

## **DEPARTMENT OF CHEMISTRY**

### **ADVANCED LEARNING METHODS**

#### INTRODUCTION:

Advanced learning methods encompass a range of innovative and effective techniques designed to enhance learning outcomes, engage students deeply, and cater to diverse learning styles. These methods leverage technology, cognitive science, and pedagogical research to create more interactive, personalized, and efficient learning experiences. Here's an overview of some advanced learning methods that have gained prominence:

#### **METHODS WE ADOPTED HERE**

- 1. Industrial visits**
- 2. Seminar presentations**
- 3. Lab works**

**Short Bio of the Dept.** The Chemistry Department of Christ College, Irinjalakuda is one of the oldest Chemistry Departments in Kerala and started functioning with the very inception of Christ College in 1957 with B.Sc. Chemistry course. Post-graduate course in Chemistry was started in the year 1968 and in 1972 the Department was elevated to the status of a research Centre. The department ensures that basic BSc in Chemistry throws open salient avenues in terms of career options and equipping oneself for the competitive world of industry and academics. The academic and co-curricular activities of the department lay the foundation for brilliant careers in Chemistry.

#### **Advanced Learning Program : Industrial Visit1**

##### **1.INDUSTRIAL VISITS**

**Industrial visits** can certainly be considered as part of advanced learning methods, particularly in contexts where experiential learning, real-world application of theoretical knowledge, and direct engagement with industry practices are emphasized. Industrial visits bridge the gap between classroom theoretical learning and practical, real-world applications, offering students firsthand insight into working environments, operational processes, and professional practices.

**Programme Name 1: Industrial Visit** BSc of 2021-24 Batch on March 24, 2023, to SCIRE SCIENCE, KINFRA HIGH TECH PARK Main Road, HMT COLONY North Kalamassery, Kochi.

### **Programme Objectives:**

- To provide students with hands-on experience and the opportunity to observe and understand the practical application of theoretical concepts learned in classrooms.
- To help students grasp the workflow in industrial operations, including quality control, supply chain management, and production management.
- To develop analytical and observational skills as students relate on-site experiences with theoretical knowledge.
- To provide clarity on various career paths and job roles available in the industry, helping students make informed career choices.
- To boost students' enthusiasm and commitment to their field of study by demonstrating its practical relevance and impact.

### **Expected outcomes:**

- Enhanced understanding of practical aspects of the industry.
- Increased motivation and engagement in academic and practical learning.
- Broadened perspective on potential career paths and opportunities within the industry
- Strengthened relationships between academic institutions and the industry, potentially leading to collaborations, internships, and placement opportunities.

### **Programme Report:**

The Industrial Visit of BSc Chemistry (Aided) 2021-24 batch took place on 24-3-2023. We, the teachers [Teachers in charge: Dr. Digna Varghese, Dr. Arun S and Dr. Jibin A. K] and the students, started from college at 9 am and reached SCIRE SCIENCE, KINFRA HIGH TECH PARK Main Road, HMT COLONY North Kalamassery, Kochi at 10 am. We were given brief introduction about the SCIRE by Dr. M. V. Mahesh Kumar and Dr. Jomon P Jacob (Spiceor Bionutralitews).

SCIRE SCIENCE is an entity which involves in Life Science Research & Development, Publications and Conference Series. SCIRE SCIENCE stands TO KNOW THE SCIENCE by supporting the scientific minds in THINKING, LEARNING, HYPOTHESIZING, TESTING, RESEARCHING, FINDING, SHARING, PUBLISHING & IMPLEMENTING. Scire Science R & D Essentials is looking forward to attaining a vital step towards scientific excellence through incessant research in the research unit of BioNest- KRIBS, Kalamassery to provide the best products and services to the society by all means. Technical expertise of RGCB along with State-of-the-art facilities provided by BioNest-KRIBS will leverage the potential of the output coming

from Scire Science R & D Essentials. Scire Science Publications consists of Journal, Newsletter and Academic Books, is supporting researchers and authors with rapid review and processing.

