



CRITERION	II	Teaching-Learning and Evaluation
KEY INDICATOR	2.3	Teaching - Learning Process
METRIC	2.3.1	Student-centric methods such as experiential learning, participative learning and problem-solving methodologies are used for enhancing learning experiences:

## DEPARTMENT OF CHEMISTRY SF (ACADEMIC YEAR 2022-2023)

### Introduction:

The ultimate goal of student-centered approaches, such as experiential learning, participative learning, and problem-solving methodologies used in our institution, is to increase each learner's participation in the learning process while also improving the learning process's outcome. Departments help students develop skills, knowledge, attitudes, and values that create appropriate behaviour. The department offers unique programs that foster student creativity, problem-solving abilities, and active learning. The department focuses on developing students' lifetime learning skills through student-centered methodologies. The faculty members make learning interactive with students by motivating student participation in group discussion, role-play, subject quiz, news analysis, discussion, and questions and answers on current affairs.

By implementing student-centric methodologies, faculty members strive to enhance the participatory nature of the learning process. 1. Experience-Based Learning: To assist students in their experience learning, the department offers supplementary programs. To enhance students' creativity and cognitive abilities, the department disseminates the following experiential learning practices: Participatory Learning: In this type of learning, students participate in different activities such as seminars, group discussions, wallpapers, projects, and skill-based add-on courses. Students are encouraged to participate in activities where they can use their specialized technical or management skills. The department promotes the development of students' problem-solving abilities.



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Sl. No.	Participative Learning	Experiential Learning
1	Seminar and Event Participation	Industrial Visit
2	Group Discussion for Question Paper Analysis	Certificate course
3	Career Guidance and Counselling	Internship
4		Interrupter-Thathva 22

## ***PARTICIPATIVE LEARNING***

### **Participative Learning – 1**

**Programme Name:** Seminar and Event Participation-Lecture Series

**Programme Objectives:**

- To develop confidence and understand challenges & opportunities in their academic program

**Programme Report:** On Friday, August 26, from 10:00 am to 11:30 am, the Post Graduate Department of Chemistry (Self-financing), Christ College (Autonomous), Irinjalakuda (Autonomous), Thrissur, has arranged a lecture series on "Recent advances in materials science." via the Google Meet platform. The program started with silent prayer. Ms. Greeni K I, Program Coordinator Department of Chemistry (self) welcomed everyone. Dr. Vivekanandan P, coordinator of self-financing course delivered the presidential address and officially inaugurated the function.

Dr. Tania Francis began the discussion with a quick introduction of plastic and then went on to highlight the many challenges that occur in the current context. The seminar emphasized the



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importance of replacing plastic with biodegradable alternatives such as biopolymers, bio composites, HDPE, LDPE, and bio fillers. The use of areca nut leaf sheath fibres for cellulose whisker extraction and chitosan production was described. There was also a brief discussion on job opportunities and research in this sector.

### Programme Outcome:

- Attendees gained insights into cutting-edge research methodologies, including nanotechnology and driving advancements in materials engineering.
- Presenters showcased novel materials with unparalleled properties, promising enhanced functionality and durability for diverse applications.
- Discussions were centered around emphasizing the importance of eco-friendly materials and manufacturing processes in mitigating environmental impacts.

### Brochure:

POST GRADUATE DEPARTMENT OF CHEMISTRY  
(SELF FINANCING)  
**CHRIST COLLEGE (AUTONOMOUS)**  
IRINJALAKUDA, THRISSUR 680125  
Reaccredited by NAAC with 'A' grade

**RECENT ADVANCES IN MATERIALS SCIENCE**

*Lecture Series -1*

**Green Composites for  
Biomedical applications**

RESOURCE PERSON

**Dr. TANIA FRANCIS**  
ASSISTANT PROFESSOR & HEAD, DEPT. OF CHEMISTRY  
ST. JOSEPH'S COLLEGE (AUTONOMOUS) DEVAAGIRI, KOZHIKODE

COORDINATORS  
Ms. Greeni KI  
Assistant Professor, DEPT. OF CHEMISTRY  
Ms. Meril Shelly  
Assistant Professor, DEPT. OF CHEMISTRY  
Mob. 6238003675

PRINCIPAL  
Rev. Fr. Dr. Jolly Andrews CMI

26 AUGUST 2022 10:00 AM



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**Certificate:**



**Geotagged photos:**



Teachers and students attending the seminar

Attendance:

[https://docs.google.com/spreadsheets/d/1iSEGMfZuLPIhJFmpXUuB\\_mHKIOSLgxw4/edit?usp=drive\\_link&oid=103912326889588787664&rtpof=true&sd=true](https://docs.google.com/spreadsheets/d/1iSEGMfZuLPIhJFmpXUuB_mHKIOSLgxw4/edit?usp=drive_link&oid=103912326889588787664&rtpof=true&sd=true)



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## Participative Learning – 2

**Programme Name:** Group Discussion on Question Paper Analysis

### **Programme Objectives:**

- Develops confidence and time management skills through online exams or quizzes for competitive exams
- Better academic performance in semester examinations.

