

MINISTRY OF EDUCATION



REPUBLIC OF GHANA

TEACHING SYLLABUS FOR WOODWORK (SENIOR HIGH SCHOOL 1 - 3)

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TEACHING SYLLABUS FOR WOOD WORK

RATIONALE FOR TEACHING WOOD WORK

Woodwork provides knowledge and skills in the art and craft of woodworking and further equips the learner with the necessary basic skills for work in the wood-based industry. This syllabus is an improved version of the earlier syllabus. Besides other important changes, the syllabus includes knowledge of technical drawing and designing, and the methods and principles of construction. Knowledge acquired in this subject at Senior High School level will be helpful for students who wish to proceed to tertiary education. Students who would want to enter the world of work immediately after completing SHS will require only a short period of further training to polish up for gainful employment in industry.

GENERAL AIMS

The syllabus aims at helping students to achieve the following:

- a. the ability to use hand tools and basic machines to make simple craft pieces in wood and related materials.
- b. a good basic knowledge of design and reading of working drawings
- c. the ability to plan and follow a sequence of work operations for successful project completion.
- d. development of functional skills as foundation for job opportunities in wood working.
- e. awareness of problems relating to wood and the wood industry i.e. depletion, conservation and re-forestation
- f. adoption of moral principles in the conduct of business

SCOPE OF CONTENT

The course in Woodwork covers the following essential areas:

- i. General Safety
- ii. General Construction
- iii. Tools and Materials
- iv. Designing and Making
- v. General maintenance of tools and machines
- vi. Basic upholstery
- vii. Mass production
- viii. Surface decoration

PRE-REQUISITE SKILLS AND ALLIED SUBJECTS

The course in woodwork builds on relevant aspects of the course in Basic Design and Technology offered at the Junior High School level. Students offering the Woodwork should have had good performance in English, Mathematics and in Basic Design and Technology. Satisfactory literacy and numeracy skills as well as basic knowledge and skills in drawing and designing are important for success in this subject.

ORGANIZATION OF THE SYLLABUS

The syllabus has been structured to cover three years of the Senior High School Programme. Each year's work consists of a number of sections with each section comprising a number of units. The structure of the syllabus is presented below.

STRUCTURE AND ORGANIZATION OF WOODWORK

SHS 1	SHS 2	SHS 3
<p>SECTION 1: SAFETY PRECAUTIONS - (Pg.1)</p> <p>Unit 1: General workshop safety Unit 2: Basic First Aid</p>	<p>SECTION 1: DESIGN AND MAKING - I (Pg.17)</p> <p>Unit 1: Problem identification Unit 2: Generating solutions Unit 3: Presentation of the final solution Unit 4: Making the artefact Unit 5: Evaluating the artefact</p>	<p>SECTION 1: DESIGN AND MAKING - II (Pg.36)</p> <p>Unit 1: Principles of design Unit 2: Working drawing Unit 3: Project work</p>
<p>SECTION 2: TOOLS - (Pg.3)</p> <p>Unit 1: Hand tools Unit 2: Special purpose tools</p>	<p>SECTION 1: MATERIAL: TIMBER - II (Pg.20)</p> <p>Unit 1: Surface quality of timber Unit 2: Mechanical properties Unit 3: Veneer Unit 4: Manufactured boards</p>	<p>SECTION 2: FINISHING AND FINISHES - (Pg.38)</p> <p>Unit 1: Surface preparation Unit 2: Finishes</p>

SHS 1	SHS 2	SHS 3
<p>SECTION 3: MATERIAL: TIMBER - I (Pg.5)</p> <p>Unit 1: Growth Unit 2: Classification Unit 3: Conversion Unit 4: Marketable sizes Unit 5: Seasoning Unit 6: Determination of moisture content Unit 7: Wood preservation Unit 8: Defects in timber Unit 9: West African timbers</p>	<p>SECTION 3: SURFACE DECORATION (METHODS) - (Pg.22)</p> <p>Unit 1: Inlaying Unit 2: Veneering Unit 3: Marquetry Unit 4: Laminated Plastics Unit 5: Edging Unit 6: Mouldings Unit 7: Incised and Relief carving</p>	<p>SECTION 3: SHAPING AND WOOD BENDING - (Pg.40)</p> <p>Unit 1: Methods of shaping and bending wood</p>
<p>SECTION 4: WOODWORK JOINTS - (Pg.10)</p> <p>Unit 1: Angle joints Unit 2: Widening joints Unit 3: Framing joints</p>	<p>SECTION 4: NON-WOOD MATERIALS (Pg.25)</p> <p>Unit 1: Metals Unit 2: Nails Unit 3: Screws Unit 4: Plastics Unit 5: Glass Unit 6: Leather Unit 7: Abrasives Unit 8: Fittings Unit 9: Adhesives</p>	<p>SECTION 4: MASS PRODUCTION (Pg.41)</p> <p>Unit 1: Design Unit 2: Working drawing Unit 3: Selection and preparation of materials (Using machines) Unit 4: Marking-out Unit 5: Production of parts</p>
<p>SECTION 5: PORTABLE POWER TOOLS (Pg.12)</p> <p>Unit 1: Safety Precautions Unit 2: Planes Unit 3: Hand drill Unit 4: Sanders Unit 5: Saws Unit 6: Spray gun</p>	<p>SECTION 5: BASIC UPHOLSTERY (Pg.29)</p> <p>Unit 1: Tools Unit 2: Materials Unit 3: Platforms</p>	<p>SECTION 4: MASS PRODUCTION (CONT'D) (Pg.42)</p> <p>Unit 6: Assembling Unit 7: Finishing Unit 8: Quality control</p>

SHS 1	SHS 2	SHS 3
<p>SECTION 6: MENSURATION (Pg.15)</p> <p>Unit 1: Estimation Unit 2: Costing Unit 3: Calculations involving linear, area, volume and percentages</p>	<p>SECTION 6: WOOD WORKING MACHINES (Pg.31)</p> <p>Unit 1: Safety Precautions Unit 2: Sawing Machines Unit 3: Planing Machines Unit 4: Drilling Machine Unit 5: Morticing Machine Unit 6: Shaping Machines Unit 7: Grinding Machine</p>	
	<p>SECTION 7: WOOD TURNING (Pg.34)</p> <p>Unit 1: The lathe Unit 2: Turning tools Unit 3: Turning operations Unit 4: Projects</p>	

TIME ALLOCATION

Woodwork is allocated Six (6) periods a week in the 1st year; Six (6) periods a week in the 2nd year and six (6) periods a week in the 3rd year. Theory instruction should take 40 percent of instructional time while practicals take 60 percent of the time.

SUGGESTIONS FOR TEACHING THE SYLLABUS

General Objectives

General Objectives have been listed at the beginning of each section of the syllabus, that is, just below the theme of the section. The general objectives specify the skills and behaviours the student should acquire after learning the units of a section and flow from the general aims for teaching Woodwork listed on page (vi) of this syllabus. The general objectives form the basis for the selection and organization of the unit topics. Read the general objectives very carefully before you start teaching. After teaching all the units, go back and read the general aims and general objectives again to be sure you have covered both of them adequately in the course of your teaching.

Sections and Units: Each section of the syllabus is divided into units, where a unit consists of a body of knowledge and skills that form a logical aspect of the section.

Column I - Units: The Units in Column 1 provide the major topics of the section. You are expected to follow the unit topics according to the linear order in which they have been presented. However, if you find at some point that teaching and learning of a unit will be more effective if you skipped to another unit before coming back to the unit in the sequence you are encouraged to do so.

Column 2 - Specific Objectives: Column 2 shows the Specific Objectives for each unit. The 'specific objectives begin with numbers such as 1.2.2 or 2.2.1. These numbers are referred to as "Syllabus Reference Numbers. The first digit in the syllabus reference number refers to the section; the second digit refers to the unit, while the third digit refers to the rank order of the specific objective. For instance, 1.2.2 means: Section 1, Unit 2 (of Section 1) and Specific Objective 2. In other words, 1.2.2 refers to Specific Objective 2 of Unit 2 of Section 1. Similarly, the syllabus reference number 2.2.1 simply means Specific Objective number 1, of Unit 2 of Section 2.

You will note also that specific objectives have been stated in terms of the students i.e. "*what the student will be able to do after instruction and learning in the unit.* Each specific objective hence starts with the following: "The student will be able to." This in effect, means that you have to address the learning problems of each individual student. It means individualizing your instruction as much as possible such that the majority of students will be able to master the objectives of each unit of the syllabus.

Column 3 - Content: The "content" in the third column of the syllabus presents a selected body of information that you will need to use in teaching the particular unit. In some cases, the content presented is quite exhaustive. In some other cases, you could add more information to the content presented. In any case, try to find more information through reading and personal investigations, to add to the content provided. The use of resource persons will in many cases, help to provide your class with more information and skills. The column also suggests tools and materials that can be used for the unit or lesson.

