



Karmaveer Bhaurao Patil University,

Satara

Syllabus for

Basics of Chemical Lab Technician Skill Level-4

Under

Faculty of Science and Technology

(As per NEP 2020)

With effect from Academic Year 2024-2025

SKILL DEVELOPMENT COURSES: 2024-25

Basics of Chemical lab technician

Skill Level: 4

Department of Chemistry

1. **Title:** Basics of Chemical Lab Technician.

2. **Year of Implementation:** 2024-25

Structure of Skill Development Courses

Skill Level	Theory Hours	Practical Hours	Total Hours	Credits	No. of students in batch
4	15	30	45	02	30

Syllabus

Learning Objectives:

1. Understand the role and responsibilities required for technician.
2. Acquire the theoretical knowledge and practical skill.
3. Studies the important paper role and technical information.

Theory Syllabus (15Hrs)

Unit I- Role and Responsibilities (05)

Design and execute laboratory testing, Conduct experiments, Organize and store all chemical substances, Record and manage all data, Manage lab equipment and supplies, Manage cleanliness, orderliness and supplies, Prepare reports based on findings, Observe and interpret research findings, label and analyze samples.

Unit II- Technical Knowledge

(05)

Lab skills include creating a hypothesis, record keeping, pipetting, measuring, lab safety, calibration of lab equipments and instruments. Computer skill for chemical stock management

Practical Syllabus (30 Hrs)

List of Experiments:

(24 Hrs)

- 1) Preparation of safety data sheets for hazardous chemicals.
- 2) Handling of hazardous chemicals. (H_2SO_4 , HCl , HNO_3) etc
- 3) Storage of chemicals at workplace.
- 4) Preparation of laboratory reports.
- 5) Use of Excel sheet and MS word for chemical stock.

- 6) Calibration of measuring cylinders, Burettes and Pipettes.
- 7) Disposal of waste chemicals.
- 8) Management of Laboratory equipments.
- 9) Preparation of turmeric papers.
- 10) Maintenance of Bunsen Burner

Project/Field Visits/ Industrial Visit

(06 Hrs)

Learning Outcomes: After completion of this course students will be able to.

1. Perform laboratory activity in a scientific manner.
2. Calibrate and demonstrate the working of instruments.
3. Gain confidence to setup own lab practice.

Recommended Books:

1. Jack T. Ballinger and Gershon J. Shugar, Chemical Technicians' Ready Reference Handbook, 5th Edition, (The McGraw-Hill Companies, Inc., 2011)
2. Charlotte Bailey, Vicki Barwick, Laboratory Skills Training Handbook (ISBN 978-0-948926-25-9, LGC Limited, May 2007)

BOS Sub Committee:

1. Mr. A. D. Kadam
2. Miss. V. V. Walekar

Expert Committee:

1. Mr. D. Rupanwar, Asst. Prof., LBS college, Satara
2. Mr. Ajit Ekal, Manager, Insta Vision

Laboratories & Services Satara.



Karmaveer Bhaurao Patil University,

Satara

Syllabus for

Advances of Chemical Lab Technician Skill Level-4

Under

Faculty of Science and Technology

(As per NEP 2020)

With effect from Academic Year 2024-2025

SKILL DEVELOPMENT COURSES: 2024-25
Advances of Chemical Lab Technician.
Skill Level: 4

Department of Chemistry

1. Title: Advances of Chemical Lab Technician.

2. Year of Implementation: 2024-25

Structure of Skill Development Courses

Skill Level	Theory Hours	Practical Hours	Total Hours	Credits	No. of students in batch
4	15	30	45	2	30

Syllabus

Learning Objectives:

1. To understand Basic laboratory techniques and safety measures.
2. To understand calibration of glassware for preparation standard solutions.
3. To understand use of various glassware, Balance, and allied equipment in laboratory.
4. To develop an ideal approach in in students regarding good laboratory practices.

Theory Syllabus (20 Hrs)

Unit I-Introduction to solutions (05)

Preparation of various standard solutions with respect to precautions and safety measures by using calibrated glassware.

Disposal of Various Waste chemicals with standard operating procedure.

Unit II- Applications of various instruments in chemical laboratories (10)

Desiccators, Oven, Furnace, Ice flicker, Centrifugator , Vacuum filtration, Heating mantle, Water distillation, Rota evaporator, Parallel synthesizer etc.

Practical Syllabus (30 Hrs)

List of Experiments:

1. Preparation of 1.0N, 0.1N, 0.5N, 0.25N solutions of sodium hydroxide and oxalic acid
2. To determine physical constants of various solid organic compounds. Benzoic acid, α -naphthol, β -naphthol, Naphthalene
3. To determine physical constants of various organic liquid compounds Acetone, Aniline, Nitrobenzene
4. Cleansing of various laboratory glassware's using suitable solvents.
5. To determine the end point of titrations using ideal technique

6. Demonstration of reaction setup using parallel synthesizer
7. Extraction of solvent using Rota evaporator
8. Disposal of waste acid chemicals
9. Disposal of waste basic chemicals
10. Cleaning of various hazardous chemicals in laboratory

Recommended Books:

- 1) Vogel's textbook of practical organic chemistry. By B.S.Furniss.
- 2) Practical skills in chemistry By John R.Dean, David Holmes, Rob Reed, Allan jones
- 3) Practical organic chemistry by O.P. Agrawal
- 4) Vogel's text book of Qualitative Chemical Analysis (Longman ELBS Edition)
- 5) Experiments in Chemistry: D.V. Jahagirdar
- 6) Experimental Physical Chemistry: A.Findlay

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