



Department of Chemical Engineering
Indian Institute of Technology Kanpur

SHORT TERM COURSE

Pinch Technology & Process Integration

Finding the target for minimum energy consumption of a plant — and designing the heat-exchanger network which actually achieves it.

COURSE DATES

14–16 OCTOBER 2026

AT A GLANCE

Three Days

14–16 October 2026 · onsite and online

Twenty Contact Hours

09:00–17:00 daily, workshop format

Thirty Onsite Seats

confirmed strictly in order of payment

IIT Kanpur Certificate

awarded to onsite and online participants alike



SCAN OR VISIT

iitk.ac.in/che/stc

ABOUT THE COURSE

Most plants pursue energy savings by evaluating changes in one or more heat exchanger at a time. Process integration takes a fundamentally different approach—treating the entire plant as a single thermal system, establishing its true energy targets, and then designing the appropriate separation processes and heat exchanger network to achieve them.

The course follows Kemp's composite-curve approach and Linnhoff's systematic design methodology, covering the complete journey from energy targeting and network design to retrofit strategies, with extensions into water and hydrogen systems.

Throughout the course, several case studies will be discussed to demonstrate the systematic approach adopted by Dr. Saboo for achieving significant energy savings while simultaneously improving process yields, capacity, and throughput.

OBJECTIVES

- ▶ To develop a **whole-plant systems perspective** for identifying energy-saving and resource-integration opportunities.
- ▶ To introduce **process-integration & pinch-analysis principles** for establishing the true energy targets of a process before equipment-level design.
- ▶ To develop the ability to **construct composite curves, identify the process pinch, and determine minimum heating and cooling requirements**.
- ▶ To train participants in the **pinch-based design of separation systems and heat exchanger networks** to achieve targeted energy performance.
- ▶ To apply **energy-relaxation and retrofit techniques** to identify practical energy-saving opportunities in existing plants.
- ▶ To demonstrate how process integration can deliver **energy savings while improving process yields & plant throughput**, using relevant industrial case studies.
- ▶ To extend the process-integration and targeting philosophy to **water, hydrogen, and total-site systems**.
- ▶ To develop an understanding of **capital-energy trade-offs and ΔT_{min} selection**, enabling participants to justify technically and economically appropriate design decisions.

WHO SHOULD ATTEND

Process Engineers — plant performance & design

Energy Managers & Auditors — need a defensible target

Plant & Technical Services — retrofit & operations teams

Faculty & Researchers — academia, EPC & consulting

CURRICULUM

Nine modules, in the order they build.

- 01 Fundamentals of Process Integration**
A systems view of energy and resource use across the plant.
- 02 Basic Concepts of Pinch Analysis**
Composite & grand composite curves, problem table, heat cascade, ΔT_{min} .
- 03 Pinch Design for Exchanger Networks**
New network design, energy relaxation, retrofit of existing plants.
- 04 Heat & Power Systems**
Correct placement of turbines, heat pumps, refrigeration.
- 05 Separation Systems**
Distillation columns, evaporators, process simulation.
- 06 Site-Wide Pinch Analysis**
Total-site targeting across units and shared utilities.
- 07 Water & Hydrogen Pinch**
Extending targeting beyond heat to other constrained resources.
- 08 Electrical Power Conservation**
Power savings alongside thermal integration.
- 09 Industrial Case Studies**
Refineries, petrochemicals, pulp & paper, textiles, sugar, food processing.

"You leave with a method, not a lecture"

Dr. Alok Saboo

THREE-DAY SCHEDULE

09:00–17:00 daily · two tea breaks and lunch

DAY 1 · WED 14 OCT — TARGETING & NETWORK DESIGN

09:00–11:00	Introduction & Concept of PI <i>Composite curves · energy targeting · heat cascade</i>
11:00–11:20	<i>Tea Break</i>
11:20–12:30	Basic Rules for Pinch Design <i>Grid-diagram fundamentals; design rules at the pinch</i>
12:30–13:00	Targeting of Capital Cost <i>Area & unit targets · optimum ΔT_{min}</i>
13:00–14:30	<i>Lunch</i>
14:30–15:30	Pinch Design for New HENs <i>Energy relaxation · retrofitting existing plants</i>
15:30–15:45	<i>Tea Break</i>
15:45–17:00	Case Studies & Practice <i>Hands-on network design session</i>