Column 4 -Teaching and Learning Activities (T/LA): T/LA that will ensure maximum student participation in the lessons is presented in Column 4. The teaching of this subject should be activity oriented. The major portion of class work and other assignments should emphasize practice. Group work and other participatory methods should be emphasized in the teaching and learning process. In this particular subject, students are expected to acquire valuable basic practical skills to serve as a foundation for further skill development. Observe and also ensure that students exhibit skills and values in their behaviour and in creative activities.

As has been said already, the order in which the unit topics appear should not necessarily be the teaching order. There should however, be a linkage in the order in which the units and specific objectives are treated. The teacher will have to study the syllabus carefully and plan ahead the activities the students will carry out during a particular lesson. Knowing the requirements of a lesson, the teacher should assemble the tools and materials required for the activities well in advance. The collection of tools and materials must be done by both the teacher and students. Other regular materials may be continually collected and stored to be used when needed. When materials are not available in the school or in the immediate environment, the teacher should try to contact persons in higher institutions and in the community for help.

As students begin to work on activities of each lesson, the teacher should serve as a facilitator and motivate the students in various ways to sustain their interest. As much as possible, resource persons may be invited to carry out demonstrations and talk about their work to the class. Field trips may be organized to the community for students to observe woodwork practices.

Column 5 - Evaluation: Suggestions and exercises for evaluating the lessons of each unit are indicated in Column 5. Evaluation exercises can be in the form of oral questions, quizzes, class assignments, project work; etc. Ask questions and set tasks and assignments that will challenge your students to apply their knowledge to issues and problems, and that will engage them in creating new and original items, and developing positive attitudes as a result of having undergone instruction in this subject. Evaluation should also include observation of processes students go through in performing various activities, and the products students make. Processes and products are both equally important and need observation and correction. The suggested evaluation tasks are not exhaustive. You are encouraged to develop other creative evaluation tasks to ensure that students have mastered the instruction and behaviours implied in the specific objectives of each unit.

Lastly, bear in mind that the syllabus cannot be taken as a substitute for lesson plans. It is therefore necessary that you develop a scheme of work and lesson plans for teaching the units of this syllabus.

PROFILE DIMENSIONS

Profile dimensions describe the underlying behaviours or abilities students are expected to acquire as a result of having gone through a period of instruction. Each of the specific objectives in this syllabus contains an action verb that specifies the type of learning or skill that the student should acquire by the end of the instructional period. A specific objective as follows: The student will be able to describe ...etc. contains an action verb "describe" that indicates what the student will be able to do after teaching and learning have taken place. Being able to "describe" something after the instruction has been completed means that the student has acquired "knowledge". Being able to explain, summarise, give examples, etc. means that the student has understood the lesson taught. Similarly, being able to develop, plan, construct etc, means that the student has learnt to create, innovate or synthesize knowledge. Each of the action verbs in the specific objectives of the syllabus describes the behaviour the student will be able to demonstrate after the instruction. "Knowledge", "Application", etc. are dimensions that should be the prime focus of teaching, learning and assessment in schools.

As already stated, profile dimensions describe the underlying behaviours for teaching, learning and assessment. Woodwork is a practical subject and the learning required is best achieved by practical application of skills learnt. The profile dimensions specified in this subject and their respective weights are as follows:

Knowledge and Understanding	10%
Application of Knowledge	30%
Attitudes and Practical Skills	60%

Each of the dimensions has been given a percentage weight that should be reflected in teaching, learning and testing. The weights, indicated on the right of the dimensions, show the relative emphasis that the teacher should give in the teaching, learning and testing processes. Combining the three dimensions in the teaching and learning process will ensure that woodwork is taught and studied not only at the cognitive level, but will also lead to the acquisition of practical skills in the subject.

The explanation of the key words involved in each of the profile dimensions is as follows:

Knowledge and Understanding (KU)

Knowledge The ability to:
remember, recall, identify, define, describe, list, name, match, state principles, facts and concepts. Knowledge is simply the ability to remember or recall material already learned and constitutes the lowest level of learning.

Understanding The ability to:
explain, summarize, translate, rewrite, paraphrase, give examples, generalise, estimate or predict consequences based upon a trend. Understanding is generally the ability to grasp the meaning of some material that may be verbal, pictorial, or symbolic.

Application of Knowledge (AK)

Ability to use knowledge or apply knowledge, as implied in this syllabus, has a number of learning/behaviour levels. These levels include application, analysis, innovation or creativity, and evaluation. These may be considered and taught separately, paying attention to reflect each of them equally in your teaching. The dimension "Use of Knowledge" is a summary dimension for all four learning levels. Details of each of the four sub-levels are as follows:

Application The ability to:
apply rules, methods, principles, theories, etc. to concrete situations that are new and unfamiliar. It also involves the ability to produce, solve, operate, demonstrate, discover etc.

Analysis	The ability to: break down materials into its component parts; to differentiate, compare, distinguish, outline, separate, identify significant points etc, recognize unstated assumptions and logical facilities, recognize inferences from facts etc.
Innovation/Creativity	The ability to put parts together to form a new whole. It involves the ability to synthesize, combine, compile, compose, devise, suggest a new idea or possible ways, plan, revise, design, organize, create, and generate new solutions. The ability to create or innovate is the highest form of learning. The world becomes more comfortable because some people, based on their learning, generate new ideas, design and create new things.
Evaluation	The ability to: appraise, compare features of different things and make comments or judgments, contrast, criticize, justify, support, discuss, conclude, make recommendations etc. Evaluation refers to the ability to judge the worth or value of some materials, ideas etc., based on some criteria. Evaluation is a constant decision making activity. We generally compare, appraise and select throughout the day. Every decision we make involves evaluation. Evaluation is a high level ability just as application, analysis and innovation or creativity since it goes beyond simple knowledge acquisition and understanding.

Practical Skills (PS)

Practical skills involve pre-imaging to solve practical problems, demonstration of manipulative skills using tools/equipment and materials to carry out practical operations. The teaching and assessment of practical skills should involve projects and creative practical tasks.

“Practical Skills” is given 60 per cent of the teaching, learning and testing time to emphasize the point that woodwork is largely a practical subject especially at the SHS level. The remaining 40 per cent can be used for theoretical aspect involving acquisition of knowledge and understanding.

Skills required for effective practical work are the following:

1. Handling Tools/Equipment/Materials
2. Observation
3. Craftsmanship/Draftsmanship
4. Perception
5. Creativity
6. Communication

Tools/Equipment/Material Handling: Students should be able to handle and use tools/equipment/materials properly for practical work to acquire the needed manual skills.

Observation: The student should be able to use his/her senses to make accurate observation of skills and techniques during demonstrations. The student in this case should be able to imitate the techniques he/she has observed for performing other tasks.

Craftsmanship/Draftsmanship: This involves the skilful and efficient handling of materials and tools for accomplishing specific tasks according to the level of the students.

Perception: The student should be able to respond to his/her environment using all the senses i.e. seeing, hearing, smelling, touching and tasting. The student should be encouraged to apply these senses to every project he/she undertakes.

Originality/Creativity: Students should be encouraged to be creative or original and be able to use new methods in carrying out projects. Encourage them to be original in making works of art and not copy existing work. You can help them to be creative and original by encouraging any little creative effort, technique and product they may develop.

Communication: Students should be guided to develop effective oral and written communication skills necessary for group work, reporting and appreciation etc.

The action verbs provided under the various profile dimensions should help you to structure your teaching such as to achieve the set objectives. Select from the action verbs provided for your teaching, in evaluating learning before, during and after the instruction.

FORM OF ASSESSMENT

It must be emphasized again that it is important that both instruction and assessment be based on the profile dimensions of the subject. In developing assessment procedures, select specific objectives in such a way that you will be able to assess a representative sample of the syllabus objectives. Each specific objective in the syllabus is considered a criterion to be achieved by the student. When you develop a test that consists of items or questions that are based on a representative sample of the specific objectives taught, the test is referred to as a "Criterion-Referenced Test". In many cases, a teacher cannot test all the objectives taught in a term, in a year etc. The assessment procedure you use i.e. class tests, home work, projects etc. must be developed in such a way that it will consist of a sample of the important objectives taught over a period.

The example on the next page shows an examination consisting of two papers, Paper 1 and Paper 2. Paper 3 will be the School Based Assessment (SBA) which is not shown in the table. Paper 1 will usually be an objective-type paper; Paper 2 will consist of structured questions or essay questions, essentially testing "Application of Knowledge", but also consisting of some questions on "Knowledge and Understanding". Paper 2 will be the practical test paper, and the SBA will be based on all three dimensions as indicated. The distribution of marks for the objective test items, structured questions and the practical questions in the three papers and in the SBA should be in line with the weights of the profile dimensions already indicated and shown in the last column of the table below.

