

# Department of Chemical Engineering

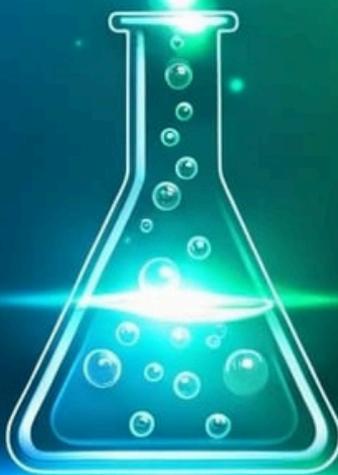


# Chemchronicle

JUNE 2025 EDITION



**V.S.B Engineering College**  
(An Autonomous Institution)





# VSB ENGINEERING COLLEGE, KARUR

## Vision Statement

**We endeavour to impart futuristic technical education of the highest quality to the student community and to inculcate discipline in them to face the world with self-confidence and thus we prepare them for life as responsible citizens to uphold human values and to be of service at large. We strive to bring up the Institution as an Institution of Academic excellence of International standard**

## Mission Statement

**We transform persons into personalities by the state-of-the-art infrastructure, time consciousness, quick response and the best academic practices through assessment and advice.**



# CHEMICAL ENGINEERING

## Vision Statement

**TO BE A CENTRE OF EXCELLENCE FOR DEVELOPMENT AND DISSEMINATION OF KNOWLEDGE IN CHEMICAL ENGINEERING FOR THE NATION AND BEYOND.**

## Mission Statement

**DEPARTMENT OF CHEMICAL ENGINEERING IS COMMITTED TO: IMPART KNOWLEDGE TO STUDENTS AT ALL LEVELS THROUGH A VIBRANT, DYNAMIC AND STATE OF THE ART INTELLECTUAL DELIVERY TO ENSURE THE CREATION OF A COMPLETE CHEMICAL ENGINEER WITH A HIGH SENSE OF SOCIAL RESPONSIBILITY AND PROFESSIONAL ETHICS. SYNERGIZE THE EFFORTS OF THE STUDENTS AND FACULTY TO EVOLVE INNOVATIVE ENGINEERING PRACTICES AND TEACHING METHODOLOGIES GENERATE AN ENVIRONMENT OF CONTINUOUS LEARNING AND RESEARCH.**



## **CHAIRMAN'S DESK**

**Our Institution, a temple of learning and a hallmark of discipline, treads towards the zenith of glory by preferring the education of global standards in the best quality and variety, and substantiates to be a benchmark among all the colleges in India.**

**- Shri.V.S.Balsamy, B.Sc., L.L.B.,**

## **HOD'S MESSAGE**

**ON BEHALF OF OUR FACULTY, STAFF, AND STUDENTS, I EXTEND A WARM WELCOME TO THE DEPARTMENT OF CHEMICAL ENGINEERING AT V.S.B. ENGINEERING COLLEGE, KARUR.**

**CHEMICAL ENGINEERING IS CONCERNED WITH THE ECONOMIC DESIGN AND OPERATION OF CHEMICAL INDUSTRIES. THE**

**DISCIPLINE IS BROADENING AND NEW SCIENCE AND**

**ENGINEERING ENCOURAGES TO DEVELOP MORE EFFICIENT, ENVIRONMENTALLY TECHNOLOGIES. CHEMICAL SAFER AND SUSTAINABLE ENGINEERS**

**COMBINE MATHEMATICS, CHEMISTRY, PHYSICS, BIOLOGY, AND ECONOMICS TO TACKLE LARGE-SCALE INDUSTRIAL PROBLEMS**

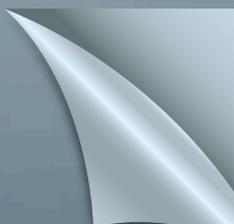
**BY DEVELOPING THEORIES, ADVANCED SIMULATIONS, AND EXPERIMENTS. IN TERMS OF PRODUCTS AND PROCESSES,**

**CHEMICAL ENGINEERS HAVE PLAYED A MAJOR ROLE IN SOCIETY OVER THE YEARS. IN THE FUTURE, MANY NEW OPPORTUNITIES**

**FOR CHEMICAL ENGINEERS WILL BE OPENED UP. CHEMICAL INDUSTRIES NOW COVER A WIDE RANGE OF APPLICATIONS**

**Mr. R. Gowrishankar**

# Placement



# CHEMICAL ENGINEERING PLACEMENT HIGHLIGHTS

**HIGHEST NUMBER OF OFFERS**

**HIGH PACKAGE ACHIEVEMENTS**

**SRIDEVI P**

Highest Package:

**7 LPA** from  
**TATA ELECTRONICS**

Other Companies:

