the method <i>quarter sawn</i>	Presentation Student teachers use e-learning facilities for videos and write-ups to prepare and make a presentation on the method <i>quarter sawn</i>
	Conclusion	4/ 10 minutes	Conclusion of Lesson Tutor reflects with student teachers on the lesson and summarize the key points of the lesson	Conclusion of Lesson Student teachers reflect with the tutor on the lesson and note down the key points of the lesson
Lesson assessments – evaluation of learning: of, for and as learning within the lesson (link to Learning Outcomes)	<p>In Lesson Assessment: Assessment for and as Learning</p> <p>Component 1: Examination Assessment Type: Assessment of Learning Category of Assessment: Written Examination/Test Students teachers are assessed by summative examination on:</p> <ul style="list-style-type: none"> Conversion of timber <p>NTS 2c. (Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge)</p> <p>Learning Outcomes Assessed: CLO2 Weighting: 40%</p> <p>Component 2: Continuous Assessment Assessment Type: Assessment for and as Learning Category of Assessment: Student teachers assessed through class assignment with oral presentation as follows: Make a presentation from internet sources on the following methods of conversion of timber:</p> <ul style="list-style-type: none"> Through and through Quarter sawn <p>NTS 2c. Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge. NTS 3b (Carries out small scale action research to improve practice)</p>			

	<p>Learning Outcomes Assessed: CLO 2 Weighting: 30%</p>
Teaching Learning Resources	<ul style="list-style-type: none"> • Audio-visual equipment and images /videos on conversion of timber • Braille, Scanner and Embosser Sign language (Resource Person). • internet facility, laptop computer/PCs, projector • JHS Syllabus for Basic Design and Technology (Pre-Tech)
Required Text (core)	<p>Amoakohene, S.K. et al (1998). <i>Technical skills and drawing for teacher training Book 2 (Tools and processes and methodology)</i>. Accra: Unimaxin association with Macmillan Educ. Ltd. Cambridge University Press.</p> <p>Walker, J. C. F. (1993). <i>Primary wood processing principles</i>. London: Chapman & Hill.</p>
Additional Reading List	<p>Oteng-Amoako, A. A. (2006). <i>100 tropical African trees in Ghana</i>. Kumasi: Graphic Packaging.</p>
CPD Needs	<ul style="list-style-type: none"> • Use of ICT in teaching • Issues of SEN (Special Education Needs) • Gender stereotyping/issues

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
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Title of Lesson	Conversion of timber – tangential sawn and radial sawn				Lesson Duration	180	Minutes
Lesson description	This lesson focuses on the conversion of timber with emphasis on the following methods of conversion of timber: Tangential sawn; and radial sawn						
Previous student teacher knowledge, prior learning (assumed)	Student Teacher are: <ul style="list-style-type: none"> Familiar with the fact that timber has to be converted before being used in the woodworking industry Familiar with through and through, and quarter sawn from the previous lesson 						
Possible barriers to learning in the lesson	<ul style="list-style-type: none"> Stereotyping of woodwork as male occupation Large class size Ill equipped laboratories and workshops 						
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.	<ul style="list-style-type: none"> Cooperative Learning Techniques (Learning Together Model) to enable student teachers to discuss, in groups, tangential sawn and radial sawn methods of timber conversion 						
<ul style="list-style-type: none"> 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 	The purpose of this lesson is to predispose student teachers to the concept of conversion of timber focusing on tangential sawn and radial sawn methods of timber conversion						
<ul style="list-style-type: none"> Learning Outcome for the lesson, picked and developed from the course specification Learning indicators for each learning outcome 	Learning Outcomes: By the end of the lesson, the student teacher will be able to:		Learning Indicators		Identify which cross cutting issues – core and transferable skills, equity and addressing diversity. How will these be addressed.		
	<ul style="list-style-type: none"> Demonstrate knowledge and understanding of tangential sawn method of timber conversion Demonstrate knowledge and understanding of radial sawn method of timber conversion 		Make a video from internet sources on the following methods of conversion of timber: <ul style="list-style-type: none"> Tangential sawn Radial sawn 		Crosscutting Issues to be addressed in the lesson: <ul style="list-style-type: none"> Gender Issues of SEN (Special Education Needs) ICT skills Transferable skills to be addressed in the lesson: <ul style="list-style-type: none"> Team work/collaborative skills Critical thinking skills Inquiry skills 		

