

Vimala College (Autonomous)
Thrissur



Department of Physics

Standard Operating Procedure of the lab

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Standard Operating Procedures of the lab (LAB)

1.0 Preparation of the lab (LAB)

1. Equipments and chemicals for the lab are purchased from time to time as per the requirements.
2. Request with list of major and minor equipments to be purchased for the academic year is given to the Principal by the Head of the Department (HoD).
3. After appropriate tendering/quotation the purchase committee decide the purchase of the required items and is made available in the lab.

The purchased items are entered in the stock register and numbered and handed over to the laboratory staff by the HoD.

4. The newly added items are labelled and maintained in the lab.
5. List of experiments to be carried out by the concerned teacher to the laboratory staff and the various apparatus for the experiments are set by the lab staff prior to each lab.
6. After completion of each lab class, the equipments are checked and placed in the appropriate places.

2.0 Execution of Lab Experiments (LAB)

1. Attendance is must for all experiments. Students who miss 25% (or, as per the syllabus followed) experiments shall not be permitted to write the exam.
2. Make up labs are not promoted except under unforeseen circumstances.
3. No eating or drinking is allowed during class in laboratory.
4. The grading guidelines shall be strictly followed as per the syllabus followed for each batch.
5. Each student must submit an individual report for every lab paper.
6. Cover page must include title of every experiment, page number and date.
7. Aim, apparatus, theory and principle, relevant diagrams and procedure must be recorded along with the observations, graphs (optional) and result for every experiment.
8. Error calculations must be shown in PG experiment records.
9. The students must submit attested lab records for the exam.

3.0 Performing experiments in research lab

1. Strictly follow the procedures while operating the Major equipments.
2. Step by step procedure for switching on and off the system as per the SOP to be followed.
3. Enter the details in the log book.
4. Report to the concerned faculty member or supervising guide regarding any improper functioning of the system.
5. Do not use USB to copy data. Only CD to be used.
6. Do not tamper or remove any accessories from one instrument to other without the permission of the concerned teacher in charge.
7. Keep the working place always neat and tidy.
8. Chemical mixing or material synthesis should not be performed in the air-conditioned lab.
9. Always use Fume hood for chemical synthesis.
10. Do not waste electricity, consumables and water.
11. Do not work alone in the lab without prior permission from supervisor and HoD.

4.0 The preventive and corrective measures

1. Report all accidents, injuries or breakage to the teacher in charge/ lab attendant immediately.
2. Do not perform unauthorized experiments. Get the permission of teacher in charge before you try something original.
3. Be careful when working with apparatus that may be hot. If you must pick it up, use tongs, a wet paper towel, or other appropriate holder.
4. If a thermometer breaks, inform the teacher/lab attendant immediately. Do not touch either the broken glass or the mercury with your bare skin.
5. Ask the teacher to check all electrical circuits before you turn on the power.
6. When working with electrical circuits, be sure that the current is turned off before making adjustments in the circuit.
7. Do not connect the terminals of a battery or power supply to each other with a wire. Such a wire will become dangerously hot.

8. Return all equipment, clean and in good condition, to the designated location at the end of the lab to the concerned staff. Leave your lab area cleaner than you found it.
9. Avoid skin and eye contact with all chemicals. Minimize all chemical exposures. Never leave containers of chemicals open.
10. Be vigilant of warning signs when unusual hazards, hazardous materials, hazardous equipment, or other special conditions are present.
11. Do not taste or intentionally sniff chemicals. Never consume and/or store food or beverages or apply cosmetics in areas where hazardous chemicals are used or stored.

Procedure for Conduct of Practical Exams

1.0 Planning

1. The teacher-in-charge notifies the lab admin about the subject, time and date of the exams.
2. Necessary stationary items for the exam is procured from the Controller of examination for the smooth conduct of exams after placing a request.
3. The systems and apparatus to be used for the exam are identified, checked and maintained.

2.0 Conduct

1. The lab is cleaned and kept ready for the exam.
2. The batch wise list of students is handed over to the external on the day of examination.
3. As per the instructions of external examiner the lab exam is conducted.
4. The records of the students are collected and punctured to notify that the record is valued.
5. The internal examiner and teacher in charge will be present throughout the exams to fix problems that may arise during the conduct of examination.
6. The exam papers are evaluated by the external and the marklists are prepared by the internal examiner.
7. The prepared marklists are verified and signed by both examiners.
8. The answer sheets, marklists, attendance sheets are submitted to the Controller of examinations office.
9. The unused items are also returned to the exam office.

Procedure for Project Evaluation

1.0 Planning

1. Both UG and PG projects are planned by the project supervisors concerned and the students.
2. The project guide and the students take all initiatives to carry out the project work.

2.0 Conduct

1. Project viva and presentation will be carried out along with the external practical examination as per the regulation.
2. After the conduct of project viva, the softwares are removed, the internet connectivity and flash drives are blocked and the systems are added back to the network.

SOP for the Safety measures to be followed in the lab (LAB)

1. Be always alert and attentive in the lab. Follow all written and verbal instructions. Never hesitate to ask your doubts.
2. Report all accidents, injuries or breakage to the teacher in charge/ lab attendant immediately. Also, report any equipment that you suspect is malfunctioning.
3. Avoid wearing overly-bulky or loose-fitting clothing, or dangling jewelry that may become entangled in your experimental apparatus. Pin or tie back long hair.
4. Use goggles:
 - a. when heating anything.
 - b. when using any type of projectile or laser experiments
 - c. when instructed to do so.
5. Do not perform unauthorized experiments. Get the permission of teacher in charge before you try something original.
6. Be careful when working with apparatus that may be hot. If you must pick it up, use tongs, a wet paper towel, or other appropriate holder.
7. If a thermometer breaks, inform the teacher/lab attendant immediately. Do not touch either the broken glass or the mercury with your bare skin.

8. Ask the teacher to check all electrical circuits before you turn on the power.
9. When working with electrical circuits, be sure that the current is turned off before making adjustments in the circuit.
10. Do not connect the terminals of a battery or power supply to each other with a wire. Such a wire will become dangerously hot.
11. Return all equipment, clean and in good condition, to the designated location at the end of the lab to the concerned staff. Leave your lab area cleaner than you found it.
12. Know locations of laboratory eye wash stations, fire extinguishers and emergency exit routes.
13. Avoid skin and eye contact with all chemicals. Minimize all chemical exposures. Never leave containers of chemicals open.
14. Be vigilant of warning signs when unusual hazards, hazardous materials, hazardous equipment, or other special conditions are present.
15. Do not taste or intentionally sniff chemicals. Never consume and/or store food or beverages or apply cosmetics in areas where hazardous chemicals are used or stored.
16. Wash exposed areas of the skin prior to leaving the laboratory.
17. No cell phone or ear phone usage in the active portion of the laboratories, or during experimental operations.

INSTRUCTIONS TO LABORATORY STAFF

1. Laboratory employees should have access to a chemical inventory list and relevant SOPs.
2. Access to laboratories and support areas such as stockrooms, specialized laboratories, etc. should be limited to approved personnel only.
3. All equipment should be regularly inspected for wear or deterioration.
4. All containers must have appropriate labels. Unlabeled chemicals should never be used.
5. Equipment should be maintained according to the manufacturer's requirements and records of certification, maintenance, or repairs should be maintained for the life of the equipment.
6. Designated and well-marked waste storage locations are necessary.
7. Do not pour chemicals down drains. Do NOT utilize the sewer for chemical waste disposal.
8. Perform work with hazardous chemicals in a properly working fume hood to reduce potential exposures.