**Programme Report:** On 25/2/2023 second semester students solving previous year question paper. We assign students in to different groups and give different topic for each group. They took one day for solving the question and submit the answers as an assignment.

### **Programme Outcome:**

- To develop critical thinking skills, improve communication skills
- To increase self-confidence and build teamwork.

### **Geotagged photos:**



Students Discussing Previous Year Question paper



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### Participative Learning – 3

**Programme Name:** Career Guidance and Counselling

**Programme Objectives:**

- Improve oral and communication skills through seminars and group discussions.

**Programme Report:** A mock interview for first-year MSc Chemistry students was held to obtain insight into the various prospects available to students seeking careers in different fields. Sr Ann Mariya Rose, a retired faculty member from the Physics Department of SH College in Chalakudy, conducted the interview as part of the career clinic. The interview started at 10 a.m. on March 15, 2023.

**Programme outcome:**

- Acquired team-oriented or collaborative skills through problem solving group exercises and leadership qualities.

**Geotagged Photos:**



MSc Chemistry 2<sup>nd</sup> Semester students participating Career Guidance program.



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## **EXPERIENTIAL LEARNING**

### **Experiential Learning – 1**

**Programme Name:** Industrial Visit

**Programme Objective:**

- To interact and learn from experts in industry
- Learning management concepts
- Improves their job prospects

**Programme Report:** We, the Christ College (Autonomous), Irinjalakuda second semester MSc Chemistry (SF) students, visited the Sophisticated Analytical Instruments Facility (SAIF) in STIC, CUSAT, Cochin, Kerala, India, and the Central Institute of Petrochemical Engineering and Technology (CIPET), Cochin, Kerala, India, on March 10, 2023. The Department of Chemicals and Petrochemicals within the Ministry of Chemicals and Fertilizers, Government of India, is Central Institute of Petrochemical Engineering and Technology (CIPET). Students get an opportunity to familiarising with varieties of instruments and understanding the different stages of production unit at CIPET. From SAIF lab they got an opportunity to familiarising the sophisticated instruments like FT-NMR, SXRD, TGA, SEM, TEM, XRD, and CHNS analyser etc.

**Programme Outcomes:** Industrial visit allows students to have hands-on experience with genuine machinery, workstations, systems, factories, assembly lines, and more, as well as learn how the system works from industry experts. Such actual teaching is critical for students who have always learned through imagination. Students also learn about the company's production



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and operational procedures, which they can relate to base on what they have learned in the curriculum.

**Attendance Link:**

[https://docs.google.com/document/d/1Wm2yHj\\_4MyLWWnhQnBuyKWESTKwCn1Ik/edit?usp=drive\\_link&oid=103912326889588787664&rtpof=true&sd=true](https://docs.google.com/document/d/1Wm2yHj_4MyLWWnhQnBuyKWESTKwCn1Ik/edit?usp=drive_link&oid=103912326889588787664&rtpof=true&sd=true)

**Geotagged Photos:**



Entire team from Department of Chemistry (Self) participated in the Industrial visit



Mr. Ranjith K.R (Lab In charge at CIPET-Kochi) explaining about Injection Moulding to students





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Mr. Saji T.S (Lab In charge at SAIF-STIC-Kochi) explaining about NMR Spectrometer to students

## Experiential Learning – 2

**Programme Name:** Certificate Course

**Programme Objective:**

- To impart skills on use of various open-source chemistry tools that are essential for any student or researcher with chemistry as a major subject.

**Programme Report:** The course started on 25th January 2023. There were 14 M.Sc. 1st year students participated in the program and all are completed the course. The duration of the course was 30 hrs. The classes were taken as both practical and theory session. The doubt clearing session was very interesting and informative for students.