The weighting of examination marks will be done in accordance with the examination structure on the next page. Paper 1 will have two sittings – A and B which will comprise the multiple choice (objectives) and the structured questions respectively. Paper 1C will comprise the second sitting and will involve Drawing and Designing.

Paper 1A, 1B and 1C will therefore carry a total of 100 marks which will be scaled down to 40%; 10 marks for the objective test, 10 marks for the structured test paper and 20 marks for Drawing and Designing paper.

Paper 2 will comprise the project work and practical test and will carry a total of 100 marks to be scaled down to 60%; 20% for project work to be assessed internally on termly basis and 40% for the practical examination to be externally assessed..

The weighting for the three dimensions specified for Woodwork and indicated in the examination structure on the next page is as follows:

Knowledge and Understanding	-	10%
Application of Knowledge	-	30%
Practical Skills	-	60%

EXAMINATION STRUCTURE

Dimensions	PAPER 1			PAPER 2		
	A Objectives	B Structured/Essay	C Drawing and Designing	Project	Practical	Weightings
Knowledge and Understanding (KU)	10	5	5	5	-	10%
Application of Knowledge (AK)	15	35	5	5	-	30%
Practical Skills (PS)	-	-	25	40	50	60%
TOTAL MARKS	25	40	35	50	50	-
Total	40%			60%		100%

ASSESSING PRACTICAL WORK

Woodwork will be assessed by practical projects at the end of each term. The mark allocation in the assessment of practical products will follow these guide lines:

Originality	-	30%
Design	-	30%
Craftsmanship	-	40%

GUIDELINES FOR SCHOOL-BASED ASSESSMENT (SBA)

A new School Based Assessment system (SBA) will be introduced into the school system in 2011. The new SBA system is designed to provide schools with an internal assessment system that will help schools to achieve the following purposes:

- Standardize the practice of internal school-based assessment in all Senior High Schools in the country
- Provide reduced assessment tasks for subjects studied at SHS
- Provide teachers with guidelines for constructing assessment items/questions and other assessment tasks
- Introduce standards of achievement in each subject and in each SHS class
- Provide guidance in marking and grading of test items/questions and other assessment tasks
- Introduce a system of moderation that will ensure accuracy and reliability of teachers' marks

- Provide teachers with advice on how to conduct remedial instruction on difficult areas of the syllabus to improve class performance.

The arrangement for SBA may be grouped in categories as follows. Folio Preparation, Project designed to include folio preparation, Mid-Term test, Group Exercise and End of Term Examination.

Folio Preparation: Folio preparation may include the following:

- Specific Design
- Investigative study and field visit reports.

Project: This will consist of a selected topic to be carried out by groups of students for a year. Segments of the project will be carried out each term toward the final project completion at the end of the year,

Mid-Term Test: The mid-term test following a prescribed format will form part of the SBA

Group Exercise: This will consist of written assignments or practical work on a topic(s) considered important or complicated in the term's syllabus

End-of-Term Examination: The end-of-term test is a summative assessment system and should consist of the knowledge and skills students have acquired in the term. The end-of-term test for Term 3 for example, should be composed of items/questions based on the specific objectives studied over the three terms, using a different weighting system such as to reflect the importance of the work done in each term in appropriate proportions. For example, a teacher may build an End-of-Term 3 test in such a way that it would consist of the 20% of the objectives studied in Term 1, 20% of objectives studied in Term 2 and 60% of the objectives studied in Term 3.

GRADING PROCEDURE

To improve assessment and grading and also introduce uniformity in schools, it is recommended that schools adopt the following WASSCE grade structure for assigning grades on students' test results. The WASSCE structure is as follows:

Grade A1:	80 - 100%	-	Excellent
Grade B2:	70 - 79%	-	Very Good
Grade B3:	60 - 69%	-	Good
Grade C4:	55 - 59%	-	Credit
Grade C5:	50 - 54%	-	Credit
Grade C6:	45 - 49%	-	Credit
Grade D7:	40 - 44%	-	Pass
Grade D8:	35 - 39%	-	Pass
Grade F9:	34% and below	-	Fail

In assigning grades to students' test results, you are encouraged to apply the above grade boundaries and the descriptors which indicate the meaning of each grade. The grade boundaries i.e., 60-69%, 50-54% etc., are the grade cut-off scores. For instance, the grade cut-off score for B2 grade is 70-79% in the example. When you adopt a fixed cut-off score grading system as in this example, you are using the criterion-referenced grading system. By this system a student must make a specified score to be awarded the requisite grade. This system of grading challenges students to study harder to earn better grades. It is hence a very useful system for grading achievement tests.

Always remember to develop and use a marking scheme for marking your class examination scripts. A marking scheme consists of the points for the best answer you expect for each question, and the marks allocated for each point raised by the student as well as the total marks for the question. For instance, if a question carries 20 marks and you expect 6 points in the best answer, you could allocate 3 marks or part of it (depending upon the quality of the points raised by the student) to each point, hence totaling 18 marks, and then give the remaining 2 marks or part of it for organization of answer. For objective test papers you may develop an answer key to speed up the marking.

SENIOR HIGH SCHOOL - YEAR 1

SECTION 1

SAFETY PRECAUTIONS

General objectives: The student will:

1. observe general safety precautions in the workshop.
2. develop safe working attitudes.
3. acquire basic skills in administering First Aid.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 GENERAL WORKSHOP SAFETY	The student will be able to: 1.1.1 state reasons for observing safety measures in a workshop. 1.1.2 apply the appropriate safety measures in the workshop. 1.1.3 demonstrate precautions to be observed in a workshop.	Importance of safety measures in a workshop: Prevention of: a. injury to self b. injury to others c. damage to tools and machines, etc Safety Measures in a workshop: Behaviour, Protective clothing. Safe use of tools, lighting, ventilation, environment, use of electrical appliances, Identification of accidents that can occur and how to prevent them. Precautions in a workshop: i. Protective clothing: goggles, aprons/overalls, masks, boots, helmets, gloves, respirators ii. Avoid horse play	Use a Futures Wheel to trace the consequences of not observing safety measures in a workshop Discuss reasons for observing safety measures in a workshop Use digital content or real objects to show protective clothing used in a workshop Discuss the safety measures to be taken at the workshop. Demonstrate safety measures in a workshop for students to practise. Discuss the uses of protective clothing as a means of observing. Brainstorm the precautions to be observed in a workshop Demonstrate the precautions to be observed in the workshop.	Students to: discuss five consequences of failing to observe safety measures in a workshop list five safety measures to be observed in a workshop role-play two scenarios showing the effects of using protective clothing and not using protective clothing in a workshop

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 FIRST AID	<p>The student will be able to:</p> <p>1.2.1 identify and use basic First Aid items.</p> <p>1.2.2 administer basic First Aid in case of emergency.</p>	<p>Basic First Aid items</p> <ol style="list-style-type: none"> a. Lint b. Scissors c. Bandages d. Plaster e. Methylated spirit f. Iodine g. Cotton wool h. Forceps <p>Application of First Aid in case of accident situations: cuts, burns, electric shock, etc.</p>	<p>Display the contents of a First Aid Box.</p> <p>Discuss conditions for using each item.</p> <p>Demonstrate how the items are used for First Aid.</p> <p>Discuss reasons for using each item for its purpose</p> <p>Discuss when an accident situation requires immediate referral or First Aid.</p> <p>Demonstrate steps to take in referring an accident victim to a hospital or a clinic.</p> <p>Discuss the procedure for administering First Aid in an accident situations listed in content.</p> <p>Observe a demonstration of First Aid procedures Demonstrate the procedure in specific accident situations</p> <p>Note 1: Stress the Importance of training some- one to be in-charge of the First Aid box.</p> <p>Note 2: Ensure that the First Aid box is conspicuously placed in the workshop.</p>	<p>Students to:</p> <p>list six items found in a First Aid box and describe their uses.</p> <p>role-play an accident situation which requires referral</p> <p>role-play administration of First Aid in an accident</p>

SENIOR HIGH SCHOOL - YEAR 1

SECTION 2 TOOLS

General objectives: The student will:

