

Dear Students,

I pray that you all are doing well. I am your course coordinator for Clean Technology for Process Industries (ChBE-83). The syllabus for the course is:

**Introduction:** *Environmental impact of chemicals and chemical production, life cycle assessment, waste minimization techniques, sustainable development.*

**Evaluation of Conventional Technologies:** *Evaluation of present process technologies for ammonia, sulphuric acid, caustic soda, pulp and paper, plastics and polymers synthesis. Analysis of raw materials, intermediates, final products, by-products and wastes.*

**Alternate Technologies:** *Alternative raw materials, low temperature and low pressure and low energy consuming routes for the manufacture of caustic soda, leather, plastics, pulp and paper and rayon.*

**Minimization of water and heat consumption:** *Process Integration and water pinch technology for minimizing water and heat consumption; data extraction, minimum fresh water target with and without reuse: limiting water profile, concentration-composite curve, concentration-interval diagram, block diagram, grid diagram, mass-content diagram, network design, network evolution: loop identification and loop breaking.*

**Process Modification and energy production from waste:** *Process modification waste utilization and energy production from solid waste, recycling and reuse of water, solid waste management.*

**Advanced Technologies:** *Development of biodegradable and end-products of polymers and plastics, CO<sub>2</sub> capture, sequestration and utilization.*

I will be sending out course material over the passage of time. Firstly, for the Introduction module, we will be reading **Chapter 9** of the book, “**An Introduction to Industrial Chemistry by Alan Heaton**”. Further, I will be giving you a paper entitled “**Environmentally Conscious Chemical Process Design**” (Annu. Rev. Energy Environ. 1998. 23:499–536). I’ve attached these for your reference. I’d highly recommend that you explore more papers on the topic after going through these resources. In case you need further help, please email me on [fatima@nitsri.ac.in](mailto:fatima@nitsri.ac.in).

Stay safe.

Best,

Fatima Jalid  
Course Coordinator  
Clean Technology for Process Industries (ChBE-83)