INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
भारतीय प्रौद्योगिकी संस्थान तिरुपति
Yerpedu-Venkatagiri Road, Yerpedu Post, Tirupati District, Andhra Pradesh - 517 619

1.	Title of the course	Process Synthesis and Economics
2.	Course number	CH316L
3.	Structure of credits (L-T-P-C)	3-0-0-3
4.	New course/modification to	Modified with CH401L/PROCESS SYNTHESIS AND ECONOMICS
5.	To be offered by	Chemical Engineering
6.	Proposed by	Shamik Misra
7.	Prerequisite	None
8.	**Course Objective(s):** To provide the fundamentals of conceptual process design and develop systematic methods for flowsheet synthesis. To introduce the economic principles of process industry.	
9.	**Course Content:** Process economics: principles, cost estimation, depreciation and total annualized cost, cost indices, rate of return, payback period, discounted cash flow; Conceptual process synthesis: hierarchical synthesis of flowsheets; Reactor network synthesis: choosing type of reactor and conditions for simple reaction systems; Separation system synthesis: distillation column sequencing; Heat exchanger network synthesis: pinch technology, targets for minimum utilities, area, total cost.	
10.	**Textbook(s):** 1. Peters M S, Timmerhaus K D and West R E, Plant Design and Economics for Chemical Engineers, 5th Edition, Tata McGraw Hill (2011). 2. Smith R, Chemical Process Design and Integration, 2nd Edition, Wiley India (2014).	
11.	**Reference(s):** 1. Austin G T, Shreve N R and Brink J A, Shreve's Chemical Process Industries, 5th Edition, Tata McGraw Hill (2012). 2. Biegler L T, Grossmann I E and Westerberg A W, Systematic Methods for Chemical Process Design, Prentice Hall (1997). 3. Douglas J M, Conceptual Design of Chemical Processes, McGraw Hill (1988). 4. Seider W D, Seader J D and Lewin D R, Product and Process Design Principles - Synthesis, Analysis and Evaluation, 3rd Edition, Wiley India (2015).	