1. acquire skills in safe handling and use of tools.
2. develop skills in effective way of caring and maintaining tools.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 HAND TOOLS	The student will be able to: 2.1.1 identify and classify hand tools. 2.1.2 explain how to care for and maintain hand tools. 2.1.3 demonstrate the right techniques for using hand tools. 2.1.4 sketch hand tools. 2.1.5 select tools for specific jobs.	Identification, Classification and uses of classes of hand tools: a. Measuring and marking out b. Cutting and shaping c. Abrading and scraping d. Boring e. Percussion and impelling f. Holding and supporting Care and maintenance of hand tools Usage of hand tools Sketching of hand tools Selection of tools	Use digital content/real objects, to discuss, view and describe the features of hand tools Demonstrate the uses of the various classes of hand tools Students observe demonstrations on the uses of the various classes of hand tools and practice Demonstrate how to maintain and care for the tools. Demonstrate the right techniques for using each tool Sketch and label the hand tools Prepare an album on hand tools and the jobs they are used for	Students to: identify and name the various tools. prepare an album on the hand tools. sketch and label one tool each for abrading, scraping, boring and shaping.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 SPECIAL PURPOSE TOOLS	<p>The student will be able to:</p> <p>2.2.1 explain the functions of the parts of tools.</p> <p>2.2.2 describe how to care and maintain the tools.</p> <p>2.2.3 classify and state the uses of special purpose tools.</p> <p>2.2.4 sketch special purpose tools</p>	<p>a. planes:- plough, router, compass b. Saws:- coping, bow, fret, etc c. Boring bits:- auger, expansion, etc. d. Shapers:- rasp, scraper, surform.</p> <p>Maintenance and care of the tools.</p> <p>Identification, classification and uses of classes of special purpose hand tools</p> <p>Sketching and labeling of special purpose tools.</p>	<p>Discuss the functions of the parts of the tools.</p> <p>Discuss and demonstrate the maintenance and care of tools.</p> <p>Display special purpose tools and assist students to classify them.</p> <p>Students to draw and label the tools</p>	<p>Students to:</p> <p>list and describe two tools under each class.</p> <p>state reasons for caring and maintaining special purpose tools.</p> <p>explain why hand tools need periodic care and maintenance.</p> <p>sketch and label parts of two special purpose tools from each class.</p>

SENIOR HIGH SCHOOL - YEAR 1

SECTION 3

MATERIAL: TIMBER – 1

General objectives: The student will:

1. be aware of the characteristics and uses of timber.
2. recognize defects in timber.
3. be aware of the methods of preserving timber.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 GROWTH	<p>The student will be able to:</p> <p>3.1.1. identify the cross-sectional parts of a tree and describe their characteristics and functions.</p> <p>3.1.2 explain how the characteristics of the cross-sectional parts of a tree affect its timber and woodwork.</p> <p>3.1.3 describe the functions of the parts of a tree in its growth and development.</p>	<p>Functions of the cross-sectional parts of a tree:</p> <ol style="list-style-type: none"> a. Bark b. Bast c. Cambium layer d. Annual/Growth rings e. Medullary rays f. Sapwood g. Heartwood h. Pith <p>Effects of the characteristics of the cross-sectional parts of a tree on its timber and woodwork.</p> <p>Parts of the tree and their functions its growth and development.</p> <ol style="list-style-type: none"> a. Roots b. Trunk c. Crown 	<p>Discuss how the functions performed by the parts of a tree in its growth and development affect its wood quality and uses in woodwork.</p> <p>Use digital content / sketches or charts to discuss the cross-sectional parts of a tree as listed in content</p> <p>Illustrate with sketches and label the parts.</p> <p>Discuss the characteristics of the cross-sectional parts of a tree</p> <p>Discuss the effects that characteristics of the cross-sectional parts of a tree have on its timber and woodwork.</p> <p>Use digital content / sketches or charts to discuss parts of a tree as listed in the content</p> <p>Discuss the functions of the parts of a tree in its growth and development.</p>	<p>Students to:</p> <p>draw and label the cross-sectional parts of a tree and state their functions.</p> <p>explain the effects of the characteristics of the following on timber: Bark, Bast, Medullary rays, Annual Growth Rings, Sapwood, Heartwood and Pith.</p> <p>sketch and label the cross-sectional parts of the tree</p>

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 CLASSI- FICATION	The student will be able to: 3.2.1 differentiate between hardwood and softwood trees by seed, leaves, and structure.	Differences between hardwood and softwood trees Seeds: i. Covered seed plants: - Hardwoods - Dycotyledons (Angiosperms) ii. Naked seed plant): Softwood – (Gymnosperms) Leaves: i. Broad leaves: - Hardwood ii. Needle- like leaves: - Softwood Structure: i. Pored: - Hardwood ii. Non Pored: - Softwood	Use digital content/ chart or real objects to discuss hardwoods and softwoods Discuss the differences between hardwoods and softwoods as listed in the content. NB: Teachers to organize field trips to: Places where the softwood and hardwood trees and timber are, e.g. Forest and Sawmill/Chain Saw Operators for students to observe the differences between hardwoods and softwoods. .	Students to: write a report on the field trip for presentation in class. describe the differences between hardwoods and softwoods.
UNIT 3 CON- VERSION	3.3.1 identify and sketch the methods of conversion.	Methods of conversion: a. Plain/through and through/ Live sawing b. Tangential/Back/Flat/rake sawing. c. Quarter/radial/rift sawing d. Boxed-heart sawing .	Use films, charts and discuss methods of conversion Discuss the steps in the methods of conversion Discuss the advantages and disadvantages of different methods of conversion Demonstrate methods of conversion NB: Teacher to organize visits to saw-mills/ chain saw operator at work for students to observe the methods of conversion	what is meant by conversion?. discuss the advantages and disadvantages of four methods of conversion write group report and discuss in class

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 4 MARKETABLE SIZES	The student will be able to: 3.4.1 identify and sketch various marketable sizes of timber.	Marketable sizes of timber: Log, Baulk, Fritch, Plank, Board, Scantling, Strip, Batten, Square	Discuss the various marketable sizes of timber NB: Teacher to organize visits to timber markets/saw-mills/timber shed for students to observe. Assist students measure the various marketable sizes of timber as listed in content.	Students to: Identify and sketch various marketable sizes of timber and dimension them. write group report and discuss in class
UNIT 5 SEASONING	3.5.1 demonstrate methods of seasoning timber.	Methods of seasoning: a. Natural/Open air seasoning b. Artificial/Kiln seasoning c. Water seasoning d. Chemical seasoning	Demonstrate steps in seasoning timber using the various methods listed in content NB: Teacher to organize field trips to visits saw-mills to observe the various methods of seasoning timber.	explain seasoning. perform the tasks in seasoning timber using the various methods. using event chain, describe three methods of seasoning timber. write group report and discuss in class
UNIT 6 DETERMINATION OF MOISTURE CONTENT	3.6.1 demonstrate oven and moisture meter methods of determining the moisture content of timber .	Methods of determining moisture content of timber: a. oven b. moisture meter	Discuss reasons for determining the moisture content of timber Discuss the steps in using each method. Discuss the advantages and disadvantages of each method. Demonstrate the methods for determining the moisture content of timber.	outline the steps in one of the methods of determining the moisture content of timber.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 7 WOOD PRESERVATION	The student will be able to: 3.7.1 describe wood preservatives. 3.7.2 demonstrate method of applying wood preservatives.	Types of wood preservatives: a. Tar oil b. Water borne c. Organic solvent Methods of applying wood preservatives: a. pressure treatment b. Non-Pressure treatment	Discuss reasons for preserving wood. Discuss the merits and demerits of using the preservatives. Demonstrate methods of applying wood preservatives. NB: Teacher to organize field trips to timber treatment plants for students to observe and practice the methods.	Students to: what are the merits and demerits of using Tar Oil and Water borne in preserving wood write group report and discuss in class
UNIT 8 DEFECTS IN TIMBER	3.8.1 detect defects in wood 3.8.2 identify and sketch types of defects.	Causes of defects in wood: a. Natural defects b. Seasoning defects. Type of defects: knots, shakes, splits, checks bowing, springing, cuping, honey-combing, casehardening, collapse	Brainstorm to come out with the defects in timber Using real object differentiate between natural and artificial defects. Discuss examples of natural and artificial defects.	sketch and label five types of defects in wood.
UNIT 9 WEST AFRICAN TIMBERS	3.9.1 differentiate between various types of timber and state their uses.	Characteristics and uses of West African timbers: Iroko (odum), Abura, Mahogany, Obeche (wawa), Walnut, Afara, Ebony, Danta, Emery, Shedua, Mansonia, Afromosia (Kokrodua) Avodire, Kusia.	Use digital content or real wood to show types of defects and draw them. Discuss the effects of defects on woodwork. Use digital content/ real objects /charts to differentiate the various types of timber listed in content. Discuss the characteristics of the timbers and state their uses. Discuss the similarities and differences between the various types of timber.	distinguish between the following types of timber: i. Iroko (odum) and Abura, ii. Mahogany and Obeche (wawa), iii. Walnut and Afara. iv. Ebony and Danta v. Emery and Shedua, vi. Mansonia and vii. Afromosia (Kokrodua) viii. Avodire and Kusia.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 9 (CONT'D.) WEST AFRICAN TIMBERS	The student will be able to: 3.9.2 analyse the effects of depletion of timber species in the Wood Industry.	Effects of depletion of timber species	Discuss the effects of depletion of timber species in the Woodwork Industry. Discuss the need for re-afforestation.	Students to:

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SECTION 4 WOODWORK JOINTS

General objectives: The student will:

