



SILVER OAK UNIVERSITY
Silver Oak Institute of Science
Bachelor of Science Physics
Course Name: Lab Testing and Quality Assurance
Course Code: 2050003296
Semester: 3rd

Prerequisite:

1. Basic knowledge of Lab Testing and Quality Assurance.

Course Objectives:

1. To make students understand the basic concepts of Lab Testing and Quality Assurance.
2. To understand the principles of regulatory compliance in laboratory settings.
3. To explore the fundamentals of data analysis and interpretation in lab results.

Teaching Scheme:

Teaching Scheme				
L	T	P	Contact Hours	Credit
2	0	0	2	2

Contents:

Unit	Topics	Teaching Hours	% Weightage
1	Introduction to Quality Assurance Principles of quality assurance. Importance of quality control in various industries. Laboratory Techniques and Equipment. Proper use of laboratory equipment. Calibration and maintenance of equipment.	14	25
2	Quality Control Methods Statistical process control. Six Sigma principles. Lean manufacturing techniques. Testing Methods. Various testing methods relevant to the field of study. Sample preparation and analysis.	14	25
3	Quality Standards and Documentation ISO Standards. Introduction to ISO 9000 and ISO 17025 Implementation of ISO standards in laboratories. Documentation and Record Keeping. Record-keeping for quality control and assurance. Compliance with industry standards and regulations	14	25
4	Data Analysis and Practical Application Data Analysis and Interpretation. Data analysis techniques. Statistical tools for quality assessment. Error and Variability Analysis. Identifying and reducing errors in testing. Variability and its impact on quality. Safety and Ethics. Laboratory safety procedures. Ethical considerations in quality assurance	14	25

Course Outcomes:

Sr. No.	CO Statement	Unit
CO-1	Understand the importance of quality control, calibration, and maintenance of equipment.	1
CO-2	Perform sample preparation and analysis through the designated experiments.	2
CO-3	Comprehend quality standards and the significance of documentation.	3
CO-4	Gain knowledge of basic data analysis and its practical applications.	4

Teaching & Learning Methodology:

1. Problem based Learning.
2. Cooperative based Learning.
3. Competency based Learning.
4. Experiment centric teaching methods.

Books Recommended: -

1. Terence J. O'Hanlon, "Quality Assurance: A Guide to the Application of ISO 9001 to Process Plant Projects".
2. L. George, John Maxey, "A Quick Reference Guide to Nearly 100 Tools for Improving Quality and Speed".
3. Acheson J. Duncan, "Quality Control and Industrial Statistics".
4. Charles A. Cianfrani, Jack E. West, "ISO 9001:2015 Explained".
5. Amar Sahay and Gopal K. Kanji, "Statistical Quality Control and Improvement".
6. B. Mahadevan, "Total Quality Management: Text and Cases".

List of Open-Source Software/learning website:

1. <http://silveroakuni.ac.in/video-lecture>

CO-PO-PSO Matrix:

CO No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO-1	1	2	1	1	1	1	1	1	1	2	2	2	3
CO-2	1	2	2	2	1	1	2	1	1	2	2	2	3
CO-3	1	2	2	2	1	1	2	1	1	2	2	2	3
CO-4	1	3	2	2	1	1	2	1	1	2	3	2	3