Department of Chemical Engineering
Zakir Husain college of Engineering and Technology
Aligarh Muslim University
Aligarh-202002 INDIA
ABOUT THE UNIVERSITY

Aligarh Muslim University (AMU) is an institution of national importance and one of the oldest premier Central Universities of India with a unique and rich culture of its own. It owes its existence to the selfless and untiring efforts of the great visionary SIR SYED AHMAD KHAN. Deeply moved by the socio-economic and educational plight of his community after the First War of Independence of 1857, he was quick to realize that the panacea for these ills lay in inculcating the spirit of free enquiry and modernism in the community. His exposure to the British Universities, particularly those at Oxford and Cambridge, and their public schools, inspired him with a new vision of a harmonious pattern of culture, combining the best elements in the cultures of the East with the arts and sciences of the West. In 1875 he founded a school at Aligarh, which, within three years, was raised to a college known as Mohammadan Anglo Oriental College which metamorphosed into the Aligarh Muslim University in 1920.

ABOUT THE COLLEGE AND THE DEPARTMENT

The University also maintains a number of Colleges, Institutes, Centres and Schools. Zakir Husain College of Engineering & Technology, being one of them, is one of the oldest engineering colleges of the country and was established in 1935. It started with bachelor's degree program in Civil, Mechanical and Electrical Engineering. To recognize the remarkable contributions, made by Dr. Zakir Husain the College was named as the Zakir Husain College of Engineering and Technology.

The idea of the creation of the Department of Chemical Engineering at A.M.U. was born with the visit of His Highness Sheikh Zaid Bin Sultan Al-Nahyan of the UAE in 1975. The approval of the UGC was obtained for the creation of the Department in the fifth Five Year Plan and it came into existence in 1978, when the first undergraduate course in Chemical Engineering started with an intake of thirty students.

A Post-graduate Diploma in Petroleum Processing was started in the Department in 1987, which was upgraded to full-fledged degree, M.Sc. Engg. (Petroleum Processing) in 1988. A Masters programme of M. Tech. (Chemical Engineering) was started in 1999 with specialization in ‘Process Modelling and Simulation’. Another specialization, ‘Computer Aided Design of Process Plant’ has also been approved. The Department of Chemical Engineering, ZH College of Engineering and Technology was one of the seven Institutes selected for up gradation to the level of IIT by MHRD, Government of India.

The Department also offers Ph.D. programme in Chemical Engineering in wide range of thrust areas such as heat transfer, hazardous waste management, nanotechnology, mass transfer, enhanced distillation thermodynamics, and modelling and simulation etc.

Till date five Ph.Ds. have been awarded in different areas and four are in progress.

The Department offers following programmes:
- B. Tech. (Chemical Engineering) Intake: 30+5 (NRI)
- M. Tech. (Chemical Engineering)
  - Process Modelling & Simulation (Intake: 20)
  - Computer Aided Design of Process Plant (Intake: 20)
- Ph.D. (Chemical Engineering) Intake: Variable
Thrust Area/ Core Competence of the Department:

- Boiling Heat Transfer
- Process Modelling and Simulation
- Process Optimization
- Fluid Mechanics and CFD
- Computer Aided Design
- Membrane Separation
- Nanomaterial and Nano-composites
- Industrial Pollution Control, Solid Waste Management and Waste Minimization
- Artificial Intelligence

VISION AND MISSION

VISION

To be a world class Chemical Engineering Department that imparts high quality education to its graduates and prepares them to be leaders in chemical engineering and allied fields.

MISSION

1. To produce globally acceptable, competent, ethically strong and professional chemical engineers to serve the needs of society as engineers, technocrats, entrepreneurs and leaders.
2. To foster process engineering knowledge through collaborative research and innovation with leading academic institutions and industry.
3. To prepare the students coming from different socio-economic levels including a sizeable number from the marginalized sections of society for a successful career in chemical engineering and allied fields.
4. To create a conducive environment to attract and retain the best faculty.
## TEACHING FACULTIES

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<th><strong>Dr. MOHAMMAD IDREES</strong></th>
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<td>Email: <a href="mailto:idreesingenieur@gmail.com">idreesingenieur@gmail.com</a></td>
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### PROFILE

Dr. M. Idrees obtained his PhD degree in Chemical Engineering from IIT Kanpur in 1982. His teaching experience spans over more than three decades including those at IIT Kanpur (as SRA & TA) and five years at Universiti Teknologi Malaysia, Kuala Lumpur and Johor Bahru. He has been teaching core and advanced subjects both at undergraduate and graduate level.

