



**SULTANATE OF OMAN
MINISTRY OF MANPOWER
HIGHER COLLEGE OF TECHNOLOGY**

QUALITY SUB MANUAL

**Engineering & Fashion Design
Workshops**

PREPARED BY:

**Engineering Department
&
Fashion Design Department**

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Part 1

Introduction

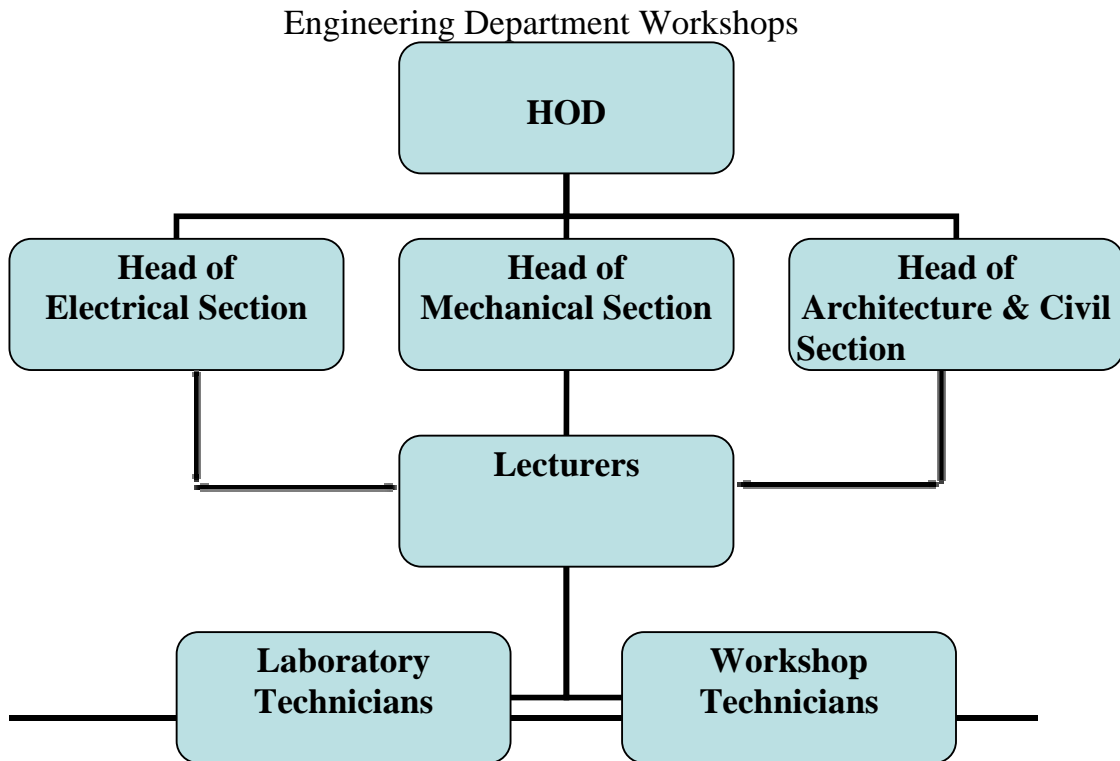
INTRODUCTION

The Engineering and Fashion Design Workshops are units of the Engineering and Fashion Design department which aim to give quality service, provide adequate number of standard quality Instruments, Machinery, and enough materials supply to students who are taking Mechanical and Pattern making courses which are commonly known as “practical” or “projects”.

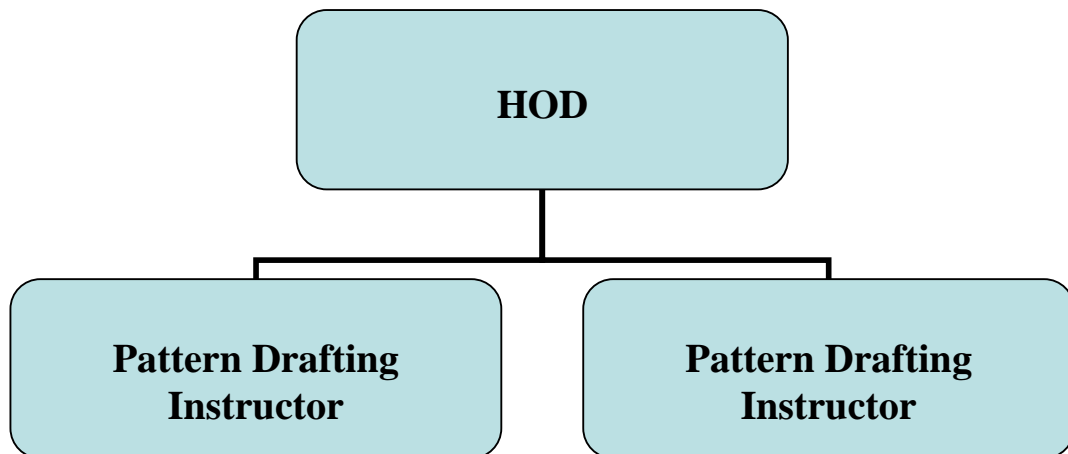
To achieve the goal set for total quality services and management in the workshops, there is a need for careful planning, documentation and implementation of **General Guidelines and Procedures**, hence, this sub manual for Engineering and Fashion Design Workshops. This sub manual will help the users of the Workshop understand the Workshop set-up, the standard operation procedures and the general guidelines in the Workshops. It also provides specific steps on the operation and maintenance of sensitive machinery and instruments.

