# WOOD WORKING AND FURNITURE MAKING

## COURSE CONTENTS FOR 9TH CLASS

## THEORY

| Text | Scope |
|---|---|

### Chapter No.1

1. **Safety precautions and Trees (04 periods)**
   - 1.1 Safety precautions
   - 1.2 Tree
   - 1.3 Cross Section
   - 1.4 Kinds of Wood

- Explain the safety precautions
- Explain the tree and parts of tree.
- Explain the trunk cross section with diagram
- Describe the kinds of wood according to construction
- Describe the kinds of wood according to the characteristics

### Chapter No.2

2. **Wood Seasoning (03 periods )**
   - 2.1 Introduction of wood seasoning
   - 2.2 Methods of natural & artificial seasoning

- Explain the introduction of wood seasoning and its benefits
- Explain the methods of natural seasoning and artificial seasoning
- Describe the methods of chemical seasoning

### Chapter No.3

3. **Wood Defects (03 periods)**
   - 3.1 Knots
   - 3.2 Rots
   - 3.3 Shakes
   - 3.4 Wood sawing
   - 3.5 Methods of sawing

- Give the list of Knots and types of knots
- Give the list of rots, dry rots and net rots
- Explain the list of shakes with diagrams (star shakes, cup shakes, heart shakes)
- Describe the methods of sawing
- Construct diagram of straight sawing, sawing along the grains & across granges, with diagrams

### Chapter No. 4

4. **Measuring and Marking Tools (04 periods)**
   - 4.1 Measuring tools

- Describe the foot rule, measuring-tape, folding rule, inside caliper, outside

| Text | | Scope |
|---|---|---|
| | | calipers, divider, sliding, and tee bevel |
| 4.2 | Marking tools | • Explain the marking tools, try square, marking gauge, carpenter square, scriber and divider |

**Chapter No. 5**

| | | |
|---|---|---|
| 5. | **Saws (05 periods)** | |
| 5.1 | Hand saws | • Describe the hand saw and its parts |
| 5.2 | Kinds of saws | • List of kinds of saws and explain them ( cross cut saw, rip saw, tenon or back saw, dove tail saw, turning saw, coping saw, compass saw and key hole saw) |
| 5.3 | Methods of sharpening the saws | • Describe the methods of saw sharpening and saw setting |

**Chapter No. 6**

| | | |
|---|---|---|
| 6. | **Planes, Wood Chisels and Gouges (06 periods)** | |
| 6.1 | Wooden plane | • Describe the parts of wooden plane |
| 6.2 | Metallic plane | • Describe the parts of metallic plane |
| 6.3 | Kinds of planes | • Explain the kinds of planes<br>• Jack plane, jointer plan, smooth plan, block plane, rabbet plan, router plane, circular plane and spoke shave plane |
| 6.4 | Sharpening of the plane | • Explain how to sharpen a plane with diagram |
| 6.5 | Parts of chisel | • Explain the parts of chisel with diagram |
| 6.6 | Kinds of chisels | • Explain the kinds of chisels (socket chisel, frimer chisel, tang chisel and gouges) |
| 6.7 | Method of sharpening | • Give the method of sharpening of chisels |

**Chapter No.7**

| | | |
|---|---|---|
| 7. | **Geometrical &Technical Drawing (05 periods)** | |
| 7.1 | Introduction of drawing | • Describe meaning, importance and uses of technical drawing |
| 7.2 | Drawing Instruments | • Describe drawing instruments, their construction, uses and cares. |
| 7.3 | Basic and alphabet of lines | • Describe the types of basic lines<br>• Describe the types of alphabet of lines with their weight, shape and proper construction |

| Text | | Scope |
|---|---|---|
| 7.4 | Geometrical construction | • Describe angles, triangles, quadrilateral, polygons and circle elements |
| 7.5 | Free Hand sketching | • Describe the importance of sketching<br>• Describe the procedure of sketching for shapes, geometric figures and models |
| 7.6 | Multi view Drawing | • Describe the concepts of orthographic drawing.<br>• Describe the procedures to draw the Front, Side and Top Views |
| 7.7 | Pictorial Drawing | • Describe the procedure to draw the Isometric and Oblique drawing of simple shapes and models. |
| 7.8 | Wood Joints | • Describe different types of wood joints |

## WOOD WORKING AND FURNITURE MAKING

## LIST OF PRACTICALS 9TH CLASS:

### SKILL REQUIREMENT

1. **Technical Drawing**
   1 Draw basic lines and alphabet of drawing lines.
   2 Draw different types of angles, triangles, quadrilateral and polygons
   3 Draw elements of circle
   4 Sketch geometric shapes and models
   5 Draw Front, Side and Top views of simple wooden model
   6 Draw simple Isometric and Oblique Drawings of simple models
   7 Draw the different symbols relating to concerned field.