**Quest Global 5.5 LPA**

**Capgemini 4.25 LPA**

**LTIMINDTREE 4.5 LPA**





**YOGESWARI P**  
**CAPGEMINI - 4.25 LPA**  
**COGNIZANT - 4 LPA**



**KHANISHKHA A V**  
**CAPGEMINI - 4.25 LPA**



**SANMUGAPRIYA K**  
**CAPGEMINI - 4.25 LPA**



**MANJU R**  
**CAPGEMINI - 4.25 LPA**



**SAJIV M**  
**QUEST GLOBAL - 5.5 LPA**

# TOP CONSISTENT PLACEMENTS EVERY YEAR

Department of Chemical Engineering

## 2025 Placements

**Capgemini - 5 offers**

**Quest Global - 2 offers**

**LTIMINDTREE - 1 offer**

**Tata Electronics - 1 offer**

**Cognizant - 1 offers**

**Still Placement Drive Going On...**

# Innovations in Research



***ICONS OF OUR DEPARTMENT***

# IV YEAR

1st



**SRIDEVI P**

CGPA - 9.09

2nd



**KEERTHIS**

CGPA - 8.98

3rd



**KHANISHKHA V**

CGPA - 8.96

# III YEAR



**SARANI R P**

CGPA - 9.36



**POOJAS**

CGPA - 8.64



**RAGUNATHA**

CGPA - 8.55

# II YEAR

1st



**DHATCHAYANI V M**

CGPA - 8.30

2nd



**MAHALAKSHMI D**

CGPA - 8.30

3rd



**ANTO FRICKSON X**

CGPA - 8.28

# I YEAR



**JAYASHANKAR J**

CGPA - 8.79



**DHANUJA S**

CGPA - 8.54



**JYOTHI SREE S M**

CGPA - 8.46

# STEPPING INTO THE FUTURE WITH CERTIFIED EXPERTISE - NPTEL



**SRIDEVI P**



**YOGESWARI P**



**MONISHA B**



**SANMUGAPRIYA K**



**KEERTHI S**



**MADHUMALIKA J**



**SWETHA S**



**SARANI R P**



**DEEPIKA S**

# STEPPING INTO THE FUTURE WITH CERTIFIED EXPERTISE - NPTEL



**PANDIDURAI M P**



**ADHITHYA  
KRISHNA R**



**NITHIN KUMAR D**



**ELLAKIYAN S**



**KAVINRAJ S**



**PARANJOTHI B S**



**BHUVANESHWAR S M**



**SHANMUGARAJA L**

# BEST OUTGOING STUDENT OF BATCH 2021-2025



**SRIDEVI P**

She has been awarded as a best outgoing student of the batch 2021-2025 based on her performance in academics, placement and other extra activities.

A faint, light blue outline map of the state of Tamil Nadu is centered in the background of the image. A dark blue curved line arches over the top of the map.

# **FUNDED PROJECT**

**Rs. 10,000**

**from Naan Mudhalvan -  
Government of Tamil Nadu**

# TOP 1000 TEAM

Selected from  
15,300+ teams



**Mr. R. Gowrishankar**  
Head of the Department

**MENTOR**



**SRIDEVI P**



**KHANISHKHA A V**



**MANJU R**

# ONE MORE CROWN TO OUR DEPARTMENT

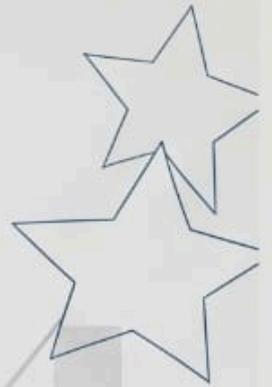
Venkatramanan



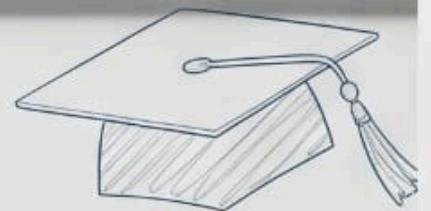
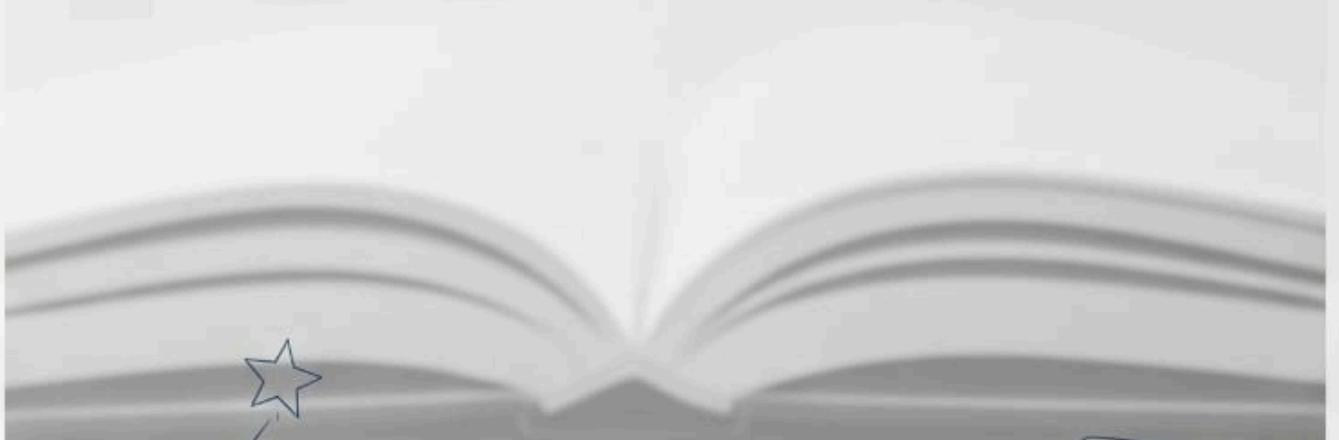
First year chemical Engineering Student

