



केन्द्रीय माध्यमिक शिक्षा बोर्ड
(शिक्षा मंत्रालय, भारत सरकार के अधीन एक स्वायत्त संगठन)
CENTRAL BOARD OF SECONDARY EDUCATION
(An Autonomous Organisation under the Ministry of Education, Govt. of India)

CBSE/Training/2021

Circular No. Acad-36/2021

Date: 3rd June 2021

To
All Heads of Schools affiliated to CBSE

Subject: Workshop for Science Teachers (Classes IX-XII) on Chemistry Laboratory Experiments in collaboration with IIT Bombay.

CBSE and IIT Bombay are organizing an online workshop on ChemCollective Virtual Lab to enhance the knowledge on the usage of ICT tools for teachers. In the current time of pandemic lab work has become a challenge for students and teachers. ChemCollective Virtual Labs, proposed to be covered in this training, can mitigate this difficulty substantially, and has the potential to reduce the number of actual labs required to complete the learning process, whenever the contact labs resume.

The ChemCollective Virtual Lab is a simulation of a chemistry lab using open source software. It is designed to help students perform chemistry laboratory experiments. The lab allows students to select from hundreds of standard reagents (aqueous) and manipulate them in a manner resembling a real lab. The ChemCollective Virtual Lab software works on Windows, Mac and Linux machines and is available free of charge to all educators and students.

Workshop dates: 14th - 18th June 2021

Work shop Timings: 3:00 PM to 6:00 PM

Methodology of the workshop: The workshop will be for 5 days, 3 hrs of lectures/hands on session on each day. The workshop will be conducted using a mix of pre-recorded spoken tutorial videos with side by side learning, and live lectures. A practice problem/assignment will also be provided after every topic followed by discussions on them to get a good understanding of each topic. All participants will get the ChemCollective Virtual Lab software, Spoken Tutorials on ChemCollective Virtual Lab, copies of our slides, and several solved problems.

Topics covered in the workshop:

The training will help teachers in using the ChemCollective Virtual lab software to develop their own lab courses using the reagents and apparatus available on the software interface. At the end of this workshop, participants will be able to:

- prepare standard solutions
- dilute solutions and measure pH
- measure density of solids and liquids
- perform experiments on solubility of solids



'शिक्षा सदन', 17, राऊज़ एवेन्यू, इंस्टीटूशनल एरिया, नई दिल्ली-110002
'ShikshaSadan', 17, Rouse Avenue, Institutional Area, New Delhi – 110002





केन्द्रीय माध्यमिक शिक्षा बोर्ड

(शिक्षा मंत्रालय, भारत सरकार के अधीन एक स्वायत्त संगठन)

CENTRAL BOARD OF SECONDARY EDUCATION

(An Autonomous Organisation under the Ministry of Education, Govt. of India)

- determine the solubility products for different reactions
- perform acid-base titrations
- prepare buffer solutions
- perform metal displacement reactions

In addition, the participants will be exposed to advanced topics, such as measurement of heat of reactions (enthalpy), measurement of equilibrium constant and gravimetric analysis.

Benefits of the Workshop:

- Learn to perform basic chemistry laboratory experiments using ChemCollective Virtual Lab.
- Learn about ChemCollective resources that are useful in classroom teaching as well as other scientific and academic purposes.
- Certificate for attending the ChemCollective Virtual Lab workshop.
- The detailed schedule and content to be covered in the workshop is given in the annexure.

Link for Registration:

https://docs.google.com/forms/d/e/1FAIpQLSdK_XozQ4YS3AbD9Dxjk3NW_y2gKQjJaJh1VH05MZqEiriaCw/viewform?usp=sf_link

- Registrations are on first come first serve basis and will close as soon as seats are full.

Course Fee: Rs 950 (Inclusive of GST) per person. Fee is to be paid directly to IIT, Bombay through the link which will be shared by them to the registered candidates.

In case of any further query/ information, please contact:

Mr. Mahendra Parmar,
Sr. Project Manager, ESOS Project
Department of CSE, Kanwal Rekhi Building,
Indian Institute of Technology Bombay,
Mumbai - 400 076.
Email: c Outreach@it.iitb.ac.in
Website - www.it.iitb.ac.in/nmeict

Biswajit Saha

Dr. Biswajit Saha

(Director, Training & Skill Edu)



'शिक्षा सदन', 17, राऊज़ एवेन्यू, इंस्टीटूशनल एरिया, नई दिल्ली-110002
'ShikshaSadan', 17, Rouse Avenue, Institutional Area, New Delhi – 110002





केन्द्रीय माध्यमिक शिक्षा बोर्ड

(शिक्षा मंत्रालय, भारत सरकार के अधीन एक स्वायत्त संगठन)

CENTRAL BOARD OF SECONDARY EDUCATION

(An Autonomous Organisation under the Ministry of Education, Govt. of India)