2. **Basic Training:**
   Proper working:
   Identifying and using of common measuring tools

3. Identifying and using of marking tools

4. Sawing Practice:
   1. Sawing with cross cut saw
   2. Sawing with Rip saw
   3. Sharpening and setting of saw teeth

5. Planning Practice
   1. Assembling and dismantling of plane
   2. Sharpening of iron blade

6. Joints of Wood
   Dado Joint
   Cross Lap joint
   Martise and tenon joint

   Dovetail half joint (TEE)
   Half Tee joint

   Bredle Joint
   Butt joint
   Miter joint
   Rub joint
   Dowel joint
   Groore joint
   Screw Dowel joint
   Scarp joint

## WOOD WORKING AND FURNITURE MAKING
## MACHINES USED IN WOOD WORKING

| | | |
|---|---|---|
| 1. | Planer | One No. |
| 2 | Thicknesser | One No. |
| 3 | Band Saw | One No. |
| 4 | Circular saw | One No. |
| 5 | Drill machine (Pedestal) Height 4' to 5' | One No. |
| 6 | Turning lathe size 5' (Mughal or Al-Hilal) | One No. |
| 7 | Mortise machine (Hilal) | One No. |

## LIST OF HAND TOOLS

| S.No. Name of Item | Quantity |
|---|---|
| 1. Foot Rules (China) | 40 Nos. |
| 2. Try Square (England) | 20 Nos. |
| 3. Carpenter Square(Framing Square) | 05 Nos. |
| 4. Slide Tee Bevel 8 inches | 05 |
| 5. Making Gauge 8 inches | 20 |
| 6. Mortise Gauge 8 inches | 05 |
| 7. Divider 8 inches | 10 |
| 8. Outside Caliper 8 inches | 10 |
| 9. Inside Caliper 8 inches | 10 |
| 10. Cross Cut Saw 14-18inches | 20 |
| 11. Rip Saw 14-18inches | 20 |
| 12. Tenon Saw (Back Saw) 12-14 inches | 20 |
| 13. Dovetail Saw 10 inches | 05 |
| 14. Turning Saw 14-18 inches | 05 |
| 15. Coping Saw 6-8 inches | 10 |
| 16. Compass Saw 10-12 inches | 05 |
| 17. Key Hole Saw 10-12 inches | 05 |
| 18. Jack Plane 12 inches | 20 |
| 19. Jointer Plane 18-24 inches | 10 |
| 20. Smooth Plane 8 inches | 20 |
| 21. Block Plane 6 inches | 05 |

| S.No. Name of Item | Quantity |
|---|---|
| 22. Rabbet Plane 8 inches | 05 |
| 23. Router Plane | 05 |
| 24. Circular Plane | 05 |
| 25. Spoke Shave Plane | 05 |
| 26. Socket Chisel 1/4inches, 1/2inches 1" 2" Cutting edge | 40 Nos. each |
| 27. Tang Chisel 1/8", ¼" ½" (Cutting edge) | 10 Nos. each |
| 28. Mortise Chisel ¼", ½", ¾" 1" | 20 Nos. each |
| 29. Gouges | 05 sets |
| 30. Auger Bit | 05 sets |
| 31. Twist Bit | 05 sets |
| 32. Iron Drill | 05 sets |
| 33. Gimlet Bit | 05 sets |
| 34. Straight Shanic Drill | 10 Nos. |
| 35. Taper Shank Drill | 05 Nos. |
| 36. Counter sink Bit | 10 Nos. |
| 37. Center Bit | 05 Nos. |
| 38. Handled Auger Bit | 05 Nos. |
| 39. Ratchet Brace | 05 Nos. |
| 40. Hand Drill (simple crank drill) | 05 Nos. |
| 41. Claw hammer ½" | 20 Nos. each |
| 42. Cross peen hammer | 10 Nos. |
| 43. Straight peen hammer | 05 Nos. |
| 44. Wooden mallet | 20 Nos. |
| 45. Rubber mallet | 05 Nos. |
| 46. Plastic Mallet | 05 Nos. |
| 47. Nail Puller | 05 Nos. |
| 48. Pincer | 10 Nos. |
| 49. Nail punch | 10 Nos. |
| 50. Screw Driver (Flat end) 8", 10", 12" | 10 Nos. each |
| 51. Screw driver (narrow end) 8", 10", 12" | 10 Nos. each |
| 52. Phillip screw driver 6", 8", 10" | 10 each |

