Issue - 16
Jul 2025 to Nov 2025

UPL UNIVERSITY OF SUSTAINABLE TECHNOLOGY

CHEMEZINE

Chemical Engineering e-Magazine

Creating Competent Chemical Engineers for the world of tomorrow

DEPARTMENT OF CHEMICAL ENGINEERING, SRICT

To achieve excellence in Chemical Engineering and allied fields by providing excellent teaching learning experience enabling students to become competent professionals to tackle global issues.

MISSION

- To provide excellent technical education to students with basics of chemical engineering.
- To provide theoretical and practical education so that students vigorously apply knowledge in solving chemical engineering problems for sustained development.
- To inculcate professional ethics among students by exposing them to state of the art technologies in the field.
- To inspire students for lifelong learning and to develop leadership qualities in their career.

Program Educational Outcomes (PEOs) of Department

- To impart the fundamentals of chemical engineering and enable them to have a successful career in wide range of core industries.
- To deliver quality technical education thereby developing sustainable technology in addressing global issues.
- To prepare graduates who are capable of solving complex chemical engineering problems.
- To provide practical aspects of chemical engineering to the students by ways of industrial visits, expert lectures and increased industry-institute interaction thereby making students industry ready.
- To prepare graduates who can effectively communicate, demonstrate leadership qualities with creative thinking and professional ethics.

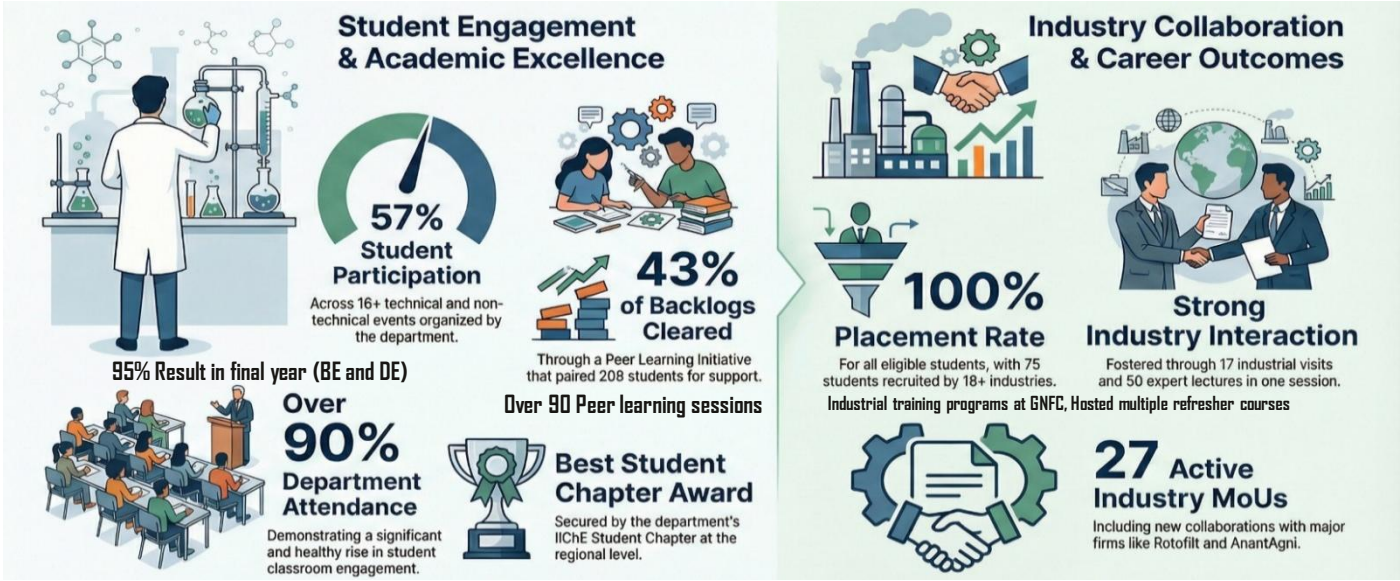
Message from Head of Department

Krunal Suthar

The session, winter 2025 has been an inspiring journey filled with activities, celebrations, learning opportunities, and remarkable achievements by our Chemical Engineering family. Every corner of the department remained vibrant - from classrooms and laboratories to seminar halls and student chapters.

One striking observation this semester has been the growing use of AI tools. Globally, nearly 56% of college students use AI for assignments, and some surveys show this number rising to over 88% in 2025 [1]. Interestingly, within our department, almost 100% of final-year students used AI tools while preparing their active-learning assignments. While this shift brings new challenges, it also opens up exciting opportunities. As educators, it motivates us to design assignments that demand deeper thinking, book-based references, and problem-solving beyond what AI can generate.

In fact, to embrace this transformation, let me also use an AI tool to convert the message into a creative infographic — because visuals often speak louder than words.



As we move into the next semester, we look forward to hosting many more meaningful activities, alumni gathering, refresher courses, strengthening academic rigor, and embracing emerging technologies with responsibility and passion. Together, let us continue building a department that grows stronger, more innovative, and more impactful each year.

[1] https://www.bestcolleges.com/research/most-college-students-have-used-ai-survey/

INDUSTRIAL VISITS

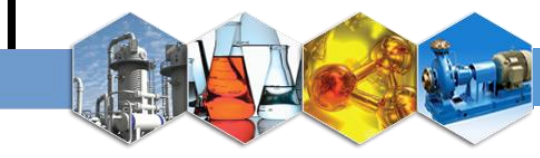
Date	Name of the Industry	Sem
11.07.2025	Apex Pharma Chem, Ankleshwar	DE-5
18.07.2025	ISRO & Science City, Ahmedabad	BE-5 BE-3 DE-3
25.07.2025	NCTL, Ankleshwar	DE-3
12.09.2025	Snehal dyes industries Shreenath chemical industries	DE-3
15.09.2025	Shree Ganesh Pigments, Ankleshwar	BE-5
17.09.2025	Tagros Chemicals, Ankleshwar	BE-3
23.09.2025	GNFC, Bharuch	BE-7
29.09.2025	Prahrit Pigments, Jhagadia	BE-7

BE-3rd Tagros Chemicals, Ankleshwar

DE-3rd sem, Shreenath Chemical Industries, Ankleshwar

BE-7th Praharit Pigments, Jhagadia

BE-7th GNFC, Bharuch



INDUSTRIAL VISITS

DE-5th sem, Apex Pharma Chem, Ankleshwar

BE-3rd,5th and DE-3rd , Vikram Sarabhai Space Centre, Ahmedabad

DE-3rd NCTL, Ankleshwar

Sem	Expert Name	Topic of EL	Date
DE 5	Mr. Amol Lakhare	Safety concerns in Chemical Industries	25/09/2025
BE 3	Mr. Prasil Kapadiya	Linear & non-linear equations in Chemical Engineering	25/09/2025
BE 3	Mr. Prasil Kapadiya	Matrix based problems in Chemical Engineering	25/09/2025
BE 7	Mr. Sudeep Jambekar	Career Skills – Competency Building, Interview Preparation & Leadership	26/09/2025
BE 7	Prof. Vivek Dua	Data driven modeling and optimization of Chemical Process	29/09/2025
BE 7	Mr. Taher Dakorwala	Lessons of Leadership from Dr. Keki Gharda	30/09/2025
BE 3	Mr. Mahesh Malusare	GATEWAY to Success	04/08/2025
BE 3	Dr. Sivasankar K	Waste Management & Upcycling	26/08/2025
BE 5	Mukesh Bhatt	Waste to Wealth: Conversion of MSW into Value added products	17/07/2025
BE 3	Mr. Tushar Chauhan	Transformation of Career	22/07/2025

Sem	Expert Name	Topic of EL	Date
BE 7	Prof. M .N. Vyas	Process Design & Mechanical aspects of Plant Design	30/10/2025
BE 7	Ms. Narhitya	Career Guidance for higher education	29/10/2025
BE 5	Mr. Sanjog Deore	Work Place Safety	10/10/2025
DE 5	Mr. Sanjog Deore	Safety concerns in Chemical Industries	10/10/2025
DE 5	Mr. Rahul Salunke	Process safety practices in Industries	10/10/2025
DE 3	Mr. Sanjog Deore	Work Place Safety	10/10/2025
DE 3	Mr. Rahul Salunke	Process safety practices in Industries	10/10/2025
DE 3	Mr. Amol Lakhare	Safety practices in Industries	10/10/2025
BE 5	Prof M.N Vyas	Project Management Concepts in Chemical Engineering	22/09/2025
DE 3	Ms. Zeel Desai	Applications of Unit operations in Wastewater treatment process	22/09/2025
DE 5	Mr. Dhaval Upasani	Importance of Chemical analysis - Compliance & Sustainability	23/09/2025
BE 3	Mr. Amol Lakhare	Safety concerns in Chemical Industries	25/09/2025

Expert lecture on Transformation of Career
on 17 July 2025

Expert lecture on Waste Management & Upcycling
on 26 Aug 2025

Expert lecture in Importance of Chemical analysis - Compliance & Sustainability

Expert lecture in Process Design & Mechanical aspects of Plant Design on 30 Oct 2025

EL on Process safety practices in Industries

Expert lecture in Work Place Safety on 10 Oct 2025

Expert lecture on Transformation of Career on 17 July 2025

PEER LEARNING INITIATIVE

Under Peer learning initiative (PLI), senior student delivers technical content to peers making it comfortable and easy for students. It also improves communications skills, and professional development.

Sr No.	Name of student	Program	Semester	Delivered to	Name of the course
1	Rana Mohitkumar Sanjaybhai	BE	SEM-3	BE SEM-3(G3)	Engineering Thermodynamics
2	Dighe Pritee Suryakant	BE	SEM-5	BE SEM-3(G3)	Mechanical Operations
3	Modi Prit Chetankumar	BE	SEM-3	DE SEM-3(G2)	Chemical Process Technology-I
4	Roopam Debnath	BE	SEM-7	BE SEM-5(G2)	Chemical Reaction Engineering-I
5	Solanki Jayveersinh	BE	SEM-3	DE SEM-5(G3)	Process Heat Transfer - II
6	Mandal Aakashkumar	BE	SEM-7	BE SEM-5(G2)	Plant Economics and Management
7	Keya Prajapati	BE	SEM-7	BE SEM-5(G1)	Mass Transfer Operations-I
8	Jha Komal Manoranjan	DE	SEM-5	DE SEM-3(G1)	Chemical Process Technology-I
9	Patel Sarswatiben Jawaharbhai	DE	SEM-5	DE SEM-3(G3)	Chemical Process Technology-I
10	Sonawane Anuj	DE	SEM-5	DE SEM-3(G2)	Chemical Process Technology-I
11	Maheer Gandhi	BE	SEM-5	DE SEM-5(G3)	Petroleum Refining
12	Sarthak Rami	BE	SEM-5	DE SEM-5(G1)	Process Heat Transfer - II
13	Gohil Dhruvrajsinh Vikramsinh	DE	SEM-5	DE SEM-3(G3)	Thermodynamics
14	Shaikh Mo. Hamza	DE	SEM-5	DE SEM-3(G1)	Thermodynamics
15	Rachit Jaiswal	BE	SEM-3	BE SEM-3(G2)	Mathematics-III
16	Patel Bhavya Santoshkumar	BE	SEM-5	DE SEM-5(G2)	Petroleum Refining
17	Leesa Chauhan	BE	SEM-3	BE SEM-3(G3)	Mathematics-III
18	Machhi Krutik Manishbhai	BE	SEM-3	DE SEM-5(G2)	Plant Economics and Management
19	Machhi Krutik Manishbhai	BE	SEM-3	DE SEM-5(G2)	Plant Economics and Management
20	Neelkumar Maheshbhai Chauhan	BE	SEM-3	DE SEM-5(G3)	Process Heat Transfer - II
21	Modi Prit Chetankumar	BE	SEM-3	DE SEM-5(G1)	Plant Economics and Management
22	Modi Prit Chetankumar	BE	SEM-3	DE SEM-5(G1)	Plant Economics and Management
23	Vansia Hemilsinh D	ME	PG-SEM-1	BE SEM-7	Biochemical Engineering
24	Sah Kishan Ganesh	DE	SEM-5	DE SEM-3(G1)	Chemical Process Technology-I