Topic Title	Sub-topics (if any):	Stage/Time	Teaching and Learning Activity to achieve learning outcomes depending on the delivery mode selected. Teacher led, collaborative group work or independent	
			Teacher Activity	Student Activity
Conversion of timber - tangential sawn and radial sawn	Relevant Previous Knowledge	1/ 10 minutes	Introduction of Lesson Tutor facilitates student teachers' revision of their knowledge of the lesson from pre-tertiary. Tutor asks the following question: 1. What did we learn about through and through, and quarter sawn methods of timber conversion?	Introduction of Lesson Tutor facilitates student teachers' revision of their knowledge of the lesson from pre-tertiary. Tutor asks the following questions:
	Tangential Sawn	2/ 80 minutes	Video Presentation Tutor asks student teachers to form small groups (five or six members each) and task them to research and prepare a video presentation on <i>tangential sawn</i> NB: consider mixed ability, gender and SEN in the grouping of students	Video Presentation Working in small groups, student teachers research, prepare and make a video presentation on <i>tangential sawn</i> Groups share their work with the class
	Radial Sawn	3/ 80 minutes	Video Presentation Tutor asks student teachers to form small groups (five or six members each) and task them to research and prepare a video presentation on <i>radial sawn</i> NB: consider mixed ability, gender and SEN in the grouping of students	Video Presentation Working in small groups, student teachers research, prepare and make a video presentation on <i>radial sawn</i> Groups share their work with the class
	Conclusion	4/ 10 minutes	Conclusion of Lesson Tutor reflects with student teachers on the lesson and summarize the key points of the lesson	Conclusion of Lesson Student teachers reflect with the tutor on the lesson and note down the key points of the lesson
Lesson assessments – evaluation of learning: of, for and as learning within the lesson (link to Learning Outcomes)	<p>In Lesson Assessment: Assessment for and as Learning</p> <p>Component 2: Continuous Assessment</p> <p>Assessment Type: Assessment for and as Learning</p> <p>Category of Assessment:</p> <p>Student teachers assessed through class assignment with video presentation as follows: Make a video presentation from internet sources on the following methods of conversion of timber:</p> <ul style="list-style-type: none"> • Tangential sawn • Radial sawn <p>NTS 2c. Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge. NTS 3j (Produces and uses a variety of teaching and learning resources including ICT, to enhance learning)</p> <p>Learning Outcomes Assessed: CLO 2 Weighting: 30%</p>			
Teaching Learning Resources	<ul style="list-style-type: none"> • Audio-visual equipment and images /videos on conversion of timber • Braille, Scanner and Embosser Sign language (Resource Person). 			

	<ul style="list-style-type: none"> • internet facility, laptop computer/PCs, projector • JHS Syllabus for Basic Design and Technology (Pre-Tech)
Required Text (core)	<p>Amoakohene, S.K. et al (1998). <i>Technical skills and drawing for teacher training Book 2 (Tools and processes and methodology)</i>. Accra: Unimaxin association with Macmillan Educ. Ltd. Cambridge University Press.</p> <p>Walker, J. C. F. (1993). <i>Primary wood processing principles</i>. London: Chapman & Hill.</p>
Additional Reading List	Oteng-Amoako, A. A. (2006). <i>100 tropical African trees in Ghana</i> . Kumasi: Graphic Packaging.
CPD Needs	<ul style="list-style-type: none"> • Use of ICT in teaching • Issues of SEN (Special Education Needs) • Gender stereotyping/issues • Teaching mixed ability group

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
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Title of Lesson	Seasoning of timber - natural (air) seasoning						Lesson Duration	180 Minutes
Lesson description	This lesson focuses on the seasoning of timber with emphasis on natural (air) seasoning							
Previous student teacher knowledge, prior learning (assumed)	Student Teachers are: <ul style="list-style-type: none"> Familiar with the fact that the moisture content of timber has to be reduced to make it suitable for use in certain instances 							
Possible barriers to learning in the lesson	<ul style="list-style-type: none"> Stereotyping of woodwork as male occupation <ul style="list-style-type: none"> Large class size Ill equipped laboratories and workshops 							
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.	<ul style="list-style-type: none"> Use internet sources to conduct research and prepare a report on natural (air) seasoning for presentation Cooperative Learning Techniques (Learning Together Model) to enable student teachers to discuss, in groups, natural (air) seasoning 							
<ul style="list-style-type: none"> 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 	The purpose of this lesson is to introduce student teachers to natural (air) seasoning							
<ul style="list-style-type: none"> Learning Outcome for the lesson, picked and developed from the course specification Learning indicators for each learning outcome 	Learning Outcomes: By the end of the lesson, the student teacher will be able to:			Learning Indicators		Identify which cross cutting issues – core and transferable skills, equity and addressing diversity. How will these be addressed.		
	<ul style="list-style-type: none"> Demonstrate knowledge and understanding of the concept of seasoning and related terminologies Demonstrate knowledge and understanding of natural seasoning of timber 			<ul style="list-style-type: none"> Prepare a report on the natural (air) seasoning Make a presentation on the natural (air) seasoning 		Crosscutting Issues to be addressed in the lesson: <ul style="list-style-type: none"> Gender Issues of SEN (Special Education Needs) ICT skills Transferable skills to addressed in the lesson: <ul style="list-style-type: none"> Team work/collaborative skills Critical thinking skills Inquiry skills 		