He started his research career in the modelling and optimization of kraft pulping comprising of both experimental work and mathematical modelling. Current activities of his research group focus on hazardous waste management, nanocomposite synthesis, mathematical modelling and simulation, reaction engineering and process integration. They synthesized macromolecules and applied the same for the removal of heavy metals from electroplating wastewater. Research project entitled 'Environmental friendly management of hazardous electroplating waste: A zero discharge plan’ is in progress. Another ongoing project pertains to ‘Designing of N-Heterocyclic Carbene Based MOFs: Application in Gas storage, Separation and in Catalysis’.

His research work has been published in journals like *Pulp & Paper, Journal of Thermal Analysis, Malaysian Oil Science and Technology, Chemical Engineering Research and Design, Acta Crystallographica, International Journal of Advances in Engineering Sciences, Iran Journal of Chemical Engineering*, etc.

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<th><strong>Dr. SATTAR HUSAIN</strong></th>
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### PROFILE

He joined the department in March 1982 and actively participated in the growth of the department. Proceeded to University of Roorkee (now IIT., Roorkee) to pursue Ph.D. Professor from June 2001, during last 32 years of teaching and research, travelled widely in India and abroad. in (36) International/ National Conferences /Seminars /Workshops /Courses etc. and guided many M. Tech. and Ph.D. and published 30 papers in International/ National Journals and Conferences like *Int. Journal of Food Science and technology, Int. J. Chemical Sciences, Current World Environment, Environmental Pollution Control Journal, Material Science Research India, Beverage and Food World*. The research areas of interest include Heat
Transfer, Bioprocess/Food process engineering, and Environmental engineering. A life member of Indian Institute of Chemical Engineering, Kolkata (LM 22124) delivered invited lectures at NSIC Aligarh and UGC Sponsored programs at Academic Staff College of A.M.U. Examiner to some Universities and one Public Service Commission. He has also served as member of interview board of UPSC. He has been an expert member of chemical engineering in a team of UGC for assessment of autonomy of some Institutions in Assam & Jharkhand. He has also been actively engaged in many University level administrative/examination related activities for some years.

**NASEEM AHMAD KHAN**  
Associate Professor  
**Email:** nakhan63@rediffmail.com

**PROFILE**  
Mr. Naseem Ahmad Khan has done his M.Tech from Aligarh Muslim University and his research areas of interest include Heat Transfer, Modeling and Simulation and CAD. Many projects and dissertation have been guided at UG level and PG level. Presently he is a TEQUIP-II Project coordinator of Zakir Hussain college of Engineering and Technology, AMU, Aligarh.

**M. ABDUL HAKEEM**  
Associate Professor  
**Email:** mahakim@rediffmail.com

**PROFILE**  
Mr. Abdul Hakeem has received his postgraduate degree in 1988 from Banaras Hindu University. He joined as a Lecturer in the Department of Chemical Engineering in the November 1988, then promoted to lecturer selection grade from November 1998, afterwards placed as Associate professor from January 1st 2006. Major research areas include Heat Transfer, Thermosiphon Reboiler, Modeling and Simulation and soft computing. Paper in these areas had been published in the best international Journal of Chemical Engineering say AIChE, Aplied Thermal Engineering and Chemical Engineering Research and Design.

**Dr. SADAF ZAIDI**  
Associate Professor  
**Email:** sadaf63in@yahoo.com

**PROFILE**
Dr. Sadaf Zaidi has obtained his Ph.D. degree from Aligarh Muslim University. His research interests area are in the fields of artificial intelligence, boiling heat transfer (thermosiphon reboilers), food processing, conducting polymers for application in super capacitors and solid waste management. He is a regular visitor to academic events like conferences, symposia, short term courses, workshops, etc. He has published 20 papers in international, national journals and conference proceedings and three chapters in books. Some of the journals in which his articles have been published include Chemical Engineering Science, Chemical Engineering Research and Design (Elsevier), Waste Management and Research, Chemical Engineering World, Chemical Products Finder and Beverage and Food World. Currently, he is guiding two students for their Ph.D.

### Dr. JUNAID KHALIL
Associate Professor  
**Email**: mohdjunaidkhalil@hotmail.com

### PROFILE
Dr. Mohd Junaid Khalil did his B.Tech from ZHCET in 1987, M.Tech from IIT Roorkee in 1989 then subsequently joined the Deptt. Of Chemical Engineering at AMU as lecturer. In 2004 he acquired his Ph.D degree from IIT, Delhi.  
He has to his credit of around 20 papers which he has presented and published in various national and international conferences of repute and proceedings. He has taught quite many courses of chemical engineering at graduate and post graduate level ranging from basic to advance one. 
His area of research are Environmental Engineering, Modeling and Simulation, Chemical and Biochemical Engineering. He has also been contributing to campus life through various administrative, cultural and sports responsibilities.

