Course code: Course Title	Course Structure			Pre-Requisite
	L	T	P	
CH104: Introduction to Chemical Engineering	3	1	0	NIL

Course Objective: To acquaint students with the fundamentals of Chemical Engineering and to build their perspective in a wholesome manner.

S. NO	Course Outcomes (CO)
CO1	Correlate the day to day life with the principles of chemical engineering.
CO2	Describe the unit operations and other processes involved in chemical industries.
CO3	Identify the major chemical industries and their future prospects in Indian and worldwide scenarios.
CO4	Identify the role of chemical engineers in society and identify their right future.
CO5	Correlate the chemical engineering with sustainable development and renewable energy.

S. NO	Contents	Contact Hours
UNIT 1	Introduction: Chemical Engineering in day to day life with examples, history of chemical processes industries, origin and growth of chemical engineering in chemical process industries, scaling up chemical processes for industrial scale operations.	8
UNIT 2	Unit Operations and Unit Processes: Concepts of unit operations and unit processes, classification of unit operations (fluid mechanics, heat and mass transfer, mechanical operations), Example of two or three unit operations from each type, their brief introduction and application. Brief introduction of industrial scale reactors. Brief introduction of process control and automation.	10

UNIT 3	Introduction to Chemical Industries: Classification of Chemical Industries (Petrochemical, Commodity, Fertilizer and Pesticides, Cement, Paint and Pigment, Soap, Inorganic chemicals, Food and dairy, Textile, Pharmaceutical and cosmetic), their main products, raw materials and market demand prospects based on Indian and worldwide markets, Process flow sheeting and symbols, Example of process flow diagram of one or two chemical industries.	10
UNIT 4	Career Diversities in Chemical Engineering: Career Development leading to specialization, chemical engineering job titles/options, chemical and processes engineers, process design engineers, commissioning engineers, process control and automation engineers, process safety engineers, Chemical engineers in research & development/product development, pipeline engineers, production engineers, Jobs in waste management and environment sectors, chemical engineer's prospects in techno-commercial jobs profiles (marketing, management, project planning, finance, policy deciding related jobs).	6
UNIT 5	Chemical Engineering and Environment: Development of new energy efficient and environmental friendly unit operations with two or three examples. Shifting towards green biomass based raw materials from Petroleum based raw materials with one or two examples, importance of chemical engineering in renewable green energy production and energy storage with one or two examples.	8
	TOTAL	**42**

Tutorial/Project work: One project report on any chemical process industry based on Indian and worldwide scenario with presentation / A Plant/ Industry visit with tour report.

REFERENCES

S.No.	Name of Books/Authors/Publishers	Year of Publication / Reprint
1	Introduction to Chemical Engineering; S. Pushpavanam, PHI Learning.	2012
2	Unit Operations in Chemical Engineering; J. W. L. McCabe, J. C. Smith, P. Harriot, McGraw Hill.	2017
3	Outlines of Chemical Technology; C. E. Dryden, M. G. Rao, Affiliated East West Press.	1997

4	Sherve's Chemical Process Industries; Austin, Mc-GrawHill.	2017

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