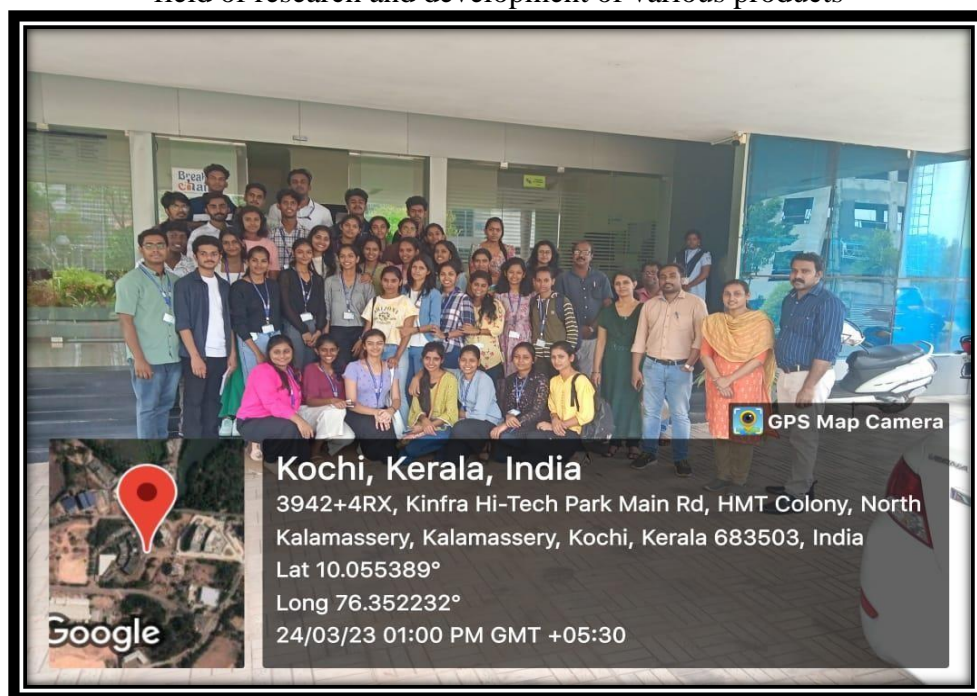
SCIRE SCIENCE is working for the goal of joining the hands those are in the field of science as contributor or receiver to get excellence in the productivity, which leads to technology transfer and outstanding deliverables through Scire Conference and workshops Series (SciCon Series). SCIRE SCIENCE is outshining by being Next Step towards Scientific excellence through global networking of scientists, Professors, Researchers, Academicians, Educationists, Policymakers and Industrialists and resourcing them at proper phase. We believe exchanging of thoughts and sharing of ideas will always open up novelty in the science and technology of medical, environmental, nutritional, geographical fields as well as engineering, entertainment and arts zones, since everything is being in science and pursuing on scientific facts. Our Scire Interactome Forum is such an initiative which focuses specifically on the above goals. Members of the forum can avail various platforms provided by Scire Science and other collaborated organisations to Scire, to express, communicate and exchange their Scientific Ideas.

During the visit we had the opportunity to see the working of various instruments used in scientific research:

- Gravity Sedimentation Centrifuge
- Phyto Chemistry Extracting
- Spray dryer
- Spectrometer
- High performance liquid chromatography
- Liquid Chromatography mass spectrometer
- PCR
- RPCR
- Genetic analyzer



Industrial visit, we got a new exposure to different types of instruments and procedure in the field of research and development of various products



Industrial Visit of the BSc Chemistry (Aided) held at SCIRE SCIENCE, located in KINFRA HIGH TECH PARK , Main Road, HMT COLONY, North Kalamassery, Kochi.

### **Programme attained Outcome:**

- Ability to relate theoretical concepts to practical applications observed during the visit.
- Understanding of industry standards, safety practices, and regulatory compliance.
- Higher engagement in academic projects and research, inspired by real-world applications and innovations observed during the visit.

Enhanced ability to think critically and solve real-world problems, with a practical understanding of industry challenges and solutions.