Continue

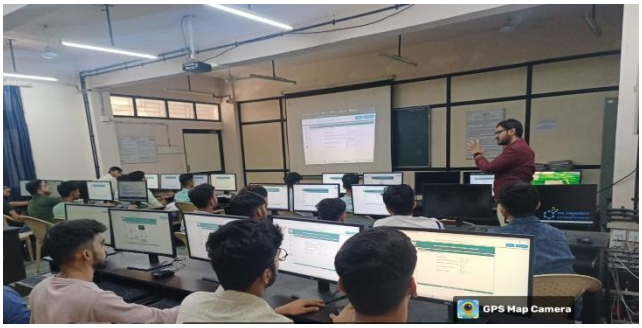
PEER LEARNING INITIATIVE

Sr No.	Name of student	Program	Sem	Delivered to	Name of the course
25	Machhi Krutik Manishbhai	BE	SEM-3	DE SEM-5(G2)	Indian Constitution
26	Modi Prit Chetankumar	BE	SEM-3	DE SEM-5(G1)	Indian Constitution
27	Heerak Sharma	DE	SEM-5	DE SEM-3(G3)	Industrial Stoichiometry
28	Mandal Aakashkumar	BE	SEM-7	DE SEM-5(G2)	Safety and Hazard Management
29	Patel Parth R.	BE	SEM-5	BE SEM-3(G1)	Mechanical Operations
30	Neelkumar Maheshbhai Chauhan	BE	SEM-3	DE SEM-5(G2)	Process Heat Transfer - II
31	Mandal Aakashkumar	BE	SEM-7	BE SEM-5(G1)	Chemical Reaction Engineering-I
32	Roopam Debnath	BE	SEM-7	BE SEM-5(G1)	Chemical Reaction Engineering-I
33	Mohit Rana	BE	SEM-5	BE SEM-3(G2)	Mechanical Operations
34	Patel Jaimin Mukundbhai	BE	SEM-3	DE SEM-5(G3)	Plant Economics
35	Nitin Kumar Singhal	BE	SEM-5	BE SEM-3(G1)	Mathematics-III
36	Nitin Kumar Singhal	BE	SEM-5	BE SEM-3(G2)	Mathematics-III
37	Modi Prit Chetankumar	BE	SEM-3	DE SEM-5(G3)	Plant Economics
38	Parth Pravinkumar Parmar	BE	SEM-5	BE SEM-3(G3)	Mechanical Operations
39	Dighe Pritee Suryakant	BE	SEM-5	DE SEM-5(G2)	Petroleum Refining
40	Pritee Dighe	BE	SEM-5	DE SEM-5(G1)	Petroleum Refining
41	Sarthak Rami	BE	SEM-5	BE SEM-3(G2)	Mechanical Operation
42	Patel Herik Dhavalkumar	BE	SEM-5	BE SEM-3(G1)	Mechanical Operation
43	Patel Dharmikkumar Ashishkumar	BE	SEM-3	DE SEM-5(G2)	Safety and Hazard Management
44	Machhi Krutik Manishbhai	BE	SEM-3	DE SEM-3(G3)	Industrial Stoichiometry
45	Modi Prit Chetankumar	BE	SEM-3	DE SEM-5(G1)	Safety and Hazard Management
46	Modi Prit Chetankumar	BE	SEM-3	DE SEM-5(G2)	Process Heat Transfer-2
47	Heerak Sharma	DE	SEM-5	DE SEM-3(G2)	Industrial Stoichiometry
48	Komal Jha	DE	SEM-5	DE SEM-3(G1)	Industrial Stoichiometry
49	Patel Hitkumar Bharatbhai	DE	SEM-5	DE SEM-3(G3)	Chemical Process Technology-1
50	Patel Hitkumar Bharatkumar	DE	SEM-5	DE SEM-3(G1)	Communication Skills in English
51	Yash Prashant Patil	DE	SEM-5	DE SEM-3(G1)	Chemical Process Technology-1
52	Rana Mohitkumar Sanjaybhai	BE	SEM-5	BE SEM-3(G2)	Engineering Thermodynamics
53	Patel Dharmikkumar Ashishkumar	BE	SEM-3	DE SEM-5(G2)	Indian Constitution
54	Machhi Krutik Manishbhai	BE	SEM-3	DE SEM-5(G3)	Plant Economics
55	Machhi Krutik Manishbhai	BE	SEM-3	DE SEM-5(G1)	Indian Constitution
56	Modi Prit Chetankumar	BE	SEM-3	DE SEM-5(G3)	Process Heat Transfer-2
57	Gohil Anshkumar Hareshbhai	DE	SEM-5	DE SEM-3(G2)	Mechanical Operations
58	Heerak Sharma	DE	SEM-5	DE SEM-3(G3)	Mechanical Operations
59	Kher Mohammadsaif Zakhirhussain	DE	SEM-5	DE SEM-3(G1)	Mechanical Operations

Continue

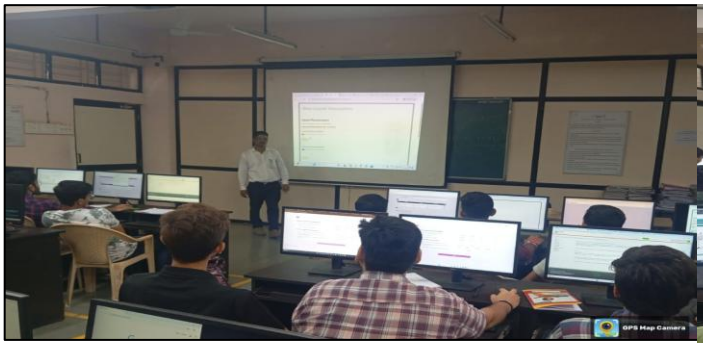
PEER LEARNING INITIATIVE

Sr No.	Name of student	Program	Sem	Delivered to	Name of the course
60	Kamdar Dhruvkumar M	BE	SEM-3	DE SEM-5(G3)	Process Auxiliaries
61	Parmar Karan Vijaybhai	BE	SEM-3	DE SEM-5(G3)	ndian Constitution
62	Patel Dharmikkumar A	BE	SEM-3	DE SEM-5(G2)	Plant Economics and Management
63	Patel Dharmikkumar A	BE	SEM-3	DE SEM-3(G2)	Chemical Process Technology-I
64	Patel Dharmikumar A	BE	SEM-3	DE SEM-5(G1)	Process Heat Transfer - II
65	Kamdar Dhruvkumar M	BE	SEM-3	DE SEM-5(G2)	Process Auxiliaries
66	Modi Prit Chetankumar	BE	SEM-3	DE SEM-5(G1)	Plant Economics and Management
67	Kher Mohammadsaif Z	DE	SEM-5	DE SEM-3(G3)	Chemical Process Technology-I
68	Mansi Bharucha	DE	SEM-5	DE SEM-3(G2)	Industrial Stoichiometry
69	Kher Mohammadsaif	DE	SEM-5	DE SEM-3(G1)	Industrial Stoichiometry
70	Patel Herik Dhavalkumar	BE	SEM-5	DE SEM-5(G1)	Petroleum Refining
71	Patel Herik Dhavalkumar	BE	SEM-5	DE SEM-5(G2)	Petroleum Refining
72	Gandhi Maheerkumar K	BE	SEM-5	BE SEM-3(G3)	Fluid Flow Operations
73	Patel Bhavya Santoshkumar	BE	SEM-5	DE SEM-5(G1)	Instrumentation and Process Control
74	Patel Bhavya Santoshkumar	BE	SEM-5	DE SEM-5(G2)	Instrumentation and Process Control
75	Patel Bhavya Santoshkumar	BE	SEM-5	DE SEM-5(G3)	Instrumentation and Process Control
76	Machhi Krutik Manishbhai	BE	SEM-3	DE SEM-5(G3)	Safety and Hazard Management
77	Pruthvirajsinh Mori	BE	SEM-5	DE SEM-5(G1)	Process Heat Transfer - II
78	Patel Divyeshkumar Hareshbhai	BE	SEM-5	DE SEM-5(G2)	Process Heat Transfer - II
79	Mohit Rana	BE	SEM-5	BE SEM-3(G3)	Fluid Flow Operations
80	Mandal Aakashkumar	BE	SEM-5	BE SEM-5(G1)	Material Science and Engineering
81	Sonawane Anuj	DE	SEM-5	DE SEM-3(G2)	Mechanical Operations
82	Keya Prajapati	BE	SEM-7	BE SEM-5(G2)	Chemical Reaction Engineering-I
83	Gohil Anshkumar H	DE	SEM-5	DE SEM-3(G1)	Industrial Stoichiometry
84	Pratham Mesari	DE	SEM-5	DE SEM-3(G2)	Industrial Stoichiometry
85	Patel Herik Dhavalkumar	BE	SEM-3	DE SEM-5(G2)	Process Auxiliaries
86	Patel Herik Dhavalkumar	BE	SEM-5	DE SEM-5(G3)	Process Auxiliaries
87	Patel Herik Dhavalkumar	BE	SEM-5	DE SEM-5(G1)	Process Auxiliaries
88	Patel Jaimin Mukundbhai	BE	SEM-3	DE SEM-5(G2)	Plant Economics and Management
89	Keya Modi	DE	SEM-5	DE SEM-3(G3)	Communication Skills in English
90	Shwet Barnwal	DE	SEM-5	DE SEM-3(G2)	Communication Skills in English



Name of Lab	Experiment List
Process Control, Reaction Engineering and Unit Operations Lab	1. Reaction kinetic studies in a batch reactor 2. Reaction kinetic studies in a mixed flow reactor 3. Reaction kinetic studies in a plug flow reactor
Process Control, Reaction Engineering and Unit Operations Lab	1. Reaction kinetic studies in a batch reactor 2. Reaction kinetic studies in a mixed flow reactor 3. Reaction kinetic studies in a plug flow reactor
Basic Engineering Mechanics and Strength of Material	1. Tensile test experiment 2. Compression Test experiment 3. Impact test experiment
Process Control, Reaction Engineering and Unit Operations Lab	1. Reaction kinetic studies in a batch reactor 2. Reaction kinetic studies in a mixed flow reactor 3. Reaction kinetic studies in a plug flow reactor
Fluid Mechanics - Dynamics of Fluid Flow	1. Flow Through Venturimeter 2. Flow Through Orifice-meter 3. Pitot Tube
Process Control, Reaction Engineering and Unit Operations Lab	1. Reaction kinetic studies in a batch reactor 2. Reaction kinetic studies in a mixed flow reactor 3. Reaction kinetic studies in a plug flow reactor

Over 90 virtual laboratory sessions were conducted for Diploma and BE students during the academic sessions. The list of a few labs are mentioned in the above table. These virtual labs effectively complemented the classroom theory by providing visual demonstrations, simulations, and hands-on conceptual understanding, thereby enhancing students' learning experience and reinforcing key theoretical concepts.



UNIVERSITY EXAM RESULTS Diploma, B.E., M.E. Summer-2025

Sr. No	Semester	Total	Pass	Fail	Withheld	% Pass
1	D.E. Semester-4	207	153	27	27	73.91
2	D.E. Semester-6	104	99	5	0	94.23
3	B.E. Semester-4	130	62	59	9	47.69
4	B.E. Semester-6	54	51	3	0	94.4
5	B.E. Semester-8	102	92	2	8	90.20
6	M.E. Semester-2	09	07	2	0	77.7
7	M.E. Semester-4	11	10	1	0	90.9

Top 3 from every class – Exam Summer 2025

Diploma Semester-IV

SPI – 10
CPI - 9.98
JHA KOMAL MANORANJAN

SPI – 10.00
CPI – 9.92
RAJAK ANUP PRAKASH

SPI – 10.00
CPI - 9.79
BHARUCHA MANSHI

Diploma Semester-VI

SPI – 10/10
CPI – 9.95
VARSADA SHIV SURESHBHAI.

SPI – 10/10
CPI - 9.84
VANZA YASH C.

SPI – 10/10
CPI -9.82
RULESH KUMAR

UNIVERSITY EXAM RESULTS
D.E., B.E., M.E.
Summer-2025

CHEMICAL ENGINEERING BRANCH

Top 3 from every class – Exam Summer 2025

B.E. Semester-IV

SPI – 9.88
CPI - 9.50
PATEL PARTH RAKESHBHAI

SPI – 9.75
CPI - 9.50
RANA MOHITKUMAR

SPI – 9.63
CPI – 9.24
ADITYA KUMNAR MANDAL

B.E. Semester-VI

SPI – 10.00
CPI - 9.65
HARSHIL RANA

SPI – 9.75
CPI – 9.5
KAUSHAL D SONAGRA

SPI – 9.71
CPI – 8.69
MANDAL AAKASHKUMAR R

B.E. Semester-VIII

SPI – 10
CPI - 9.89
PATEL DIPALI K

SPI – 10
CPI - 9.41
GOHIL KRUNAL BI

SPI – 10
CPI - 9.75
GOHIL VANSH

UNIVERSITY EXAM RESULTS
D.E., B.E., M.E.
Summer-2025

CHEMICAL ENGINEERING BRANCH

Top 3 from every class – Exam Summer 2025

M.E. Semester-II

SPI – 9.83
CPI - 9.83
Chauhan Trusha

SPI – 9.67
CPI - 9.67
Mahadevwala Manisha

SPI – 9.22
CPI - 9.22
Chauhan Jagruti

M.E. Semester-IV

SPI – 10.00
CPI - 9.82
KAUSHIK VAIJAPURKAR

SPI – 10.00
CPI - 9.64
PATEL OM G.