Topic Title	Sub-topics (if any):	Stage/Time	Teaching and Learning Activity to achieve learning outcomes depending on the delivery mode selected. Teacher led, collaborative group work or independent	
			Teacher Activity	Student Activity
Seasoning of timber - natural (air) seasoning	Relevant Previous Knowledge	1/ 10 minutes	Introduction of Lesson Tutor facilitates student teachers' revision of their knowledge of the lesson from pre-tertiary. Tutor asks the following questions: 1. Why is it necessary for the moisture content of timber to be reduced?	Introduction of Lesson Students answer questions and do brief discussions
	The concept of seasoning and related terminologies	2/ 70 minutes	Report Presentation Tutor facilitates the use e-learning facilities to prepare and present a report on concept of seasoning and related terminologies	Report Presentation Student teachers use e-learning facilities to prepare and present a report on the concept of seasoning and related terminologies
	Natural (air) seasoning	3/90 minutes	Report Presentation Tutor facilitates the use e-learning facilities to prepare and make a report on natural seasoning for discussion	Report Presentation Student teachers use e-learning facilities to prepare and present a report on natural seasoning for discussion Student teachers share the reports
	Conclusion	4/10 minutes	Conclusion of Lesson Tutor reflects with student teachers on the lesson and summarize the key points of the lesson	Conclusion of Lesson Student teachers reflect with the tutor on the lesson and note down the key points of the lesson
Lesson assessments – evaluation of learning: of, for and as learning within the lesson (link to Learning Outcomes)	<p>In Lesson Assessment: Assessment for and as Learning Component 2: Continuous Assessment Assessment Type: Assessment for and as Learning Category of Assessment: Student teachers are assessed through class assignment with oral presentation as follows:</p> <ul style="list-style-type: none"> • Prepare a report on the natural (air) seasoning • Make a presentation on natural (air) seasoning <p>NTS 2c. Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge. NTS 3j (Produces and uses a variety of teaching and learning resources including ICT, to enhance learning)</p> <p>Learning Outcomes Assessed: CLO 2 Weighting: 30%</p>			
Teaching Learning Resources	<ul style="list-style-type: none"> • Audio-visual equipment and images /videos on seasoning of timber • Braille, Scanner and Embosser Sign language (Resource Person). • internet facility, laptop computer/PCs, projector • JHS Syllabus for Basic Design and Technology (Pre-Tech) 			
Required Text (core)	<p>Amoakohene, S.K. et al (1998). <i>Technical skills and drawing for teacher training Book 2 (Tools and processes and methodology)</i>. Accra: Unimaxin association with Macmillan Educ. Ltd. Cambridge University Press. Walker, J. C. F. (1993). <i>Primary wood processing principles</i>. London: Chapman & Hill.</p>			
Additional Reading List	<p>Oteng-Amoako, A. A. (2006). <i>100 tropical African trees in Ghana</i>. Kumasi: Graphic Packaging.</p>			
CPD Needs	<ul style="list-style-type: none"> • Use of ICT in teaching 			

	<ul style="list-style-type: none">• Issues of SEN (Special Education Needs)• Gender stereotyping/issues
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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
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Title of Lesson	Seasoning of timber–artificial seasoning						Lesson Duration	180 Minutes
Lesson description	This lesson focuses on the seasoning of timber with emphasis on artificial seasoning							
Previous student teacher knowledge, prior learning (assumed)	Student Teachers are: <ul style="list-style-type: none"> Familiar with natural (air) seasoning as a method of reducing the moisture content of timber to make it suitable for use in certain instances Aware that there may be other methods that could be used to reduce the moisture content of timber 							
Possible barriers to learning in the lesson	<ul style="list-style-type: none"> Stereotyping of woodwork as male occupation Large class size Ill equipped laboratories and workshops 							
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.	<ul style="list-style-type: none"> Use internet sources to conduct research and prepare a report on types of artificial seasoning for presentation Use cooperative learning techniques (Learning Together Model) to enable student teachers to discuss, in groups, the kiln seasoning 							
<ul style="list-style-type: none"> 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 	The purpose of this lesson is to introduce student teachers to artificial seasoning with emphasis on kiln seasoning							
<ul style="list-style-type: none"> Learning Outcome for the lesson, picked and developed from the course specification Learning indicators for each learning outcome 	Learning Outcomes: By the end of the lesson, the student teacher will be able to:			Learning Indicators		Identify which cross cutting issues – core and transferable skills, equity and addressing diversity. How will these be addressed.		
	<ul style="list-style-type: none"> Demonstrate knowledge and understanding of the types of artificial seasoning Demonstrate knowledge and understanding of kiln seasoning 			<ul style="list-style-type: none"> Prepare a report on the types of artificial seasoning Prepare a report on kiln seasoning 		Crosscutting Issues to be addressed in the lesson: <ul style="list-style-type: none"> Gender Issues of SEN (Special Education Needs) ICT skills Transferable skills to be addressed in the lesson: <ul style="list-style-type: none"> Team work/collaborative skills Critical thinking skills Inquiry skills 		