This sub manual will also serve as a constant reminder of the potential hazards in the workshops and the general precautionary measures to avoid injury and damage to life and property. Appropriate, extensive use and implementation of what is contained in this manual will ensure smooth delivery of desired quality workshop services.

Organizational Structure



Fashion Design Workshops



Part 2

STAFF

2.1. JOB DESCRIPTION OF THE WORKSHOP SUPERVISOR

1. Coordinating and supervising the work of the teaching staff in order to achieve common objectives in line with the aim of the department, in particular and the college, in general.
2. Organizing Workshops in coordination with the teaching staff.
3. Keeping and updating inventory records of all the Instruments, machinery and materials in the workshops, in addition to implementing the instruments / machinery maintenance schedule.
4. Cooperating with teaching staff in the preparation, presentation and production of course materials.
5. Receiving materials from suppliers, making sure of their compliance with the specifications, and making entries.
6. Ensuring that health and safety procedures are followed in the workshops.

2.2 DUTIES and RESPONSIBILITIES OF WORKSHOPS TEACHING STAFF

1. Organizing Workshops in coordination with the Workshop supervisor or Head of Department.
2. Cooperating with Workshop Supervisor or Head of Department in the preparation, presentation and production of course materials.
3. Receiving materials from suppliers, in the absence of the Workshop Supervisor.
4. Ensuring that health and safety procedures are followed in workshops.
5. Preparation of materials: The workshop teaching staffs are responsible for the preparation of all materials, instruments and machinery required for assigned courses or projects/exams.
6. Maintenance of instruments and machinery: The workshop teaching staff should maintain in good working order all specialized instructional instruments and machinery; ensure regular routine damage inspection and preventive maintenance and safe storage and safe use of all instruments, machinery and materials in the workshops.

7. Workshops maintenance: Responsible for maintaining the teaching Workshop spaces before and after all classes and remove, clean and store all instruments (if applicable), and materials that were used and properly dispose waste.
8. Storage of instruments, machinery and materials: Remove and store in good condition and in an appropriate pattern tools, and fabric supplies and any other materials used in workshop exercises and classes as compatible with their safe use and proper storage procedures as designated.
9. Requisitioning: Responsible for tracking the use and consumption/inventory of all workshops consumable supplies such as electrical wires, oils, water, tools and pattern making instruments, etc. and, submitting in a timely fashion appropriate requisitions for the re-purchase of such supplies to ensure their continual availability when needed.
10. Carrying out any other tasks assigned by the head of department and or section.

A. The added duties and responsibilities of workshop staff assigned as Instrument Supervisor are as follows:

1. Inspecting and maintaining the good working condition of the instruments and machinery most especially those that require highly technical skill in using them.
2. Preparing the maintenances and calibration schedule of the instruments and machinery of the workshops.
3. Contacting, after getting the permission and approval of the HoS / HoD, the supplier / manufacturer of the machinery that he / she cannot repair or calibrate, for technical service or assistance.
4. Preparing specifications of instruments and machinery that the department is planning or requesting to purchase.
5. Checking together with the Workshop supervisor the instruments and machinery that are delivered or supplied.
6. Giving training on the proper use and maintenance of the instruments and machinery.

2.3 LABORATORY QUALITY CONTROL AUDITORS

The implementation of quality assurance and quality control in the workshops will be monitored and evaluated regularly by the workshop quality control auditors of the department who will be selected and designated by the Department Council. The lead auditor will be appointed by the Department Council. The workshop quality control auditors directly report to the Head of the Department.

The selection of workshop quality control auditors will be based on the experience, performance, integrity and impartiality of the nominees.

The responsibilities of workshop Quality Control Auditors are:

1. To check the quality of instruments, machinery and materials in the workshops.
2. To verify the accuracy and reliability of the work results.
3. To check the implementation of the health and safety policy in the workshops.
4. To check if the provisions of the workshop sub manual is properly implemented.
5. To assist if needed the Department Quality Assurance Coordinator / Officer during internal audit.
6. To suggest or propose necessary corrective and preventive actions when necessary.
7. To submit report of the result of their inspection to the Head of the Department and provide a copy the Department Quality Assurance Coordinator or Officer.