SPI – 10.00
CPI - 9.49
OJHA MRITYUNJAY

Chemical Engineering Graduates at 3rd Convocation

EVENTS

Quiz Competition on "Unit Conversion"

On 18th July 2025, the Department of Chemical Engineering, along with the IICHE SRICT Student Chapter at UPL University of Sustainable Technology, organized an engaging Unit Conversion Quiz Competition. Over 265 students participated enthusiastically in three exciting rounds, making the event both fun and highly successful.

EVENTS

"Debate Competition"

On 08th August 2025, the IIChE Student Chapter of the Chemical Engineering Department organized a Debate Competition for 3rd- and 5th-year Diploma and Degree students. Twelve teams competed in two rounds—technical and non-technical debates. Winners from the Degree program were Anjali Sagar, Yashita Singh, and Sumit Rathore, while Diploma winners were Sonwane Mehul, Jeeson Saji Varghese, and Yashraj Makwana. The event was judged by Ms. Gloria James, Ms. Nupur Modi, and Ms. Priyanshi Patel.

EVENTS

"Chem-E-Tank"

On 14th August 2025, the Chemical Engineering Department of SRICT, UPL University, under the IIChE SRICT Student Chapter, organized the Chem-E-Tank Competition for Chemical Engineering students. Six teams presented innovative product ideas, which were evaluated by Mr. Akash Raval, making the event a celebration of innovation, teamwork, and engineering excellence.

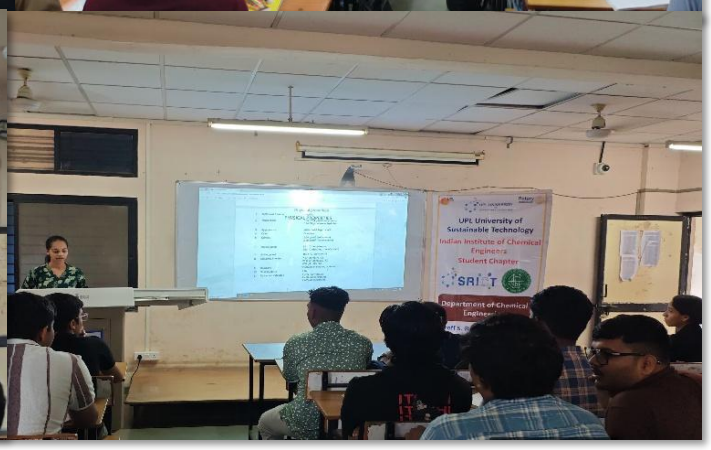
EVENTS

Teacher's Day Celebration

The Department of Chemical Engineering, UPL University of Sustainable Technology, in collaboration with the IIChE Students' Chapter, marked Teacher's Day on 04/09/2025 through an academic initiative.

As part of the celebration, Peer Learning Initiative (PLI) sessions were conducted, with 23 senior students delivering well-prepared, curriculum-focused presentations.

The initiative promoted collaborative learning while strengthening students' conceptual understanding, presentation skills, and appreciation of the teaching–learning process.



EVENTS

Five Days Workshop on MATLAB

Under the aegis of the IIChE Student Chapter, RAC, and IQAC, the Department of Chemical Engineering conducted a five-day MATLAB workshop for B.E. Chemical Engineering (3rd Semester) students from 15th to 19th September 2025.

A total of 36 students participated and gained hands-on exposure to MATLAB, with sessions led by Mr. Prasil Kapadia, PMRF Research Scholar, IIT Bombay, enhancing their computational and analytical skills.

EVENTS

Glimpse of Sci-Technovation-2025 Maze-Hunt

The Department of Chemical Engineering, under the banner of IIChE, organized the Maze-Hunt event—a technical activity blended with fun—successfully managed by Diploma and B.E. students. With participation from over 30 teams, the event highlighted teamwork and creativity; the winner was a B.Sc. Chemistry team, while 2nd and 3rd positions were secured by 5th- and 3rd-semester Diploma Chemical Engineering teams from UPL University.

EVENTS

"Glimpse of Sci-Technovation-2025 IPL Auction"

The Department of Chemical Engineering, under the banner of IIChE, organized an IPL Auction Event as part of Sci Technovation 2025. The event featured enthusiastic student participation in a strategic and engaging mock auction, fostering teamwork and lively interaction in a spirited yet professional setting.

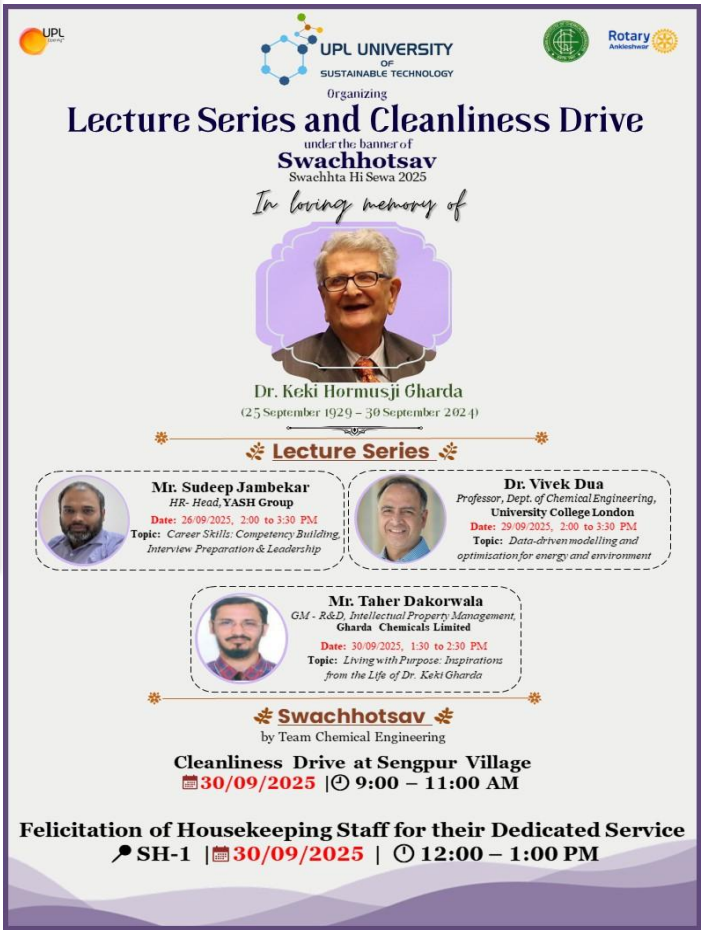
EVENTS

"Glimpse of Sci-Technovation-2025 Aquathrust"

The Department of Chemical Engineering, UPL University of Sustainable Technology, organized "Aquathrust" under the banner of IIChE on 18th September 2025 as part of Sci-Technovation 2K25. The event witnessed enthusiastic participation from students of multiple institutes, providing a competitive platform to showcase innovation, technical skills, and problem-solving abilities.

EVENTS

"Swachhotsav 2025 – Swachhta Hi Seva "



In loving memory of **Dr. Keki Hormusji Gharda** (1929–2024), Team Chemical Engineering, UPL University under the banner of IIChE successfully organized Swachhotsav 2025, a meaningful blend of knowledge, service, and gratitude.

The program commenced with an inspiring Lecture Series by eminent speakers, offering valuable insights on career development, research, and purposeful living. Furthering this spirit, a Cleanliness Drive was conducted on 30th September 2025 at Sengpur Village, where students actively participated, promoting hygiene, sustainability, and social responsibility.

EVENTS

"Glimpse of Lecture Series"

As part of the Lecture Series, three impactful sessions were conducted by eminent speakers from industry and academia. The first session by Mr. Sudeep (Yashashvi Rasayan) focused on Career Skills, Competency Building, Interview Preparation, and Leadership, offering practical insights for professional readiness. The second session, delivered online by Dr. Vivek Dua, addressed Data-Driven Modeling and Optimization of Chemical Processes, highlighting modern analytical approaches in chemical engineering.

The third session was delivered by Mr. Tahir Dakorwala on "Lessons of Leadership from Dr. Keki Gharda." Drawing inspiration from the life and vision of Dr. Keki Gharda, the speaker emphasized values such as integrity, innovation, perseverance, and social responsibility, motivating students to adopt purposeful leadership in their professional and personal lives.

EVENTS

Glimpse of Cleanliness Drive at Sengpur Village

EVENTS

“Glimpse of Felicitation Ceremony of our housekeeping staff”

Later in the day, a **Felicitation Ceremony** was held to honor the housekeeping staff for their contribution to campus cleanliness, concluding the event with gratitude and inspiration in line with the vision of **Dr. Keki Gharda**.

One-Day Refresher Course on Process Safety

This one-day refresher course is designed to update industry professionals on essential concepts and best practices in Process Safety. The program includes key safety tools, real-world case studies, and hands-on HAZOP training to enhance hazard identification and risk management skills. A total of 45 participants have registered for the course.

One Day Refresher Course on ESG with IMS and Energy Audit

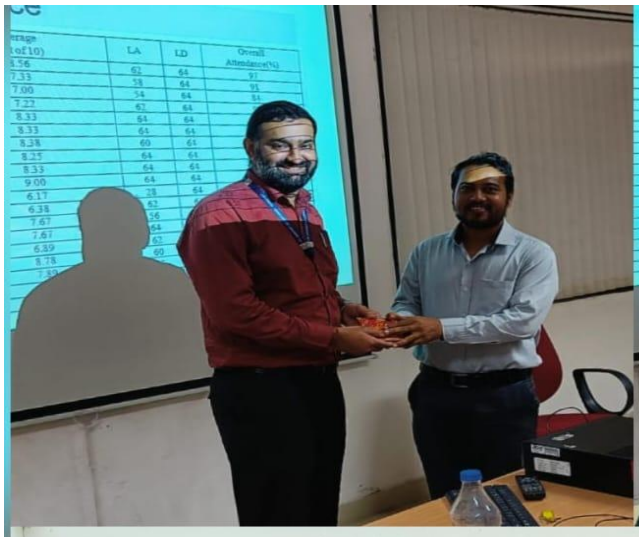
As part of the University's MoU with the Bharuch District Management Association (BDMA), the Department of Chemical Engineering, in collaboration with BDMA, the IIChE Students' Chapter, and the CoE–Process Safety, UPL University, organized a one-day refresher course titled "Driving Sustainable Growth: ESG with IMS and Energy Audit Insights.

Invited Speakers included Mr. Manish Yadav (ESH Head, GNFC Dahej) on IMS Awareness and Implementation, Mr. Pankaj Sharma (Sr. Manager, Bureau Veritas India Ltd., Baroda) on Social and Ethical ESG Audits, and Mr. Sunil Motiramani (Cluster Head–EHS, Superform Chemistries Ltd.) on Energy Audit Tools, Trends, and Industry Practices. The program witnessed participation from 70 professionals representing over 15 industries.

Other Activities

Certification Course at GNFC: Glimpse

We have successfully completed 64 hours of training, covering 13 modules under the GNFC program, with encouraging overall feedback. The Mechanical and Electrical sessions will commence shortly after completion of administrative formalities (tentatively from 6th or 7th August). Certificates for all batches will be distributed together upon completion of all training programs.



Plant Operator Felicitation

The Plant Operator Training Program for Batch–2 was successfully completed. The certification program was designed to provide participants with a strong foundation in chemical process plant operations, with focused modules on basic communication skills, process safety, and the fundamentals of unit operations and chemical processes.

To mark the successful completion of the program, a certificate distribution ceremony was organized for the second batch of plant operators. The certificates were distributed at the auspicious hands of Shri Sunil Sharda, Shri Ashok Panjwani, and Prof. Shrikant Wagh, whose presence greatly encouraged and motivated the participants.

Other Activities

Abhyutthan 2025

The *Abhyutthan 2025* Meritorious Award Ceremony was successfully organized on **11th September 2025** by the **Department of Chemical Engineering**, in association with the **Department of Electrical Engineering**. The event was conducted to recognize and celebrate the academic excellence, consistent performance, and holistic development of students.