1. be aware of different types of joints used in woodwork .
2. be able to construct different types of joints.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 ANGLE JOINTS	The student will be able to: 4.1.1 construct items involving angle Joints.	Description and uses of the following angle joints: a. Dowel b. Dovetails c. Housing d. Halving e. Comb f. Plain mitre	Use digital content or real objects/charts to show various angle joints Discuss the uses of angle joints. Sketch and label the various angle joints. Demonstrate the construction of the various types of angle joints Design and make usable items to involve angle joints	Students to. Project: design and make usable items involving the angle joints listed in content
UNIT 2 WIDENING JOINTS	4.2.1 make items involving widening joints.	Explanation of the following types of widening joints and their uses: a. Dowel b. Tongue and groove c. Loose tongue d. Rebated butt e. Slot screw f. Plain butt	Use digital content or real objects/charts to show various widening joints Discuss the uses of widening joints Demonstrate the construction of widening joints and assist students to practise. Sketch and label types of widening joints. Design useable items to involve widening joints	Project: design and make usable items involving the widening joints listed in content

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SECTION 5 PORTABLE POWER TOOLS

General objectives: The student will:

1. develop skills in safe handling of power tools.
2. acquire skills in the use of power tools

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 SAFETY IN THE USE OF PORTABLE POWER TOOLS	The student will be able to:			Students to:
	5.1.1 observe safety measures in the use of portable power tools.	Safety measures in the use of portable power tools.	Discuss safety precautions to be observed when using portable power tools.	list some safety precautions.
UNIT 2 PLANES	5.1.2 develop a safe working attitude.	Safe working attitude	Demonstrate safe working attitudes.	exhibit safe working attitude
	5.2.1 identify parts of planes.	Identification of parts of portable planes	Demonstrate the uses of planes	identify parts of portable power planes and their functions.
	5.2.2 describe the functions of planes.	Functions of portable power planes.		
	5.2.3. differentiate between portable plane and portable router plane.	Types of portable planes: a. portable plane b. portable router	Discuss the differences and uses of the planes.	
	5.2.4 use the portable power planes	use of portable power planes	Demonstrate the use of planes Assist students to practise the use of portable planes	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 3 HAND DRILL	The student will be able to: 5.3.1 identify parts of the hand drill. 5.3.2 explain the functions of the parts of hand drill. 5.3.3 demonstrate the safe use of the hand drill.	Identification of parts of hand drill Functions of parts of hand drill. Safe use of hand drills.	Use real objects to show parts of hand drill. Discuss the functions of the parts of hand drill. Demonstrate the safe use of the hand drill.	Students to: state parts of portable hand drill and explain their functions.
UNIT 4 SANDERS	5.4.1. identify different types of sanders. 5.4.2. describe the functions of the parts. 5.4.3. demonstrate correct use of sanders.	Types of sanders: a. Belt b. Disc c. Orbital d. Drum Functions of parts of sanders Correct use of sanders	Show the types of sanders, parts, and their uses. Discuss the functions of parts of sanders Demonstrate the correct use of t sanders Assist students to practice sanding	state the parts and the uses of the various portable power tools practice sanding on wood pieces.
UNIT 5 SAWS	5.5.1 identify parts of saws. 5.5.2 differentiate between portable circular saw and jig saw.	Parts of saws Types of saws: Difference between circular saw and Jig saw.	Use charts or real saws to show parts of saws. Discuss the difference, of the saws.	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 5 (CONT'D.) SAWS UNIT 6 SPRAY GUN	The student will be able to: 5.5.2. state the functions of the parts. 5.5.4 select the appropriate saw for a specific job. 5.6.1. identify parts of the spray gun. 5.6.2. explain the functions of the parts. 5.6.3. demonstrate the safe use of the spray gun.	Functions of the parts of saws Safe use of the portable saws Identification of parts and uses of the spray gun. Functions of parts of the spray gun. Safe use of the spray gun.	Discuss the functions of parts of saws Demonstrate the safe use of the saws. Guide students to practice the use of the saws. Show parts of the spray gun to students. Discuss the parts and their functions. Demonstrate the correct use of the spray gun. Students to practise the use of the spray gun	Students to.

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SECTION 6

MENSURATION

General objectives: The student will:

1. calculate and cost the amount of materials for a job.
2. determine the total length, area, and volume of materials.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1	The student will be able to:			Students to:
ESTIMATION	6.1.1 identify parts of a job.	Identification of parts of a job	Show samples of material list to students.	given a design of a job, prepare a list of materials and indicate their quantities for the job.
	6.1.2 prepare an estimate for a job.	Calculation of total quantity of materials required for a job.	Assist students to prepare a material list for a specific job.	
UNIT 2				
COSTING	6.2.1 calculate total cost of the job.	Elements involved in costing of a job. Design of job: <ol style="list-style-type: none"> a. Materials b. Labour c. Overhead expenses d. Packaging e. Portage f. Sales expenses g. Advertising h. Net profit i. Tax 	Illustrate with a costing chart under the following headings: <ol style="list-style-type: none"> a. Description b. Quantity c. Unit cost d. Total cost e. Remarks 	prepare a costing sheet for a given job. given a design of a job and costs invoices of materials, prepare a list of materials, indicate their quantities and costs for the job.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 3 CALCULATIONS INVOLVING LINEAR, AREA, VOLUME	The student will be able to: 6.3.1 determine the total length, area and volume of materials for a job.	Determination of lengths, areas and volumes of materials for a job.	Show examples of items involving each area of the calculations. Set class work on the topics.	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 GENERATING SOLUTIONS	The student will be able to: 1.2.1 articulate series of ideas using sketches. 1.2.2 select the most appropriate solution for the problem	Generation of ideas by conducting Investigation through the following: - research - interviews - careful observation of relevant situations - other sources Generation of initial solutions Developing the selected solutions.	Assist students to generate series of ideas using sketches. Discuss findings based on the investigations for possible solutions to the problem. Guide students to analyse the facts/ideas gathered. Guide students to sketch their ideas clearly in pictorial drawing. Two or three ideas which are possible solutions to the problem must be presented.	Students to translate their ideas in isometric.
UNIT 3 PRESENTING FINAL SOLUTION	1.3.1 draw the final solution in pictorial view. 1.3.2 prepare working drawings of the final solution in either first or third angle orthographic projection.	Drawing final solution in pictorial view.: i. Isometric ii. Oblique iii. perspective Preparation of working drawings	Discuss principles of pictorial drawing as stated in the content. Guide students to practise drawing in pictorial projections. Assist student to draw the final solution of the selected and developed ideas in isometric form using the right technique. Demonstrate the principles of the first and third angle orthographic projections. Guide students to prepare their working drawings in either of the two projections NOTE: Ensure that students: - draw the front elevations, plan, end elevation and necessary sections. - make a detailed drawing of each component part - dimension their drawings.	prepare the final working drawings.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 3 (CONT'D) PRESENTING FINAL SOLUTION	The student will be able to: 1.3.3 prepare a cutting list.	Preparation of cutting list.	Show a sample of table for a cutting list to students. Demonstrate how to prepare a cutting list.	Students to:
UNIT 4 MAKING OF THE ARTIFACT	1.4.1 prepare materials using the cutting list.	Preparation of materials for the artifact.	Guide students to prepare cutting lists from their working drawings. Organize appropriate tools, equipment and materials to perform the operations. Construct the artifact.	
UNIT 5 EVALUATING THE ARTIFACT	1.4.2 construct the artifact based on the final solution.	Construction/making of the artifact.	Demonstrate the various skills where necessary for the construction. Students to make or construct the artifact.	write processes of making the artifact.
	1.5.1 test and evaluate the artifact.	Testing and evaluation of artifact. considering: - Purpose of the artifact. - specifications of artifact - whether the artifact meets the specifications. - strengths and weaknesses of artifact - areas of possible improvement - judgment as to whether artifact is excellent, good, satisfactory, poor	Discuss criteria for testing and evaluating an artifact. Assist students to do group testing and evaluation of their artifacts against the stated specifications	
	1.5.2 write an appraisal report on the artifact.	Report writing	Guide students to write evaluation report. NOTE: Emphasize objectivity in criticizing one's own work. Encourage students to make suggestions for improvement. Supervise the group activities to ensure active participation of each student in a group.	write an evaluation.