### Dr. SYED AKHLAQ AHMAD
Associate Professor  
**Email**: sakhlqaahmad@gmail.com

### PROFILE
Dr. Syed Akhlaq Ahmad has obtained his B.Tech in Chemical Engineering from University of Roorkee and Master of Technology and Doctor of Philosophy from Indian Institute of Technology Kanpur. He has joined the Department of Chemical Engineering, Aligarh Muslim University, Aligarh as Lecturer in December 1988.  
His major areas of research interests include Transfer Operations, Separation Processes, Modeling Simulation and Optimization, Thermodynamics of Phase Equilibria.  
He attended many national and international conferences. He published the research papers in reputed international journals like Korean Journal of Chemical Engineering, Fluid Phase Equilibria and International Journal of Scientific and Engineering Research.
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<th><strong>Dr. SHEEBAA JILANI</strong></th>
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**PROFILE**

Dr. Sheeba Jilani has obtained her Ph.D degree from I.I.T Roorkee in 2010. Her research areas include modeling of chemical engineering systems, separation processes, waste to energy conversion, and environmental pollution abatement. Some of the journals in which her articles are published include International/National Journals/Proceedings.

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<th><strong>Dr. MOHAMMAD DANISH</strong></th>
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**PROFILE**

Dr. Mohammad Danish has obtained his Bachelor's Degree (B. Tech. in Chemical Engineering) from AMU, Aligarh in 1999. He has obtained his Master's and PhD degrees in Chemical Engineering from IIT Roorkee in 2002 and 2012, respectively. Dr. Danish joined AMU in 2000 as lecturer and at present he is working as Assistant Professor in the Department of Chemical Engineering, A.M.U., Aligarh.

His research areas include Process Modelling & Simulation, Mathematical Methods, Transport Phenomena and Reaction Engineering. He has several publications in various reputed national and international journals. He has guided several M. Tech. dissertations in the area of modelling & simulation of chemical engineering systems. Currently he is supervising a PhD thesis in the area of data driven modelling of chemical engineering systems. He is also actively engaged in administrative activities as well.

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<th><strong>Dr. FAISAL ZIA SIDDQUI</strong></th>
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**PROFILE**

Dr. Faisal Zia Siddiqui has more than 17 years of varied experience in the field of Environmental Engineering. He obtained his BSc in Chemical Engineering in 1996 from AMU, Aligarh and M. Tech in Energy and Environment Management in 2001 from IIT, Delhi. He completed his PhD in the field of Energy and Environment in 2013 from JMI University, New Delhi.
Dr. Hasan Akhtar Zaidi has obtained degree in BSc Engineering in Chemical (AMU Aligarh), M. Tech. in Petroleum Processing (A.M.U Aligarh) and awarded PhD (Chemical Engg) from Indian Institute of Technology Delhi, India. He has 11 years of Teaching/Research experience. He has published 30 research papers in national / international journals and conferences. He has reviewed various papers in many international journals also (such as Elsevier publication etc). He has been invited for one year as an Assistant Foreign Professor in the School of Display and Chemical Engineering Department at Yeungnam University at South Korea from 2008-2009. He is a committee member of various international conferences. His research interest lies in the area of catalytic reaction engineering such as catalytic conversion of ethanol, methanol and glycerol to hydrocarbons. He is a Life member of IICHE (Indian Institute of Chemical Engineers), Senior member of the Asia-Pacific Chemical, Biological & Environmental Engineering Society, Hong Kong and Member of International Association of Engineers (IAENG), Hong Kong.

AISHATUL BUSHRA  
Assistant Professor  
Email: a.bushra@rediffmail.com
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**PROFILE**

Mr. Raunaq Hasib has obtained B.Tech. in Chemical Engineering from AMU Aligarh and M.Tech. in Chemical Engineering from IIT Roorkee. Prior to joining AMU Aligarh he has served at Chemical Engineering Department, JIET Guna. Since 2009, he is with AMU Aligarh as Assistant Professor.

His research interest includes Process Modelling Simulation & Control, Computational Fluid Dynamics, and Multiphase Contactors. He has over eight research papers in journals and conferences, and has guided six M.Tech. dissertations in the area of Computational Fluid dynamics, and Process Modelling & Simulation.
## DEPARTMENTAL FACILITIES

### FLUID MECHANICS LAB:

Fluid Mechanics Laboratory covers practical aspects, phenomena of fluid flow for both compressible and incompressible fluids and its properties. It features the following equipment: Bernoulli’s apparatus, Orifice & Venture meter, Capillary flow Viscometer, Fluidized Bed Equipment and Centrifugal pump etc. The lab also has some advance research set-up as Flow Through Straight Circular Tube, Flow Through Helical Coil and Flow Through Spiral Coil, where some research work can be performed.

