



# Indian Institute of Petroleum and Energy

## Visakhapatnam

### Certificate Course on

## Carbon Capture and Utilization

### Objective of the course

Climate change is real and greenhouse gas emission can lead to a worldwide rise in temperature above 1.5° C. Carbon Capture and Utilization (CCU), technologies aim to reduce carbon emissions by capturing them from industrial emissions and atmosphere which can be utilized for production of chemicals and other useful products. Enhanced climate objectives and cutting-edge technologies drive the CCU to achieve net zero emissions by 2050. The objective of this course is to provide various technical prospectus on CCU technologies and future goals, resulting in the abatement of carbon emissions.

### Learning Outcome

Upon completion of the course, participants would be able to understand:

- The fundamentals of carbon capture and utilisation
- Industrial practical problems and their solutions through case studies in CCU
- Advancements of the state-of-the-art CCU technologies in the industries
- Application of the software to solve CCU problems

### Eligibility criteria

Interested candidates from Science and Engineering background with interest in CCU technologies can apply

### Registration Process

Go to <https://www.iipe.ac.in/outreach/CHEMC2.php> and follow the instructions to Registration, Payment and Fee structure

### Important dates

- Registrations starts on: 12-09-2024.
- Registrations closes on: 31-10-2024.
- Course starting date: 02-11-2024.

\*Registrations closed for UG and Master's

### Course content and details

- **Course Duration:** 12 weeks
- **Course timings:** 2 hours-Every Saturday (5.00-7.00 P.M.)
- **Delivery mode:** Online (Cisco-WebEx Meetings)

No. of hours	Topic and contents
2	Carbon cycle, carbon capture and utilization, Physical and Chemical fundamentals, Carbon point sources, Careers/Manpower requirement in CCU.
2	Carbon capture techniques: Introduction, Pre combustion capture, Post combustion capture, Oxyfuel combustion capture and Chemical/Calcium looping capture
2	Absorption capture systems: Chemical and physical fundamentals, absorption applications in post combustion capture and absorption technology R&D status
2	Tutorial session with Modeling Software
2	Adsorption capture systems: Physical and chemical fundamentals, adsorption process applications, Materials, Modeling and simulation tools.
2	Tutorial session with Modeling Software
3	Carbon utilization through heterogeneous catalysis: Dry reforming, methane, methanol and Fischer tropesch processes
2	Carbon utilization through homogenous catalysis and Biological processes
3	Recent advances in green technologies for Carbon mitigation and Future challenges: Alkane dehydrogenation, Biomass utilization, photocatalysis etc.
2	Modeling aspects of Industrial Reactors
2	Tutorial session with Modeling Software

### Course Coordinators



Dr Sridhar Palla  
Assistant Professor



Dr Ravi kiran M  
Assistant Professor

Department of Chemical Engineering

\*Click on the faculty name to find their profiles

Contact (For any queries on the registration and course related matters)

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