He has participated in various speech competitions like Aura 25 conducted by Government Engineering College, Salem and also participated in awareness program conducted by the collaboration of Police force and our college and won first price in both events.





# STUDENTS ACHIEVEMENTS



## FIRST PRICE

Our department 1<sup>st</sup> year students participated in ideathon and won first price

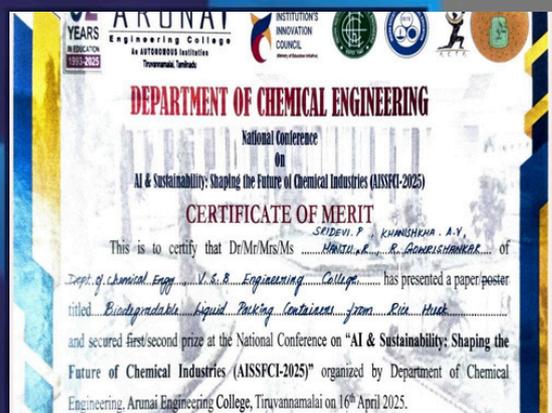


## SECOND PRICE

Our department final year students presented a paper in Kongu Engineering College symposium and won second price

## SECOND BEST PAPER AWARD

Our department final year students presented a paper in Arunai Engineering College Conference and won second best paper award.



<b>Sl.No:</b>	<b>NAME OF THE STUDENT</b>	<b>YEAR</b>	<b>EVENT</b>
1	S.ABINAYA	IV	CONFERENCE
2	T.DHANUSIYA	IV	CONFERENCE
3	S.SUBA	IV	CONFERENCE
4	S.SWETHA	IV	CONFERENCE
5	S.MONISHA	IV	CONFERENCE
6	S.KEERTHI	IV	CONFERENCE
7	J.MADHUMALIKA	IV	CONFERENCE
8	P.YOGESHWARI	IV	CONFERENCE
9	K.SANMUGAPRIYA	IV	CONFERENCE
10	P.SRIDEVI	IV	CONFERENCE
11	A.V.KHANISHKA	IV	CONFERENCE
12	R.MANJU	IV	CONFERENCE
13	S.SABARINATHAN	IV	CONFERENCE
14	R.RAJESH	IV	CONFERENCE
15	M.SAJIV	IV	CONFERENCE
16	M.HARI KRISHNA	IV	CONFERENCE
17	P.SURENDHAR	IV	CONFERENCE
18	L.SANMUGARAJA	IV	CONFERENCE
19	S.ARULMURUGAN	IV	CONFERENCE
20	M.P.PANDIDURAI	IV	CONFERENCE
21	R.ADITHYA	IV	CONFERENCE
22	D.NITHINKUMAR	IV	CONFERENCE
23	T.MATHAN KUMAR	IV	CONFERENCE
24	S. RAEZE	IV	CONFERENCE
25	S.AJAY	IV	CONFERENCE
26	N.SAKTHI	IV	CONFERENCE

27	A.RAGUNATH	III	PAPER PRESENTATION
28	M.RUKKESH	III	PAPER PRESENTATION
29	M.DIVAKAR	III	PAPER PRESENTATION
30	S.B.JAIVANTH	III	PAPER PRESENTATION
31	ADHITIYA KRISHNA	IV	PAPER PRESENTATION
32	NITHIN KUMAR T	IV	PAPER PRESENTATION
33	MATHANKUMAR T	IV	PAPER PRESENTATION
34	NITHIN KUMAR T	IV	PAPER PRESENTATION
35	ADHITIYA KRISHNA	IV	PAPER PRESENTATION
36	MATHANKUMAR T	IV	PAPER PRESENTATION
37	KAVINRAJ S	IV	PAPER PRESENTATION
38	ELAKIYAN S	IV	PAPER PRESENTATION
39	PRAVEEN P	IV	PAPER PRESENTATION
40	PARANJOTHI B S	IV	PAPER PRESENTATION
41	SRIDHAR M K	IV	PAPER PRESENTATION
42	ABIRUBA A	I	PAPER PRESENTATION
43	LAKSHANA	I	PAPER PRESENTATION
44	KAVISRI	I	PAPER PRESENTATION
45	JOYTHISREE	I	PAPER PRESENTATION
46	TAMILARASI	I	PAPER PRESENTATION
47	NITHYA SRI S	I	PAPER PRESENTATION
48	DHIVYADHARSHINI	I	PAPER PRESENTATION
49	ELAKKIYA S	III	PAPER PRESENTATION
50	ABINAYA S	III	PAPER PRESENTATION
51	SARANI R P	III	PAPER PRESENTATION
52	SARANYA P	III	PAPER PRESENTATION
53	DEEPIKA S	III	PAPER PRESENTATION

