Shram Sadhana Bombay Trust's
COLLEGE OF ENGINEERING AND TECHNOLOGY
BAMBHORI, POST BOX NO. 94, JALGAON – 425001. (M.S.)

Brief Report of Add on Course

"Instrumental Chemical Analysis"

Date and Venue / Location: 01-07 Sept. 2023, Smart Class Room No.125.

Aim / Purpose: To familiarize students with the principles and applications of instrumental chemical analysis in industrial practices and in research.

Objectives:

- To familiarize students with the principles and applications of instrumental chemical analysis.
- To enhance students understanding and skills in analytical instruments.
- To prepare students for research and industrial challenges in the field of chemical engineering.

Participant's Profile: Students from S.E & T.E. Chemical Engineering.

Description about the Program: The Department of Chemical Engineering organized an add-on course on "Instrumental Chemical Analysis" for students, aiming to enhance their knowledge and practical skills in advanced analytical techniques. This course was designed to provide participants with a comprehensive understanding of modern instrumental methods used in chemical analysis.

Feedback & Analysis: More than 80% participants rated add on course in excellent category by strongly admiring relevant content and applicability of the course for their overall employability and research skill developments.

Outcomes: The course successfully achieved its objectives, and the students gained:

- Enhanced understanding of instrumental techniques.
- Confidence to apply these skills in research and industrial projects.

Recommendation: Such research career oriented courses are more appealing to students, thus to be arranged once in a academic year.

Mr.V.P. Sangore
Course Coordinator

Dr.N.Y.Ghare
Course Coordinator

Dr.V.R.Diware
HOD (Chemical Engineering)

Head of the dept.
Chemical Engg.
College of Engg. & Tech.
Post. Box No. 94, Jalgaon.

DEPARTMENT OF CHEMICAL ENGINEERING
SSBT's COLLEGE OF ENGINEERING & TECHNOLOGY,
BAMBHORI, JALGAON

Notice

Date: 26/08/2023

All the students of SE and TE Chemical Engineering are hereby informed to attend add-on course on **"Instrumental Chemical Analysis"** from 01/09/2023 to 07/09/2023.

The venue for the course is ICT classroom No.125

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Head of the dept
HOD
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Copy to : Principal SSBT's COET

DEPARTMENT OF CHEMICAL AND BIOTECHNOLOGY ENGINEERING
SSBT'S COLLEGE OF ENGINEERING & TECHNOLOGY, JALGAON

Add On Course 2023-24 (Term I)

"Instrumental Chemical Analysis"

(From Sept. 01 to 07, 2023)

Schedule of Course

SN	Date and Day	Session –1 11.00 AM - 1.00 PM	Session -2 1.45 - 3.45 PM	Session -3 3.45 - 4.45 PM
1	01/09/2023 Friday	**Importance of Instrumental Chemical Analysis** Dr. Nikhill Y. Ghare	**Analysis Through Spectroscopy IR,UV** Mr.V.P.Sangore	**Analysis Through Spectroscopy NMR, Mass** Mr.V.P.Sangore
2	02/09/2023 Saturday	**Analysis Through Chromatography** Ms.Ashwini Badgujar	**Analysis Through Chromatography HPLC** Ms.Ashwini Badgujar	**Analysis Through Chromatography GC** Ms.Ashwini Badgujar
3	04/09/2023 Monday	**Analysis Through Thermal Energy** Mr.V.P.Sangore	**Analysis Through Thermal Energy TGA,TMA** Mr.V.P.Sangore	**Analysis Through Thermal Energy DTA,DSC** Dr. Nikhill Y. Ghare
4	05/09/2023 Tuesday	**Analysis Through X-Ray Techniques** Mr.V.P.Sangore	**Analysis Through X-Ray Techniques XFS** Dr. Nikhill Y. Ghare	**Analysis Through X-Ray Techniques XPS** Dr. Nikhill Y. Ghare
5	06/09/2023 Wednesday	**Analysis Through Microscopy** Dr. Nikhill Y. Ghare	**Analysis Through Microscopy SEM,TEM** Mr.V.P.Sangore	**Analysis Through Microscopy SPM** Dr. Nikhill Y. Ghare
6	07/09/2023 Thursday	**Analysis Through Electro - Chemical Techniques** Mr.V.P.Sangore	**Polarography** Dr. Nikhill Y. Ghare	**Electrophoresis** Mr.V.P.Sangore