Annexure: ChemCollective Workshop – Methodology and Schedule

Day	Duration	Topics
Day 1	30 min	Hands-on Session 1 Preparation of Standard Solutions
	30 min	Practice problems and solutions
	30min	Hands-on Session 2 Dilutions and pH measurement
	30 min	Practice problems and solutions
	30 min	1 Live Demonstration
	30 min	2 Live Demonstration
Day 2	30 min	Hands-on Session 1 Density of Solids and Liquids
	30 min	Practice problems and solutions
	30min	Hands-on Session 2 Effect of Temperature on Solubility
	30 min	Practice problems and solutions
	30 min	1 Live Demonstration
	30 min	2 Live Demonstration
Day 3	30 min	Hands-on Session 1 Acid-Base Titrations
	30 min	Practice problems and solutions
	30min	Hands-on Session 2 Buffer Solutions
	30 min	Practice problems and solutions
	30 min	Hands on Session 3 Determination of pKa
	30 min	1 Live Demonstration
Day 4	30 min	Hands-on Session 1 Heat of Reaction
	30 min	Practice problems and solutions
	30min	Hands-on Session 2 Metal Displacement Reactions
	30 min	Practice problems and solutions
	30 min	Hands on Session 3 Gravimetric Analysis
	30 min	1 Live Demonstration
Day 5	30 min	Hands-on Session 1 Determination of Equilibrium Constant
	30 min	Practice problems and solutions
	30min	Hands-on Session 2 Determination of Solubility Product
	30 min	Practice problems and solutions
	30 min	1 Live Demonstration
	30 min	2 Live Demonstration



'शिक्षा सदन', 17, राऊज़ एवेन्यू, इंस्टीटूशनल एरिया, नई दिल्ली-110002
'ShikshaSadan', 17, Rouse Avenue, Institutional Area, New Delhi – 110002





केन्द्रीय माध्यमिक शिक्षा बोर्ड

(शिक्षा मंत्रालय, भारत सरकार के अधीन एक स्वायत्त संगठन)

CENTRAL BOARD OF SECONDARY EDUCATION

(An Autonomous Organisation under the Ministry of Education, Govt. of India)

Copy to the respective Heads of Directorates, Organizations and Institutions as indicated below with a request to disseminate the information to all the schools under their jurisdiction:

1. The Commissioner, Kendriya Vidyalaya Sangathan, 18-Institutional Area, Shaheed JeetSingh Marg, New Delhi-110016.
2. The Commissioner, Navodaya Vidyalaya Samiti, B-15, Sector-62, Institutional Area, Noida-201309
3. The Director of Education, Directorate of Education, Govt. of NCT of Delhi, Old Secretariat, Delhi-110054
4. The Director of Public Instructions (Schools), Union Territory Secretariat, Sector 9, Chandigarh-160017
5. The Director of Education, Govt. of Sikkim, Gangtok, Sikkim –737101
6. The Director of School Education, Govt. of Arunachal Pradesh, Itanagar –791 111
7. The Director of Education, Govt. of Andaman & Nicobar Islands, Port Blair - 744101
8. The Director, Central Tibetan School Administration, ESSESS Plaza, Community Centre, Sector 3, Rohini
9. The Director (Edu.) of all states.
10. The Secretary (School Edu.) of all states
11. Sh. P.K. Sahoo, Under Secretary to the Govt. of India, Ministry of Tribal Affairs, EMRS Division
12. The Additional Director General of Army Education, A – Wing, Sena Bhawan, DHQ, PO, New Delhi-110001
13. The Secretary AWES, Integrated Headquarters of MoD (Army), FDRC Building No. 202, Shankar Vihar (Near APS), Delhi Cantt-110010.
14. All Regional Directors/Regional Officers of CBSE with the request to send this circular to all the Heads of the affiliated schools of the Board in their respective regions
15. All Heads/ In-Charges, COEs of the Board with request to disseminate the information
16. The Joint Secretary (Training) / Joint Secretary (Academics)
17. All Joint Secretary/Deputy Secretary/Assistant Secretary, CBSE
18. In charge IT Unit with the request to put this circular on the CBSE Academic website
19. The Public Relations Officer, CBSE
20. PS to Chairperson, CBSE
21. SPS to Secretary, CBSE
22. SPS to Controller of Examinations, CBSE
23. SPS to Director (Information Technology), CBSE
24. SPS to Director (JAB)
25. SPS to Director (CTET)
26. SPS to Director (EDUSAT)
27. SPS to Director (Academics) CBSE.
28. SPS to Director (Training & Skill Education)

Director (Skill Education & Trainings)



'शिक्षा सदन', 17, राऊज़ एवेन्यू, इंस्टीटूशनल एरिया, नई दिल्ली-110002
'ShikshaSadan', 17, Rouse Avenue, Institutional Area, New Delhi – 110002