2.4 STAFF TRAINING

The teaching staff must be familiar with all the instruments and machinery and how they should be used in addition to the different operations conducted in the workshops. In this regard, they are expected to attend all training conducted when available in the workshops. The necessary training machinery related to workshop operations, and instrument shall be available in each workshop to facilitate easier, efficient and systematic functioning and operation in the workshops. Necessary

trainings through the assistance of the technical experts of the suppliers / manufacturer shall be arranged for the staff, whenever new instruments or machinery are installed or supplied in the workshops. The department or section shall also conduct an intensive induction program to new staff joining in each workshop.

2.5 TRAINING MATERIALS

The training materials include the following:

- Standard Operating Procedures (SOPs) and catalogues of various instruments and machinery.
- Workshop manuals containing instruction and procedures of various operations.
- Safety measures and precautions to be observed in the workshops.

2.6 INDUCTION PROGRAM FOR NEW STAFF

An induction program of one-week or less duration is to be conducted for the newly joined staff before taking charge in any workshop so as to get acquainted with the entire operations and functioning of the workshop. The activities of the induction program include:

- Safety work practices, safety rules and precautions to be observed in the workshop.
- Familiarization of the workshop operation and functioning (including the overall set-up, instrument organization, storage system, record keeping and updating, inventory methods etc.)
- Studying and understanding of operation and maintenance procedures of different instruments and machinery.
- Identification of the workshop supply system, power control points, switches and breakers for emergency operation etc.
- Overall understanding of the academic structure, rules and regulations, examinations and student evaluation schemes.

2.7 MAXIMIZING THE USE OF THE WORKSHOPS AND THE INSTRUMENTS/MACHINERY

The time schedule of the workshop is to be arranged in such a way that a maximum and effective utilization of the workshops facilities can be achieved and in accordance with the department timetables for practical classes and exams. The ratio of instrument / machinery to student shall be 1:3 or 1:2 preferably as much as possible. The student activities and participation in projects shall be arranged in such a way that each student will get good exposure to the complete practical aspects of the project. A user's log book for each instrument can be maintained in each workshop if necessary to record the daily activities of the students and it should be counter signed by the concerned lecturer or project supervisor. The use of highly technical instrument will not be allowed unless the trained technician is available to supervise the use of such instrument.

Part 3

WORKSHOP OPERATIONS

3.1 GENERAL GUIDELINES AND PROCEDURES

3.1.1 Workshop Class Discipline and Management

The lecturer has full responsibility of anything/everything that happens in his / her class during workshop periods, and for every workshop machinery/instrument used:

1. To prevent accidents, the lecturer with the assistance of the workshop technician is obliged to give guidelines to the students on the proper handling of the instrument, and machines.
2. To be prepared in case of emergencies, a review on how to use the fire extinguishers and to administer basic First Aid Treatment must be conducted on the first day of practical / technique / project classes;
3. For an orderly and quick distribution of materials, the Workshop Technicians/Lecturer must be given enough time to prepare. Lecturers must file their requisitions **2 – 3 days before** the start of the project. Likewise, students must be properly instructed on what and how to get the needed materials/equipment.

Note: To avoid confusion and mistakes, lecturers must file complete and specific requisitions of items needed for every experiment. **Only requisitioned items will be issued.**

4. Practical procedures must be organized logically, simply and clearly explained. Waste of time, and materials should be avoided.
5. Ten (10) minutes before dismissal time must be allotted for cleaning tables/ machines and covering them. Delicate/sensitive instruments. Group discussions must be done in moderate tone.
6. Order and cleanliness must be observed at all times. Work areas must be cleaned and wiped dry. Waste should be properly disposed and stools orderly arranged and checked before class dismissal.
7. At all times, absolutely no smoking, drinking, and eating in the Workshop.
8. Lecturers must never leave the class during Workshop periods (unless absolutely necessary and the Workshop technician/Supervisor must be informed). Students may enter/stay in the Workshop only when the lecturer is with them.

9. Lecturers must follow the time for practical exam scheduled by the Examination Committee and in the room assigned.

After giving all the necessary precautions, Workshop procedures and close supervision of the class, the lecturer is relieved of his / her responsibilities in cases of accidents or breakage the students may encounter during the performance of projects.

3.1.2 Lecturer's Requisition Slip

To facilitate teaching/learning processes, maximize time and manpower of all concerned, lecturers must:

1. File complete requisition per project needed per class submitted 2 to 3 days before starting of the project. Obtain the form from the Workshop Technician, or can be sent electronically.
2. Indicate: Number and title of the project , date and time needed, subject / class / section/course related
3. Performance of projects outside the scheduled date and time must be approved first by the Head of the Department / Head of Section / Unit Coordinator through the recommendation of the concerned Workshop supervisor.