Topic Title	Sub-topics (if any):	Stage/Time	Teaching and Learning Activity to achieve learning outcomes depending on the delivery mode selected. Teacher led, collaborative group work or independent	
			Teacher Activity	Student Activity
Seasoning of timber – artificial seasoning	Relevant Previous Knowledge	1/ 10 minutes	Introduction of Lesson Tutor facilitates student teachers' revision of their knowledge of the lesson from pre-tertiary. Tutor asks the following questions: <ol style="list-style-type: none"> 1. What is the purpose of natural (air) seasoning? 2. What other method could be used to reduce the moisture content of timber? 	Introduction of Lesson Students answer questions and do brief discussions
	Types of artificial seasoning	2/ 70 minutes	PowerPoint Presentation Tutor facilitates the use e-learning facilities to prepare PowerPoint presentation on types of artificial seasoning	PowerPoint Presentation Student teachers use e-learning facilities to prepare PowerPoint presentation on types of artificial seasoning
	Kiln seasoning	3/90 minutes	PowerPoint Presentation Tutor asks student teachers to form small groups (five or six members each) and task them to use the internet to research and make a PowerPoint presentation on kiln seasoning NB: consider mixed ability, gender and SEN in the grouping of students	PowerPoint Presentation Working in small groups, student teachers use the internet to research and prepare a PowerPoint presentation on kiln seasoning Groups share their work with the class
	Conclusion	3/10 minutes	Conclusion of Lesson <ul style="list-style-type: none"> • Tutor reflects with student teachers on the lesson and summarize the key points of the lesson • Tutor tasks student teachers to look out for how the knowledge and skills acquired over the period are being applied in the school environment by their mentors during the period of supported teaching 	Conclusion of Lesson <ul style="list-style-type: none"> • Student teachers reflect with the tutor on the lesson and note down the key points of the lesson • Student teachers perform the task during the next Supported Teaching visit to the school and write a report
Lesson assessments – evaluation of learning: of, for and as learning within the lesson (link to Learning Outcomes)	In Lesson Assessment: Assessment for and as Learning Component 1: Examination Assessment Type: Assessment of Learning Category of Assessment: Written Examination/Tests Students teachers are assessed by summative examination on: <ul style="list-style-type: none"> • Seasoning of timber. NTS 2c. Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge. Learning Outcomes Assessed: CLO 2			

	<p>Weighting: 40%</p> <p>Component 2: Continuous Assessment Assessment Type: Assessment for and as Learning Category of Assessment: Student teachers assessed through class assignment with PowerPoint Presentations and Reportson:</p> <ul style="list-style-type: none"> • Report on the types of artificial seasoning • Report on kiln seasoning • Presentation on kiln seasoning <p>NTS 2c. (Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge) NTS 3j (Produces and uses a variety of teaching and learning resources including ICT, to enhance learning)</p> <p>Learning Outcomes Assessed: CLO 2 Weighting: 30%</p>
Teaching Learning Resources	<ul style="list-style-type: none"> • Audio-visual equipment and images /videos on seasoning of timber • Braille, Scanner and Embosser Sign language (Resource Person). • internet facility, laptop computer/PCs, projector • JHS Syllabus for Basic Design and Technology (Pre-Tech)
Required Text (core)	<p>Amoakohene, S.K. et al (1998). <i>Technical skills and drawing for teacher training Book 2 (Tools and processes and methodology)</i>. Accra: Unimaxin association with Macmillan Educ. Ltd. Cambridge University Press.</p> <p>Walker, J. C. F. (1993). <i>Primary wood processing principles</i>. London: Chapman & Hill.</p>
Additional Reading List	<p>Oteng-Amoako, A. A. (2006). <i>100 tropical African trees in Ghana</i>. Kumasi: Graphic Packaging.</p>
CPD Needs	<ul style="list-style-type: none"> • Use of ICT in teaching • Issues of SEN (Special Education Needs) • Gender stereotyping/issues • Teaching mixed ability group

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
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Title of Lesson	Preservation of timber – pressure preservation						Lesson Duration	180 minutes
Lesson description	This lesson focuses on preserving timber with emphasis on concept and related terminologies, and pressure preservation							
Previous student teacher knowledge, prior learning (assumed)	Student Teachers are: <ul style="list-style-type: none"> Familiar with the fact that the quality of timber deteriorates with time and that certain methods are adopted by users of timber to prevent or slow the process of deterioration 							
Possible barriers to learning in the lesson	<ul style="list-style-type: none"> Gender issues in the choice of career in woodwork: <i>Woodwork is a male dominated occupation.</i> Large class size Ill equipped laboratories and workshops 							
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.	<ul style="list-style-type: none"> Use internet resources to prepare a report on the concept of timber preservation and related terminologies Use internet resources to prepare seminar presentation on pressure preservation 							
<ul style="list-style-type: none"> 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 	The purpose of this lesson is to introduce student teachers to the preservation of timber, focusing on the concept of timber preservation and related terminologies, and pressure preservation							
<ul style="list-style-type: none"> Learning Outcome for the lesson, picked and developed from the course specification Learning indicators for each learning outcome 	Learning Outcomes: By the end of the lesson, the student teacher will be able to:			Learning Indicators		Identify which cross cutting issues – core and transferable skills, equity and addressing diversity. How will these be addressed.		
	<ul style="list-style-type: none"> Demonstrate knowledge and understanding of the concept of timber preservation and related terminologies Demonstrate knowledge and understanding of pressure preservation of timber 			<ul style="list-style-type: none"> Produce a report on the concept of timber preservation and related terminologies Produce a report on pressure preservation 		Crosscutting Issues to be addressed in the lesson: <ul style="list-style-type: none"> Gender Issues of SEN (Special Education Needs) ICT skills Transferable skills to addressed in the lesson: <ul style="list-style-type: none"> Team work/collaborative skills Critical thinking skills Inquiry skills 		