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SECTION 2

MATERIAL: TIMBER - II

General objectives: The student will:

1. appreciate surface quality of timber.
2. understand the terms relating to mechanical properties.
3. be aware of type of manufactured boards.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 SURFACE QUALITY OF TIMBER	The student will be able to: 2.1.1 identify and sketch the features on the surface.	Grain formation of timber.	Use sample species of timber as teaching aids and discuss grain orientations (straight, inter lock, wavy, diagonal etc.) texture, figure and colour of timber. Discuss the effects of conversion on the surface quality/appearance of timber	Students to: sketch various features.
UNIT 2 MECHANICAL PROPERTIES	2.2.1 explain the mechanical properties. 2.2.2 select appropriate materials for a job based on the properties.	Mechanical properties of timber: a. hardness b. strength c. elasticity d. toughness Selection of appropriate materials	Discuss with students the following mechanical properties:- a. hardness b. strength (tensile, compressive and shear) c. elasticity d. toughness Assist students to select appropriate materials for a job.	arrange a visit to plywood manufacturing factory or industry.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 3 VENEERS	The student will be able to: 2.3.1 describe the methods of cutting veneers	Methods of veneer production. a. Rotary b. Slicing (vertical and horizontal) c. Sawing.	Discuss the following methods of production:	Students to: write the production of veneer group report and discuss in class.
UNIT 4 MANU-FACTURED BOARDS	2.4.1 explain types of manufactured boards. 2.4.2 state advantages of manufactured boards over solid wood. 2.4.3 sketch types of manufactured boards.	Types of manufactured boards: a. plywood b. block board c. batten board d. laminated board e. chip board f. particle board g. hard board h. fibre board Advantages of manufactured board over solid wood Sketching types of manufactured board	Discuss the processes of manufacturing board: Show samples of manufactured boards to students. Discuss with students the economic use of wood pieces and waste from converted timber, i.e. shavings, sawdust etc. in producing some of the manufactured boards. Discuss with students the advantages of manufactured boards over solid wood: e.g. maximum strength: - obtained in large sheets - dimensional stability etc. Help students to sketch manufactured board	sketch sections of various boards. state and explain advantages of manufacturing boards over solid boards sketch types of manufactured boards.

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SECTION 3

SURFACE DECORATION (METHODS)

General objectives: The student will:

1. appreciate types of surface decoration.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 INLAYING	<p>The student will be able to:</p> <p>3.1.1 identify and sketch tools for inlaying.</p> <p>3.1.2 demonstrate method of inlaying.</p>	<p>Tools for inlaying.</p> <ol style="list-style-type: none"> a. scratch stock b. mortise and cutting gauges c. brush d. hammer e. smoothing plane <p>Method of inlaying</p>	<p>Display inlaying tools for students to identify.</p> <p>Demonstrate the procedure for inlaying.</p>	<p>sketch the inlaying tools.</p>
UNIT 2 VENEERING	<p>3.2.1 explain methods of veneering.</p> <p>3.2.2 identify and sketch veneering tools.</p> <p>3.2.3 state the uses of veneering tools.</p>	<p>Methods of veneering:-</p> <ol style="list-style-type: none"> a. hammer veneering b. caul veneering <p>veneering tools</p> <ol style="list-style-type: none"> a. straight edge b. veneer knives c. veneer saw d. veneer clamp e. tothing plane f. flat iron g. veneer hammer 	<p>Demonstrate the methods of veneering.</p> <p>Visit an industry with students to observe the uses of veneering tools.</p>	<p>sketch the veneering tools.</p> <p>practise surface veneering using odd pieces of boards.</p> <p>write group report and discuss in class</p>

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 6 MOULDINGS	The student will be able to: 3.6.1 identify the different types of mouldings.	Types of mouldings: a. round b. ovolo c. carvetto/hollow d. cyma recta/ogee e. cyma reversa f. scotia g. bead h. fluting i. reeding	Use charts/sketches to show types of mouldings.	Students to: sketch the mouldings.
UNIT 7 INCISED AND RELIEF CARVING	3.7.1 distinguish between incised and relief carving. 3.7.2 sketch carving tools 3.7.3 select appropriate tools for a specific type of carving. 3.7.4 demonstrate how to care and maintain for carving tools.	Difference between relief and incised carvings. Sketching of carving tools. Tools; a. straight and bent chisel b. straight, bent and curved gouges c. parting tool d. chip carving knife care and maintenance of carving tools	Discuss and show samples of the two types of carvings for students to differentiate. Demonstrate how to sketch the carving tools. Guide students to practise. Assist students to select appropriate tools for a type of carving. Demonstrate how to care and maintain carving tools.	make sketches to show the two types of carvings. sketches of the carving tools. practice how to care and maintain carving tools

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SECTION 4

NON-WOOD MATERIALS

General objectives: The student will:

1. recognise specified non-wood materials
2. be aware of the uses of the specified non-wood materials.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 METALS	The student will be able to: 4.1.1 state the characteristics of different types of metals. 4.1.2 classify metals into ferrous and non-ferrous.	Physical properties of metals. Colour, hardness/softness Basic chemical characteristics of different metals (melting point). Types of metals:- a) ferrous metals: i. low carbon steel ii. dead/mild steel b) non-ferrous metals: i. aluminium ii. lead iii. copper iv. tin	Discuss physical properties of metals with students. Students to make dents with centre punch on given pieces of metals to identify their hardness or softness. Show the various types of metals to students. Students to classify the various metals into ferrous and non-ferrous	Students to: state physical properties of metals. write reasons for using the two different types of metals for specific jobs.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 NAILS	The student will be able to: 4.2.1 explain the uses of different types of nails.	Types of nails: - wire nails - oval wire nails - panel pin - Veneer pin - Cut tack - Lost head - Upholstery nails - Roofing nails	Show samples of nails to student. Use charts to illustrate the types of nails. Discuss with students the uses of nails.	Students to:
UNIT 3 SCREWS	4.2.2 describe different types of nails. 4.3.1 state different types of screws. 4.3.2 state the uses of different types of screws.	Differences in nails Types of screws: - countersink - raised head - round head - Philips head - coach screw - uses of screws	Discuss reasons for using the various metals for specific jobs. Show samples of screws to students. Discuss the uses of screws	make sketches of the various nails. State types and uses of screws.
UNIT 4 PLASTICS	4.4.1 identify thermosetting and thermoplastic materials. 4.4.2 state the uses of thermosetting and thermoplastics. 4.4.3 differentiate between thermosetting and thermoplastics.	Thermosetting materials: - phenol formadehyde - (bakelited) and formica Thermoplastic materials: - polypropylene - low density polyethylene - nylon - polyvinyehloride - urea formaldehyde - polyster resin (glass fibre materials) uses of plastics: Difference between thermosetting and thermoplastics	Display samples of thermosetting and thermoplastic materials for students to identify. Discuss the uses of both types of plastics. Display samples of plastics for students to distinguish. Group students to discuss the differences between thermoplastics and thermosetting by experiment	list items made from the two types of plastics state the common properties of the two types of plastics.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 5	The student will be able to:			Students to:
GLASS	4.5.1 identify types of glasses.	Types of glass: - opaque - transparent - decorative	Display sample of types of glasses and discuss them with students	
	4.5.2 state the uses of glass.	Uses of glass. glazed doors, picture frames, windows, cabinets, louver blades.	Discuss the uses of glasses with students:	make sketches to show a glass used in a particular situation.
UNIT 6				
LEATHER	4.6.1 state the uses of leather	Uses of leather. Furniture, belts, bags etc.	Students to brainstorm and come out with the uses of leather. Discuss the uses of leather:	
	4.6.2 distinguish between natural and artificial leather.	Difference between natural and artificial leather	Show samples of leather and group students to discuss the difference between natural and artificial leather.	
UNIT 7				
ABRASIVES	4.7.1 identify types of abrasives.	Types of abrasives: a. glass paper b. garnet paper	Show and discuss samples of abrasives Discuss abrasive materials	
	4.7.2 state abrasive materials.			
	4.7.3 explain the processes of Manufacturing abrasives.	Manufacturing abrasives	Display some types of fittings as teaching aids and group students to discuss their features	
UNIT 8				
FITTINGS	4.8.1 identify types of fittings.	Type of fittings: a. locks b. hinges c. bolts d. castors e. stays f. catches g. use the fittings	State the uses of the fittings.	make sketches of the fittings.
	4.8.2 state the uses of fittings.		Demonstrate to students how to hang cabinet/cupboard doors with hinges, catches, etc.	practical demonstration

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 9 ADHESIVES	<p>The student will be able to:</p> <p>4.9.1 identify types of adhesives.</p> <p>4.9.2 state the characteristics of adhesives.</p> <p>4.9.3 describe the uses of adhesives</p> <p>4.9.4 demonstrate the methods of preparation of adhesives.</p> <p>4.9.5 apply adhesive on work pieces.</p> <p>4.9.6 observe safety precautions during application of adhesive.</p>	<p>Types of adhesives:</p> <p>a. Protein:</p> <p>i. animal</p> <p>ii. casein</p> <p>b. Synthetic</p> <p>i. urea</p> <p>ii. phenol</p> <p>iii. melamine formaldehydes</p> <p>c. Contact-rubber based</p> <p>Characteristics of adhesives</p> <p>Methods of preparing of adhesives.</p> <p>Animal glue - glues supplied in the form of sheets and cakes are boiled</p> <p>- glues supplied in liquid form are made ready for use</p> <p>Casein glue - mix powder with water</p> <p>Contact glue - supplied ready for use.</p> <p>Synthetic resins - mix resins with hardeners</p> <p>Application of adhesives.</p> <p>Safety precautions.</p>	<p>Discuss the various types of adhesives, characteristics, of adhesives.</p> <p>Assist students to discuss the uses of adhesives.</p> <p>Show samples of adhesives to students.</p> <p>Demonstrate preparation of adhesives with students</p> <p>Help students to use brush to apply adhesives for:</p> <ol style="list-style-type: none"> 1. bonding plastics to wood surfaces 2. jointing (students to practise) <p>Demonstrate safety precautions to be observed when using adhesives.</p>	<p>Students to:</p> <p>describe the methods of preparation of animal glue and synthetic resins.</p> <p>name the tool for applying adhesives.</p> <p>state the types of protective clothing to be worn when applying adhesives.</p>