3.1.3 Requisition slip for project students

Students and project supervisors who are conducting projects are advised to follow the following guidelines:

1. Students who are conducting project should fill-up the Requisition Slip.
2. The Requisition Slip should be checked and signed by the project supervisor.
3. The Requisition Slip should be filed 2-3 days before the actual use of the item.
4. The borrowed items will be checked by the Workshop Technician and the borrower (student) before and after use.
5. Any damaged/lost items borrowed or used should be reported immediately to the Workshop Supervisor. Breakage Slip should be properly filled-up and signed by the project supervisor.

3.1.4 Breakage Slip

1. The Breakage Slip should be filled-up and filed by the borrower for any material / instrument / machine that is broken / damaged by the group. This should be checked and counter-signed by the lecturer.
2. Breakages/losses that the students incur during the performance of the projects and 2nd requisitions for supplies will be equally charged to the student or members of the group.

3.2 ORIENTATION PROGRAM FOR NEW STUDENTS

A lecturer of new students (new intake) is required to give an orientation on the safety in the workshops on his / her first meeting with the students in practical classes by using the safety manual which is designed and prepared for such purpose. The student safety declaration form should also be answered and signed by the students.

The following are the objectives of the orientation:

1. To make the students aware of the risks and hazards involved in the workshop.
2. To enable the students to understand and apply necessary safety rules and precautions.
3. To familiarize the students with the workshop set-up, operational methodology and general procedure involved in the performance of the projects.

3.3 LABELLING AND DIRECTIONS

Information found on a label/Machine may include components, hazard or toxicity data, including a description of the hazard, and routes of entry, directions for proper use, storage, handling, and disposal, directions for treatment/first aid following accidental exposure.

3.4 HANDLING AND STORAGE OF INSTRUMENTS, MACHINERY AND MATERIALS

1. Instruments are placed at suitable locations according to the frequency of use and convenience in accessing and using them.
2. Machines are distributed in each workshop according to the practical needs, and are labelled and numbered.

Part 4
HEALTH AND SAFETY

4.1 WORKSHOP SAFETY GUIDELINES

The goal of Workshop safety guidelines is to provide the staff & students with all safety parameters, increasing their awareness while working in the workshop and to prevent potential hazards.

Safety is a collective responsibility of all the workshop users and this requires their full cooperation and involvement. Workshop staff and students should follow all the safety instructions carefully and become acquainted with the location and use of safety facilities. They should also be familiar with the hazards of the machines being used and know the safety precautions and emergency procedures in case of accident, before undertaking any work or activity in the workshops.

Machinery hazards in the workshop may be occur such as, Physical accidents (Body or body parts injuries), or electrical shocks. Many accidents may involve a combination of these hazards.

Be aware of the Safety Features inside the workshops. Locate the Fire and workshop Exits, ventilation, exhaust fans for air circulation, electrical, fire extinguishers, fume hoods and safety posters.

It is impossible to prevent all possible accidents and hazards that may happen in the workshop. However, the following guidelines will help in reducing the occurrence of accidents or unwanted incidents.

4.1.1. Objectives

The objectives of the safety guidelines are to:

1. Prevent risk
2. Detect deviations
3. Correct errors
4. Improve effectiveness
5. Reduce cost

4.1.2 Responsibilities

It is the responsibility of all Workshop Lecturers, Supervisors and Technicians to ensure that all the safety guidelines are followed by the students. Such responsibility is extended to cover the following:

1. Promoting safety by wearing the required protective garments if required for some machinery/instruments.
2. Continually watching for unsafe conditions.
3. Conducting frequent and comprehensive self-inspections.
4. Performing corrective follow-up action promptly and effectively.
5. Enforcement of rules and procedures and discipline where appropriate.
6. Review of all projects for safety prior to implementation.
7. Prohibiting intake and storage of food or beverage in the workshops.

4.2 SAFETY GUIDELINES FOR STAFF

4.2.1 Personal protective attire and conduct

1. The Workshop outfit must be worn when at all times inside the workshop except for Fashion workshops. It should be buttoned up, and correctly fitting. Cotton is better than nylon. No Staff is allowed to work in the workshop without the appropriate workshop outfit.
2. Workshop outfits should be washed frequently.
3. A proper dress code must be observed in the Fashion Workshops. Dangling neckties or scarves, unrestrained long hair, and fluffy or floppy clothing can easily get entangled in apparatus and moving machinery, etc. Remove or restrain your long necktie/scarf.
4. The Workshop Staff must be supplied with a workshop outfit, safety goggles or eyewear protection, gloves, safety footwear, dust masks to ensure safety during the work shift when necessary.
5. The hands should be protected with rubber or plastic gloves when necessary.
6. Lecturers and workshop supervisors are responsible for ensuring that the students are properly trained to handle machinery operations.
7. Do not eat, drink, or smoke in the workshop.