Course Coordinator: Mr. V. P. Sangore
Dr.N.Y.Ghare

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ADD-ON COURSE 2023-2024 FOR S.E & T.E. CHEMICAL ENGINEERING

"Instrumental Chemical Analysis"

(From Sept. 01-07, 2023)

Syllabus

Topic : Importance of Instrumental Chemical Analysis
(Resource Person: Dr. Nikhil Y. Ghare)

- Introduction to Instrumental Chemical Analysis
- Importance and Advantages
- Key Applications
- Future Trends in Instrumental Analysis

Topic : Analysis Through Spectroscopy IR,UV
(Resource Person: Mr.V.P.Sangore)

- Definition and Range, Sources of IR Radiation
- IR Spectroscopy :Instrumentaion & Applications
- Definition and Range, Sources of UV Radiation
- UV Spectroscopy: Instrumentaion & Applications

Topic : Analysis Through Spectroscopy NMR, Mass
(Resource Person: Mr.V.P.Sangore)

- Principle of NMR spectroscopy
- NMR Spectroscopy :Instrumentaion & Applications
- Principle of Mass spectroscopy
- Mass Spectroscopy :Instrumentaion & Applications

Topic : Analysis Through Chromatography
(Resource Person: Ms.Ashwini Badgujar)

- Introduction to Chromatography
- Definition and principle of chromatography.
- Types of chromatography
- Importance and applications in qualitative and quantitative analysis.

Topic : Analysis Through Chromatography HPLC
(Resource Person: Ms.Ashwini Badgujar)

- Overview of HPLC and its components and applications
- High-pressure pump, injector, column, detector.
- Reverse-phase and normal-phase HPLC.
- Detection methods (e.g., UV-vis, fluorescence, electrochemical detection).

Topic : Analysis Through Chromatography GC
(Resource Person: Ms.Ashwini Badgujar)

- Components: Injection port, column, carrier gas, detector.
- Role of the carrier gas (e.g., helium, nitrogen).
- Common detectors (e.g., flame ionization detector, mass spectrometry detector).
- Applications of GC

Topic : Analysis Through Thermal Energy
(Resource Person: Mr.V.P.Sangore)

- Introduction to Thermal Energy
- Heat Transfer Mechanisms
- Thermal Properties of Materials
- Thermodynamics and Energy Analysis

Topic : Analysis Through Thermal Energy TGA,TMA
(Resource Person: Mr.V.P.Sangore)

- Thermogravimetric Analysis (TGA)
- Principle & applications of TGA
- Thermomechanical Analysis (TMA)
- Principle & applications of TMA

Topic : Analysis Through Thermal Energy DTA,DSC
(Resource Person: Mr.V.P.Sangore)

- Differential Thermal Analysis (DTA)
- Principle & applications of DTA
- Differential Scanning Caloriemeter (DSC)
- Principle & applications of DSC

Topic : Analysis Through X-Ray Techniques
(Resource Person: Mr.V.P.Sangore)

- Introduction to X-Ray Techniques
- Fundamentals of X-Ray Diffraction (XRD)
- Instrumentation
- Applications

Topic: Analysis Through X-Ray Techniques XFS
(Resource Person: Dr. Nikhil Y. Ghare)

- X-Ray Fluorescence Spectrometry (XFS)
- Principle
- Instrumentation
- Applications

Topic: Analysis Through X-Ray Techniques XPS
(Resource Person: Dr. Nikhil Y. Ghare)

- X-Ray Photo-emission Spectrometry (XPS)
- Principle
- Instrumentation
- Applications