# VJ in VSB Chemical



**Venkatramanan from our department has hosted the  
Cultural event Vaagai 2k25**

# SPORTS ACHIEVEMENT

DEDICATION. EXCELLENCE. VICTORY



# SPORTS ACHIEVEMENTS

## BALL-BATMITON



**Sri Sowmiya-II**



**Shrinithi-II**



**Abiniya-II**



**Anusiya-II**



**Abiruba-II**



**Yogadharshini-II**

# SPORTS ACHIEVEMENTS

## KHO-KHO



**Sri Sowmiya-II**



**Abiruba-II**



**Abiniya-II**



**Anusiya-II**



**Selvamani-II**

# SPORTS ACHIEVEMENTS

## BATMITON



Sowmiya-II



Abiniya-II



Sri Sowmiya-II



Anusiya-II

# ATHLETICS

SHOTPUT



DISCUSTHROW



Sowmiya-II



Abiniya-II

# SPORTS ACHIEVEMENTS

## ATHLETICS



**KRISHNA MOORTHY-II**  
200Mtr First Place

# SPORTS ACHIEVEMENTS

## ATHLETICS



**Gopinathan-II**  
100Mtr Second Place

# SPORTS ACHIEVEMENTS

## KABBADI



### IInd Year

Kavin Kumar  
Sujith Kumar  
Siva Sakthivel  
Thatsanamoorthi

### IIIrd Year

Arjun harish  
S Sailesh  
M.R.Ruban  
K.Santhosh  
M.Harish  
K.Subrashanth



# ATHLETICS

## 4×100 MTR



Shabiyon raj -II  
Krishnamoorthi - II  
Gopinathan - II  
Ramakrishnan - III





**WORKSHOPS  
AND  
TECHNICAL  
EVENTS**

Art met sustainability in the Recycling Art Competition conducted by the Eco Club, where students gave a second life to discarded materials and proved that waste is just creativity waiting to happen.



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**NBA**  
National Board of Accreditation  
FOR CHE, EEE, ECE, MECH,  
IT, CIVIL, ENR, ST, CHEM  
DEPARTMENTS

**NAAC**  
Accredited

**DEPARTMENT OF CIVIL AND CHEMICAL ENGINEERING**

**EcoClub** **RECYCLING ART COMPETITION**

**BRING YOUR OWN RECYCLABLES**

- ✓ CARDBOARD
- ✓ CANS
- ✓ NEWSPAPER
- ✓ PLASTIC
- ✓ MAGAZINES
- ✓ AND MORE

**Where** : Seminar Hall  
**When** : Saturday, January 25  
**Why** : No Impact Week Waste Day



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**INSTITUTIONS INNOVATION COUNCIL**

**DEPARTMENT OF CIVIL & CHEMICAL ENGINEERING**  
Organizes

**WEBINAR ON INSIGHTS ON ENTREPRENEURSHIP**

**RESOURCE PERSON**  
**Er. K.N. Easwaran**, B.E, MBA  
Founder, Lakshya Consulting

**ONLINE MODE**

**31.01.2025**  
FRIDAY  
11.00 AM TO 12.30 PM

**VENUE : SEMINAR HALL**

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The Department of Chemical Engineering organized a webinar titled "Insights into Entrepreneurship", aimed at nurturing an entrepreneurial mindset among students. The session provided valuable guidance on transforming ideas into successful ventures, understanding market needs, and overcoming the challenges faced by young entrepreneurs. The speaker Er. K. N. Easwaran shared real-world experiences and motivated students to explore innovation and self-employment as career pathways. The interactive session inspired participants to think beyond traditional career routes and consider building something of their own.

The Departments of Civil and Chemical Engineering jointly organized a webinar on "IPR Awareness on Patents and Designs", aimed at educating students on the significance of intellectual property rights in engineering innovation. The session was delivered by Mr. M. Elamparthy, an expert in IPR, who provided valuable insights into the patent filing process, design protection, and the importance of safeguarding original ideas in both academic and industrial research. The session helped students understand how to transform innovative thinking into legally protected intellectual assets, encouraging a culture of creativity and innovation.



