Dharmsinh Desai University

Chemical Engineering Department

IIChE DDU SC

Presents

CHEMATHON 2025

Innovative solutions invited under United Nations' Sustainable Development Goals (SDG)

Awards :

Win prizes upto 2 lakhs

Entry Fees :

For IIChE Members : Rs.350/- per team

For Non-IIChE Members : Rs.500/- per team

15 -17 August 2025

Theme : Commitment To Sustainable Future

Venue : Dharmsinh Desai University, Nadiad, Gujarat

Registration link : https://forms.gle/xJLsYYQH93Tqy2PD7

Contact No. : +91 98793 06949, +91 99747 64564

Email : dhrumilgandhi.ch@ddu.ac.in, nirajnair.ch@ddu.ac.in

Website : www.ddu.ac.in

/iicheddu

ABOUT IIChE-CHEMATHON...

IIChE-CHEMATHON is a national-level hardware hackathon proudly hosted by the Dharmsinh Desai University and Indian Institute of Chemical Engineers (IIChE) Training Institute. This distinctive event brings together students from a variety of engineering backgrounds to design and develop innovative hardware solutions aligned with the United Nations' Sustainable Development Goals (SDGs 3, 6, 7, 9, 11, 12, and 13). The hackathon serves as a dynamic platform for participants to tackle pressing real-world problems in areas such as sustainability, process efficiency, and industrial innovation. IIChE-CHEMATHON 2025, organized by the IIChE DDU Student Chapter in collaboration with the Department of Chemical Engineering, Dharmsinh Desai University, invites bright minds to push the frontiers of technology through creativity, critical thinking, and teamwork. Participants will benefit from expert guidance, practical project-building sessions, and feedback from professionals across academia and industry. The event aims to inspire transformative solutions that contribute meaningfully to global sustainability goals, with active involvement from students, researchers, and professionals nationwide.

Step 1: Ready to Join? Confirm Your Entry!
Secure your spot by paying the entry fee and receive a participation certificate.

Step 2: Preliminary Rounds
Participate in online prelims, where teams will give a virtual presentation of their idea.

Step 3: Final Round Registration
Selected teams will pay the final round registration fee.

Step 4: Final Round at DDU Campus
On the given date, selected teams will come to DDUcampus for Chemathon 2025.🏆 Winners will receive prize money, and all finalist will get certificate.

About Organizing Institute...

Dharmsinh Desai University (DDU), established in 1968, began its journey as an institute dedicated to Chemical Engineering education, with the vision of producing skilled engineers for India's growing industrial needs. Over the decades, the university expanded its academic horizon and today offers a wide range of undergraduate, postgraduate, and doctoral programs in disciplines such as Engineering, Technology, Pharmacy, Dental Science, Management, and Medical Science.

Situated on a 45-acre eco-friendly campus in Nadiad, DDU is equipped with modern laboratories, state-of-the-art infrastructure, and cutting-edge research centers for surface science, nanotechnology, structural design, and environmental auditing. Accredited by UGC, AICTE, NAAC, and NBA, the university maintains strong industry partnerships and global academic collaborations.

DDU takes pride in fostering a vibrant culture of innovation, entrepreneurship, and sustainability. It continues to nurture future-ready professionals and ethical leaders who contribute meaningfully to society and address real-world challenges through technology-driven solutions.

About Organizing Department & IIChE Nadiad Regional Centre

The Chemical Engineering Department at Dharmsinh Desai University, along with the IIChE-DDU Student Chapter, forms a cornerstone of technical growth and innovation on campus. The department, backed by a strong academic foundation and experienced faculty, nurtures students in core engineering principles, research, and industry-relevant skills. The IIChE-DDU Student Chapter, the oldest technical club of the university, complements this by promoting chemical engineering knowledge, student-led initiatives, and professional development opportunities under the guidance of the IIChE Nadiad Regional Centre. Together, they have actively organised expert lectures, industrial visits, technical quizzes, webinars, and workshops that enhance the academic and professional journey of students.