Topic Title	Sub-topics (if any):	Stage/Time	Teaching and Learning Activity to achieve learning outcomes depending on the delivery mode selected. Teacher led, collaborative group work or independent	
			Teacher Activity	Student Activity
Preservation of timber – pressure preservation	Relevant Previous Knowledge	1/ 10 minutes	Introduction of Lesson Tutor facilitates student teachers' revision of their knowledge of the lesson from pre-tertiary. Tutor asks the following questions: 1. What happens to the quality of timber with time? 2. What are some of the methods adopted by users of timber to prevent or slow the process of deterioration of timber?	Introduction of Lesson Students answer questions and do brief discussions
	The concept of timber preservation and related terminologies	2/ 70 minutes	Report Presentation Tutor facilitates the use e-learning facilities to prepare report on the concept of timber preservation and related terminologies for discussion	Report Presentation Student teachers use e-learning facilities to prepare report on the concept of timber preservation and related terminologies for discussion Student teachers share reports
	Pressure preservation	3/100 minutes	Report Presentation Tutor facilitates the use e-learning facilities to prepare report on pressure preservation for discussion	Report Presentation Student teachers use e-learning facilities to prepare a report on pressure preservation for discussion
	Conclusion	4/10 minutes	Conclusion of Lesson Tutor reflects with student teachers on the lesson and summarize the key points of the lesson	Conclusion of Lesson Student teachers reflect with the tutor on the lesson and note down the key points of the lesson
Lesson assessments – evaluation of learning: of, for and as learning within the lesson (link to Learning Outcomes)	<p>In Lesson Assessment: Assessment for and as Learning Component 2: Continuous Assessment Assessment Type: Assessment for and as Learning Category of Assessment: Student teachers assessed through class assignment with oral Presentations and Reports as follows:</p> <ul style="list-style-type: none"> Produce a report on the concept of timber preservation and related terminologies Produce a report on pressure preservation of timber <p>NTS 2c. Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge. NTS 3j (Produces and uses a variety of teaching and learning resources including ICT, to enhance learning)</p> <p>Learning Outcomes Assessed: CLO3 Weighting: 30%</p>			
Teaching Learning Resources	<ul style="list-style-type: none"> Audio-visual equipment and images /videos on preservation of timber Braille, Scanner and Embosser Sign language (Resource Person). internet facility, laptop computer/PCs, projector JHS Syllabus for Basic Design and Technology (Pre-Tech) 			
Required Text (core)	<p>Amoakohene, S.K. et al (1998). <i>Technical skills and drawing for teacher training Book 2 (Tools and processes and methodology)</i>. Accra: Unimaxin association with Macmillan Educ. Ltd. Cambridge University Press.</p> <p>Walker, J. C. F. (1993). <i>Primary wood processing principles</i>. London: Chapman & Hill.</p>			

Additional Reading List	Oteng-Amoako, A. A. (2006). <i>100 tropical African trees in Ghana</i> . Kumasi: Graphic Packaging.
CPD Needs	<ul style="list-style-type: none">• Use of ICT in teaching• Issues of SEN (Special Education Needs)• Gender stereotyping/issues

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
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Title of Lesson	Preservation of timber - non-pressure preservation and pressure impregnation				Lesson Duration	180 minutes	
Lesson description	This lesson focuses on ways of preserving timber, namely: non-pressure preservation and pressure impregnation						
Previous student teacher knowledge, prior learning (assumed)	Student Teachers are: <ul style="list-style-type: none"> Familiar with the fact that the quality of timber deteriorates with time and that certain methods are adopted by users of timber to prevent or slow the process of deterioration 						
Possible barriers to learning in the lesson	<ul style="list-style-type: none"> Gender issues in the choice of career in woodwork: <i>Woodwork is a male dominated occupation.</i> Large class size Ill equipped laboratories and workshops 						
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.	<ul style="list-style-type: none"> Use internet resources to prepare a seminar presentation on non-pressure preservation and pressure impregnation methods of preserving timber Seminar on non-pressure preservation and pressure impregnation methods of preserving timber 						
<ul style="list-style-type: none"> 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 	The purpose of this lesson is to introduce student teachers to the preservation of timber, focusing on non-pressure preservation, and pressure impregnation						
<ul style="list-style-type: none"> Learning Outcome for the lesson, picked and developed from the course specification Learning indicators for each learning outcome 	Learning Outcomes: By the end of the lesson, the student teacher will be able to:		Learning Indicators		Identify which cross cutting issues – core and transferable skills, equity and addressing diversity. How will these be addressed.		
	<ul style="list-style-type: none"> Demonstrate knowledge and understanding of non-pressure preservation of timber Demonstrate knowledge and understanding of pressure impregnation of timber 		<ul style="list-style-type: none"> Produce a report on non-pressure preservation of timber Produce a report on pressure impregnation of timber 		Crosscutting Issues to be addressed in the lesson: <ul style="list-style-type: none"> Gender Issues of SEN (Special Education Needs) ICT skills Transferable skills to addressed in the lesson: <ul style="list-style-type: none"> Team work/collaborative skills Critical thinking skills Inquiry skills 		