**Programme outcome:**

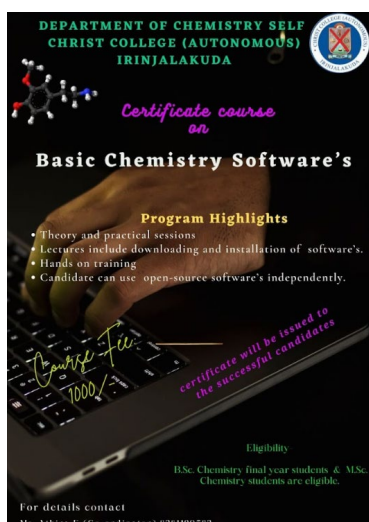
- Students expressed satisfaction with the class. Students were taught about chemistry software such as ChemsKetch, Chemdraw, Avogadro, Gaussian, and others, as well as the theoretical aspects of computational chemistry such as the z-matrix.
- Students learned how to draw chemical structures, generate names for them, retrieve information about physical properties, perform calculations, three-dimensional molecular



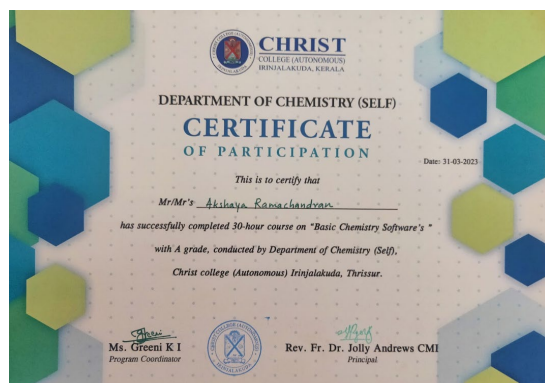
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structure calculations, spectroscopic signatures, predict chemical reaction pathways, and other parameters.

### Brochure:



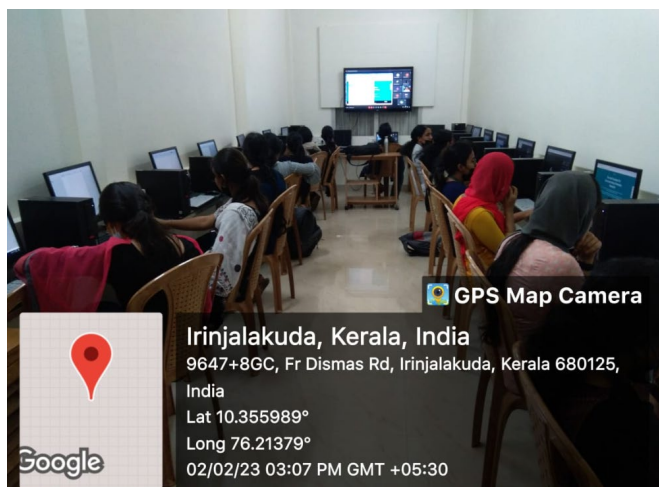
### Certificate:



### Geotagged photo:



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MSc Students attending certificate course via google meet

### Experiential Learning – 3

**Programme Name:** Internship

**Programme Objective:**

- To acquire knowledge and gain valuable experience, while also fulfilling any educational program requirements.

**Programme Report:** An internship is a short-term work experience program provided by an organization. Internships allow students to explore, learn, and choose a career path that interests them. One of our students, Mr. Indrajith K.B (MSc Chem 2021-2023 Batch), completed an internship program at the Indian Institute of Technology Palakkad.

**Certificate:**



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## Experiential Learning – 4

**Programme Name:** “Interrupter”, Tathva’22-NIT Calicut

### **Programme Objective:**

- To develop critical thinking, scientific temper and foster spirit of inquiry.

**Programme Report:** On October 22, 2022, six MSc Chemistry students competed in the 'Interrupter' competition at Tathva'22, organized by NIT Calicut. The department of chemical engineering of NIT Calicut hosted the competition at their chemistry lab. We got first and second place in the iodine clock experiment competition.

### **Programme Outcome:**

- Students were able to design and carry out scientific experiments



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- They developed problem-solving skills and apply critical thinking to scientific problems
- Understand ethical behaviour related to chemical handling, environmental issues and societal challenges.

**Brochure:**



**Certificate:**





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**Geotagged Photo:**



The prize-winning team at NIT Calicut



*Fr. Dr. Jolly Andrews*

PRINCIPAL

**Fr. Dr. Jolly Andrews**  
Associate Professor -  
In-Charge of Principal  
Christ College (Autonomous)  
Irinjalakuda