| S.No. Name of Item | Quantity |
|---|---|
| 53. Ratchet screw driver (England) | 03 Nos. |
| 54. Hand scraper | 05 Nos. |
| 55. Cabinet scraper | 05 Nos. |
| 56. Half round file 10" (Brazil) | 40 Nos. |
| 57. Triangular file 4", 6", 8" | 20 Nos. each |
| 58. Round file 6", 8", 10" | 10 Nos. each |
| 59. Rasp file 10", 12" | 10 Nos. each |
| 60. Double edge saw file 8", 10" | 05 Nos. each |
| 61. Needle file Pocket size 8" | 03 sets |
| 62. Wood workers vise (imported) | 40 Nos. |
| 63. Bench vise 6" (imported) | 10 Nos. |
| 64. Hand Cramp 4', 6' | 05 Nos. each |
| 65. C clamp 6", 10" (imported) | 06 pairs each |
| 66. Parallel clamp | 06 pairs |
| 67. Work bench with vises | 10 Nos. |
| 68. Miter box | 01 No. |
| 69. Work stand | 04 Nos. |
| 70. Glue pots | 02 Nos. |
| 71. Brushes for bench cleaning | 20 Nos. |

## WOOD WORKING AND FURNITURE MAKING
## LIST OF CONSUMABLE MATERIALS
## (9TH and 10TH CLASSES)

| S.No. | Name of Items and size | Qty |
|---|---|---|
| 1. | First Aid Box with Accessories | 01 |
| 2. | Dcodar Wood | 60 Cu.feet |
| 3. | Shesham Wood | 60 Cu.feet |
| 4. | Ply wood 4" x 8" x 118" | 2 Sheet |
| 5. | Weneer 4' x 8" x ¾ | 10 Sheet |
| 6. | Sand papers 0,1,1-1/2, 1,2, No. | 30 Each Nos. |
| 7. | Umpers of all 3 colors | 3 packets each colour |
| 8. | Sprit (mathelated) | 20 liter |
| 9. | Enamel Paint | 20 liter |
| 10. | Nails ½',3/4" 1",1-1/2" 2" | 1 Kg |
| 11. | Screw ½',3/4" 1",1-1/2" 2" | 3 pkts |
| 12 | Shallac | 10 Nos |
| 13. | Sundres | 2 Kg |
| 14. | Mulmal cloth | ½ kg |
| 15 | White Glue | 30 mtr |
| 16. | Animal Glue | 10 pkts |
| 17. | Chalk Metti | 15 kg |
| 18. | Jute Brush | 20 Nos. |

## REFERENCE BOOK FOR TEACHERS

1. Wood Work, GW Brazier NA Haris, Printed in Great Britain by Flectcher & Son Ltd, Norwich

# GENERAL RECOMMENDATIONS

### *Text Book*

1. The textbook should be fully illustrated based on approved national curriculum.
2. The language used should be Urdu/English. Script should be simple and easy. Examples should be chosen from every day life wherever possible.
3. There should be uniformity in terminology in textbooks. For this purpose a glossary of uniform terminology based upon S.I. Units should be prepared and provided.
4. The Technical Terms/Terminology should not be translated as such and these should be directly written in Urdu.
5. Objective type as well as descriptive test items should be provided at the end of each chapter, which should serve as guideline for students and teachers.
6. The experiments suggested in the curriculum should be dealt with in detail in a separate Practicals' Manual. The experiments should be prescribed in an open-ended manner.
7. Since curriculum development is a continuous process, a follow-up committee should be formed to check its proper implementation and evaluation.

### *Practical Manual*

In order to maintain a uniform standard of practical activities throughout the country, Practical Manual should be prepared for the purpose. This manual should cover all the practicals in the trade indicating Title of practical, material, Tools & Instruments, Procedure, figure(s), Readings/ output data/result/conclusions and safety precautions etc. The final practical examination should be based on the activities prescribed in the curriculum.

### *Teacher's Guide*

In order to provide direction in the planning of academic activities, the Trade teacher needs some resource material to bank upon. A teacher's guide giving essential background information, knowledge, lesson schemes, objectives, teaching methodologies, motivation, conducting practical, assessment procedures etc. be prepared for the purpose and provided to the Trade teachers.

### *Workshop*

1. In order to facilitate the students to develop desired skills and competencies, it is recommended that practical activities should be carried out individually, where possible.
2. The workshop should be fully equipped as stipulated in the Curriculum. Provision should be made in school budget to purchase/replace latest tools and equipments to update the workshop.
3. Recommended consumables should be provided for practicals in reasonable quantity.