In addition to the meritorious scholarship awards, **Performance Linked Incentive (PLI)** awards and **Pair Learning** awards were also distributed during the ceremony, highlighting the importance of academic achievement, collaborative learning, and continuous improvement.

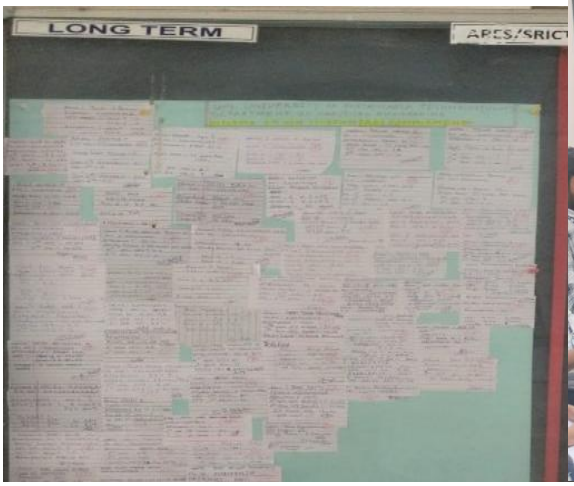
The program was conducted in two sessions to accommodate a large number of awardees. A total of **562 students** were felicitated during the event, with **237 students** receiving awards in the **morning session** and **325 students** in the **afternoon session**.

Abhyutthan 2025 served as a platform to motivate students and reinforce a culture of excellence, teamwork, and lifelong learning across departments.

Other Activities

One to One Meeting

One-to-One Meetings were organized for students with University office bearers. Final-year students had individual interactions with the Hon. President, Shri Ashok Panjwani Sir, who emphasized goal setting, daily discipline through maintaining a daily diary, and regular health check-ups. During the session, students gave a commitment to improve their academic performance and to maintain the daily diary, which will be reviewed by the Class Advisor.



Internship presentation

Industrial Internship is a mandatory component to be completed by all students after the final examinations of the Summer Session and before the commencement of the final year. During the internship, students gain hands-on exposure to industrial practices, processes, and professional work culture. Upon completion, students are required to submit an internship report, followed by a presentation.

Other Activities

Parents Teacher Meeting - DE 3rd and 5th Semester

The Department of Chemical Engineering, SRICT, conducted a Parent–Teacher Meeting on 04 October 2025 for Diploma 3rd and 5th semester students of UPL University. The meeting provided parents with insights into students' academic progress of students. With the participation of 87 parents, the session witnessed active interaction and constructive discussions, reflecting a shared commitment to student growth.

Other Activities

Expert Talk on Heterogeneous Reactions

ICC Indian Chemical Council

Dr. S. H. Gharat, Professor, Department of Chemical Engineering, UPL University of Sustainable Technology, delivered a presentation on "Heterogeneous Reactions" during the Refresher Course on *Reaction Engineering for Plant Personnel* organized by the Indian Chemical Council – Gujarat on 27th and 28th November 2025.

Institution's Innovation Council (IIC) Regional Meet

Dr. Kartik Iyer and Dr. S. H. Gharat visited the Entrepreneurship Development Institute of India (EDI), Ahmadabad, Gujarat on 25th November 2025 as a part of IIC regional meet. A poster showcasing the research and innovation activities carried out at UPL University of Sustainable Technology which highlights the achievements and contributions fostering innovation in University campus through R&D/SSIP cell was also presented during the occasion.

Other Activities

MoUs signed during the session: Winter 2025

On 14th November, the University and Rotofilt Engineering Ltd. formally signed and exchanged a Memorandum of Understanding (MoU), marking the beginning of a collaborative partnership. The MoU was signed by Prof. Wagh, Provost, UPL University, and Mr. Jitendra Soni, Director, Rotofilt Engineering Ltd.

A Memorandum of Understanding (MoU) was signed between UPL University and Anantagni Industries, Pune, on 26th August 2025, formalizing a collaborative partnership between the two institutions.

Heat Transfer Investigation in Small-Diameter Double Pipe Heat Exchangers Using Ethylene Glycol–Water Solutions

Introduction

Heat exchangers are vital devices for transferring heat between fluids and are widely used in industries such as chemical processing, power generation, oil and gas, food, pharmaceuticals, and HVAC. Among them, shell-and-tube heat exchangers are popular due to their robust design, high thermal efficiency, ability to handle high pressures and temperatures, and ease of maintenance.

To simplify analysis, researchers often use double pipe heat exchangers, consisting of two concentric tubes, providing a clear understanding of heat-transfer mechanisms and serving as a benchmark for correlation validation. These exchangers are also cost-effective and easy to maintain in small-scale applications.

Small-diameter double pipe exchangers are strongly affected by viscosity, laminar flow, and conduction–convection interactions, making them ideal for studying viscous fluids and heat-transfer enhancement. Ethylene glycol (EG) and its water mixtures are commonly used due to high viscosity, low volatility, and solubility.

This study investigates heat transfer in double pipe heat exchangers with three tube diameters and three fluid types—pure EG, 70% EG–water, and 50% EG–water—evaluating Sieder–Tate and Dittus–Boelter correlations and developing new Nusselt-number correlations.

A closed-circuit experimental setup was designed to evaluate heat transfer in three different double pipe heat exchangers. The system consisted of:

- Hot fluid storage tank
- Electric heater (3 kW)
- Centrifugal pump
- SS-316 double pipe heat exchangers
- Cylindrical glass flow-measurement device
- Temperature indicators and controllers

The setup allowed flexibility for replacing the test section with different-diameter heat exchangers. The hot fluid tank was an insulated horizontal SS-304 cylindrical vessel equipped with a 3 kW immersion heater. A temperature controller and indicator maintained the desired temperature (50°C, 60°C, or 70°C). The working fluid (EG or EG-water mixture) was heated to the set temperature before entering the test section.

Continue

Test Section

Three SS-316 double pipe heat exchangers with inner tube diameters:

1. 2.8 mm
2. 4 mm
3. 5.5 mm

The annulus carried cold water, while the inner tube carried EG-based solutions. Flanged joints enabled easy replacement.

Proposed Models

Correlations were developed for all combinations of fluid concentration and heat exchanger diameter. Examples:

- HE-1 (2.8 mm):
  Nu=1.3648Re^0.3821Pr^0.0226

- HE-2 (4 mm):
  Nu=0.1119Re^0.5441Pr^0.6317

- HE-3 (5.5 mm):
  Nu=0.09216Re^0.6845Pr^0.5589
  Each model had a deviation within ±10%, indicating strong predictive capability.

Effect of Ethylene Glycol Concentration

Higher EG concentration increases viscosity, reducing turbulence and lowering the heat-transfer coefficient.

Thus:

$$h_{50\%EG} > h_{70\%EG} > h_{100\%EG}$$

Effect of Tube Diameter

Heat-transfer coefficient increases with tube diameter. In very small tubes (2.8 mm), insufficient space restricts eddy formation, reducing turbulence.

Effect of Temperature

Heat-transfer coefficient decreases with increasing temperature because viscosity decreases, reducing the Prandtl number.

References:

Junaedi et.al. . “Heat Transfer Coefficient and Pressure Characteristics in a Copper Pipe System Using an EG/Water Mixture, 2022

Sri Wuryanti et. al. Investigation of Ethylene Glycol Heat Transfer Coefficient through Double Pipe and Coil Heat Exchanger, 2021

By
Minaxi Patel

Observance of Mokshada Ekadashi and the Universal Message of the Bhagavad Gita

- Dinesh Kumar Pandey, Department of Chemical Engineering

On 1st December 2025, we have observed Mokshada Ekadashi, the sacred day on which Lord Krishna spoke the Bhagavad Gita to His dear friend Arjuna on the battlefield of Kurukshetra. The Gita is presented in the form of profound poetic dialogue, addressing the deepest questions of life, duty, and existence.

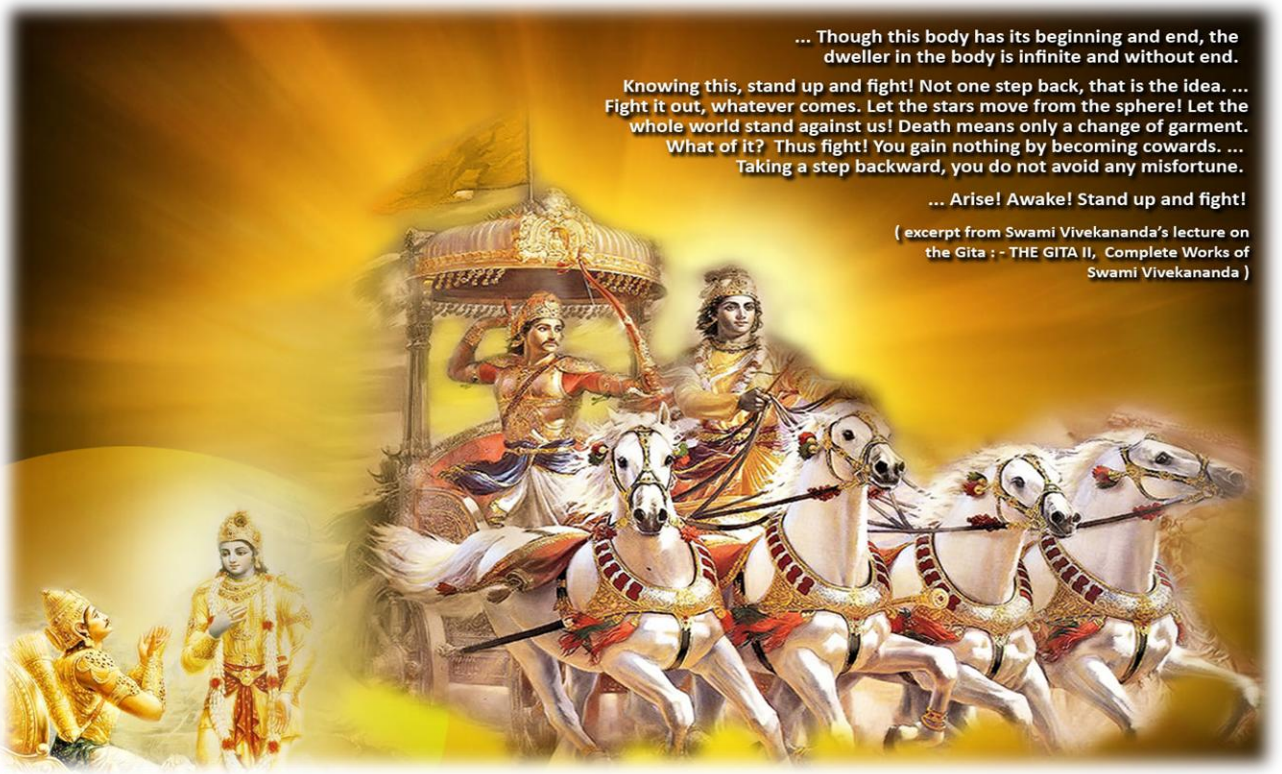
The Bhagavad Gita has been accepted by renowned philosophers and spiritual thinkers all over the world as the science of the soul and more. A sincere reading of this great scripture reveals that it is not an ordinary religious text, nor does it belong within any religious or geopolitical boundaries. The knowledge imparted in the Gita is universal, applicable to all human beings, because it explains the nature of the soul—the true living entity within everybody.

The Gita teaches that we are not the body; therefore, we are not Hindu, Muslim, Sikh, Christian, Brahmin, Kshatriya, Vaishya, or Shudra. Rather, we are part and parcel of the Supreme Being. The soul—the actual individual living entity—has no material designation. Its only true function is to serve the cause of its own existence, the Supreme Being. All external identities and coverings disappear the moment the soul leaves the body.

Continue

Observance of Mokshada Ekadashi and the Universal Message of the Bhagavad Gita

Continue



The Bhagavad Gita enlightens us about the true nature of the soul, described as Sat-Chit-Ananda—eternal, full of knowledge, and full of bliss. When covered by material energy, the soul mistakenly identifies itself with matter and seeks eternity, knowledge, and happiness through material means, which is ultimately impossible. The Bhagavad Gita plays a vital role in awakening this forgotten spiritual consciousness.

The science of the soul lies beyond the reach of our material senses and limited means of knowledge. Therefore, it can only be understood through the Supreme Being. Lord Krishna, who is beyond the limitations of ordinary perception and material dimensions. During His advent on earth, He repeatedly manifested His divine opulences.

