

COMPUTER HARDWARE (ORIENTATION)

COURSE CONTENTS - 10TH CLASS

THEORY

Text	Scope
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Chapter No. 1

1. **Mass Storage Devices**
(10 periods)
 - 1.1 **Storage Devices**
 - Purpose of mass storage devices.
 - List the storage devices.
 - 1.1.1 Floppy Disk /Drive
 - Describe floppy drive and its function.
 - Explain the floppy disk media and data storage.
 - 1.1.2 Hard Disk
 - Describe hard disk and its types.
 - Explain structure and function of hard disk.
 - Explain the pin configurations (master & slave)
 - 1.1.3 CD ROM
 - Describe the compact disk (CD)
 - Explains the data format on CD
 - Define the types of CD ROM derives
 - 1.1.4 Zip Drive
 - Describe the function of zip drive

Chapter No. 2

2. **Memory and Processor**
(04 periods)
 - 2.1 **Memory**
 - Define Memory
 - 2.1.1 Read Only Memory (ROM)
 - Define Read Only Memory (ROM)
 - 2.1.2 Random Access Memory (RAM)
 - Define Random Access Memory (RAM) and its types
 - Explain the function of RAM
 - 2.1.3 Central Processing Unit (CPU)
 - Define Central Processing Unit and explain the types of processor.

Chapter No. 3

3. **Mother Board**
(04 periods)
 - 3.1 Mother Boards
 - Explain the branded and unbranded mother-board.
 - 3.2 Jumpers and Cables Setting
 - Explain the jumpers setting
 - 3.3 Power Supply
 - Describe the power supply

Chapter No. 4**4. Bus and Slots
(05 periods)**

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|-----|-------------------------------|---|
| 4.1 | Function of Buses | <ul style="list-style-type: none">• Define the Bus and Slots.• Explain the function of buses |
| 4.2 | Function of Slots | <ul style="list-style-type: none">• Explain the function of slots. |
| 4.3 | Interface Cards and its types | <ul style="list-style-type: none">• Explain interface and list the types of interface cards. |
| 4.4 | Modem | <ul style="list-style-type: none">• Explain modem and its functions |
| 4.5 | TV Tuner Card | <ul style="list-style-type: none">• Explain TV Tuner Card and its functions |

Chapter No. 5**5. Network and Communication
(04 periods)**

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|-----|-----------------|---|
| 5.1 | Networking | <ul style="list-style-type: none">• Explain the Networking |
| 5.2 | Typology | <ul style="list-style-type: none">• Explain different typologies |
| 5.3 | Type of Network | <ul style="list-style-type: none">• Explain different type of network |

Chapter No. 6**6. Operating Systems
(03 periods)**

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|-----|--------------------------|--|
| 6.1 | Operating System | <ul style="list-style-type: none">• Explain operating system |
| 6.2 | Disk Operating System | <ul style="list-style-type: none">• Explain Disk Operating System (DOS)• Common commands of DOS |
| 6.3 | Windows Operating System | <ul style="list-style-type: none">• Explain concepts of Window system |

COMPUTER HARDWARE (ORIENTATION)
LIST OF PRACTICALS - 10TH CLASS

1. Installation of Floppy Disk Drive
2. Installation of CD-drive
3. Installation of CD-Writer
4. Installation of Mother Board
5. Data Bus and its Connections
6. Installation of Ram
7. Processor installation
8. Processor Fan installation
9. View of cards
10. Auto Configuration and Defaults
11. Bios Setup Configuration
12. Display card operation and its installation
13. Sound card operation and its installation
14. Multimedia Checking
15. Fax modem operation and its installation
16. Network interface card operation and installation
17. TV tuner card operation & installation
18. Computer assembling
19. Computer disassembling
20. Prepare boot able /Startup Disk
21. Transfer booting system
22. Power on self test
23. Fdisk
24. Disk Defragmentation
25. Security Pass-ward setting
26. Removal of Security Pass-ward
27. Disk Formatting
28. DOS (commands)
29. Windows Installation
30. Windows (commands)
31. Installation and prerequisites of computer application package
32. Word commands and shortcut keys
33. Excel commands and shortcut keys
34. Power Point commands and shortcut keys

COMPUTER HARDWARE (ORIENTATION)
LIST OF TOOLS, INSTRUMENTS, EQUIPMENT AND CONSUMABLES

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| 1. | Hand Tools | 6 Nos. each |
| | 1.1 Screw driver set | |
| | 1.2 Plier set | |
| | 1.3 Soldering iron with stand | |
| | 1.4 Soldering wire | |
| | 1.5 Sucker for desoldering | |
| 2. | Test Instruments | 6 Nos. each |
| | 2.1 C.R.O 40 MHz (only one in lab) | |
| | 2.2 Multimeter (analog and digital) | |
| | 2.3 Logic probs. | |
| | 2.4 Contact cleaner | |
| | 2.5 Vero board/bread board | |
| | 2.6 Variable power supply (0-12 volt) | |
| | 2.7 D .T .01 | |
| 3. | Electronic Components. | 20 Nos. each |
| | 3.1 Resistors (various values , types and wattage) | |
| | 3.2 Capacitors(various values , types and voltage) | |
| | 3.3 Transistors (NpN and PnP) | |
| | 3.4 LED Different color | |
| | 3.5 Regulator IC (3,5,9,12 volts) | |
| | 3.6 Diode/Bridge (various amp) | |
| | 3.7 Transformer (6-volt, 12-volt) | |
| | 3.8 Gate Ics (74LS00, 74LS02, 74LS04) | |
| | 3.9 Flip Flop Ics(74LS74) | |
| | 3.10 Character Display | |
| 4. | PC Card of various Types. | 02 Nos. each |
| | 4.1 TV Tuner Card | |
| | 4.2 Fax Modem Card | |
| | 4.3 Sound Card | |
| | 4.4 Net Work Card | |
| | 4.5 3D SVGA Card | |
| 5. | Mother Board of various types. | 02 Nos. each |
| | 5.1 Branded Mother Board | |
| | 5.2 Unbranded Mother Board | |
| 6. | Hard Disk, Floppy Disk Drive, CD-Drive. | 06 Nos. each |
| 7. | Printers. | 02 Nos. each |
| | 7.1 Inkjet | |
| | 7.2 Laser | |
| 8. | PERSONAL Computer | 02 Nos. each |
| | 8.1 P-IV Intal original (complete multimedia) | |
| | 8.2 P-III Intal original (complete multimedia) | |

COMPUTER HARDWARE

REFERENCE BOOKS FOR TEACHERS

1. Digital Electronics: by Malik Ghulam Haider
2. Computer Repair & Maintenance: by Intel Corporation, Dr. G. M. Dabid
3. A+ Certification: published by John by John

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 deduce 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:-

<i>Knowledge</i>	20 %
<i>Comprehension</i>	25 %
<i>Application</i>	15 %
<i>Skills and competencies</i>	40 %