



"ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षणप्रसार "

-शिक्षणमहर्षीडॉ. बापूजीसाळुंखे

**Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's
Dattajirao Kadam Arts, Science & Commerce College,
Ichalkaranji.**



Department of Physics

Short Term Course: -“Laboratory Safety and Good Laboratory practices”

(2021-2022)

Course Duration: 30 Hours

Module1: Introduction to Laboratory Safety and General Practices (Chemistry)

Duration: 7.5 hours

Course Outcome:

- Understand the importance of laboratory safety in chemistry.
- Identify common hazards and risks associated with chemical laboratories.
- Demonstrate proper handling, storage, and disposal of chemicals.
- Develop awareness of emergency procedures and first aid in a laboratory setting.

Topics:

1. Introduction to laboratory safety principles
2. Hazard identification and risk assessment
3. Chemical handling and storage
4. Emergency procedures and first aid in the laboratory

Reference Book:

- "Laboratory Safety for Chemistry Students" by Robert H. Hill Jr. and David C. Finster

Module 2: Laboratory Safety in Electronics

Duration: 7.5 hours

Course Outcome:

- Understand the unique safety concerns in electronics laboratories.
- Identify potential electrical hazards and how to mitigate them.
- Learn proper handling of electronic components and equipment.
- Demonstrate safe soldering practices.

Topics:

1. Electrical safety in the laboratory
2. Handling electronic components and equipment
3. Safe soldering techniques
4. Emergency procedures in electronics labs

Reference Book:

- "Introduction to Electronics: A Basic Approach" by Earl D. Gates

Module 3: Laboratory Safety in Physics Experiments

Duration: 7.5 hours

Course Outcome:

- Understand safety considerations specific to physics laboratories.
- Identify hazards associated with experimental setups and instruments.
- Learn about safe practices in handling optical and mechanical equipment.
- Demonstrate knowledge of emergency response in physics labs.

Topics:

1. Safety in physics laboratories
2. Hazards associated with experimental setups
3. Safe handling of optical and mechanical equipment
4. Emergency response in physics labs

Reference Book:

"Physics Laboratory Experiments" by Jerry D. Wilson and Cecilia A. Hernández-Hall

Module 4: Laboratory Safety in Computer Science Labs

Duration: 7.5 hours

Course Outcome:

- Understand the unique safety concerns in computer science laboratories.
- Identify ergonomic considerations for computer workstations.
- Learn about electrical safety related to computers and peripherals.
- Demonstrate knowledge of data security and privacy in computer labs.

Topics:

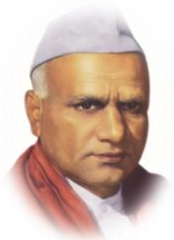
1. Safety considerations in computer science labs
2. Ergonomics in computer workstations
3. Electrical safety for computers and peripherals
4. Data security and privacy in computer labs

Reference Book:

- "Computer Science Illuminated" by Nell Dale and John Lewis

Note:

- The reference books mentioned are examples, and other suitable textbooks or resources may be used based on availability and instructor preference.
- Practical demonstrations, hands-on exercises, and case studies should be integrated throughout the course to enhance learning and application of safety principles in laboratory settings.



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Short Term Course: -“Laboratory Safety and Good Laboratory practices” (2021-2022)

Syllabus

Module 1: Introduction to Laboratory Safety and General Practices (Chemistry)

- 1. What is the primary purpose of laboratory safety in chemistry?** a. To make experiments more challenging b. To minimize the risk of accidents and injuries c. To increase the speed of experiments d. To save costs on safety equipment
- 2. What does the term "hazard identification" refer to in the context of laboratory safety?** a. Identifying potential dangers and risks b. Identifying chemical formulas c. Identifying emergency exits d. Identifying glassware in the laboratory.
- 3. In laboratory safety, what does the acronym MSDS stand for?** a. Material Safety Data Sheet b. Modern Safety Documentation System c. Laboratory Material Storage System d. Maximum Safety in Dangerous Situations
- 4. What is the correct procedure for handling and disposing of chemicals in the laboratory?** a. Pour excess chemicals down the sink b. Dispose of chemicals in the regular trash bin c. Follow proper disposal procedures and guidelines d. Leave chemicals on the lab bench for the next user

Module 2: Laboratory Safety in Electronics

- 5. Which of the following is a primary concern in electronics laboratories?** a. Chemical spills b. Electrical hazards c. Biological contamination d. Temperature variations
- 6. What is the purpose of using an ESD (Electrostatic Discharge) strap in an electronics lab?** a. To measure resistance b. To protect against static electricity c. To connect electronic components d. To clean electronic circuits
- 7. What is the recommended safety measure when soldering in an electronics lab?** a. Solder without safety equipment b. Use gloves to protect hands c. Ensure proper ventilation d. Ignore safety measures as soldering is not hazardous

8. **What should be done in case of an electrical fire in an electronics lab?** a. Use water to extinguish the fire b. Use a Class C fire extinguisher c. Disconnect the power source and use a suitable extinguisher d. Ignore the fire and continue working

Module 3: Laboratory Safety in Physics Experiments

9. **Why is it important to be aware of emergency response procedures in physics labs?** a. Physics labs are never prone to accidents b. To impress lab instructors c. Accidents can happen, and quick response is crucial d. Emergency response is not important in physics labs
10. **Which type of hazard is associated with optical equipment in a physics lab?** a. Electrical hazard b. Chemical hazard c. Mechanical hazard d. Thermal hazard
11. **What is an essential consideration for safe handling of mechanical equipment in a physics lab?** a. Wear lab coats only b. Use equipment without training c. Secure loose clothing and tie back long hair d. Ignore safety guidelines
12. **What is the correct procedure for handling broken glassware in a physics lab?** a. Pick up broken glass with bare hands b. Use a broom and dustpan to clean up c. Use gloves and a brush to clean up d. Leave broken glass for janitorial staff to clean

Module 4: Laboratory Safety in Computer Science Labs

13. **Why is ergonomic consideration important in computer science labs?** a. To impress colleagues b. To maintain a comfortable and healthy workspace c. Ergonomics is not relevant to computer labs d. To save money on furniture
14. **What does electrical safety in computer labs primarily address?** a. Proper software installation b. Safe use of electrical outlets c. Secure data transmission d. Efficient coding practices
15. **What is the purpose of data security in computer labs?** a. To slow down data processing b. To protect sensitive information from unauthorized access or damage c. Data security is irrelevant in computer labs d. To increase the risk of data breaches
16. **Which of the following is a good practice for maintaining privacy in a computer lab?** a. Share passwords with classmates b. Store sensitive information on an unsecured server c. Log out of computers when not in use d. Use the same password for all accounts

Note:

- The correct answers and explanations should be provided separately to the participants.