4.2.2 Additional Safety Guidelines for Staff

1. Staff should ensure that at the end of each class, the workshop is left as tidy as possible, ready for the arrival of the next class. The whiteboard should be cleaned. Items for “return to storage” should be left in one place, far enough not to disturb the current users of the workshop. Stools should be pushed back under the benches.
2. While the workshop is in use, both the main door and any emergency doors must be unlocked. Keep corridors and doorways clear.
3. Sinks and waste traps must be kept clean and they should be disinfected regularly.
4. Accidental spillage or breakage must be cleared up at once. Broken glass should be placed in separate marked waste containers for disposal.
5. Never put flammable material near exits. Store flammable liquids in an appropriate flammable liquid cabinet or storeroom.
6. Waste should not be allowed to accumulate in the workshop.
7. Keep workshop free from clutter, cleanup work surfaces.
8. At the end of the working hours, the workshop must be locked. All electrical, and water connections switched off and orderliness maintained.
9. Do not wedge open fire doors, and never block or obstruct doorways, corridors or stairs. Do not tamper with door closures. Do not leave drawers and doors open unnecessarily and do not trail cables across the floor.

4.3 First aid preparations and apparatus

For persons attending to others who are injured:

1. Ensure own safety / keep calm.
2. Tend to the injured person.
3. Obtain First Aid assistance.
4. Remain with injured person until assistance arrives.
5. In case of accidents or injuries, A FIRST AID KIT must be present and handy inside all workshops and placed in a labelled area, ready for the inevitable at all times.
6. In case of eye contact with chemicals, immediately bathe the eyes in cool running water: subject the eyes to a copious (but not forceful) flow of water

from the eyewash fountain or faucet; hold the eyelids thoroughly open to bathe the eyeballs and undersides of eyelids

7. All persons using the workshops should know the positions and use of the main water stopcocks and the main electrical switches and cut-out switches.

4.4 SAFETY GUIDELINES FOR STUDENTS

4.4.1 Personal protection & discipline

1. Before you enter the workshop you have to wear your protective workshop outfit.
2. Contact lenses should not be worn in the workshops.
3. High heels are prohibited in the workshops.
4. Wear safety goggles when required.
5. The female student's scarves must be tucked in and should not be dangling freely.
6. Always read the procedure of your project before coming to the workshop.
7. Do not perform unauthorized projects.
8. Never work alone in any workshop without arranging appropriate safeguards.
9. Do not play around in the workshop.
10. Do not eat, drink, or chew gum in workshops.
11. Observe good housekeeping principles in the workshops.
12. Be alert and proceed with caution at all times in the workshop. Notify the instructor immediately of any unsafe conditions you observe.

4.4.2 Sharps objects

Never put sharp objects such as needles, razor blades or broken glass into waste bins without wrapping and labelling the items carefully to protect those emptying the bins. It is preferable to use sharps containers where they are provided.

4.4.3 Reporting accidents

Report any accident (spill, breakage, etc.) or injury (cut, burn, etc.) to the lecturer immediately, no matter how trivial it may appear.

4.5 Safety Guidelines Related to Workshops (Staff and Students)

4.5.1 Physical and mental considerations

1. Are you able to concentrate and work safely?
2. Never work while tired or taking medication.
3. Try not to rush the job.
4. Be aware of your attention or lack of it to the job – repetitive cuts can lend themselves to day dreaming.
5. Avoid distractions – never surprise someone who is working with tools.
6. Standing on a concrete floor for long periods of time can tire leg & back muscles. Reduce muscle strain by laying a resilient rubber anti-fatigue mat or a piece of foam-backed carpeting on the floor in front of your work area. Wear sturdy, quality work safety shoes, and have a stool to further reduce fatigue.
7. Make sure your work surface is at a comfortable height with enough space to set out your tools and work piece.
8. A fully equipped First-Aid box should be present and readily accessible in every workshop.
9. No open flames or smoking in the workshop.
10. Evaluate the lighting conditions in your workshop: adequate lighting is necessary for the safe use of sharp hand tools or the operation of power tools. Shadows and dim lighting increase fatigue and contribute to measurement errors. Protect light fixtures from flying chips by covering them with metal window screening or wire mesh.
11. Make sure that a grounded outlet of correct amperage for your power tools is close by. This outlet should be below the level of your work table so that any electrical power cords will not interfere with work. Keep all electrical cords and extension cords free of entanglement with loose materials. Be certain all power cords are not worn or damaged but in good repair.
12. Keep the floor area clear and wipe up all spilled liquids immediately to prevent a slipping hazard.
13. Ensure that you can easily and safely work around your bench – no sharp edges or corners sticking out.
14. Store and arrange tools and equipment safely, securely, and conveniently.
15. Bag up and remove dust and debris frequently – especially rags/fabrics that are used for cleaning and finishing.