(Anna University Recognized Research Institute) | CHE, EEE, ECE, MECH, IT, CIVIL, ENR, ST, CHEM DEPARTMENTS

**Department Of Civil And Chemical Engineering**  
Organizes

**WEBINAR**  
ON  
**IPR AWARENESS on PATENTS & DESIGNS in CHEMICAL and CIVIL ENGINEERING**



**4th April, 2025**  
9.30 AM - 12.30 PM  
SEMINAR HALL

**Mr. M. Elamparthy**  
Lawyer and IPR Consultant

The Department of Chemical Engineering organized an enlightening webinar on "How to Plan for a Startup – Legal and Ethical Steps", presented by Mr. Simiyonraj. The session focused on guiding aspiring student entrepreneurs through the initial stages of launching a startup, emphasizing the importance of a strong legal foundation and ethical business practices. Key topics included business registration, intellectual property, regulatory compliance, ethical decision-making, and building a sustainable business model. The webinar inspired students to think entrepreneurially and equipped them with the knowledge to navigate the startup ecosystem responsibly.

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We cordially invite you for the event of  
**How to plan for Start-up and Legal & Ethical Steps**

**GUEST**  
**MR. SIMIYONRAJ**  
DISTRICT PROGRAM MANAGER (DPM),  
RENEWABLE DEVELOPMENT & INNOVATION,  
EDII-TN, DISTRICT INDUSTRIES CENTER (DIC),  
KARUR.

**DATE : 15.04.2025 TIME : 10:00 AM**  
**VENUE : AUDITORIUM**

**HEARTY WELCOME BY**  
**THE MANAGEMENT, PRINCIPAL, STAFF & STUDENTS**

SHRI. V.S. BALSAMY CHAIRMAN | SHRI. B. SATHEESH KUMAR VICE CHAIRMAN | SHRI. B. VIJAY SECRETARY | FOLLOW US NOW | visit us at [www.vsb.edu.in](http://www.vsb.edu.in)

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**DEPARTMENT OF CIVIL & CHEMICAL ENGINEERING**  
Organizes  
**SEMINAR ON**  
**World ENVIRONMENT day**

**RESOURCE PERSON**  
**Dr. V. ARUNA JANANI,**  
Associate Professor, Chemical Engineering,  
School of Bio and Chemical Engineering,  
Kalasalingam Academy of  
Research and Education,  
KRISHNANKOIL.

**ONLINE MODE**

**JUNE 05 2025 THURSDAY** 01.30 PM TO 04.30 PM | **VENUE SEMINAR HALL**

SHRI. V.S. BALSAMY CHAIRMAN | SHRI. B. SATHEESH KUMAR VICE CHAIRMAN | SHRI. B. VIJAY SECRETARY | FOLLOW US NOW | visit us at [www.vsb.edu.in](http://www.vsb.edu.in)

The Department of Chemical Engineering observed World Environment Day with a special session by Dr. V. Aruna Janani, who delivered an inspiring talk on the theme of "Our Land, Our Future". The session emphasized the importance of sustainable living, environmental protection, and individual responsibility in preserving natural resources. Dr. Aruna Janani highlighted real-world environmental challenges and shared actionable solutions that students can adopt to contribute towards a greener future. The event aimed to instill eco-conscious values among budding engineers and encourage environmental stewardship.

The Department of Chemical Engineering organizes Quiz on Pollution Awareness which is an inter college environmental quiz competition to create awareness about the pollution among the students.

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**EcoClub**  
**DEPARTMENT OF CIVIL AND CHEMICAL ENGINEERING**  
Organizes  
**QUIZ ON POLLUTION AWARENESS**  
AN INTER COLLEGE ENVIRONMENTAL QUIZ COMPETITION

**26<sup>TH</sup> JULY, 2025**  
**10 AM**  
**SEMINAR HALL**

For Registration Scan to Register

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# INNOVATION AND DISCOVERY

## PATENT AND PAPER PUBLICATION



He has published a patent on the topic of “ Extraction of Fucoidan from Seaweed” along with the students Sridevi P, Khanishkha A V and Manju R

**Mr. R. Gowrishankar**

Head of the Department

He has published a patent on the topic of “ Textile dye removal using anaerobic batch reactor” along with the students Paramasivam M, Vigneshwaran M, Sridhar M K



**Dr. G. Gnanapragasam**

Head of the Department



She has published a patent on the topic of “ Comparative study on the removal of chromium for wastewater treatment by moringa seeds and saw dust adsorbant” along with the students Yogeswari P, Sanmugapriya K and Madhumalika J

**Dr. Tripti De**

Assistant Professor



He has published a patent on the topic of “ Fabrication of a green and sustainable coconut leaves based nano-composite for removal of dye present in textile waste water” along with the students Pandidurai M P, Arulmrugan S, Shanmugaraja L and Balasubramani K

**Dr. Bitang Tripura**

**Assistant Professor**

He has published a patent on the topic of “ Extraction of Oil from oil seeds by cold pressing” along with the students Sajiv M, Surendhar P and Hari Krishna M