Topic Title	Sub-topics (if any):	Stage/Time	Teaching and Learning Activity to achieve learning outcomes depending on the delivery mode selected. Teacher led, collaborative group work or independent	
			Teacher Activity	Student Activity
Preservation of timber - non-pressure preservation and pressure impregnation	Relevant Previous Knowledge	1/ 10 minutes	Introduction of Lesson Tutor facilitates student teachers' revision of their knowledge of the lesson from pre-tertiary. Tutor asks the following question: 3. What are some of the methods adopted by users of timber to prevent or slow the process of deterioration of timber considered in our previous lesson?	Introduction of Lesson Students answer questions and do brief discussions
	Non pressure preservation	2/ 80 minutes	PowerPoint Presentation Tutor facilitates the use e-learning facilities to prepare and make PowerPoint presentation on non-pressure preservation for	PowerPoint Presentation Student teachers use e-learning facilities to prepare report on non-pressure preservation for presentation/discussion
	Pressure impregnation	3/ 80 minutes	Report Presentation Tutor asks student teachers to form small groups (five or six members each) and task them to use the internet to research and prepare a report on pressure impregnation for presentation on NB: consider mixed ability, gender and SEN in the grouping of students	Report Presentation Working in small groups, student teachers use the internet to research and prepare a report on pressure impregnation for presentation Groups share their work with the class
	Conclusion	4/ 10 minutes	Conclusion of Lesson Tutor reflects with student teachers on the lesson and summarize the key points of the lesson	Conclusion of Lesson Student teachers reflect with the tutor on the lesson and note down the key points of the lesson
Lesson assessments – evaluation of learning: of, for and as learning within the lesson (link to Learning Outcomes)	<p>In Lesson Assessment: Assessment for and as Learning</p> <p>Component 1: Examination Assessment Type: Assessment of Learning Category of Assessment: Written Examination/Tests Students teachers are assessed by summative examination on:</p> <ul style="list-style-type: none"> • Preservation of timber <p>NTS 2c. (Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge)</p> <p>Learning Outcomes Assessed: CLO 3 Weighting: 40%</p> <p>Component 2: Continuous Assessment Assessment Type: Assessment for and as Learning Category of Assessment: Student teachers are assessed through class assignment with PowerPoint presentation and reports as follows:</p> <ul style="list-style-type: none"> • PowerPoint on non-pressure preservation of timber • Produce a report on pressure impregnation of timber <p>NTS 2c. (Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge) NTS 3j (Produces and uses a variety of teaching and learning resources including ICT, to enhance learning)</p>			

	<p>Learning Outcomes Assessed: CLO 3 Weighting: 30%</p>
Teaching Learning Resources	<ul style="list-style-type: none"> • Audio-visual equipment and images /videos on preservation of timber • Braille, Scanner and Embosser Sign language (Resource Person). • internet facility, laptop computer/PCs, projector • JHS Syllabus for Basic Design and Technology (Pre-Tech)
Required Text (core)	<p>Amoakohene, S.K. et al (1998). <i>Technical skills and drawing for teacher training Book 2 (Tools and processes and methodology)</i>. Accra: Unimaxin association with Macmillan Educ. Ltd. Cambridge University Press.</p> <p>Walker, J. C. F. (1993). <i>Primary wood processing principles</i>. London: Chapman & Hill.</p>
Additional Reading List	<p>Oteng-Amoako, A. A. (2006). <i>100 tropical African trees in Ghana</i>. Kumasi: Graphic Packaging.</p>
CPD Needs	<ul style="list-style-type: none"> • Use of ICT in teaching • Issues of SEN (Special Education Needs) • Gender stereotyping/issues • Teaching mixed ability group

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
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Title of Lesson	Uses of manufactured boards - plywood and block board				Lesson Duration	180 minutes	
Lesson description	The lesson focuses on uses of manufactured boards, namely: Plywood and block board						
Previous student teacher knowledge, prior learning (assumed)	Student Teacher are: <ul style="list-style-type: none"> Users of some products (furniture, cabinets, doors, windows, etc.) that have some parts made from manufactured boards 						
Possible barriers to learning in the lesson	<ul style="list-style-type: none"> Stereotyping of woodwork as male occupation Large class size Ill equipped laboratories and workshops 						
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.	<ul style="list-style-type: none"> Research and produce a folio of samples of the following manufactured boards: <ol style="list-style-type: none"> Plywood Block board Student led discussion on the uses of plywood and block boards 						
<ul style="list-style-type: none"> 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 	The purpose of this lesson is to introduce student teachers to the uses of manufactured boards, namely: plywood, and block board						
<ul style="list-style-type: none"> Learning Outcome for the lesson, picked and developed from the course specification Learning indicators for each learning outcome 	Learning Outcomes: By the end of the lesson, the student teacher will be able to:		Learning Indicators		Identify which cross cutting issues – core and transferable skills, equity and addressing diversity. How will these be addressed.		
	<ul style="list-style-type: none"> Demonstrate knowledge and understanding of uses of plywood Demonstrate knowledge and understanding of uses of block boards 		Make a Folio of samples of the following manufactured boards and their uses: <ul style="list-style-type: none"> Plywood Block board 		Crosscutting Issues to be addressed in the lesson: <ul style="list-style-type: none"> Gender Issues of SEN (Special Education Needs) ICT skills Transferable skills to addressed in the lesson: <ul style="list-style-type: none"> Team work/collaborative skills Critical thinking skills Inquiry skills 		
Topic Title	Sub-topics (if any):	Stage/Time	Teaching and Learning Activity to achieve learning outcomes depending on the delivery mode selected. Teacher led, collaborative group work or independent				
			Teacher Activity		Student Activity		
Uses of manufactured boards - plywood and block board	Relevant Previous Knowledge	1/10 minutes	Introduction of Lesson Tutor facilitates student teachers' revision of their knowledge of the lesson from pre-tertiary. Tutor asks the following question:		Introduction of Lesson Students answer questions and do brief discussions		