4.6 Working/Operating Machines (Staff and Students)

4.6.1 Machinery Installation

Manufacturers of machine tools incorporate various safety features many of which concern the safety of the machine itself. Machinery, plant and equipment should be inspected on delivery to ensure its safety features comply with the requirements of the Occupational Health Safety and Welfare requirements; i.e. ensure **CE** mark available.

Each machine should be inspected prior to commencement of work to ensure that all guards are correctly fitted.

Machinery, plant and equipment should be installed so as to ensure that sufficient space and safe footholds are provided around an individual machine to allow for normal operation, group instruction, adjustment and ordinary repairs.

4.6.2 Machine Controls

Machine controls should be in accordance with the following requirements:

1. Start-stop controls of the push button type easily visible, readily accessible and incorporating both no-volt and overload release;
2. Start buttons should be shrouded or recessed, coloured green and the word START/ON shall be indicated on or near the button.
3. Starting levers and handles should have a provision for automatic retention in the "off" position;
4. Stop buttons shall be long, easy to locate, coloured red and clearly marked with an identifying symbol or the word STOP/OFF.
5. Each machine shall have a stop control for disconnecting power and the control should be readily and safely accessible to the operator from the normal operating position;
6. Emergency stop buttons of the mushroom-head type, prominently and suitably labelled, should be installed at selected positions so that pressing any one of the buttons will immediately operate the circuit breaker and disconnect the supply from the machines.

4.6.3 Machine Guards

1. Use of any power machinery introduces the danger of personal injury due to pinching, cutting, tearing or crushing. This danger can be minimized by the wearing of suitable clothing and fitting suitable guards to protect both the operator and trespassers.
2. Guards should be made of imperforated material but designed so as to allow access for inspection and maintenance and should not make the operation of the machine more difficult.
3. An obvious function of a machine guard is to keep the operator's body, fingers, clothing and arms away from the danger point without impeding the operation or obstructing vision.
4. Another function, which is less obvious, is to prevent a hazardous piece of material from striking the operator e.g. a grinding wheel guard.
5. A suitable guard should not only be shaped to contain the hazard but must also be of sufficient strength to prevent the hazard from being flung out at the operator.
6. A guard may serve a further function in preventing the fitting of an unsafe attachment e.g. an oversize wheel to a grinder.
7. This aspect of guard function also applies to interlocks where the machine cannot be started or operated unless the guard is in position.

4.7 Additional Guidelines

4.7.1 Equipment left overnight

Never set up equipment to run overnight without considering the consequences of any possible supply failure. Such equipment must be designed on the “fail safe” principle. That is it will switch off if anything goes wrong.

4.7.2 Electric shock

1. The duration, magnitude and path of an electric shock are of critical importance. The most common paths are from hand to hand or from hand to opposite foot, via the heart.

2. You can prevent your body from becoming part of an electrical circuit by following these common rules. Never use an electrical appliance, which seems faulty or looks to be in poor condition. Avoid simultaneously touching an exposed metal surface whilst using an electrical appliance or piece of equipment, and always use double insulated appliances when working in wet areas.
3. If someone receives an electric shock, immediately switch off the current. If they are unconscious do not waste time looking for a hidden switch or socket; stand on dry non-conducting material, such as a rubber mat, wood, and use rubber gloves, dry clothes, dry rope or wood to push or pull them away from the source of electrocution. Medical advice should always be sought after an electric shock incident, whether or not the person lost consciousness.

4.8 Emergency evacuations

Make yourself familiar with fire escape routes and evacuation procedures in your department. There are two staircases on either side of the department that can be used in case of emergency evacuation. Notices are displayed in the college buildings. Please be aware of anyone in your working area or on your corridor who might need help during evacuations because of restricted mobility (e.g. someone with a leg in plaster) or special needs. This includes anyone with a long-term disability and individuals that might not hear an alarm. Do not use lifts. Do not re-enter buildings until the Emergency Services gives permission.

4.9 Fire precautions

1. Fire Prevention:

Fire prevention is common sense. All staff and students have an active duty to report any defect or situation involving any department of the college, which has the potential to cause fire or an evacuation. Remember that all department's workplaces are no smoking zones.

2. Discovering a Fire:

If you discover a fire, immediately raise the alarm by following the instructions at your nearest alarm point. Warn people in the immediate vicinity and evacuate the building. All open containers in the working place must be closed, gas valves turned off, fume hoods turned off, and any electrical equipment turned off.

3. Responding to a fire alarm:

Every person should be safety conscious, especially with regard to hazards related to fires. The large quantities of flammable chemicals and solvents that used on a daily basis in the college put us all in a vulnerable position and thus we should always be ready to react to fires.