Topic: Analysis Through Microscopy
(Resource Person: Dr. Nikhil Y. Ghare)

- Principles of Microscopy
- Types of Microscopy
- Instrumentation and Operation
- Applications of Microscopy

Topic: Analysis Through Microscopy SEM, TEM
(Resource Person: Mr.V.P.Sangore)

- Scanning Electron Microscopy (SEM): Principle
- Instrumentation & Applications
- Transmission Electron Microscopy (TEM)
- Instrumentation & Applications

Topic: Analysis Through Microscopy SPM
(Resource Person: Dr. Nikhil Y. Ghare)

- Scanning Probe Microscopy (SPM)
- Principle
- Instrumentation
- Applications

Topic: Analysis Through Electro - Chemical Techniques
(Resource Person: Mr.V.P.Sangore)

- Introduction
- Advantages of Electrochemical Techniques
- Applications
- Challenges and Limitations

Topic: Polorography
(Resource Person: Dr. Nikhil Y. Ghare)

- Principle
- Instrumentation
- Applications
- Disadvantages

Topic: Electrophoresis
(Resource Person: Mr.V.P.Sangore)

- Principle
- Instrumentation
- Applications
- Disadvantages

(V.P. SANGORE) (DR. N.Y. GHARE)

DEPARTMENT OF CHEMICAL & BIOTECHNOLOGY ENGINEERING

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ADD-ON COURSE 2023-24 (Term-I) for S.E. & T.E.Chemical Engineering

On

"Instrumental Chemical Analysis"

(**From Sept. 01 to 07, 2023**)

FEEDBACK FORM

Name of Participant: _____**Class:** S.E./T.E Chemical Engg.

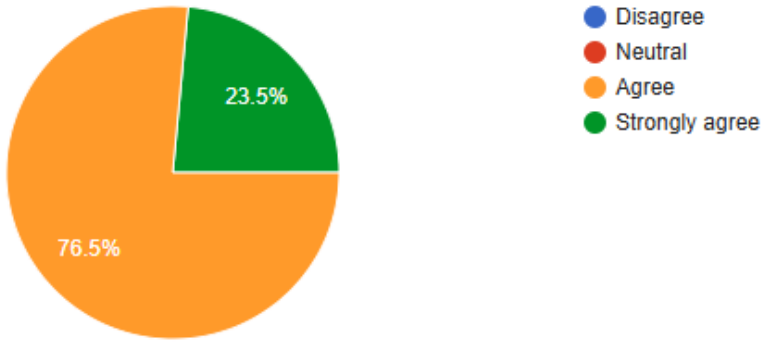
Mark ✔in appropriate box

Sr.No.	Survey Question	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
1	The content of Add-on Course was relevant					
2	All the training sessions of Add-on Course were interesting					
3	The mix of presentations and activities used in the Add-on Course was very appropriate					
4	The Audio and Video quality of Add-on Course was excellent					
5	This Add-on Course is helpful for overall development					

Date: 07/09/2023 Signature: _____

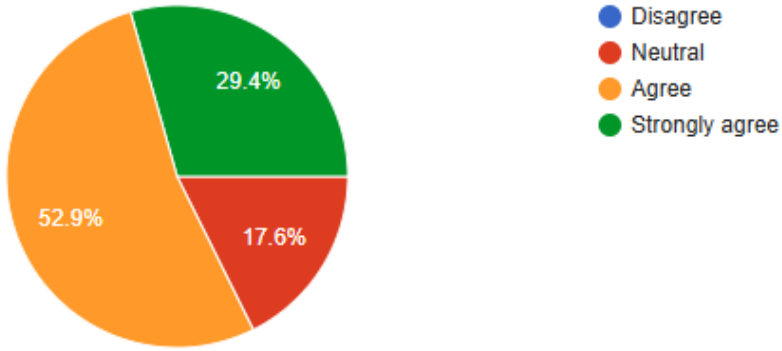
The content of Add-on Course was relevant