### **Learning Program Names:** LAB WORKS

**Lab works** lab works are inherently an integral part of advanced learning methods, especially in disciplines like sciences, engineering, medicine, and technology. Laboratory sessions provide essential hands-on experience, allowing students to apply theoretical knowledge to practical tasks, conduct experiments, and observe outcomes firsthand. This experiential learning approach is crucial for developing critical thinking, problem-solving skills, and a deeper understanding of the subject matter.

### **Program Objectives/Expected outcomes:**

- To explore the effectiveness of advanced learning in enhancing the educational experience of chemistry students through laboratory work.

### **Program Report:**

This report outlines the pivotal role of participative learning in the advancement of chemistry education. It emphasizes how incorporating interactive seminars and hands-on lab activities can foster a deeper understanding of chemical principles, enhance practical skills, and improve safety awareness among chemistry students. The report provides evidence-based strategies for implementing advanced learning and showcases the potential benefits for students' academic and professional development.

### **Program attained Outcome:**

- The unique advantages of advanced learning in mastering complex concepts, practical skills, and safety protocols in chemistry.



Mr. Neeraj Ramachandran [III BSc student] gave a demonstration session for making standard solutions in the chemistry laboratory.

### **SUMMARY**

In conclusion, lab works are a critical component of advanced learning methods, providing irreplaceable benefits in terms of practical skills, critical thinking, and deep learning. When effectively integrated into the curriculum, they prepare students for successful careers and lifelong learning in their chosen fields.

### **Learning Program Names: Seminar Presentations**

Seminar presentations can indeed be included as part of advanced learning methods. They offer a dynamic and interactive way to engage students in the learning process, fostering deep understanding, critical thinking, and various soft skills crucial for professional success. Seminar presentations involve students actively in their learning by requiring them to research a topic, organize their thoughts and findings, and present them to an audience, which can be their peers, instructors, or a wider audience.

### **Program Objectives/Expected outcomes:**

- To explore the effectiveness of advanced learning in enhancing the educational experience of chemistry students through Seminar Presentations

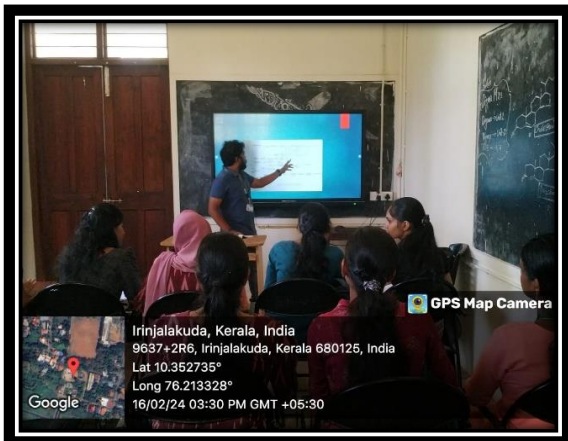
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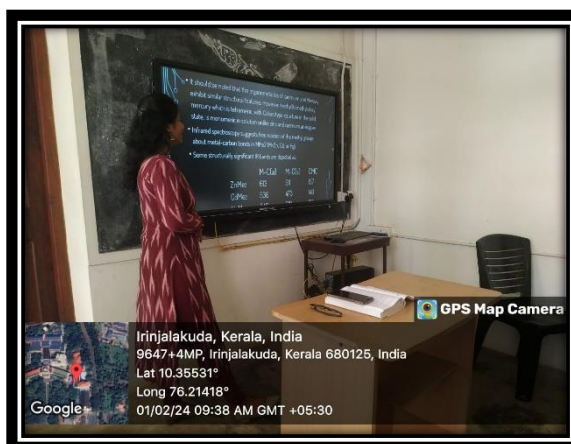
Understanding of chemical principles chemistry students. The report provides evidence-based strategies for implementing advanced learning and showcases the potential benefits for students' academic and professional development.

### Program attained Outcome:

- The unique advantages of advanced learning in mastering complex concepts in chemistry.



Mr. Arun K J gave a Seminar session to his classmates on the topic of organometallic compounds of transition metals.



Ms. Anrea K R gave a Seminar session to her classmates on the topic of Bioinorganic Chemistry