4. Fire Extinguishers:

Make yourself familiar with the location of your nearest fire alarm call points (present outside the lab in the corridor) and the types, location and operation of fire extinguishers in your study areas. If you discover a small fire you should raise the alarm and, if it is safe to do so without personal risk, attempt to extinguish it with an appropriate extinguisher before leaving the area. Close all doors behind you. Water extinguishers and foam extinguishers must not be used on electrical fires. These should be tackled with dry powder or CO₂ extinguishers after disconnecting the electricity supply where possible.

It is important to note that:

Every workshop has ***Foam and Carbon dioxide (CO₂) fire extinguishers*** fixed to the wall. Majority of the workshops have smoke detectors that would splash water in-case of fire accidents.

Part 5
MAINTENANCE

5.1 ANNUAL MAINTENANCE AND CALIBRATION OF INSTRUMENTS AND MACHINERY

Towards the end of each term, after the last day of teaching and or practical examination, the workshop instruments or machineries should be refurbished and or calibrated by the instrumentation supervisor and or workshop technicians based on the manual and S.O.P of the instrument or machine. A maintenance and calibration schedule must be prepared by the workshop supervisor which must be strictly followed and implemented. The maintenance / calibration schedule shows which instruments or machines should be cleaned / calibrated at a particular week.

In case the damage or calibration error cannot be repaired or corrected by workshop supervisor and or technicians, the supplier has to be contacted upon approval of the HoS / HoD, for technical service. A technical service report will have to be prepared and signed by the authorized service man sent by the supplier. The workshop supervisor must crosscheck the report and countersigns it before it will be forwarded for notation, filing and safekeeping.

Each instrument or machine should have maintenance / calibration form similar to what is presented in the next page.



**HIGHER COLLEGE OF TECHNOLOGY
FASHION DEPARTMENT**

Instrument /Machine Maintenance Form

Instrument / Machine Name:

Cat. no.:

Supplier:

Sr.no.	Date of Maintenance	Name & Signature	Remarks
1			
2			
3			
4			
5			
9			
10			
11			
12			
13			
14			

I

5.2 Requisition Slip

Samples of requisition slips that are used in the two departments (Engineering and Fashion Design) are presented below. This should be properly filled up by the lecturer or borrower of the materials, instrument or machines in the workshops.

**FASHION DESIGN
Department**

Higher College of Technology



Practical Activity Requirements

Lecturer: Request time & date:.....

Workshop/ Room no.; Practical date & time:

No. of sets:

#	Items	Quantity/ Units	Comments

Lecturer's Signature

Technician's Signature

5.3 WORKSHOPS PURCHASES

Purchase of materials required for the workshops (including instruments, machines, apparatus materials, consumables etc.) shall be made in advance at the beginning of each academic year by projecting the future needs based on the previous practical requests and inventory list.

All requirements prepared in specified workshop requisition form, approved and counter signed by concerned HoD shall be forwarded to the purchase section of the College for further processing.

The final purchase order shall be placed after considering the quality of the product, delivery time and provisions for after sales servicing and training provisions.

5.4 RECEIVING AND INSTALLATION OF INSTRUMENTS

1. New instruments, machines and materials being supplied to the workshops shall be received by the workshop supervisor, workshop technician after verification of specified quality, quantity and working condition, in the presence of the concerned supervisor.
2. Specialized and skilled technician sent by the supplier shall do all assembly and installation works on site.
3. The newly purchased equipments shall be tested and certified for proper functioning in the presence of the supplier's representative.
4. Operating manuals, catalogues, test certificates and other documents shall be collected and kept by the assigned workshop technician.
5. The delivery note of supplier duly signed by the HoD is send to the main college store.
6. Necessary entries shall be made in stock registers and records.

5.5 UPGRADING AND REPLACEMENT OF INSTRUMENTS AND MACHINERY

The various activities and operations of the workshops shall be regularly monitored and evaluated. Appropriate proposals and suggestions for upgrading and improvement of facilities may be prepared by taking into consideration the increase demand and technological advancement.

Faulty instruments and machinery shall be repaired or replaced on periodic basis depending on the type and nature of the defect. Only skilled and authorized service technicians shall carry out the repair works. Instruments and machinery that cannot be repaired shall be replaced.

5.6 VENTILATION AND AIR –CONDITIONING SYSTEMS

The maintenance department of the college regularly checks the ventilation and air conditioning system. The workshop supervisor must be informed if there is any complaint regarding ventilation and air-conditioning so that he / she can inform the maintenance department and request for an immediate repair.

Part 6
INTERNAL INSPECTION

6.1 INTERNAL QUALITY CONTROL INSPECTION BY THE WORKSHOP QUALITY CONTROL AUDITORS

The objective of the internal quality control inspection is to monitor and record quality for all aspects of the workshops, and to make sure that the members of the staff are performing their duties according to the College By-laws.

Regular inspections are carried out every term. Result of inspection will be discussed by the workshop quality control auditors with the Department Council for appropriate corrective and preventive actions.

