

**Basic Concepts in Laboratory Techniques**  
**Course Code: VCASAS008**

**Eligibility:** Any Student of SGRR University

**Course Duration:** 30 hrs

**COURSE OBJECTIVES**

1. To impart the basic knowledge about safety measures and good laboratory practices.
2. To develop understanding of basics of sterilization techniques.
3. To develop the skills to analyze different methods of preparations of solutions.
4. To impart the knowledge of handling sophisticated laboratory equipment's and instruments

**COURSE OUTCOME**

Upon successful completion of the course students are able to acquaint knowledge and develop skills of commonly used techniques in laboratory

**Module I :**

Safety measures while in Lab; Handling of chemical substances; Use of burettes, pipettes, measuring cylinders, flasks, separatory funnel, condensers, micropipettes.

**Module II:**

Washing, drying and sterilization of glassware; Drying of solvents/ chemicals; Weighing and preparation of solutions of different strengths and their dilution.

**Module III:**

Handling techniques of solutions; Preparation of different agro-chemical doses in field and pot applications; Preparation of solutions of acids; Neutralization of acid and bases; Preparation of buffers of different strengths and pH values.

**Module IV:**

Use and handling of microscope, laminar flow, vacuum pumps, viscometer, thermometer, magnetic stirrer, micro-ovens, incubators, water bath, Hot air oven, Autoclave, centrifuge, spectrophotometer etc.

**References:**

1. Furr AK. 2000. CRC Hand Book of Laboratory Safety. CRC Press.

2. Gabb MH and Latchem WE. 1968. A Handbook of Laboratory Solutions. Chemical
  3. Lippincott, W. T., Gailey, K. D., Meek, D. W., and Whitten, K. W. (1984). Experimental general chemistry. Philadelphia, PA: Saunders.
  4. Willard, H. H., Merritt, L. L., Jr., Dean, J. A., and Settle. F. A., Jr. (1988). Instrumental methods of analysis (7th Ed.). Belmont, CA: Wadsworth.
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