			1. What are some of the products that have some parts made from plywood and block board that you have been using?	
	Uses of plywood	2/ 80 minutes	Folio Preparation Tutor facilitates the use e-learning facilities and other available sources to prepare folio on the uses of plywood for student led discussion	Folio Preparation Student teachers use e-learning facilities and other available sources to prepare folio on the uses of plywood for student led discussion
	Uses of block board	3/ 80 minutes	Folio Preparation Tutor facilitates the use e-learning facilities and other available sources to prepare folio on the uses of block board for student led discussion	Folio Preparation Student teachers use e-learning facilities and other available sources to prepare folio on the uses of block board for student led discussion
	Conclusion	3/ 10 minutes	Conclusion of Lesson Tutor reflects with student teachers on the lesson and summarize the key points of the lesson	Conclusion of Lesson Student teachers reflect with the tutor on the lesson and note down the key points of the lesson
Lesson assessments – evaluation of learning: of, for and as learning within the lesson (link to Learning Outcomes)	<p>In Lesson Assessment: Assessment for and as Learning</p> <p>Component 1: Examination Assessment Type: Assessment of Learning Category of Assessment: Written Examination/Tests Students teachers are assessed by summative examination on:</p> <ul style="list-style-type: none"> • Uses of manufactured boards <p>NTS 2c. (Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge)</p> <p>Learning Outcomes Assessed: CLO 3 Weighting: 40%</p> <p>Component 3: Continuous Assessment Student teachers assessed through Folio on:</p> <ul style="list-style-type: none"> • Samples of plywood and block board and their uses <p>NTS 2c. (Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge) NTS 3j (Produces and uses a variety of teaching and learning resources including ICT, to enhance learning)</p> <p>Learning Outcomes Assessed: CLO 3 Weighting: 30%</p>			
Teaching Learning Resources	<ul style="list-style-type: none"> • Audio-visual equipment and images /videos on manufactured boards • Braille, Scanner and Embosser Sign language (Resource Person). • internet facility, laptop computer/PCs, projector • JHS Syllabus for Basic Design and Technology (Pre-Tech) 			
Required Text (core)	<p>Amoakohene, S.K. et al (1998). <i>Technical skills and drawing for teacher training Book 2 (Tools and processes and methodology)</i>. Accra: Unimaxin association with Macmillan Educ. Ltd. Cambridge University Press.</p> <p>Walker, J. C. F. (1993). <i>Primary wood processing principles</i>. London: Chapman & Hill.</p>			
Additional Reading List	<p>Oteng-Amoako, A. A. (2006). <i>100 tropical African trees in Ghana</i>. Kumasi: Graphic Packaging.</p>			
CPD Needs	<ul style="list-style-type: none"> • Use of ICT in teaching • Issues of SEN (Special Education Needs) • Gender stereotyping/issues 			

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	Uses of manufactured boards – lamin boards											Lesson Duration	180 minutes				
Lesson description	The lesson focuses on uses of manufactured boards, namely lamin board																
Previous student teacher knowledge, prior learning (assumed)	Student Teacher are: <ul style="list-style-type: none"> Users of some products (furniture, cabinets, doors, windows, etc.) that have some parts made from manufactured boards 																
Possible barriers to learning in the lesson	<ul style="list-style-type: none"> Gender issues in the choice of career in woodwork: <i>Woodwork is a male dominated occupation.</i> Large class size Ill equipped laboratories and workshops 																
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.	<ul style="list-style-type: none"> Research and produce a folio of samples of lamin board Student led discussion on types and uses of lamin boards Use group discussion to get student teachers to discuss the strengths and weaknesses of the various manufactured boards 																
<ul style="list-style-type: none"> 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 	The purpose of this lesson is to introduce student teachers to the uses of manufactured boards, namely lamin board																
<ul style="list-style-type: none"> Learning Outcome for the lesson, picked and developed from the course specification Learning indicators for each learning outcome 	Learning Outcomes: By the end of the lesson, the student teacher will be able to:		Learning Indicators		Identify which cross cutting issues – core and transferable skills, equity and addressing diversity. How will these be addressed.												
	<ul style="list-style-type: none"> Demonstrate knowledge and understanding of uses of lamin boards Demonstrate knowledge and understanding of the strengths and weaknesses of the various boards 		<ul style="list-style-type: none"> Make a Folio of samples of and uses of lamin board Prepare a report on strengths and weaknesses of the various boards 		Crosscutting Issues to be addressed in the lesson: <ul style="list-style-type: none"> Gender Issues of SEN (Special Education Needs) ICT skills Transferable skills to addressed in the lesson: <ul style="list-style-type: none"> Team work/collaborative skills Critical thinking skills Inquiry skills 												
Topic Title	Sub-topics (if any):	Stage/Time	Teaching and Learning Activity to achieve learning outcomes depending on the delivery mode selected. Teacher led, collaborative group work or independent														
			Teacher Activity							Student Activity							
Uses of manufactured boards – lamin boards	Relevant Previous Knowledge	1/10 minutes	Introduction of Lesson Tutor facilitates student teachers' revision of their knowledge of the lesson from pre-tertiary. Tutor asks the following question:							Introduction of Lesson Students answer questions and do brief discussions							