Feedback from the students, technicians, lectures should be gathered at the end of semester 2.

INSPECTION CHECKLIST SUMMARY
(S= Satisfactory, P= Poor, I=Intermediate)

	S	P	I
Personnel (technicians)			
1. Do they have an up- to- date training records?			
2. Have they undergone training in the following areas during the past two years?			
• Good workshop practices			
• Use of the instruments / machinery			
3. Are they knowledgeable about their job functions?			
4. Are detailed, written job descriptions available for all technicians			
Facilities			
1. Is the workshop maintained in a good state?			
2. Is the workshop neat and orderly?			
3. Is there evidence of good housekeeping?			
Instruments and Machinery			
1. Is there an approved schedule of maintenance and calibration for all instruments and machines used in the workshops?			
2. Is there evidence that it is followed?			
3. Select three major instruments/machines used in the workshop			
• Are there written procedures for operating the instruments?			
4. Are there written procedures for calibrating the instruments?			
5. Are the maintenance and calibration records up-to-date?			

Summary of Findings and Corrective Actions

Department:		
Date of Audit	Type of Audit (Pls. tick): <input type="checkbox"/> Spot <input type="checkbox"/> Regular	
Purpose of Audit:		
Area of Inspection	Findings	Recommendation / Corrective Action

Auditors:

_____	_____
Name	Signature
_____	_____
Name	Signature
_____	_____
Name	Signature

SURVEY FORMS

Survey form shall provide the feedback from the end user on the facilities and staff who are working in the workshops. The results of the surveys / evaluations will serve as the basis in **ANNUAL REVIEW AND IMPROVEMENT PLANS for the laboratories.**

Evaluation on the Management and Operation of the Workshops

Department: _____

Workshop: _____

Date: _____

Please provide feedback on the management and operation of the Workshops

S,N	Query	Please tick the appropriate box that best fits your judgement of the query				
		5	4	3	2	1
		Excellent	V.Good	Good	Average	Poor
1	Orientation program to new students					
2	Availability of Instruments, Machines and materials					
3	Labelling of Instruments, Machines and materials					
4	Standard Operating Procedure (SOP) for Instruments and Machines					
7	Cleanliness and orderliness of the workshops					
8	Availability of Safety and Hazard Symbols					
9	Use of safety clothing					
10	Adequacy of fire extinguishers and alarm					
11	Loan/ Issuance Logbook					
12	Breakages Logbook					
13	Accidents/ Emergency Logbook					
14	Action taken in case of accidents					
15	Emergency Evacuation procedure					
16	Working Condition of instruments, machines and materials					
17	Cleaning and maintenance of instruments, machines and materials					
18	Ventilation and air-conditioning system					
19	Upgrading and replacement of Instruments, machines and materials					
20	Assistance and services provided by the workshops technicians					
21	Availability of workshop technicians when needed					
22	Attitude of workshop technicians towards students and other staff					

Remarks: (Pls. use additional paper if necessary)

SAFETY SURVEY

This safety survey is being conducted to find out the staff awareness and attitude towards safety in the workshops and workplace. Moreover, it also aims to find out the staff perception on the adequacy, appropriateness and implementation of the safety procedures.

Department:	Date:
Name of staff: (optional)	Section:

(Please tick the appropriate answer)

Q.No	Question	Strongly Agree	Agree	Disagree	Strongly Disagree
1.	Our workshops are hazard free				
2.	All our students are aware of and practice the workshop safety procedures				
3.	Safety drills (fire drill, earthquake drill) and mock evacuation procedures should be conducted periodically				
4.	I am aware of the locations of first aid kit, fire extinguisher and other safety paraphernalia				
5.	I am aware of the locations of the main switches of electricity, and water				
6.	I report all incidents/accidents in the workshop to the senior technician for appropriate preventive and corrective action				
7.	I am satisfied with the procedures for reporting accidents/incidents in the workshop				
8.	I must report to the safety coordinator or safety team member any unsafe feature that I notice in the workplace or class rooms, like faulty wiring, loose whiteboards, defective appliances etc				
11.	A treatment facility for chemical waste should be constructed				
13.	The use of personal protective equipment like eye goggles, garments etc is strictly enforced in				

	the workshops				
17.	Emergency telephone numbers are clearly visible in all laboratories				
18.	Spills are cleaned up promptly				
19.	Workshops are well ventilated				
20.	Electrical cords are checked periodically for fraying or damage				
<p><i>Please feel free to write any comment or suggestions on how to improve safety in the workshops and in the workplace. Thank you.</i></p>					

APPENDICES

LIST, LOCATION AND PURPOSE OF Workshops (Engineering and Fashion Design Department)

Sr. No.	Workshop Name	Name of the Workshop/ Purpose	Location
1	PDW1	Pattern drafting workshop	Room 22
2	PDW2	Pattern drafting workshop	Room23