### FLUID PARTICLE OPERATION LAB:

Experimental facility is available for the study of size reduction techniques of materials. In this lab experimental set up is available to reduce the size from few inches down to the micron size. Size analysis facility is integral part of the experiment. The machine efficiency is also studied in some experiments.
**HEAT TRANSFER LAB:**

The Heat Transfer lab provide practical training to the students on different heating and cooling systems of various configuration e.g. cross flow, parallel flow, counter flow heat exchangers and evaporative systems along with the basic understanding of the study of heat transfer phenomena in boiling, condensation and convection systems etc.

**MASS TRANSFER LAB:**

The Mass Transfer Lab of the department provides practical training to the UG students on various mass transfer equipment covering all the basic aspects of mass transfer phenomena. The Lab is equipped with the experimental setups on solid-liquid, liquid-liquid extraction, drying and distillation operations etc.

**REACTION ENGINEERING & THERMODYNAMICS LAB:**

The Reaction Engineering lab provides practical training to the UG students on several reaction engineering equipment covering basic aspects of this core area of process engineering. These include RTD studies in a single CSTR, a series of CSTRs, and Tubular reactor; kinetics of fluid solid reaction, Plug flow reactor and the Batch reactor etc.
PROCESS CONTROL AND INSTRUMENTATION LAB:

Process Control and Instrumentation Laboratory provides the basic knowledge of instruments such as Level measurement, Temperature measurement, Flow measurement, Pressure measuring instruments etc. The students also get familiarity with controllers such as PID controller, Temperature Control System and Multi Process Control System widely used in the Chemical Industries.

TECHNOLOGY & ENERGY LAB:

Chemical process research and development is recognized as a key function during the commercialization of a new product particularly in the generic and contract manufacturing arms of the chemical, agrochemical, food industries and pharmaceutical industries. In this laboratory, the students are familiarized with experiments such as extraction of edible oil, essential oil, cement analysis, probing milk adulteration, dehydration of fruits & vegetables, making of bio-diesel and polymer resins etc.
CAD/SIMULATION LAB:
The department has well maintained CAD/Simulation Lab with more than thirty computers; all of them are having internet connectivity through LAN. This lab also provides Wi-Fi networking to other systems PCs/ Laptops through an installed router. The Lab is available to the faculty members, PhD research scholars, PG & UG students of the Department. This is also used for the practical classes of undergraduate and postgraduate courses. Lab has also been used for holding workshops and training programs on specified events. There is a dedicated high speed server, on which popular engineering Software like ASPEN PLUS, CHEMCAD are installed.

SEMINAR LIBRARY:
The department also has a distinct and well maintained library which possesses a collection of 1084 books and 545 volumes of journals. A seating arrangement for 30 students is provided in the library. Besides, issuing books to faculty members, the library facility is available to UG, PG and PhD students. Moreover, online subscriptions can be accessed through the wi-fi connections.

RESEARCH FACILITIES:
A dedicated separate laboratory exists in the department to facilitate high level of research work. The lab has good sophisticated experimental facility of Thermosyphonic flow equipped with the latest SCADA system, and heating arrangement by steam. The Lab has helped complete several PhD and M.Tech dissertation on above mentioned subject. Apart from this, the facility is available for advanced studies on inclined systems, boiling heat transfer systems, and heat transfer on coiled geometries of various configuration.
PROJECTS AND CONSULTANCY

The department has taken a number of projects from various funding agencies e.g. AICTE, MHRD, UPCST and UGC etc. and also has done some consultancies from different industries.

PUBLICATIONS

Faculty members of the department are actively involved in research by participating in conferences, seminars and have several edited chapters, and books to their credit, besides, publications in leading peer reviewed chemical engineering journals e.g. AIChEJ, Chemical Engineering Science, Computers and Chemical Engineering, Chemical Engineering Research & Design, Applied Thermal Engineering etc.

STUDENT ACTIVITIES

Besides, many literary and cultural clubs in the University and the College, the Department has established AIChE and IIChE, IAHE Students Chapters. Moreover, Department has established a Society of AMU Chemical Engineering Students (SACHES) to organize various co-curricular activities for holistic development of the students.

The students of the department are actively participating in various sports and games facilities of the University.