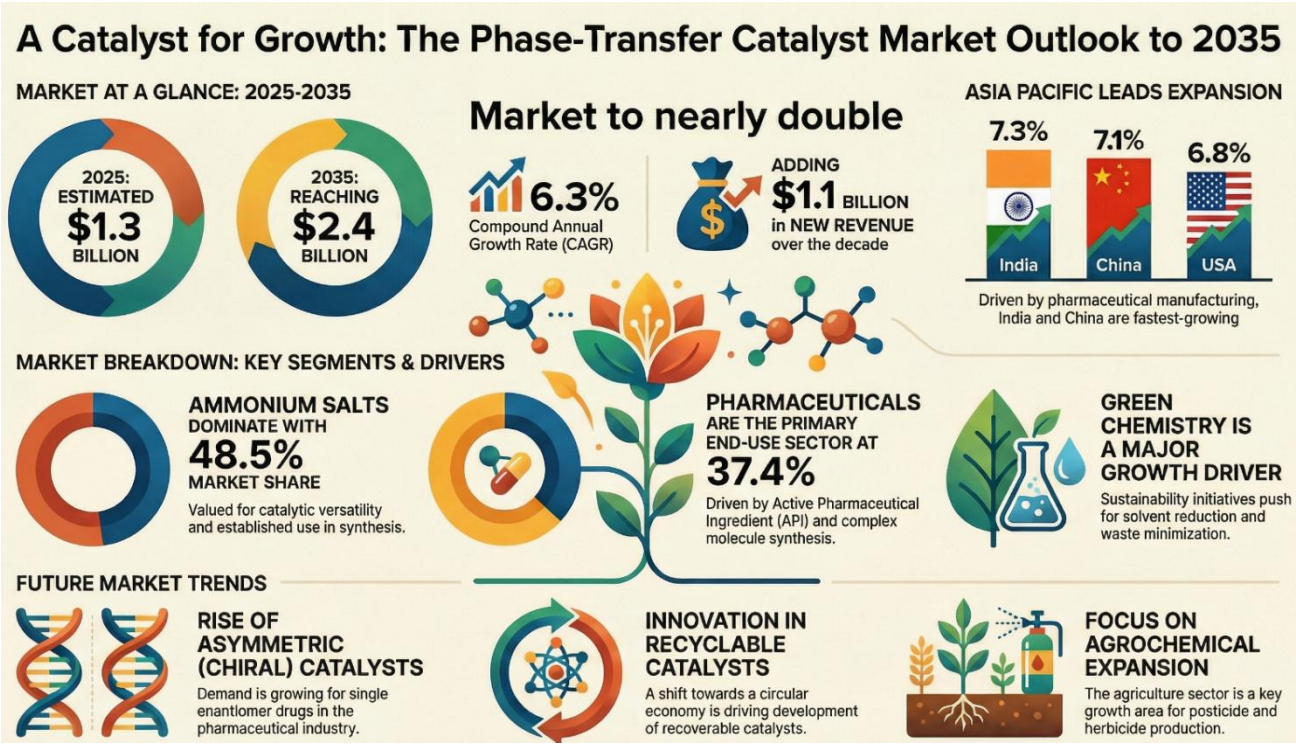
The scriptures describe six opulences: knowledge, wealth, power, beauty, fame, and renunciation. Even the partial presence of these makes a person attractive. However, Lord Krishna uniquely possesses all six opulences in complete fullness, not partially. Thus, He is Bhagavan, meaning "the all-attractive Supreme Person." He is the source of everything, and although He bestows opulences upon countless living beings, His own opulence remains completely unchanged—unlike material wealth, which diminishes when shared.

Therefore, we should take full advantage of the facilities available to us to study the Bhagavad Gita and enlighten ourselves with true, eternal knowledge that leads to self-realization and spiritual fulfillment.

Phase-Transfer Catalyst: Market on the Rise

- Krunal J. Suthar, Department of Chemical Engineering

A phase-transfer catalyst enables reactions between reagents located in immiscible phases (typically organic and aqueous). It transports reactive ions across the phase boundary by forming an ion-pair, increasing their availability in the organic phase. This enhances reaction rates, selectivity, and yields. PTCs are widely applied in pharmaceutical synthesis, agrochemicals, polymers, and fine chemicals.



Infographics generated using NotebookLM

The global phase-transfer catalyst market is set for strong growth, rising from USD 1.3 billion in 2025 to USD 2.4 billion by 2035 at a CAGR of 6.3%. Growth is driven by increasing pharmaceutical synthesis, expanding agrochemical production, and the shift toward green chemistry. Ammonium salts dominate the market with a 48.5% share due to their versatility and widespread use. Pharmaceuticals remain the top application area, accounting for 37.4% of demand, largely due to complex API manufacturing. Asia Pacific leads growth—especially India (7.3% CAGR) and China (7.1% CAGR)—followed by strong performance in the USA (6.8%) and Germany (6.5%). Key trends include asymmetric PTC for chiral drugs, recyclable catalysts, and rising emphasis on sustainability. Leading player TCI holds a 15.3% market share.

Continue

Phase-Transfer Catalyst: Market on the Rise

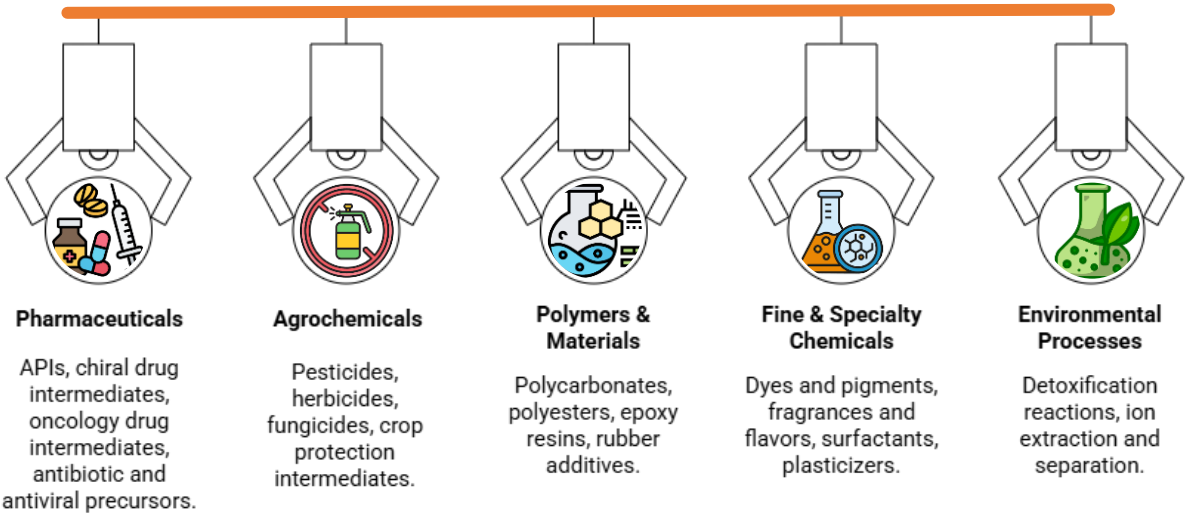
Segmental classification:

- ***Ammonium Salts (48.5%)*** dominate the market due to their catalytic versatility, strong documentation, and broad acceptance in standard synthesis. Their efficiency in ion-pair transfer, ease of use for chemists, and flexible formulation options make them the preferred PTCs. Tetrabutylammonium salts are especially valued for balanced lipophilicity in substitution reactions.
- ***Potassium Salts (29.6%)*** serve niche needs where strong bases are required, mainly in deprotonation and elimination reactions.
- ***Pharmaceuticals (37.4%)*** lead end-use demand for APIs, complex molecules, and chiral drugs, with strong alignment to green chemistry.
- ***Agriculture (23.7%)*** follows, driven by pesticide and herbicide intermediate production requiring high purity and low waste.

PTCs are important because they enable reactions that would otherwise be slow, inefficient, or impossible when reactants are in different phases usually organic and aqueous. Their key importance includes:

- Faster and more efficient reactions
- Mild and safer reaction conditions
- Reduced waste and greener processes
- Cost savings in industry
- Wide applicability

Common applications of PTCs in production of various products are shown in below figure.



Reference: www.factmr.com/report/phase-transfer-catalyst-market

Membrane Separation Technique for Purification Biodiesel

- Akash Raval, Department of Chemical Engineering

As the world population increases, demand of fuel in all sectors, such as power generation, transportation and industries lead to the depletion of fossil fuel. Due to depletion of fossil fuel uncertainty in supply and price of fuel. Furthermore, high usage of fossil fuel in engine responsible for higher emission of carbon dioxide and sulphur compound which causes environment problem. Hence, it is require searching alternative energy sources such as wind energy, solar energy, biofuels etc. Biofuels are environment friendly and renewable. Hence, they get attention as alternative to the petroleum fuel. Unlike bioethanol, biodiesel has very similar properties to the conventional diesel so that it can use directly in diesel engine without much modification. Biodiesel is biofuels which has long chain alkyl ester which is made up from the vegetable oil and animal fats [1]. Major advantage of biodiesel over conventional diesel are ease to usage, provide safety due to high flash point, favorable lubricity properties, environmental friendly due to renewable, biodegradable, non–toxic, mitigated greenhouse gases and provide national energy security, trade balance and development of rural regions. Disadvantage of biodiesel over conventional diesel is high price, less stability when come in contact with oxygen and cold flow properties [2].

Biodiesel differ chemically from the conventional diesel as it is derived from vegetable oil or animal fat. The advantages of vegetable oils used as diesel fuel are liquid nature-portability, heat content (80% of diesel fuel), ready availability and renewability [3]. The direct use of vegetable oils as fuel in is problematic due to their high viscosity, low volatility and reactivity of hydrocarbon chain which causes technical problem [4]. There is mainly four method to produced biodiesel are blending, micro emulsion, pyrolysis and transesterification. Plenty of method is available for biodiesel production but transesterification is most concentrated method because it lowers the viscosity of biodiesel and requires very less time and energy. Transesterification is the process which fatty acid is reacted with short chain of alcohol in presence of catalyst and produces fatty acid methyl ester. It is more popular method as triglycerides are converted into fatty acid methyl esters (FAME) [2].

Continue

Biodiesel produce by transesterification contain minor amount impurities such as free fatty acid (FFA), soap, water, glycerol, methanol and catalyst. Purity of biodiesel influences the properties of fuel and engine life span. To improve the properties of biodiesel further purification is needed [5].The purification of biodiesel is generally achieved by three methods. 1. Wet washing technology, 2. Membrane technology and 3.Dry wash technology. Wet washing technology is most widely used method to remove impurities from CBD (Crude biodiesel). Water technology produce lots of wastewater hence, to do purification with least water generation membrane technology was developed. This method can reduce the environmental impact due to a reduction in the amount of oil in the discharged water [4,5].However, the major disadvantage is it require large amount of water which increase its cost and time. Moreover, separation of CBD from water phase is difficult and produced large amount of water. Waste water is generated is almost 10 times of CBD. In dry washing; adsorbents such as magnesol, silica, carbon are used to eliminate the impurities present in biodiesel. This method does not provide an adequate separation of biodiesel and causes problems of disposal as well as regeneration of adsorbents.

Membrane technology is one of most emerging technology.The usage of membrane technology is beneficial as it minimize the generation of waste water and effectively avoiding the occurrence of emulsification during the washing step and resulting in a decrement of the methyl ester loss during the refining process and it is said to be a promising method of biodiesel purification.It does not require solvent and adsorbent to be separated. It produces biodiesel in alignment with the required standards [7]. But there are various limitations to the membrane, such as membrane materials used should have resistance to organic solvents, it should be moderately fouling and low cost. As a result it is imperative to identify the appropriate membrane material for separation [7]. The membrane flux depends on selectivityand higher selective membranes give higher permeate flow rate and increased fouling resistance.