DAY 2 · THU 15 OCT — UTILITIES, HEAT & POWER

09:00–11:00	Heat & Power Systems <i>Correct placement of turbines, heat pumps, refrigeration</i>
11:00–11:20	<i>Tea Break</i>
11:20–13:00	Site-Wide Pinch Analysis <i>Total-site targeting across units & shared utilities</i>
13:00–14:30	<i>Lunch</i>
14:30–15:30	Electrical Power Conservation <i>Power savings alongside thermal integration</i>
15:30–15:45	<i>Tea Break</i>
15:45–17:00	Case Studies & Practice <i>Hands-on design session</i>

DAY 3 · FRI 16 OCT — SEPARATIONS & SITEWIDE

09:00–11:00	Separation Systems <i>Distillation columns, evaporators, process simulation</i>
11:00–11:20	<i>Tea Break</i>
11:20–13:00	Water & Hydrogen Pinch <i>Extending targeting beyond heat to constrained resources</i>
13:00–14:30	<i>Lunch</i>
14:30–15:30	Industrial Case Studies <i>Refineries · petrochemicals · pulp & paper · textiles · sugar · food</i>
15:30–15:45	<i>Tea Break</i>
15:45–17:00	Discussion, Quiz & Certification <i>Closing discussion; certificates distributed</i>

Course design follows the targeting-first structure of Kemp's standard text on Pinch Analysis and Process Integration.

Sectors that benefit: refineries & oil/gas, petrochemicals, heavy chemicals, oleochemicals, pulp & paper, sugar & distilleries, textiles, food processing, steel & metallurgy.

COURSE COORDINATOR



Dr. Alok Saboo

Distinguished Visiting Professor

Department of Chemical Engineering, IIT Kanpur

The face of the course, Dr Alok K Saboo, is a distinguished chemical engineer, energy consultant and one of the early pioneers in the application of pinch technology and resilient process design. He is currently a distinguished visiting professor in Chemical Engineering at IIT Kanpur. During his long illustrious career, he has worked with Professor Bodo Linnhoff, who developed the pinch analysis method, has developed pinch analysis software packages, carried out revamp studies for more than 500 process plants across the world.

A Gold Medallist from IIT Kanpur, Dr Saboo earned his PhD from the University of Wisconsin–Madison under Professor Manfred Morari, a process design and control stalwart. He worked as an independent consultant to leading refineries and petrochemical companies for more than four decades and subsequently founded Energy Consultants Pvt Ltd, where he serves as Managing Director.

His consulting career has taken him from refineries and petrochemical complexes to a wide range of process industries, including breweries, oleochemicals, steel, alumina, and power plants. He has undertaken major assignments for Reliance Industries, Indian Oil, Bharat Petroleum, HPCL, ESSAR Oil UK, and many other leading national and international companies.

His work has delivered annual savings ranging from millions to hundreds of millions of US Dollars across major industrial sites. With experience of more than 500 large scale projects, under his belt, he has also trained engineers and industry professionals in pinch technology and energy conservation and has actively contributed to research of pinch analysis. He stands tall in the field of Process Integration and has been recognized worldwide for his contributions and considered India's foremost authority in industrial applications of pinch technology.

FEES & SEATS

ONSITE — IIT KANPUR CAMPUS

₹50,000 ~~₹65,000~~

Early bird — save ₹15,000 · by 11 Sept 2026 · incl. 18% GST + Accommodation + Hospitality + Pickup & Drop + Excursion
30 seats only

ONLINE — LIVE SESSIONS

₹30,000 ~~₹45,000~~

Early bird — save ₹15,000 · by 11 Sept 2026 · incl. 18% GST
No cap

IMPORTANT DATES

Early-Bird Deadline **11th Sept 2026**

Course Dates **14–16 Oct 2026**

HOW TO REGISTER

1. Pay via SBI Collect

Educational Institutions → IIT Kanpur → Payment Categories → Outreach Activities(OOA) → fill course details.
Course Code **IITK/OOA/2026-27/051**,
Course Title **Pinch Technology and Process Integration**
Course Duration **14.10.2026 – 16.10.2026**

2. Save the e-receipt

Note the DU / reference number printed on it.

3. Fill the registration form

Enter details and upload the payment slip.

Make a trip of it

Course fee includes a full day Saturday excursion trip to Lucknow/Agra for the participants to carry the majestic fragrance of UP back home.



Lucknow (city of nawabs) ~90 km · 2 hrs by road

- Explore the grand Bara Imambara and Rumi Darwaza, stroll through the old city, sample some of Lucknow's celebrated cuisine and shop for exquisite Chikankaari embroidered attire.



Agra (city of Taj) ~285 km · 4 hrs by road

- Home to the iconic Taj Mahal and the magnificent Agra Fort, Agra offers a memorable glimpse into India's Mughal heritage.

FOR QUERIES



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