**Dr. S. Saravanan**

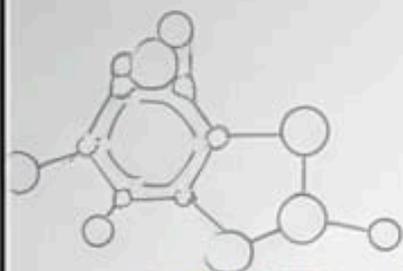
**Assistant Professor**



She has published a paper on the topic of “ Synthesis of iron oxide nanoparticles embedded biochar adsorbant for waste water dye removal” along with the students Dhanshiya T, Abinaya S and Suba S

**Dr. Tripti De**

**Assistant Professor**



# VSB Chemical student in **Vendhar TV**



**Venkatramanan from our department has participated in speech competition conducted by Vendhar TV and Won a First Price**

# Academic Results

## 2024 - 2025 EVEN SEMESTER RESULTS- CHEMICAL

S. NO	Year/ Semester	No. of Students Appeared	No. of Students Passed	No. of Students Failed	Overall Pass (%)
1	I / II	31	22	9	70.96
2	II / IV	22	14	8	63.64
3	III / VI	19	18	1	94.73
4	IV / VII	38	38	-	100.00
<b>Overall Percentage (%)</b>		<b>110</b>	<b>93</b>	<b>17</b>	<b>84.54</b>

## Smart Classroom



# IAS Guidance Programme

Regular IAS Guidance and Mentoring Programme by

**Dr. V. Iraianbu, IAS**

**Former Chief Secretary of Tamilnadu Government**



# Annual Day and Cultural Event



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**We Cordially invite you for the**  
**Annual Day & Sports Day 2025**

Date : 29.03.2025, Saturday | Time : 11:00 AM  
Venue : Dr. V.C.K Auditorium

**Chief Guest**



**Hon'ble Mr. Justice P. Vadamalai**  
Judge, High Court of Madras

**Presided by**



**Thiru. V.S. Balsamy, B.Sc., LLB**  
Founder & Chairman,  
V.S.B Group of Institutions, Karur & Coimbatore

**Annual Day Cultural Program**

Time : From 5:00 PM      Venue : Open Auditorium

**Guests**



**Mr. Arun Vijay** Actor  
**Mr. Vidaarth** Actor  
**Mr. Master Mahendran** Actor

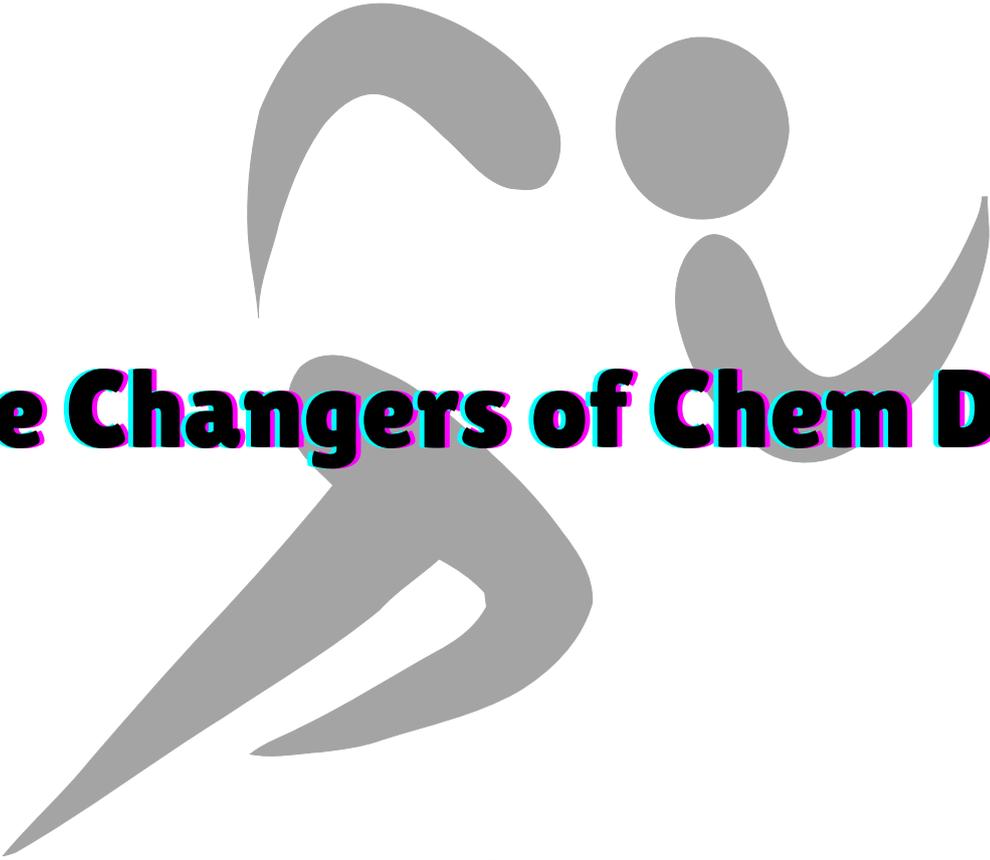
↔ All are Invited for this grand Occasion ↔

Hon'ble Mr. Justice P. Vadamalai, Judge, High court of Madras was invited as Chief guest for Annual and Sports day 2025 held on 29.03.2025 and Actors Mr. Arun Vijay, Mr. Vidaarth and Mr. Master Mahendran was invited for Cultural Event Vaagai 2K25

# INDUSTRIAL VISIT



The students of III Year – Department of Chemical Engineering has visited Chettinad Cement Corporation(pt) Limited as part of their industrial exposure program. The visit provided students with a valuable opportunity to understand real-world engineering practices and industry operations. They gained insights into various processes, technologies, and site management techniques relevant to their field. This practical experience helped bridge the gap between classroom learning and field applications, enriching their academic journey and professional perspective.