Continue

There are two types of membranes such as synthetic membranes and natural membranes. Natural membranes can be used in laboratories, whereas synthetic membranes can be used in different applications [7], [8]. On basis of materials, membranes are classified as polymeric membrane and an inorganic membrane. The polymeric membranes can be asymmetric membrane. The composite membrane is similar to that of an asymmetric membrane where a thin layer is laid on porous support materials. Membrane technology involved the usage of two types of membrane: flat microfiltration mixed cellulose acetate (MCA) polymeric membrane and flat ultra-filtration poly tetrafluoroethylene (PTFE) polymeric membrane. Polymeric membrane has low cost but get swell so easily. On the other hand ceramic membrane has high temperature and chemical resistance but it has very high cost. The crude biodiesel was pumped from the recirculation tank to the membrane module, where the methyl ester permeate that passes through the membrane was collected in a beaker, and the rejected fluid was sent back to the recirculation tank as shown in Fig. 7 study found that the ultra-filtration PTFE polymeric membrane successfully filtered a higher volume of methyl ester compared to the MCA polymeric membrane. Membrane technology was also used with inorganic membrane such as α-Al_2O_3/TiO_2 with average pore diameters of 0.2 μm. Further acidification is used to retain more contaminants. Recently implemented membrane reactors have shown great potential as a technology for biodiesel separation [9],like traditional membrane reactor setups, integrated membrane systems are now being utilized to remove the need for intermediate processing steps. In these reactors, both the reaction and separation of biodiesel happen within a single unit, which helps lower both production and installation expenses [9], Furthermore, membrane reactors effectively separate biodiesel from impurities according to ASTM standards.

Continue

Process block diagram:

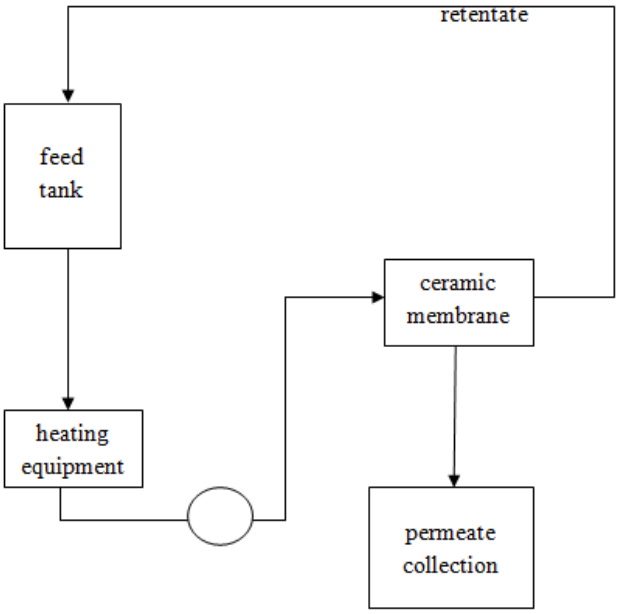


Figure. 1 Block diagram of membrane technology

Conclusion

Membranes serve as a practical substitute for the purification of biodiesel. Both microfiltration and ultra filtration membranes are suitable for manufacturing and separating biodiesel, enabling it to meet established global standards. It removes the need for excessive ethanol usage and lowers the extra expenses linked to separation processes.

References:

1. AtadarshiI.M., ArouaM.K., Abdul Aziz A.," Biodiesel separation and purification: A review,Renewable Energy, 2011, 36, 437-443.
2. Fangrui Ma, Milford A Hanna, Biodiesel production: a review,bioresource technology, 1999,70-1,1-15.
3. Nurull Muna Daud, Siti Rozaimah Sheikh Abdullah∗, Hassimi Abu Hasan, Zahira Yaakob, Production of biodiesel and its wastewater treatment technologies: A review, Process Safety and Environmental Protection,2015,94, 487–508.
4. F. Sundus,M.A.Fazal,H.H.Maszuki,Tribology with biodiesel: A study on enhancing biodiesel stability and its fuel properties,Renewable and sustainable Energy Review,2017,70,399-412.

By Aakash Rawal

Activated Carbon Filters: A Sustainable Water Treatment Solution

- Shubhash Chandra (B.E. Semester-5)

Activated carbon filters are highly efficient filtration systems that use porous carbon materials to remove impurities, odors, chemicals, and contaminants from air and water. Due to their exceptionally high surface area and strong adsorption capabilities. The activated carbon market is projected to reach USD 8.41 billion by 2030, growing at a 9.8% CAGR from 2023 to 2030.

Key Growth Drivers

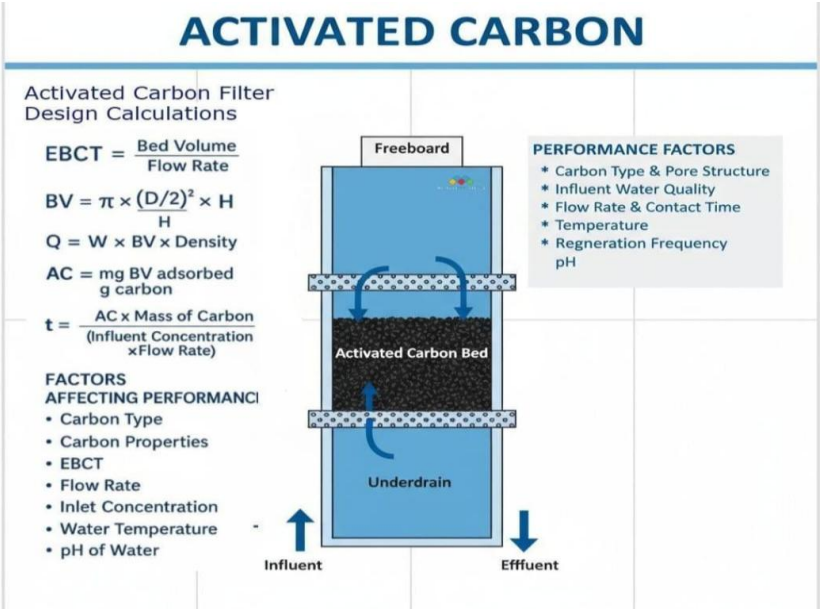
Rising Water Treatment Requirements - Increasing contamination in municipal and industrial water supplies boosts filter installation.

Air Quality Concerns - Demand rises for VOC removal, odor control, and particulate filtration in homes, offices, and industries.

Industrial Expansion - Sectors such as chemicals, petrochemicals, and food processing require high-performance filtration systems.

Environmental Regulations - Governments are enforcing strict guidelines on emissions, wastewater discharge, and air pollution control.

Growing Awareness of Health & Safety - Clean air and water solutions are being adopted across healthcare, commercial buildings, and residential setups.



Continue

Continue

Advantages of Activated Carbon Filters

Superior Adsorption Efficiency - Removes chlorine, pesticides, solvents, gases, and organic contaminants effectively.

Improved Taste & Odor Control - Widely used in water purification and food-beverage processing.

Versatile Application - Suitable for liquid-phase and gas-phase filtration

Eco-Friendly & Safe - Activated carbon is naturally sourced and biodegradable.

Cost-Effective Filtration - Long service life with low operational cost.

Market Segmentation

By Type: Granular Activated Carbon (GAC), Powdered Activated Carbon (PAC), Extruded Carbon, Impregnated Carbon

By Application: Water Purification, Air Purification, Industrial Processes, Food & Beverage, Pharmaceuticals, Gas Processing

By End-Use: Municipal, Industrial, Commercial, Residential

Challenges

Limited efficiency for inorganic contaminants.

Need for frequent regeneration or replacement.

High production cost of premium-grade activated carbon.

By

Shubhash Chandra (B.E. Semester-5)

Removal and Conversion of HF from Industrial HCl Streams Using Simple Adsorption–Precipitation Technique

By, Dhruvrajsinh Chauhan (M.E. Sem-III)

Introduction

Hydrochloric acid (HCl) is widely used in several industrial operations such as steel pickling, metal surface treatment, semiconductor processing, and chlorination-based chemical manufacturing. These processes frequently generate large quantities of spent or by-product HCl streams contaminated with various impurities. Among them, hydrofluoric acid (HF) is of particular concern due to its high corrosiveness, toxicity, and strong complex-forming ability. Industrial waste streams typically contain high-concentration HCl contaminated with 7–8% HF, making them unsuitable for direct reuse or conventional recycling.

Although HCl is a valuable and marketable chemical (approximately 4 INR/kg), the presence of even small amounts of HF classifies the entire stream as hazardous waste. Disposal through authorized treatment facilities incurs a cost of 11–15 INR/kg, resulting in a significant annual financial burden for large plants. In projects of the scale of Neogen Ions Ltd.'s 1000-crore plant, disposal costs can exceed 100 crore per year. Therefore, developing a practical, scalable, and economical technique to remove HF while recovering reusable HCl is crucial both economically and environmentally.

This study investigates the removal and conversion of HF from industrial-grade HCl streams using readily available materials such as silica, CaCO3, zeolites, NaCl, KCl, and sodium silicate. Particular emphasis is placed on a simple adsorption–precipitation technique involving NaCl and silica, which effectively converts HF into a stable, non-hazardous by-product.

Methodology

A series of materials—silica, calcium carbonate, zeolites, sodium chloride, potassium chloride, and sodium silicate—were tested individually and in combination for their ability to remove HF from concentrated HCl solutions. The objective was to identify a low-cost, industrially adoptable treatment capable of:

- Minimizing fluoride concentration
- Preventing corrosive attack on equipment
- Producing reusable, marketable HCl
- Generating a stable and safely disposable or valuable by-product

Continue

Among all combinations, the mixture of NaCl + silica showed the most effective performance. The treatment proceeds through adsorption of fluoride species on silica, followed by precipitation of fluoro-silicate complexes in the presence of sodium ions.

The main reaction forms sodium hexafluorosilicate (Na_2SiF_6), a stable crystalline product commonly used in ceramics, fluorine chemistry, and water treatment.

Reaction Mechanism

$$6\,HF + SiO_2 + 2\,NaCl \rightarrow Na_2SiF_6 + 2\,HCl + H_2O$$

- HF reacts with silica to form fluoro-silicate species.
- Sodium ions from NaCl convert these into Na_2SiF_6 crystals.
- HCl remains in solution and increases slightly in concentration.

Results and Discussion

The adsorption–precipitation process successfully removed fluoride impurities and yielded high-purity HCl of 22% concentration, suitable for industrial reuse. Simultaneously, Na_2SiF_6 was obtained as a solid by-product, enabling both fluoride stabilization and potential commercial utilization.

Key observations:

- Efficient HF removal
- Purified HCl meeting industrial specifications
- Significant reduction in hazardous-waste disposal costs
- Scalability with low-cost materials
- Environmentally safe conversion of HF into a stable solid

Conclusion

A simple and economical method for HF removal from industrial HCl waste streams was developed using a combination of NaCl and silica. The process not only converts hazardous HF into stable sodium hexafluorosilicate but also enables the recovery of 22% pure HCl. This approach provides a sustainable, scalable, and cost-effective solution for industries generating fluoride-contaminated acid waste, significantly reducing disposal costs and environmental impact.

By, Dhruvrajsinh Chauhan (M.E. Sem-III)

ALUMNI Column

Alumni Reflection – Deep Modi Batch: 2020–2024
Branch: B.E. Chemical Engineering
Current Role: Executive Engineer, Piramal Pharma Ltd.

As a proud alumnus of Shroff S. R. Rotary Institute of Chemical Technology, I, Deep Modi, a student of the Chemical Engineering Department (Batch 2020–2024), am excited to share my college experience and reflect on the invaluable lessons and memories that have shaped me into who I am today.

I am currently working at Piramal Pharma Ltd. as an Executive Engineer—a journey that began with the placement opportunity I received from the same company during my final year. I saw it as a valuable chance and embraced it wholeheartedly, which marked the beginning of my professional career.

My skill development throughout college has been both technical and non-technical. The initial year of engineering was especially challenging, as it coincided with the COVID-19 pandemic. It was difficult to grasp core concepts in an online environment. However, thanks to the dedication of our faculty and the institute's engaging initiatives such as industrial visits, expert lectures, and project-based learning, I was able to build a strong academic foundation and prepare myself for real-world applications.

One of the most impactful experiences was participating in the Peer Learning Initiative (PLI), which significantly boosted my confidence in public speaking and collaboration. I also had the opportunity to present my final-year project and attend a workshop on ASPEN software for process engineering, which enhanced my technical knowledge and industry readiness.

Beyond academics, I was honored to be selected as the team leader for the college annual function and to guide and supervise workshops, which helped me grow as a communicator and leader. These experiences gave me a chance to develop soft skills and taught me the value of teamwork and responsibility.

The constant support from all subject teachers helped me strengthen my understanding of various subjects and broaden my perspective. I am sincerely grateful to all the faculty members, staff, and mentors who supported and guided me in every aspect of my development.

To summarize, I would like to express my heartfelt gratitude to Shroff S. R. Rotary Institute of Chemical Technology and the Chemical Engineering Department for providing me with an exceptional academic experience and lifelong skills. I feel truly fortunate to have been a part of this institution and will always be proud to stay connected and contribute in any way I can.

Add soft skills, resume building, and communication workshops as part of regular curriculum to make students more confident.