Career-focused programs such as GATE preparation webinars, entrepreneurship talks, and industry interaction sessions further strengthen students' practical exposure. With active engagement on platforms like LinkedIn and Instagram, the department and the student chapter continue to foster innovation, leadership, and lifelong learning within the Chemical Engineering community at DDU.

IIChE Chemathon 2025
Problem Statments

SDG3 - Good Health And Well-Being

1. Handling of Cyanuric Chloride, a highly hazardous and reactive solid powder, poses significant operational and safety challenges. The material's toxicity, dusting tendency, and reactivity under ambient conditions complicate transfer, weighing, and charging in process vessel, increasing risks to personnel and equipment, and necessitating enhanced containment and control strategies.

SDG6 - Clean water And Sanitation

1. IoT based portable water sensor for detection of pH, TDS and temperature for fishery industry near coastal region. If it can detect Arsenic also then much better.
2. Sustainable approach towards treatment of leachate from landfill having high COD.
3. Dye wastewater discharge and treatments

SDG7 - Affordable And Clean Energy

1. Explore novel materials for improving the energy density of supercapacitors.
2. Investigate sustainable and eco-friendly alternatives to conventional battery materials.
3. Design multifunctional materials that enhance both storage capacity and device safety in energy systems.
4. Develop innovative solid-state electrolytes for next-generation energy storage devices.
5. Examine the potential of biomass derived carbon materials in electrochemical energy storage.
6. Develop new hydrogen storage materials that are safe, low-cost, and energy dense.
7. Enhance the efficiency of producing green hydrogen using renewable energy.
8. Improve the safety and performance of hydrogen fuel cells for vehicles and devices.
9. Create cost-effective and scalable systems for transporting and distributing hydrogen.
10. Study how hydrogen affects the strength and durability of structural materials (hydrogen embrittlement).

IIChE Chemathon 2025

Problem Statments

SDG9 - Industry, Innovation And Infrastructure

1. Real time viscosity monitoring device for a resin
2. IOT based bio sensors/ sensors
3. IOT-Based Remote Monitoringof Utility Parameters with Alerts
4.Smart Drone Detection and Intrusion Alert System for Process Industry Safety.
5. The spiral-wound reverse osmosis (RO) membranes used in the dyes desalting operation are experiencing accelerated fouling, leading to increased differential pressure, reduced permeate flux, and frequent cleaning cycles. This fouling is suspected to be due to the complex organic and inorganic load in the dye streams, resulting in reduced efficiency, higher operational costs and potential membrane damage.
6. The membrane filter press is unable to achieve the desired final moisture content in the discharged cake. Despite operating under standard pressure and cycle conditions, the dewatering performance remains suboptimal, Leading to wet cake fail in quality parameters because of trapped water, increased energy consumption in rework and potential bottlenecks in the process line.
7. The Agitated Thin Film Dryer (ATFD) is consistently underperforming against its rated throughput capacity. Observations indicate incomplete drying and material backlogs, which suggest possible issues related to feed consistency, fouling, heat transfer inefficiencies, or mechanical limitations, thereby impacting downstream operations and product quality.
8. During the processing of dyes in the Multi Effect Evaporator (MEE), intermittent occurrences of insoluble particles are being observed in the final product. These particles are not consistent in batch-to-batch operation .may be indicative of feed composition variation, precipitation due to unstable process parameters, leading to quality deviations and carry forward to final dryer output i.e. dry product gets fail in quality
9. To design a reaction vessel for the dye and textile industry. It is essential to maintain a temperature of 0°C to 5°C.without using ice, as ice-based cooling increases wastewater and compromises product quality. The vessel should operate across a pH range of 1 to 12 and be constructed from Mild Steel (MS). Effective thermal insulation is required to prevent heat loss, but glass lining is not allowed
10. Colour correction in ceramic
11. Electrolysis frame corrosion (resistance)

SDG11 - Sustainable Cities And Communities

1. Solid waste management (aesthetics).

SDG12 - Responsible Consumption And Production

1. Natural cosmetics (organic and >60% aqueous)

13 CLIMATE ACTION

SDG13 - Climate Action

1. Develop energy-efficient and low-cost methods for capturing carbon dioxide from industrial sources.
2. Improve the conversion of captured CO2 into useful products like fuels or chemicals.
3. Design sustainable processes to use CO2 with biomass or waste to create value added materials.
4. Explore new materials that can absorb or adsorb CO2 more effectively and cheaply.
5. Create reliable and eco-friendly systems for transporting and storing captured CO2.