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SECTION 5

BASIC UPHOLSTERY

General objectives: The student will:

1. acquire skills in basic upholstery.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 TOOLS	The student will be able to: 5.1.1 identify tools for upholstery work. 5.1.2 describe upholstery tools.	Types of upholstery tools: a. tack hammer b. strainer c. straight and curved needles d. tack remover e. stapler f. sewing machine g. webbing stretcher h. ripping chisel	Display upholstery tools for students to identify.	Students to: sketch the tools.
UNIT 2 MATERIALS	5.2.1 identify materials for upholstery work.	Types of upholstery materials: a. webbing b. padding c. covering d. tacking	Show samples of materials to students. Discuss the differences in the various materials.	design and make a simple job involving upholstery work.
UNIT 3 PLATFORMS	5.2.2 select a material for a specific upholstery work. 5.3.1 identify types of platforms.	Selection of materials Types of platforms a. fixed b. loose	Assist students to select upholstery materials for a job. Using models discuss types of platforms with students	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 3 PLATFORMS	The student will be able to: 5.3.2 state the functions of platform in upholstery work 5.3.3 differentiate between fixed and loose platforms. 5.3.4 select the appropriate platform for a specific job.	Functions of platforms Different types of platforms. Selection of appropriate platforms	Group students to discuss the function of a platform: Differentiate between fixed the loose platforms, Selecting the appropriate platform for a job. Students to visit an industry to observe upholstery products.	Students to: write group report and discuss in groups

SENIOR HIGH SCHOOL - YEAR 2

SECTION 6 WOODWORKING MACHINES

General objectives: The student will:

1. acquire skills in the operation of woodworking machines
2. appreciate the need for safety in the workshop.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1: SAFETY PRECAUTIONS	The student will be able to: 6.1.1 explain the habit of working safely in the workshop with the woodworking machines. 6.1.2 apply safety precautions in the use of woodworking machines.	Safe working habit at woodwork workshop. Safety measures in the use of the woodworking machines.	Assist students to discuss safe working habit at the workshop Discuss safety precautions to be observed when using woodworking machines.	Students to: Ask students to mention some of the safety measures to be observed when using the machines.
UNIT 2 SAWING MACHINES	6.2.1 identify different types of sawing machines. 6.2.2 describe the functions/uses of each machine. 6.2.3 select the appropriate machine for a specific sawing operation.	Types of sawing machines: a. circular saw bench b. Cross-cut saw c. Band saw d. Dimension saw Functions of each of the machines Selection of appropriate machine for sawing operation.	Show different types of sawing machines to students. Assist students to practise the use of the sawing machines. Note: where the machines stated are not available in the schools, teachers are advised to arrange excursions to wood industries e.g. Plywood manufacturing factories. Furniture making shops/factories. Saw mills.	practice sawing operations. Outline types of sawing machines at the woodwork shop. write reports after visits and discuss in class.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 3 PLANING MACHINES	The student will be able to: 6.3.1 differentiate between a surfacer/jointer and a thicknesser. 6.3.2 describe the functions/uses of the machines in 6.3.1 6.3.3. demonstrate correct use of planing machines.	Difference between Surfacer/Jointer and Thicknesser Functions/uses of the planing machines. Planing operations	Assist student to brainstorm and come out with the difference between the planing machines. Demonstrate the safe use of the planing machines. Assist Students to practise the use of the planing machines.	Students to: practise planing operations
UNIT 4 DRILLING MACHINE	6.4.1 identify drilling machine 6.4.2 describe and the parts and uses of the drilling machine. 6.4.4 demonstrate the safe and responsible use of the machine.	Identification drilling machine. Function of parts of drilling machine. Safe use of drilling machine	Show types of drilling machines to students. Discuss the parts and functions of drilling machine Demonstrate the safe use of the machine Guide students to practise the safe use of the drilling machine.	
UNIT 5 MORTISING MACHINES	6.5.1 identify different types of mortising machine. 6.5.2 demonstrate the uses of the mortising machines.	Types of mortising machines: a. chisel b. Chain c. Horizontal borer Using the mortising machine.	Discuss the types, of the mortising machines. Demonstrate the safe use of the mortising machines.	demonstrate the operations performed on the various machines.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 6 SHAPING MACHINES	The student will be able to: 6.6.1 identify different types of shaping machines. 6.6.2 state the functions of the parts of the machines. 6.6.3 select the appropriate machine for a specific shaping work	Types of shaping machines: a. Lathe b. Spindle moulder c. Router d. Drum sander e. Jig saw Selection of machine for a specific work.	Discuss types, parts and their uses of shaping machines. Demonstrate safe uses of shaping machines. Guide students to practise with the shaping machine.	Students to:
UNIT 7 GRINDING MACHINE	6.7.1 identify types of grinding machine 6.7.2 identify parts of the grinding machine 6.7.3 describe the functions of the parts of the machine. 6.7.4 select the right type of grinding wheel for use	Types of grinding machine. Identification of the parts of the grinding machine. Functions of the parts of the grinding machine. Selection of the right type of grinding wheel for use.	Show types of grinding machines to students Discuss the parts of the grinding machine and their uses. Discuss reasons for the selection of the wheels to be used for a specific job. Demonstrate the safe working practice.	explain safety precautions to be observed when working on the grinding wheel.

SENIOR HIGH SCHOOL - YEAR 2

SECTION 7 WOOD TURNING

General objectives: The student will:

1. acquire skills in wood turning

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 THE LATHE MACHINE	The student will be able to:			
	7.1.1 identify parts and accessories of the lathe	Identification of the parts and accessories of the lathe machine: a. Bed b. Stands c. Head stock d. Tail stock e. Tool rest f. Centres g. Face plates	Illustrate with charts the parts and accessories of the lathe machine and state their functions.	identify parts and accessories of lathe machine.
UNIT 2 TURNING TOOLS	7.1.2 use the lathe machine	Using the lathe machine	Demonstrate the use of the lathe machine Assist students to practise.	students to use the various tools.
	7.2.1 identify turning tools.	Types of turning tools: a. Scraping tools b. Cutting tools	Identify turning tools	
	7.2.2 explain uses of the tools.	Uses of turning tools	Discuss the uses of the tools under each heading.	
	7.2.3 use turning tools.	Use of turning tools	Demonstrate the uses of the turning tools.	

SENIOR HIGH SCHOOL - YEAR 3

SECTION 1

DESIGN AND MAKING – 2

General objectives: The student will:

1. Construct an artifact based on designing principles

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 DESIGN	The student will be able to: 1.1.1 apply the principles in designing the Artifact (Final Project)	Further work on design principles - Factors affecting design: a. Fitness b. Proportion c. Material d. Construction e. Finishing f. Cost	Assist students to apply the principles to make freehand pictorial sketches of some pieces of items such as: a. Coffee tables b. Rack - books - spoon etc. c. Stools d. Bedside cabinets e. Simple lathe turned items f. any other	Students to: make freehand pictorial sketches of joints to be used in the construction of the various items.
UNIT 2 WORKING DRAWING	1.2.1 prepare working drawings. 1.2.2 prepare cutting list. 1.2.3 estimate and cost the artifact.	Preparation of working drawings Preparation of cutting list Costing of artifacts	Guide students to prepare working drawings of their chosen projects using principles of orthographic projections. Assist students to prepare cutting list and prepare estimates for materials and cost the artifact	

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 3 CONSTRUCTION	The student will be able to: 1.3.1 prepare materials (work pieces). 1.3.2 use appropriate joints for the artifact. 1.3.3 apply the appropriate finish.	Making the artifact (final project) Use of appropriate joints for making artifact. Application of finishes.	Guide students to construct their chosen artifacts. NOTE: Ensure that: a. Working drawings are related to the artifact to be constructed. b. Tools are correctly used c. Appropriate joints are used d. Sequence of operation are followed e. Safety precautions are observed f. Appropriate finishes are applied	Students to: undertake their projects.
UNIT 4 PROJECT WORK REPORT	1.4.1 prepare project work report (folio).	Report writing (Folio Preparation)	Discuss with students for approval, designs, working drawings, cutting lists and estimate for the cost of materials of their chosen projects i.e. "FOLIO".	write project work report (FOLIO) for the final project and discuss in class.