# **Game Changers of Chem Dept**



A multi-talented athlete, Abinaya shined in Kho-Kho, Ball Badminton, and Discus Throw events.

She showcased true sportsmanship and dedication at the inter-college level. Her victories were key in lifting our department to 3rd place overall.



With a hockey stick in hand and determination in heart, Harikrishna conquered the state-level competition.

He secured prestigious medals for VSBECE and uplifted our department's name. A true sports icon of Chemical Engineering!



From the football ground to the kabaddi court, Ruban made his mark in every game.

His performance and leadership brought pride to the Chemical Engineering department.

Thanks to his guidance, we achieved a strong 3rd place finish this year!



# STUDENT'S ARTICLE

## Green Hydrogen: The Fuel of the Future in Chemical Engineering

In recent years, “Green Hydrogen” has emerged as a buzzword not just in industrial circles but also in the global fight against climate change. For chemical engineers, this represents a revolutionary opportunity to apply our core principles—thermodynamics, reaction engineering, transport processes—towards building a cleaner and sustainable world.

### What is Green Hydrogen?

Hydrogen is already used widely in industries such as petroleum refining, ammonia production, and steel manufacturing. But not all hydrogen is the same. Today, most of the world’s hydrogen is “gray hydrogen,” produced from natural gas, which emits a large amount of CO<sub>2</sub>. Green hydrogen, on the other hand, is produced by splitting water using electrolysis powered by renewable energy (like solar or wind)—resulting in zero carbon emissions.

This simple change in the method of production can transform hydrogen from a polluting industrial chemical to a clean energy carrier.

### Why Should We Care as Chemical Engineers?

Chemical engineers are at the heart of green hydrogen production and application. Here's how:

**Process Design:** Designing high-efficiency electrolyzers that can split water economically and at scale.

**Material Innovation:** Developing advanced catalysts and membranes to improve hydrogen yield and reduce costs.

**Integration:** Finding ways to integrate hydrogen production with renewable energy sources like solar farms or wind parks.

**Storage & Transport:** Innovating on safe storage and pipeline transport of hydrogen—an area where chemical engineers are actively experimenting with liquid organic hydrogen carriers (LOHCs) and metal hydrides.

## **Real-World Applications Taking Off**

**Countries like India, Japan, Germany, and Australia are investing billions into green hydrogen. India's National Green Hydrogen Mission aims to make the country a global hub for green hydrogen production by 2030. Companies like Reliance and Adani are already investing in large-scale hydrogen plants. In the near future, hydrogen-powered trucks, buses, and trains may become as common as electric vehicles today. Industries such as fertilizers, steel, and even space propulsion are looking to shift from fossil fuels to green hydrogen.**

### **Opportunities for Young Engineers**

**As students of chemical engineering, we're stepping into a world that needs clean process design, low-emission technology, and scalable energy solutions. Working in green hydrogen opens up**

**careers in:**

**Renewable energy firms**

**Electrolyzer and catalyst R&D**

**Government energy projects**

**Climate-tech startups**

**Even academic research is booming, with many IITs and global universities offering funded projects and internships.**

**Final Thought:**

**Green hydrogen is not just a trending topic—it's a symbol of the future chemical engineers must help build. With our training and creativity, we're not just learning reactions and flows; we're shaping the next energy revolution.**

**Let's be ready—not just to follow trends—but to lead them.**



By

**Ragunath.A**

**IIIrd Year**

# **ARTIFICIAL INTELLIGENCE: THE NEW CATALYST IN CHEMICAL ENGINEERING**

In the modern era of Industry 5.0, Artificial Intelligence (AI) is no longer just a buzzword—it is fast becoming a powerful tool in transforming traditional industries. In chemical engineering, a field rooted in precision, data, and optimization, AI is creating new dimensions of innovation.

## **What Is AI, and Why Does It Matter in Our Field?**

Artificial Intelligence refers to the simulation of human intelligence by machines—especially computers that can learn from data, recognize patterns, and make decisions. As chemical engineers, we constantly deal with massive data from simulations, lab results, and process industries. AI helps us make sense of this complex data, and even predict outcomes before physical experiments are done.

Imagine running a reactor simulation with 20 different variables—AI can tell us the best combination for maximum yield, reduced cost, and lowest emissions in seconds!