Thank you all.

Warm regards,
Deep Modi
B.E. Chemical Engineering, Batch of 2020–2024

ALUMNI Column

Congratulations to Dr. Krunalsinh Chauhan who completed his Ph.D. on the topic 'Oxidative Dehydrogenation of Cyclohexane over Supported Metal-oxide Catalyst: in-situ DRIFTS, Thermodynamics, and Kinetics Study' from IIT Roorkee. Krunal did his BE – Chemical Engineering from SRICT, Batch 2014-18.

Congratulations to Mr. Jay Barot, who secured winning prize of Rs. 5000/- for his final year presentation at IIT Bombay during Outstanding Young Chemical Engineering Award. Jay completed his Chemical Engineering from the batch 2021-25 and currently working for UPL.

Congratulations

Discipline, Growth, and Gratitude: Manish Singh's Story

How has your experience at Sun Pharma been?

I joined B.E. program at UPL University after pursuing Diploma course. Joining industry after B.E. was different experience. It has been a great learning phase. I adapted quickly, understood the processes well, and realized the value of subjects like safety, group projects, instrumentation, and control in real industrial environments. Thanks to our university for giving an exposure to industries.

What message would you like to give current students?

Value attendance and consistency. I once ignored both - low attendance and average SPI were normal for me. I was almost on a verge of getting detained due to attendance and my scores was not good till last semester. But when I finally became regular, everything changed. With 90% attendance in Semester 8, I scored 8.7. Believe me friends. Discipline genuinely shapes your success.

How did you spend your first salary?

I wanted my first salary to mean something special. So, I spent it on buying flight tickets for my parents and taking them on a pilgrimage. It was their first time sitting in an airplane. Watching their excitement and happiness made me feel blessed. It reminded me why we work hard - so we can give back to the people who shaped us.

Do you miss college?

Very much. College was a place that silently protected and nurtured us. Friends, faculty, labs, classrooms - everything felt familiar and supportive. In the industry, the environment is demanding and not always the same for everyone. It's only after stepping out that I realized how much care, guidance, and warmth I had around me. Those moments now feel priceless.

Are you happy with what you are doing?

Yes, I am. The beginning was challenging, but every new journey starts that way. With patience and time, things become clearer. Experience teaches you more than books. I'm grateful to our department for shaping my discipline and resilience. I now have a clear picture of what I wish to do and achieve..

MANISH SINGH

Alumni from first batch of University (B.E. Chemical Engineering 2021-25)
Trainee (Engineer) at Sun Pharma

INTERVIEW

RESEARCH PUBLICATIONS

Chemical Engineering

Winter 2025 (Jun 2025 to Nov 2025)

- ***Alok Gautam***, Endrick D. Contractor,, T.S. Rajaraman, Co-gasification of rice husk and industrial organic waste: Performance evaluation and ash characterization, Journal of the Indian Chemical Society, Volume 102, Issue 11, November 2025, 102192, https://doi.org/10.1016/j.jics.2025.102192
- ***Krunal J. Suthar***, Atir Sakhrelia, Amaan Mansuri, Anaya Patel, Priyank Thakkar & Milind H. Joshipura, High-Precision Estimation of DES Density and Viscosity using Extreme Gradient Boosting: Experimental Insights and Modelling, J Solution Chem (2025), https://doi.org/10.1007/s10953-025-01491-y
- ***Sandip H. Gharat***, Shyam P. Tekade, Luis A. Pugnaloni. Discharge of spheres and dumbbells mixed with fine grains from a 3D silo, EPJ Web of Conf. 340, 05002 (2025) https://doi.org/10.1051/epjconf/202534005002
- ***Akash Raval***, Harry Patel, Omprakash K. Mahadwad, Biswadeep Pal, Novel Zinc Orthotitanate photocatalyst: Synthesis, characterization and photocatalytic degradation of methylene blue dye, Journal of the Indian Chemical Society, Volume 102, Issue 11, November 2025, 102155, https://doi.org/10.1016/j.jics.2025.102155
- ***Akash Raval,*** Movaliya, S.K., & Patel, S.S. Microwave-Assisted Solution Combustion Synthesis of LaFe2O4 Nanoparticles for Enhanced Photocatalytic Degradation of Rhodamine B Dye under Visible Light Irradiation. Water Air Soil Pollut 237, 40 (2026). https://doi.org/10.1007/s11270-025-08711-7
- ***Alok Gautam***, Rekha Kanzariya & Shina Gautam, Harnessing effluent treatment plant bioproducts: Polyhydroxyalkanoates as a green packaging material, Preparative Biochemistry & Biotechnology, https://doi.org/10.1080/10826068.2025.2562323
- ***Alok Gautam,*** J. Joshi, S. Gautam, A. Gheewala, Extraction and isolation of stevioside and rebaudiana A from Stevia Bertoni leaves, Bulgarian Chemical Communications, Volume 57, pp. 244-250, 2025, 10.34049/bcc.57.B.A0018
- ***Alok Gautam,*** Shina Gautam, Sonal Prajapati, Isha Jasani, Dehalogenation of pyrolytic oil from printed circuit boards with rice husk. J Mater Cycles Waste Manag 27, 4418–4436 (2025). https://doi.org/10.1007/s10163-025-02370-w
- ***Ravindra B. Kanawade***, Govind Keshavrao Patil; Rajkumar Lodha; Nikita Keshavrao Patil; Jitendra B. Naik; Omprakash K. Mahadwad; Comparative Study: Various Modeling (Empirical, Integral, 3D CFD) Approach for Accurate Consequence Analysis and Risk Management of Accidental Release of Ammonia, https://doi.org/10.2118/230146-MS

Dr. Swapna Rekha Panda from the Department of Chemical Engineering, has contributed **TWO Book Chapters** to the upcoming international book *"Sustainability in Biomass and Biorefinery: Processing and Opportunities"*, published by Apple Academic Press (CRC Press, USA).

📘 Chapter 5: *Bio-based Chemicals: Transformative Biorefining Processes*
📗 Chapter 13: *Eco-Friendly Biorefineries: Sustainable Production and Supply Chain Solutions*

Both chapters were officially accepted by the editorial board on 29th November 2025.


DB HSE INTERNATIONAL

CERTIFICATE

OF WORKSHOP PARTICIPATION

This certificate is proudly awarded to

Swapna Rekha Panda

For active and invaluable participation in the **ISO 14001:2015 EMS Lead Auditor** Career Certification and Global Scope demystified workshop held on 08.07.2025

To verify the certificate, please email a copy to info@dbhseinternational.com

Debjyoti Biswas
CEO & Founder

Mr. Dhruv Patel and Dr. Krunal Suthar attended the International Conference on Integrated Computational and Experimental Methods for Innovation in Chemistry and Interdisciplinary Sciences (ICEMI-CHEMIS 2025) on September 3–4, 2025. Mr. Dhruv presented his PhD research titled: "A Machine Learning Approach for Predicting the Thermophysical Properties of Novel Green Solvents."

Dr. Swapna Rekha Panda, from the Department of Chemical Engineering, successfully completed the ISO 14001:2015 **EMS Lead Auditor** Career Certification and actively participated in the Global Scope Demystified Workshop held on **08.07.2025**, organized by DBHSCE International.

Faculty Development Programs – Winter 2025

Faculty Development Program (FDP)

Organized by
Dept. of Chemical Engineering, Heritage Institute of Technology, Kolkata
July 18-22, 2025

INSTITUTION'S INNOVATION COUNCIL (Ministry of Education Initiative)

CERTIFICATE OF COMPLETION
The certificate is hereby awarded to

Ministry of Education's INNOVATION CELL (GOVERNMENT OF INDIA)

DR. KRUNAL J. SUTHAR

from UPL University of Sustainable Technology

Who has successfully completed the Faculty Development Program (FDP) on *"Energy Transition: Pathways to Net-Zero Emission (ETPNE-2025)"* held online from July 18–22, 2025, organized by the Department of Chemical Engineering, Heritage Institute of Technology, Kolkata (HITK) in association with IIC and IQAC, HITK.

Prof. Sulagna Chatterjee	Dr. Abhyuday Mallick	Dr. Avijit Ghosh
Head, Dept. of Chemical Engineering, HITK	Co-Coordinator, FDP-ETPNE-2025	Coordinator, FDP-ETPNE-2025

Certificate ID: FDP/2025/ChE/60 Email: avijit.ghosh@heritageit.edu/ 9830752111 Date of Issue: 1st August, 2025

Faculty Development Program (FDP)

Organized by
Dept. of Chemical Engineering, Heritage Institute of Technology, Kolkata
July 18-22, 2025

INSTITUTION'S INNOVATION COUNCIL (Ministry of Education Initiative)

CERTIFICATE OF COMPLETION
The certificate is hereby awarded to

Ministry of Education's INNOVATION CELL (GOVERNMENT OF INDIA)

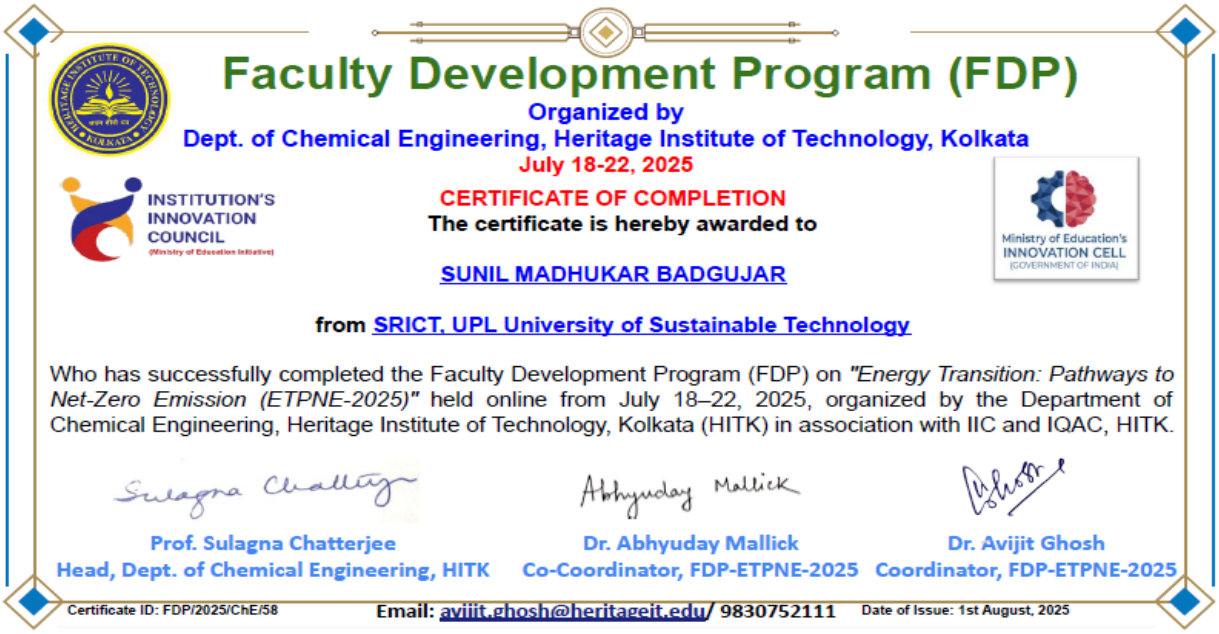
MR. ARGADE KUNALKUMAR PRAMODRAO

from UPL UNIVERSITY OF SUSTAINABLE TECHNOLOGY

Who has successfully completed the Faculty Development Program (FDP) on *"Energy Transition: Pathways to Net-Zero Emission (ETPNE-2025)"* held online from July 18–22, 2025, organized by the Department of Chemical Engineering, Heritage Institute of Technology, Kolkata (HITK) in association with IIC and IQAC, HITK.

Prof. Sulagna Chatterjee	Dr. Abhyuday Mallick	Dr. Avijit Ghosh
Head, Dept. of Chemical Engineering, HITK	Co-Coordinator, FDP-ETPNE-2025	Coordinator, FDP-ETPNE-2025

Certificate ID: FDP/2025/ChE/34 Email: avijit.ghosh@heritageit.edu/ 9830752111 Date of Issue: 1st August, 2025



Faculty Development Program (FDP)

Organized by

Dept. of Chemical Engineering, Heritage Institute of Technology, Kolkata

July 18-22, 2025

INSTITUTION'S INNOVATION COUNCIL (Ministry of Education Initiative)

Ministry of Education's INNOVATION CELL (GOVERNMENT OF INDIA)

CERTIFICATE OF COMPLETION

The certificate is hereby awarded to

SUNIL MADHUKAR BADGUJAR

from SRICT, UPL University of Sustainable Technology

Who has successfully completed the Faculty Development Program (FDP) on *"Energy Transition: Pathways to Net-Zero Emission (ETPNE-2025)"* held online from July 18–22, 2025, organized by the Department of Chemical Engineering, Heritage Institute of Technology, Kolkata (HITK) in association with IIC and IQAC, HITK.