In addition to this topics, you are welcome to propose your own, preferably multidisciplinary in nature, as long as you are able to present a working model for it.

IIChE Chemathon 2025

Selection Process

01

Teams are invited for online submission with a maximum of 4 members, including 1 mentor.

02

An email with a template will be sent to the shortlisted teams, and the prelims will be conducted online during the evening hours

03

An email will be sent for registration to the Prelims shortlisted teams on 20 July 2025 onwards

04

The grand finale presentation will take place on [15-17 August 2025]. In that, teams will be selected as winners, will be awarded prizes upto 2 lakhs.

IIChE-CHEMATHON 2025

Organising Committee

Chief Patron

Padmashri Dr. H.M. Desai	Vice Chancellor, Dharmsinh Desai University

Patron

Shri. Ankur Desai	Trustee, Dharmsinh Desai University.
Prof. Ajay Bansal	President, IICHE
Dr V.A.Shah	Dean, FOT, DDU

Chairman

Dr. M.S. Rao	Head-Dept.of Chemical Engineering, DDU

Co-Chairman

Dr. Avijit Ghosh	Director - IIChE Training Institute & Assist. Prof. HITK

Organizing Secretary

Dr. Dhrumil Gandhi	Chemical Engineering Dept, DDU

Joint - Organizing Secretary

Mr. Niraj Nair	Chemical Engineering Dept, DDU

Board of Directors - IIChE Training Institute

Prof. Sunil Baran	Kuila Member, BOD - IIChE Training Institute
Prof. N. Balasubramanian	Member, BOD - IIChE Training Institute
Mr. Dhawal Saxena	Member, BOD - IIChE Training Institute
Prof. Madhu Agarwal	Member, BOD - IIChE Training Institute

Student Organizing Committee

Bhensadadia Krish Hiteshbhai	Purohit Daiv Harshal
Pastagiya Sujal Rajeshkumar	Shah Parth Pratik
Bharadava Darshil Bhaveshbhai	Karmjeetsinh Zala
Mann Ramanbhai Patel	Devansh Vyas
Patel Bhumil Shaileshbhai	Rudra Budheliya
Vasoya Pranav Deepakbhai	Patel Vrunda Rakeshbhai
Darshil Dave Gaurang	Patel Aditi Piyush
Mungara Dhruvik Pravinbhai	Padh Pranav Kirtikumar
Tanushree Nitin Tayade	Budheliya Parth Jitendrabhai
Kataria Divesh Sunilkumar	Rajwanshi Himani Pankaj
Rishi Dilipkumar Mangnani	Raithatha Dhwanil Ameet
Dev Bhupendrabhai Patel	Jadav Harsh Prashantkumar

IIChE - NATIONAL ADVISORY COMMITTEE

Prof. Ajay Bansal
(President)
Mr. Sunil Indulal Thakar
(Immediate Past President)
Prof. R. Parthiban
(Vice-President)
Prof. Parag R. Gogate
(Vice-President)
Prof. Sunil Baran Kuila
(Honorary Secretary)
Prof. Diwan S Rawat (NZ)
Dr. Sujoy Sarkar (SZ)
Dr. V. Sivamurugan (SZ)
Prof. K. A. Badrinarayana
(Honorary Jt. Secretary)
Prof. N. Balasubramanian
(Honorary Treasurer)
Mr. Dhawal Saxena
(Honorary Registrar)
Dr. Utkarsh Maheshwari
(Controller Of Examination)
Prof. Anil Verma
(Editor-in-Chief)
Prof. D. A. Shambhag (WZ)
Prof. Anindya Datta (WZ)
Prof. V. K. Rathod (WZ)
Smt. Sheela
Dr. M. Srinivasa Rao
Dr. Prasad T.L. Gupta
Dr. Gaurav Rattan
Prof. Animes Kumar Golder
Mr. A. K. Bhattacharyya
Prof. Nitosh Kumar Brahma
Prof. Rakesh Kumar Trivedi
Prof. Shailendra Bajpai
Dr. M Rajasimman
Mr. K Sadanand
Prof. Madhu Agarwal
Mr. Biswanath Chattopadhyay
(Co-opted Member)
Prof. Shishir Sinha
(CCo-opted Member)
Prof. M. K. Jha
(Special Invitee)
Dr. Avijit Ghosh
(Special Invitee)