## **Applications of AI in Chemical Engineering**

AI is now being used in a wide range of chemical engineering domains:

**Process Optimization:** AI models can continuously monitor and fine-tune operations in chemical plants to improve efficiency and safety. This reduces energy consumption and increases product quality.

**Predictive Maintenance:** Using machine learning, equipment failures in refineries or manufacturing units can be predicted before they happen, avoiding major accidents or shutdowns.

**Molecular Design & Drug Discovery:** AI is speeding up research by predicting the behavior of new molecules, helping chemical engineers collaborate with the pharma and biotechnology sectors.

**Waste Management & Sustainability:** AI is used to track waste generation and suggest eco-friendly alternatives or recycling routes.

## **Case Study: AI-Powered Distillation**

Distillation is one of the most energy-intensive operations in the chemical industry. AI tools are now being used to simulate and control distillation columns, adjusting flow rates and temperatures in real-time based on sensor data. The result? Energy savings of up to 25% in some plants—without compromising product purity.

### **Opportunities for Us as Students**

For chemical engineering students, AI opens

### **exciting career paths:**

Process Data Analyst

AI Engineer in Oil & Gas or Pharma

Automation Specialist

Research Associate in AI-Driven Labs

Students can start learning AI through Python, MATLAB, and basic machine learning models. Platforms like Coursera and NPTEL offer beginner-friendly courses, and many chemical engineering software tools (like Aspen Plus and COMSOL) are now integrating AI features.

### **Final Note:**

As a budding chemical engineer, I believe AI is not here to replace us—it is here to empower us. The blend of human creativity and artificial intelligence has the potential to solve some of the world's biggest chemical and environmental challenges. Let's be prepared to embrace it, explore it, and engineer the future.



**BY**

Jyothi Sree S. M

I Year Chemical Engineering

**In a world that is slowly suffocating under the weight of its own waste, the traditional “take–make–dispose” industrial model is no longer sustainable. As final-year chemical engineering students, we must look beyond short-term production goals. One of the most powerful shifts happening in the industry today is the move towards a Circular Economy, and chemical engineers are playing a central role in making it real.**

### **What is the Circular Economy?**

**Unlike the linear economy, the circular economy is based on reducing, reusing, recycling, and regenerating resources. It aims to close the loop in manufacturing—where materials are continuously reused instead of being discarded after a single use.**

**But this is not just about recycling plastic. For chemical engineers, it involves designing sustainable processes that reduce waste generation at the molecular level, converting byproducts into valuable resources, and even using biological or renewable feedstocks in place of fossil fuels.**

**Chemical Engineering Meets Circularity**



## **Chemical Engineering Meets Circularity**

Here's how chemical engineering is transforming this concept into industrial reality:

**Plastic to Fuel:** Pyrolysis and catalytic cracking are being used to convert plastic waste into usable fuel or monomers, enabling closed-loop polymer production.

**CO<sub>2</sub> Utilization:** Instead of treating carbon dioxide as waste, chemical engineers are using it as a raw material to produce methanol, urea, and synthetic fuels.

**Waste Valorization:** Organic waste is being turned into bioethanol or bioplastics. Even wastewater is becoming a source of chemicals and nutrients through membrane separation and advanced oxidation processes.

**Green Solvents & Catalysts:** Processes are being redesigned to use environmentally benign solvents and recyclable catalysts, reducing ecological impact without compromising efficiency.

### **A Different Mindset for a New Generation**

As we approach the final stage of our academic journey, it's important to realize that circular thinking is not a subject—it's a mindset. Whether we go into industry, research, or entrepreneurship, the future will demand that we think not only about efficiency but also about sustainability and regeneration.

Companies like BASF, Tata Chemicals, and L'Oréal are already embedding circular economy principles into their core operations. From biodegradable packaging to carbon-neutral production sites, chemical engineers are behind these innovations.

### **Final Thought:**

In this era of climate crisis and resource scarcity, the role of chemical engineers is evolving. We are no longer just process designers—we are system thinkers and sustainability architects. The circular economy is not a far-off dream—it is a revolution already happening in labs, factories, and startups around the world.

Let's not just be graduates with degrees. Let's be the generation that engineered the circular future.



**BY**

M.R. Pandi Durai  
Final Year Chemical Engineering

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**தொட்டனைத் தூறும் மணற்கேணி  
மாந்தர்க்குக் கற்றனைத் தூறும் அறிவு.**

**பொருள்:**

**தோண்டத் தோண்ட ஊற்றுநீர் கிடைப்பது போலத் தொடர்ந்து  
படிக்கப் படிக்க அறிவு பெருகிக் கொண்டே இருக்கும்**



**IN SANDY SOIL, WHEN DEEP YOU DELVE, YOU REACH THE  
SPRINGS BELOW:**

**THE MORE YOU LEARN, THE FREER  
STREAMS OF WISDOM FLOW.**

**Explanation:**

**Water will flow from a well in the sand in proportion to the  
depth to which it is dug and knowledge will flow from a man in  
proportion to his learning**