Prof. Sulagna Chatterjee
Head, Dept. of Chemical Engineering, HITK

Dr. Abhyuday Mallick
Co-Coordinator, FDP-ETPNE-2025

Dr. Avijit Ghosh
Coordinator, FDP-ETPNE-2025

Certificate ID: FDP/2025/ChE/58 Email: avijit.ghosh@heritageit.edu/ 9830752111 Date of Issue: 1st August, 2025

Dr. Shivanand S. Chavan participated in the Faculty Development Program on *Simulation Tools for Engineering Problems (STEP-3.0)*, held from 1st to 5th November 2025, organized by the Department of Chemical Engineering, SVNIT Surat.

SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY, SURAT

CERTIFICATE

OF PARTICIPATION

THIS CERTIFICATE IS AWARDED TO

SHIVANAND SAHEBRAO CHAVAN

FROM

UPL UNIVERSITY OF SUSTAINABLE TECHNOLOGY

for his/her successful participation in Hybrid Mode Short Term Training Program (STTP) on *"Simulation Tools for Engineering Problems (STEP - 3.0)"* organized by the Department of Chemical Engineering, Sardar Vallabhbhai National Institute of Technology, Surat from 1st – 5th November, 2025.

DR. M. CHAKRABORTY CONVENER | DR. A. K. MUNGRAY CONVENER | DR. V. N. LAD COORDINATOR | DR. A. A. MUNGRAY COORDINATOR | DR. JOGENDER SINGH COORDINATOR | DR. P. P. THAKUR COORDINATOR

ATAL/2025/1763289832

Skill India

ATAL

RNGPIT

ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

Nelson Mandela Marg, Vasant Kunj, New Delhi -110070

AICTE Training and Learning (ATAL) Academy

Certificate

It is certified that Mr. KIMSHUK D DESAI, Assistant Professor of R.N.G. PATEL INSTITUTE OF TECHNOLOGY has successfully participated & completed AICTE Training And Learning (ATAL) Academy Faculty Development Program on Environmental Auditing for a Sustainable Future at R. N. G. PATEL INSTITUTE OF TECHNOLOGY RNGPIT from 17/11/2025 to 22/11/2025.

Latesh B Chaudhari
Professor Level (AICTE Institute), Coordinator
R. N. G. PATEL INSTITUTE OF TECHNOLOGY
RNGPIT

Dr. Sunil Luthra
Director & Bureau Head
Training and Learning Bureau, AICTE

Mr. Kimshuk D. Desai successfully completed a 6-day AICTE-approved online Faculty Development Program on *Environmental Auditing for a Sustainable Future*, held from 1st November 2025 to 30th November 2025.

Chemical Engineering Student Selected for RDC 2025

Mr. Abhishek Rajbhar, a student of Chemical Engineering (Semester–5), has been selected to represent the Gujarat Directorate at the prestigious Republic Day Camp (RDC), New Delhi, under the Prime Minister's Rally category. This remarkable achievement reflects his discipline, leadership qualities, and commitment to excellence, and brings great pride to the Department of Chemical Engineering and the University.

SCHEMCON 2025 Participation

Four B.E. final-year Chemical Engineering students (Patel Meet, Aakash Mandal, Kaushal Sonagra, Karan Manavadariya) attended SCHEMCON 2025 at VIT. The students gained valuable exposure to emerging topics such as the role of graphite in energy storage technologies and advanced electrode technologies with future perspectives. They also obtained useful insights from the research work and technical presentations delivered by fellow students at SCHEMCON, enriching their academic and professional understanding.

We are delighted to share that Mr. Sunil M. Badgujar has successfully completed his Doctor of Philosophy (PhD) from UICT, KBC North Maharashtra University, Jalgaon. His doctoral research was on the topic: “Design and Modeling of Thin Film Co-Precipitation Reactor System for Synthesis of Nanomaterials,”

The work was carried out under the esteemed guidance of Prof. Ujwal D. Patil and Prof. Jitendra S. Narkhede.We extend our heartiest congratulations to **Dr. Sunil M. Badgujar** on this significant academic achievement and wish him continued success in his future endeavors.

ACHIEVEMENTS

Mr. Kimshuk D. Desai was selected to represent Chess at the Taluka level in the prestigious Khel Maha Kumbh, held from 1st November 2025 to 30th November 2025. His selection reflects his dedication, strategic skills, and commendable performance in the sport, bringing pride to the institution.

Happy to share that the SRICT IIChE Student Chapter has been honored with the Best Student Chapter Award by the IIChE – Ankleshwar Regional Centre for the second consecutive year (2024 and 2025). The award was presented by Shri B. D. Dalwadi, Chairman, IIChE–ARC, in the presence of esteemed dignitaries during today's Annual General Meeting.

Student's Corner

By
Priti Dighe
BE VI

By
Anuj Sonawane
DE V

By
Priya Dighe
BE VI

By
Keya
BE VII

Student's Corner

Beyond the Classroom: Sports Highlights

Our students actively participated in the District-level Khel Mahakumbh Football Tournament held on 17/11/2025 at Anandpura Sports Complex, Anleshwar. Students also represented the institute in the Khel Mahakumbh Basketball Tournament conducted at Amicus School, Bharuch. In addition, first-year Chemical Engineering students secured victory in the Inter-Department Volleyball Tournament, showcasing their excellent teamwork and sporting spirit. Ananya Singh along with other NCC cadets participated in volleyball game during NCC camp at Rajpipla during July 2025.

Student's Corner

Medical Checkup Camp

A regular medical check-up camp was conducted on campus for students. Chemical Engineering students actively participated in the health check-up, promoting awareness and ensuring their overall well-being.

Student's Corner

A Lively Day in ChemEng

Yo, step in the class—8:30 on the clock,
Prof walks in and *boom*—we all unlock.
Thermo on the board, equations run wild,
Balancing mass like a cool, calm child.
Pumps go boom, reactors go *whirr*,
Brain lights up—pure heat transfer.
Distillation towers stretching to the sky,
One small slip and the column says "bye!"
Syllabus thick like a design file stack,
Assignments chase me—but I don't look back.
I walk in proud with my lab coat clean,
'Cause Chemical Engineers fuel the machine.
Titrations drip like beats in a loop,
Centrifuge spins like a high-energy troupe.
P&ID lines weaving left and right—
This is how we flex on a process site.
From first-year nerves to final-year cheer,
We grind, we rise, we persevere.
Pipes, valves, vessels - yeah,
that's our gear.
Say it loud…
I'm a Chemical Engineer!

Krutik Macchi and Dharmik Patel
from BE Semester-4

Student's Corner

QUICK SPARKS & CRICKET VIBES

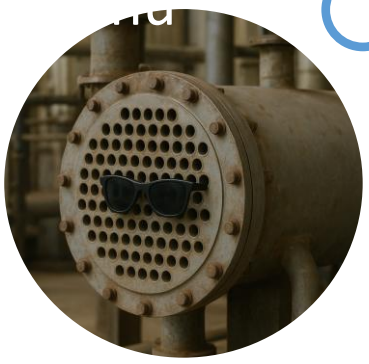
1. Did You Know?

- The 2025 Women's Cricket World Cup became one of the most-watched women's sporting events in history.
- India lifted the trophy for the first time, creating a proud moment for fans across the country.
- Deepti Sharma emerged as one of the top all-round performers of the tournament.

Little reminder: Big victories grow from small, steady efforts — whether in sports or studies.

2. Mini Quiz – Try It in 30 Seconds

- Where was the final match of the 2025 Women's World Cup played?
- Who scored 87 runs for India in the final?
- How many teams participated in the tournament?
- Try it with a friend — loser buys a canteen samosa!

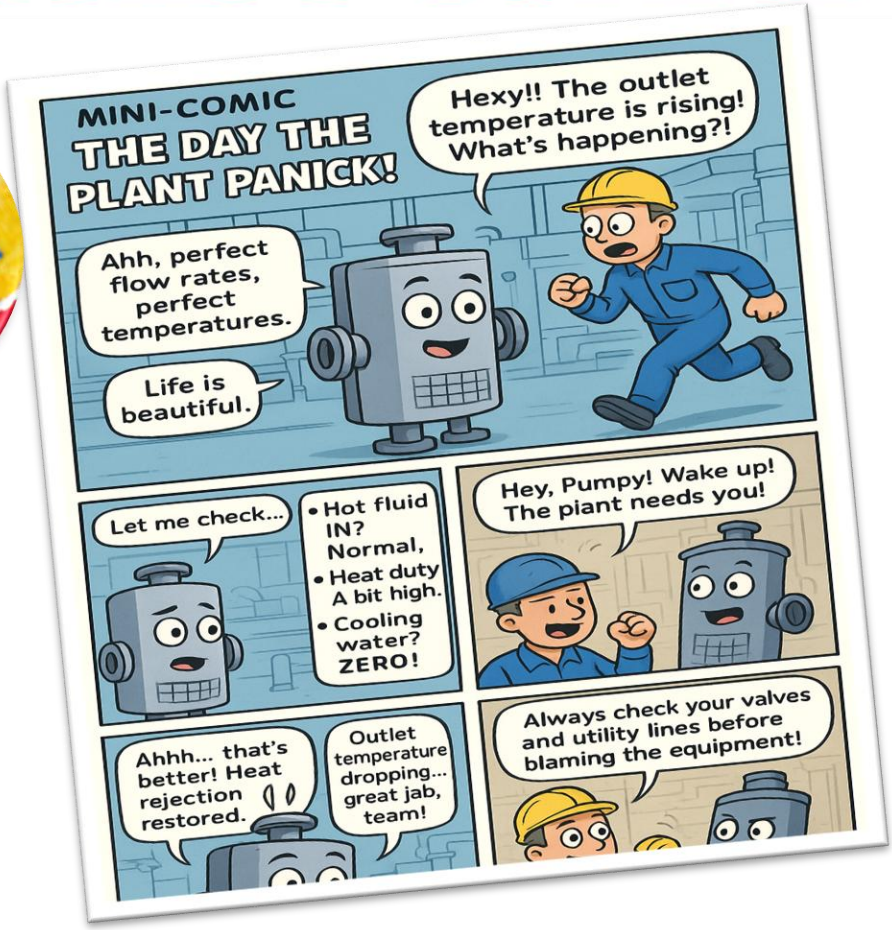


"The Heat Exchanger That Wanted a Vacation"

The old shell-and-tube heat exchanger groaned as fouling coated its tubes again. "I need a break," it whispered. One day, the plant shut down for maintenance. Workers cleaned its tubes shiny and bright. When the system restarted, it felt reborn transferring heat faster, happier, and proud to be essential again.

- Hit Patel and Rishabh Patil from DE 4 sem

Student's Corner



- **Baffles are like traffic police** inside heat exchangers — they keep fluids from taking shortcuts!
- **A pump never "sucks"**. It only creates low pressure so the liquid *rushes in* to fill the space.
- **Distillation is just separation by patience** — the more stages you add, the more polite the separation becomes.
- **A fluidized bed is basically popcorn mode** — solids "float" as gas tries to escape upward.
- **Reactors don't explode… people ignoring temperature control do.**
- **Steam traps = plant's housekeepers** — keep the steam, throw out the condensate.

- Hit Patel and Rishabh Patil from DE 4 sem

EDITORIAL BOARD

Thank you to all our stakeholders for your continued support. We encourage students, faculty, and well-wishers to contribute creative, technical, or thought-provoking pieces for our next edition. Until then - read on, stay inspired, and keep the CHEMEZINE spirit alive!

A special note to our alumni: Join us for the Mega Alumni Gathering and New Year Celebration on 4th January 2026.

🎉 Mega Alumni Gathering 2026! 🎊

Join us as we celebrate the New Year together with joy, music, food, and unlimited nostalgia.

🗓️ 4th January 2026

⏰ 3 PM – 8 PM

Registration mandatory (NO On spot registration)

Link: https://upluniversity.github.io/ALUMINI/

We look forward to your valuable feedback…

CHAMPIONS

STRENGTH IN EVERY STROKE, BELIEF IN EVERY MOVE.
INDIA'S WOMEN CHAMPIONS REMIND US TO

RISE, LEAD, AND INSPIRE

happy reading!