Course Code	CP408
Course Title	Basics in Process Engineering Design Project
No. of Credits	3
Pre-requisites	None
Compulsory/Optional	Compulsory

Aim(s): To develop skills to gather and derive information required for a detailed process design.

Intended Learning Outcomes:

On successful completion of the course, the students should be able to;

ILO 1: Survey information to predict the market size for a given product and select a suitable location for setting up a processing facility.

ILO2: Choose a processing-path for the given product and justify the basis.

ILO3: Estimate material and energy flow rates and synthesis process flow diagrams (PFD).

ILO4: Analyze health, safety, and sustainability related aspects of the selected production facility.

ILO5: Utilize time and resources effectively for successful completion of the design project as a member of a team.

Topics	**Time Allocation/Hours**			
	L	**T**	**P**	**A**
• **Analysis of preliminary information for process plant design** Define the design problem related to chemical, food or other process industry; Market survey for demand prediction; Multi-criteria decision making for site selection; Literature review for the selection of alternative processes routes.			26	
• **Develop manufacturing process for a given chemical product** Application of heat and mass balances to estimate flow quantities; Present process information (block diagrams and Process flow diagrams).			30	
• **Computer aided process simulation**	08		14	
• **Environmental considerations** Waste management; noise; visual impact; legislation; environmental auditing.			04	
Total equivalent hours	**08**		**37**	

Recommended Texts:

- Ullmann's Encyclopedia of Industrial Chemistry, (7 Ed), Wiley-VCH, 2011.
- Richardson, J. F., Harker, J. H., Coulson and Richardson's Chemical Engineering Design, (5 Ed), Butterworth-Heinemann, 2002.
- Seader, J. D, Henley, E. J., Roper, D. K., Separation Process Principals: Chemical and Biochemical Operations, (1 Ed), John Wiley & Sons, 2013.
- Green, D. W., Southard, M. Z., Perry's Chemical Engineers' Handbook, (9 Ed), McGraw-Hill Education, 2019.

Assessment	**Percentage Mark**	
In-course		100
Progress Evaluation	10	
Reports	50	
Presentations and viva-voce examination	40	
End-semester		