[A-3]COURSE SYLLABUS

1. Course Description (Approximately 100 words)

In this course you will focus on adopting a systematic approach to understanding and solving some of the many fundamental and important design issues that are associated with industrial operations of paramount importance to Chemical Engineers. The course aims to provide you with the tools and resources to solve some of these process design issues. This is a project-based course where you will work in teams on an open ended design problem on a particular chosen process, integrating the knowledge gained in previous first year courses. Depending on the nature of the project the emphasis and specific details of design issues may vary from year to year to incorporate important concepts ranging from detailed analysis of unit operations; materials selection; design and fabrication; details of the key operating parameters and process variables; and principles of mass and energy balances associated with the design. strong emphasis will be placed on the sustainable development of the process and addressing important triple bottom line issues related to that process.

2. Course Goals and Objectives (Approximately 100 words)

On completion of this course the student should be able to:

1. Discuss the important design issues and considerations for systematically analysing the chosen process
2. Define a rational approach for analysing and implementing these design issues
3. Analyse the open literature available on key design issues of the process
4. Describe the functional requirements for particular components and their operation, and design approaches to meet these requirements
5. Apply concepts and principles of sustainable development to the design process
6. Communicate ideas, concepts and design issues in a clear, concise and logical fashion both verbally and in writing

3. Textbook (Title, Author, Publisher, Year of Publication, etc.)

1. L.E. Brownell, E. H. Youg, “Process Equipment Design” John Wiley & Sons Publications, 2004.

2. J.M. Coulson and J. Richardson, “Chemical Engineering”, Vol. 6, Asian Books Printers Ltd.

3. W.L. McCabe, J.C. Smith and P. Harriot, “Unit Operation of Chemical Engineering”, McGraw-Hill, 2001.

4. Reference

W.L. McCabe, J.C. Smith and P. Harriot, “Unit Operation of Chemical Engineering”, McGraw-Hill, 2001.

5. Course Requirements and Grades

CAT 30%
EXAM 70%

6. Course Calendar

Week	Main Content
1	Process Design of Heat Exchanger
2	Mechanical design of heat exchanger:
3	Design of evaporator
4	Design of driers
5	Separation Equipments
6	Design of tall vessels
7	MID-TERM EXAM
8	Process design of mass transfer column
9	Mechanical design of mass transfer column I
10	Mechanical design of mass transfer column II
11	Process Hazards
12	Safety Measures in Equipment Design I
13	Safety Measures in Equipment Design II
14	FINAL EXAMINATION