TECHNICAL ADVISORY COMMITTEE

Mr. Shyam Patel
(Chromient Industries, Panoli)
Mr.B. D. Dalwadi
(CEO,BEIL,Ankleshwar)
Mr. Chirag Parmar
(Zydus Lifescience)
Mr. Mayur Thumar
(Archroma International Pvt Ltd)
Mr. Shrenikbhai Trivedi
(Syntron Industry Ltd, Vatva, Ahmedabad)
Mr. Rajesh Bhavar
(Utility service)
Mr. Divyang Shah
(Head Technical Service, GNFC, Bharuch)
Mr. Kaushan Panchal
(Adani Greens)
Mr. Samir Shah
(Bechtel, Downstreams Operations)
Mr. Prerak Patel
(Head, Utility, GACL)
Mr. Kunjal Vaidya
(Airproducts)
Mr. Nirav Patel
(Aditya Birla)

LOCAL EXECUTIVE COMMITTEE

Dr. P.A.Joshi
Dr. Avinash Desmukh
Dr. Jalesh Purohit
Dr. Anand Dhanwani
Dr. Vimal Gandhi
Dr. Atindra Shukla
Mr. Mihir Shah
Ms. Dipali Shah
Mr. Nirav Bhavsar
Dr. Anand Tiwari
Dr. Siddharth Modi
Mr. Hitesh Panchal
Dr. Dhrumil Gandhi
Dr. Hemant Kumar
Dr. Jaydeep Jivani
Mr. Niraj Nair
Dr. Bhupendra Suryavnshi
Dr. Krishna Chauhan
Dr. Kantilal Chauhan
Dr. Yash Jaiswal
Dr. Mittal Thakkar
Mr. Rignesh Patel
Dr. Chirag Patel
Mr. Deep Shah
Mr. Pranay Patel
Dr. Jaymin Patel
Mr. Aditya Christian

Imporatant Dates

Start Registrations for Prelims	:	20 June 2025
End Registrations for Prelims	:	15 July 2025
Prelims: Presentation of Ideas	:	17–18 July 2025
Results of Prelims	:	20 July 2025
Registration for Final Round	:	21–25 July 2025
Final Round at DDU, Nadiad	:	15-17 August 2025

NO ON-SPOT REGISTRATION

Entry Fees

Student (UG/PG/PhD)

- IIChE Members 350/- (per team)
- Non - Members 500/-

Registration Fees

1000/- per team

Sponsorship

- Diamond : Rs 3,00,000
- Platinum : Rs 2,00,000
- Gold : Rs 1,00,000
- Silver : Rs 75,000
- Lunch : Rs 1,00,000/day
- Dinner : Rs 1,50,000/day
- High Tea : Rs 50,000/day
- Registration Kit : Rs 75,000

A/C Name	:	I.I.C.E NADIAD R.G.CENTRE
A/C Number	:	14440200000045
IFSC Code	:	BARBOCOLLEG
Bank Name	:	Bank Of Baroda

The Organizing Secretary
IIChE - Chemathon 2025
Department of Chemical Engineering,
Dharmsinh Desai University,
Nadiad - 387001
Gujarat, India

Registration Link :
https://forms.gle/xJLsYYQH93Tqy2PD7

Contact No. : +91 98793 06949, +91 99747 64564
Email : dhrumilgandhi.ch@ddu.ac.in, nirajnair.ch@ddu.ac.in