17 responses



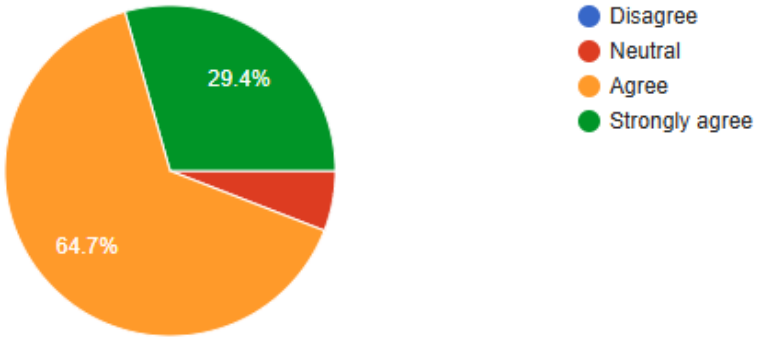
All the training sessions of Add-on Course were interesting

17 responses



The mix of presentations and hands-on training used in the Add-on Course was very appropriate

17 responses



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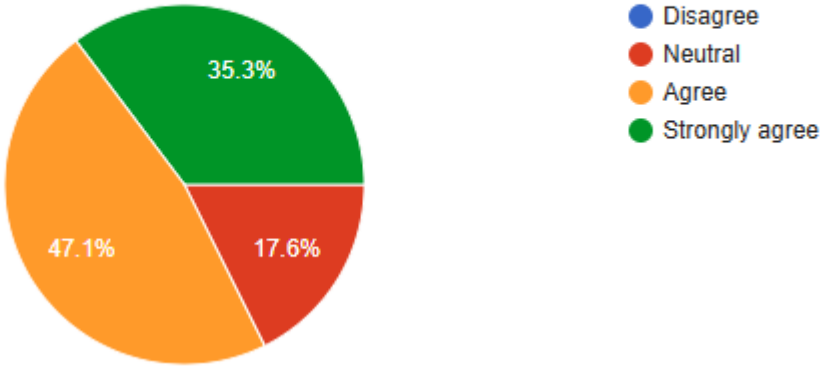

This Add-on Course is helpful for overall development

17 responses

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ADD-ON COURSE 2023-24 (Term-I) for S.E. & T.E.Chemical Engineering

On

"Instrumental Chemical Analysis"

(From Sept. 01 to 07, 2023)

LIST OF PARTICIPANTS

Sr.No.	Name of Participant	Class	01/09/23	02/09/23	04/09/23	05/09/23	06/09/23	07/09/23
1	Gohil Meetkumar Vinodbhai	S.E. Chemical						
2	Khalane Rohit Nanabhau	S.E. Chemical						
3	Mhasal Neha Shatrughna	S.E. Chemical						
4	Patil Darshan Ramesh	S.E. Chemical		A				
5	Patil Rushikesh Bharat	S.E. Chemical	A	A	A	A	A	A
6	Pawar Shraddha Chandrakant	S.E. Chemical						
7	Rajput Vedant Vijaysing	S.E. Chemical	A	A	A	A	A	A
8	Sandhanshiv Aakash Dilip	S.E. Chemical						
9	Thakare Yuti Sarojkumar	S.E. Chemical						
10	Thorat Harshal Harish	S.E. Chemical						
11	Thorat Rohan Sanjay	S.E. Chemical						
12	Bhoi Jagdish Raghunath	T.E.Chemical		A		A		A
13	Kakuste Prathamesh Sunil	T.E.Chemical	A	A	A	A	A	A
14	Koli Prem Sanjay	T.E.Chemical			A		A	
15	Panjarde Rahul Supadu	T.E.Chemical	A	A	A	A	A	A
16	Patel Dev Vasant	T.E.Chemical						
17	Patil Tejas Dilraj	T.E.Chemical	A		A			A
18	Yeole Rahul Ramesh	T.E.Chemical	A	A	A	A	A	A

Course Coordinator: Mr. V. P. Sangore

Dr.N.Y.Ghare

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