			1. What are some of the products that have some parts made from lamin boards that you have been using?	
	Uses of lamin board	2/ 75 minutes	Folio Preparation Tutor facilitates the use of e-learning facilities and other available sources to prepare folio on the uses of lamin board for student led discussion	Folio Preparation Student teachers use e-learning facilities and other available sources to prepare folio on the uses of lamin board for student led discussion
	Strengths and weaknesses of the various manufactured boards	3/ 75 minutes	Report Presentation Tutor facilitates the use of e-learning facilities and other available sources to prepare reports on the three boards on their strengths and weaknesses for discussion	Report Presentation Student teachers use e-learning facilities and other available sources to prepare reports on the three boards on their strengths and weaknesses for student led discussion
	Conclusion	4/ 20 minutes	Conclusion of Lesson <ul style="list-style-type: none"> Tutor reflects with student teachers on the lesson and summarize the key points of the lesson Tutor discusses with student teachers their general impression about the course 	Conclusion of Lesson <ul style="list-style-type: none"> Student teachers reflect with the tutor on the lesson and note down the key points of the lesson Student teachers discuss their general impression about the course
Lesson assessments – evaluation of learning: of, for and as learning within the lesson (link to Learning Outcomes)	<p>In Lesson Assessment: Assessment for and as Learning</p> <p>Component 1: Examination Assessment Type: Assessment of Learning Category of Assessment: Written Examination/Tests Students teachers are assessed by summative examination on:</p> <ul style="list-style-type: none"> Uses of manufactured boards <p>NTS 2c. (Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge)</p> <p>Learning Outcomes Assessed: CLO 3 Weighting: 40%</p> <p>Component 3: Continuous Assessment Assessment Type: Assessment for and as Learning Category of Assessment: Student teachers assessed through folio on:</p> <ul style="list-style-type: none"> Samples of plywood, block board and lamin board and their uses <p>NTS 2c. (Has secure content knowledge, pedagogical knowledge and pedagogical content knowledge) NTS 3j (Produces and uses a variety of teaching and learning resources including ICT, to enhance learning)</p> <p>Learning Outcomes Assessed: CLO 3 Weighting: 30%</p>			
Teaching Learning Resources	<ul style="list-style-type: none"> Audio-visual equipment and images /videos on manufactured boards Brailler, Scanner and Embosser Sign language (Resource Person). internet facility, laptop computer/PCs, projector JHS Syllabus for Basic Design and Technology (Pre-Tech) 			
Required Text (core)	<p>Amoakohene, S.K. et al (1998). <i>Technical skills and drawing for teacher training Book 2 (Tools and processes and methodology)</i>. Accra: Unimaxin association with Macmillan Educ. Ltd. Cambridge University Press.</p> <p>Walker, J. C. F. (1993). <i>Primary wood processing principles</i>. London: Chapman & Hill.</p>			

Additional Reading List	Oteng-Amoako, A. A. (2006). <i>100 tropical African trees in Ghana</i> . Kumasi: Graphic Packaging.
CPD Needs	<ul style="list-style-type: none"> • Use of ICT in teaching • Issues of SEN (Special Education Needs) • Gender stereotyping/issues
Course Assessment	<p>Component 1:Subject Portfolio Assessment (overall score = 30%) Selected items of students work (3 of them=10% each)</p> <ul style="list-style-type: none"> • Written Assignment • Group Presentation • Individual Presentation • Midterm assessment/Quiz.....=20% • Reflective Journal=40% • Organisation of the Portfolio=10% (how it is presented/ organized) <p>Weighting :30% Assesses Learning Outcomes ; CLO 1,2,3,4,5 and 6</p> <p>Component 2 : Subject Project(30% overall assessment) Task student teachers to design a survey instrument to collect data on their peers perception of various ATR beliefs. Should be analysed and the outcome used to create a poster to be presented during the 11th lesson.</p> <ul style="list-style-type: none"> • Introduction; clear statement of aim and purpose.....= 10% • Methodology : what the student has done and why.....= 20% • Substantive or main sections= 40% • Conclusion..... = 30% <p>Assesses Learning Outcomes ; CLO 2,3,4 and 6</p> <p>Component 3: End of Semester Examination..... =40% Assesses Learning Outcomes ; CLO 1,2,3,4,5 and 6</p> <p>Component 1:Subject Portfolio Assessment (overall score = 30%) Selected items of students work (3 of them=10% each)</p> <ul style="list-style-type: none"> • Written Assignment • Group Presentation • Individual Presentation • Midterm assessment/Quiz.....=20% • Reflective Journal=40% • Organisation of the Portfolio=10% (how it is presented/ organized) <p>Weighting :30% Assesses Learning Outcomes ; CLO 1,2,3,4,5 and 6</p> <p>Component 2 : Subject Project(30% overall assessment) Task student teachers to design a survey instrument to collect data on their peers perception of various ATR beliefs. Should be analysed and the outcome used to create a poster to be presented during the 11th lesson.</p> <ul style="list-style-type: none"> • Introduction; clear statement of aim and purpose.....= 10% • Methodology : what the student has done and why.....= 20% • Substantive or main sections= 40% • Conclusion..... = 30% <p>Assesses Learning Outcomes ; CLO 2,3,4 and 6</p> <p>Component 3: End of Semester Examination..... =40% Assesses Learning Outcomes ; CLO 1,2,3,4,5 and 6</p>