SENIOR HIGH SCHOOL - YEAR 3

SECTION 2

FINISHING AND FINISHES

General objectives: The students will:

1. provide a smooth finish to a surface.
2. apply the right type of finishing.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 SURFACE PREPARATION	The student will be able to: 2.1.1 prepare smooth surfaces using the right process.	Preparation of surfaces: a. cleaning – up b. Surface treatment	Discuss the tools and materials for cleaning-up. Discuss processes and materials for surface treatment. Demonstrate the processes such. as: planning, scraping, glass papering, filling, staining, bleaching, spraying and polishing. Ensure that students use the specified methods of finishing for all constructed artifacts.	Students to: practise surface preparation.
UNIT 2 FINISHES	2.2.1 identify different types of finishes. 2.2.2 state general characteristics of different types of finishes.	Types of finishes: a. Lacquers b. Vanishes c. Paints d. Laminated Plastics. e. Polishes Characteristics of finishes.	Discuss types of finishes including their uses, characteristics, and application. Discuss the characteristics of the various types of finishes	Ask oral questions on finishes.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 2 (CONT'D.) FINISHES	The student will be able to: 2.2.3 explain the uses of different types of finishes. 2.2.4 apply the right type of finishes to items. 2.2.5 apply safety precautions when finishing.	Uses of finishes Application of finishes Safety in the use of finishes	Students to apply finishes to their projects. Demonstrate methods of applying finish.	(Final Project work continues)

SENIOR HIGH SCHOOL - YEAR 3

SECTION 3

SHAPING AND WOOD BENDING

General objectives: The student will:

1. acquire the skills for bending and shaping wood

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 METHODS OF SHAPING AND BENDING WOOD	The student will be able to: 3.1.1 identify different methods of shaping and bending wood. 3.1.2 describe the different methods of shaping and bending wood. 3.1.3 select and demonstrate the appropriate method for a job in hand.	Types of shaping and bending wood: a. Sawn shapes from solid wood. b. Shaping by lamination c. Shaping by curved bending Description of methods of shaping and bending. Appropriate tools /formers for shaping and bending.	Students to brainstorm to come out with the various type/methods of shaping and bending Discuss methods of shaping and bending wood. Show tools and formers for shaping and bending to students Ensure safe use of tools and equipment and appropriate adhesives. Demonstrate the methods of shaping and bending.	Students to: explain with sketches, the process of bending a solid piece of wood.

SENIOR HIGH SCHOOL - YEAR 3

SECTION 4 MASS PRODUCTION

General objectives: The student will:

1. understand procedures in mass production.

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 1 DESIGN	The student will be able to: 4.1.1 explain the stages of designing.	<u>Mass Production</u> <u>Stages:</u>	Group students to discuss the stages of designing (application)	Students to:
UNIT 2 WORKING DRAWING	4.2.1 describe the procedures in working drawing.	a. Design and working drawings (From drawing office). b. Proto-type c. Preparation of workshop rod/setting out d. Cutting list e. Selection of materials f. Preparation of materials operational sequence	Discuss the various stages in mass production as outlined in the content. Organize visits to furniture industries.	assign a job to practise division of labour.
UNIT 3 SELECTION AND PRE-PARATION OF MATERIALS (USING MACHINES)	4.2.2 differentiate between working drawing and workshop rod. 4.2.3 prepare cutting list. 4.3.1 explain the sequence of operation (flow line) in preparation of materials. 4.3.2 select suitable- materials for the a job.	Difference between working drawing and workshop rod. - Preparation of cutting list. - Sequence of operation - Selection of materials	Guide students to prepare cutting list Demonstrate the correct methods of preparing materials for a given job. Guide students to select appropriate materials for a job.	write group report and discuss in class

UNIT	SPECIFIC OBJECTIVES	CONTENT	TEACHING AND LEARNING ACTIVITIES	EVALUATION
UNIT 4 MARKING-OUT	The student will be able to: 4.4.1 explain transfer of positions of members from the workshop rod onto the work pieces.	g. Marking out (use templates Production of parts (use jigs and fixtures where necessary)	Demonstrate the procedures for marking out using the workshop rod	Students to: mark out work pieces using the workshop rod.
UNIT 5 PRODUCTION OF PARTS	4.5.1 Prepare parts	h. Production of parts (use jigs and fixtures where applicable) i. Trial run j. Assembly line	Prepare parts for a given job	practise division of labour on the preparation of parts.
UNIT 6 ASSEMBLING	4.6.1 distinguish between trial and final assembly.	k. Trial Assembly l. Final Assembly m. Finishing	Discuss the various stages in mass production.	
UNIT 7 FINISHING	4.7.1 appreciate good finished Surfaces. 4.7.2 state reasons for good finished surfaces.	Reasons for a good finish Difference between good and poor quality work.	Organize visits to furniture industries. Guide students to discuss the importance of finished surfaces	write and submit reports. for class discussion
UNIT 8 QUALITY CONTROL	4.8.1 differentiate between good and poor quality work.	n. Quality Control (should be exercised throughout the various stages)	Students to discuss ways for differentiating between good and poor quality work	evaluate the quality of work done.

RECOMMENDED TEXTBOOKS WOODWORK

AUTHOR	TITLE	PUBLISHER
Walton, J. A.	Woodwork in theory and Practice (metric edition)	Australian Publishing company (London)
Ahaw, D. M.	Woodwork Design and Practice	Hodder and Stoughton London
King, H. E.	General Certificate Woodwork	Harrap, London
Wilacy, D. N.	Woodwork Book 1 and 2	Nelson, Lagos
Nurudeen et al	Fundamentals of woodworking	Evans, Lagos
Brazier, G. W. and N. A. Harris	Woodwork	Bungay, Richard clay.
Fierre, J. and G. Hutchings	Advanced Woodworking and Furniture Making	
CESAC	Woodwork for Senior Secondary School	
Sackey, J. N. K., Manu G. and BAAFI, R. Y.	Woodwork for Senior Secondary School.	Macmillan
Tom Pettit	Woodwork Made Simple	W. H. Allen and Co. Ltd London
John Strefford Guy McMurdo	Woodwork Technology	Schofield and Sims Ltd
Wunter, E. J.	Woodwork	Longman
Sackey, J. K. N.	Woodwork Technology	Macmillan
Hayward, C.H.	Woodworker's Pocket Book	Evans Brothers Ltd.

TOOLS

1. Rip saw
2. Cross-cut saw
3. Panel saw
4. Tenon saw
5. Dovetail saw
6. Coping saw
7. Pad saw
8. Firmer chisels, 6mm, 10mm, 12mm, 15mm, 20mm
9. Bevelled-edge chisels 6mm, 10mm, 12mm, 15mm, 20mm
10. Mortise chisels. 6mm, 10mm, 12mm, 15mm and 20mm
11. Gouges (Firmer and Scribing) 6mm, 12mm, 15mm, 20mm
12. Jack plane (metal)
13. Smoothing plane (metal)
14. Plough plane
15. Rebate plane
16. Shoulder Plane
17. Block plane
18. Router plane
19. Bullnose plane
20. Compass plane
21. Spokeshave (Round and flat)
22. Oil stone and slip stones
23. Oil can
24. Brace (Ratchet)
25. Bits (auger, centre, forstner, gimlet, bradawl, countersink sizes: 6mm, 10mm, 12m, 15mm, 20mm)
26. Hand drill
27. Hand scraper
28. Folding rule/Tape measure
29. Marking gauge

30. Cutting gauge
31. Mortise gauge
32. Wing compasses
33. Marking knife
34. Sliding bevel
35. Mitre square
36. woodwork bench
37. woodwork bench vice
38. sash cramps
39. G-cramps
40. Rack cramps
41. Try square
42. Warrington hammer
43. Claw hammer
44. Mallet
45. Pincers
46. Nail punches
47. Crowbar
48. Nail cutter
49. Glass cutter
50. Files
51. Rasps

SUGGESTED WOODWORKING MACHINES

1. Cross –cut saw
2. Circular saw bench
3. Dimension saw
4. Band saw
5. Jig saw
6. Surfacer/Jointer
7. Thicknesser
8. Mortiser
9. Spindle moulder
10. Lathe
11. Sander
12. Bench grinding machine

PORTABLE POWER TOOLS

1. Plane
2. Router
3. Jig saw
4. circular saw
5. Power drill
6. Sanders (orbital, belt, disc)

MATERIALS

1. Timber
2. Adhesives
3. Abrasives
4. Nails
5. Screws
6. Finishes and Thinners
7. Plywood (different sizes)

FITTINGS

1. Hinges
2. Locks (drawer, cupboards)
3. Bolts (barrel, tower, flash)
4. Catches
5. Stays
6. Castors