### *Evaluation of Curriculum*

It is recommended that provincial curriculum evaluation committees should be formulated on permanent basis comprising curriculum experts, teacher trainers, working technical teachers, experts, subject specialists and educationists to evaluate the shortcomings and achievements of the curriculum. The committees will be expected to remain in contact with the teachers to obtain feedback for decision making.

### *Methodology of Instruction*

Following methods of teaching may be used in technical education as considered appropriate by the teacher:

1. Project Method
2. Illustration Method
3. Investigation Method
4. Demonstration Method
5. Practice/Drill Method
6. Lecture Method
7. Assignment Method
8. Discussion (Questions & Answers) Method
9. Visit to industry
10. Tutorial

### *Characteristics of Technical Teachers*

For effective instruction, the desirable qualities of competent technical teachers should be:-

a) Good manager, facilitator, and counsellor
b) Educational background and industrial experience
c) Mastery of instructional techniques
d) Competence in the subject
e) Resourcefulness and creativeness
f) Ability to develop good personal relationship with students
g) Knowledge of performance evaluation procedures

### *Promotional Activities*

During education various co-curricula activities develop and promote interest, positive attitudes and commitment. Following activities may be utilized to promote Vocational and Technical Education:

1. Technical club
2. Bulletin Board
3. Exhibition corner
4. Display of Projects

5. Quiz Contests
6. Technical & Science exhibition
7. Technical & Science Fair
8. Technical & Science Olympiad etc.

***Assessment of Student Achievement***

The procedure in vogue for evaluation is the examination. It is however, suggested that in addition to annual examination, the teachers should also evaluate class work on completion of each lesson/unit followed by periodic tests in the subject. Besides periodic and annual tests, skill standards prepared by National Training Bureau should be used at the end of the year.

For the purpose of classroom appraisal, individual as well as group technique may be used. The tests should comprise both short answer and objective type questions. Assessment should focus knowledge, skills, competencies, and application of concepts and ability to use the techniques and tools. It is therefore, suggested that a comprehensive scheme of knowledge, skills, competencies etc. be prepared to assess students' achievements. Rigorous efforts are needed to prepare such items. Standardized test items, be prepared for the use of the examining Boards and also for the classroom teachers.

It is to be kept in mind that students study habits are influenced by the teacher's method of testing. It is therefore, suggest that examination should be a meaningful activity.

***Recommended Scheme of Studies***

Each vocational subject is being divided into two parts – theory and practical, of 50 marks each. Geometrical and Technical Drawing is included as an essential part of the engineering trades. Questions of 20 % marks will be from Geometrical and Technical Drawing and the rest of the examination will be of 80% marks covering the whole theory and practical course of the respective trade.

Relative Marks distribution in Examination is as under:

| | | | |
|---|---|---|---|
| Theory Paper: 50 | (i) | Trade | 40 Marks |
| | (ii) | Geometrical & Technical Drawing | 10 Marks |
| Practical Paper: 50 | (i) | Trade | 40 Marks |
| | (ii) | Geometrical & Technical Drawing | 10 Marks |
| Total:100 | | | |

In the examination, the level of learning abilities to be tested may be taken as:

*Knowledge* – The ability to recall facts, nomenclature, classifications, practical techniques, laws and theories, straight-forward calculation and computation.

*Comprehension* – The ability to translate data from one form to another (verbal into mathematical, tabular or graphical and vice versa) to interpret or deduct the significance of data, and to solve problems.

*Application* – The ability to apply knowledge, experience and skill to new situations presented in a novel manner.

In the theory examination paper such questions may be set which facilitate to test learning abilities related to *Knowledge, Comprehension* and *Application*..

The questions asked may provide the students an opportunity to give reasoned arguments, to apply his knowledge to the theoretical and practical problems, or to interpret given data and apply in the situation described thereby.

In the practical examination, the student will be required to perform a practical, to use tools and equipment, to observe and tabulate data, perform calculations and draw graphs, to locate fault, to make physically required circuits, to troubleshoot and repair desired circuit/unit etc.

In the practical examination, the level of competencies and skill to be tested may be taken into five categories as:

*Imitation* - The ability to observe skill and attempt to repeat it.

*Manipulation* - The ability to perform skill according to instruction rather than observation.

*Precision* - The ability to reproduce a skill with accuracy, proportion, and exactness.

*Articulation*- The ability to combine more than one skill in sequence with harmony and consistency.

*Naturalisation* – The ability to comprehend one or more skills with ease and adapt automatically with limited physical or mental exertion.

*Use of Tools* - The skills and competencies to use tools and equipment.

Approximate percentage of marks allotted to each of the above abilities may be:-

*Knowledge*..... *20 %*
*Comprehension*..... *25 %*
*Application*..... *15 %*
*Skills and competencies*..... *40 %*