BITS PILANI, DUBAI CAMPUS
INSTRUCTION DIVISION
SECOND SEMESTER 2012 - 2013

Course Handout (Part II)

Date: 03.02.2013

In addition to part-I (General Handout for all courses appended to the timetable) this portion gives further specific details regarding the course.

Course No : **CHE C322 (3 0 3)**
Course Title : **Chemical Process Technology**
Instructor-in-charge : **Dr.Vijaya Ilango**
Instructors : **Dr.Vijaya Ilango**

Scope and objective of the course:
The aim of the course is to study the general relationship of Chemical manufacturing processes and their application to specific chemical industries. Emphasis is placed on the industries and raw materials, Flow sheet, synthesis and analysis.

Course Pre/Co- requisite (if any) **& Catalogue / Bulletin Description:** *Given in the Catalogue 2012 – 2013CD*

Study Material:
Text Books:(TB)
M Gopala Rao and Marshall Sittig "**Dryden's Outlines of Chemical Technology for the 21st Century**" Edited by. East West Press, 3rd Ed., 1997. Reprint 2007.

Reference books:(RF)
1: George T. Austin, **Shreve's Chemical Process Industries**, McGraw Hill, 5th Edn., 1984.
2: Jacob A Moulijn, **Chemical Process Technology,** John Wiley, 2007

Course plan:

Lec. No.	Learning objectives	Contents	References@ (Chapters)
1	Introduction	Chemical Industries – Facts and figures	Ch I, TB
2-4	To understand the species allocation and separation task selection	Unit operations and Unit Process concepts, General Principles applied in studying an Industry	Ch I, TB
5-6	To understand the chronological development in the sulfur production	Frasch process, oxidation-reduction of H_2S	Ch II A, TB; RF1
7-8	To understand the chronological development in the sulfuric acid production	Chamber Process, Contact Process, DCDA Process,	Ch II A, TB; RF1
9-12	To understand the chronological development in the fuel and industrial gases	Producer gas, water gas, coke oven gas, natural gas and LPG treatment processes.	Ch II B, TB; RF1
13 & 14	To understand the chronological development in the Nitric acid production	Ammonia Oxidation Processes: Mono Pressure and Mixed Pressure Processes	Ch II E, TB; RF1
15 - 17	To understand the chronological development in the Nitrogen based fertilizers production	Urea Production Processes incl. Stamicarbon process; Ammonium Nitrate Production Processes;	Ch II E, TB; RF1
18 & 19	To understand the importance of NPK fertilizer and its production	Phosphate and Potash based fertilizers production processes; Phosphoric acid manufacturing processes	Ch II F, TB; RF1
20 - 22	To understand the pulp and paper production processes	Kraft Process, sulfite Process, Mechanical Pulping; Paper making, Production of lignin chemicals	Ch III F, TB; RF1
23- 24	To understand the cement manufacturing processes	Dry and wet cement manufacturing processes	Ch II K, TB
25 - 27	To understand the extraction of edible and essential oils	Mechanical and solvent based extraction processes, Hydrogenation of oils; isomerization, interesterification	Ch III A, TB; RF1
28- 30	To understand the soap manufacturing processes and detergent making	Soap manufacturing processes, glycerin recovery process, alfol process of detergent production	Ch III B, TB; RF1

31-33	To understand the coal based technologies	Coal combustion, carbonization and liquefaction technologies	Ch III G, TB
34 - 36	To understand the crude oil refining processes	Origin and classification of petroleum, atmospheric and vacuum distillation processes; Reforming, Solvent deasphalting , solvent dewaxing	Ch III H, TB
37-39	To understand the petrochemical processes	Chemicals from C_1 compounds, Chemicals from C_2 compounds, Chemicals from C_3 compounds, Chemicals from C_4 compounds,	Ch IV B-E, TB;
40-41	To know the emergence of Pharma Industry	Characteristics of Pharma industry; Production of Penicillin	Ch IV H, TB
42-43	To understand the polymerization processes	Various polymerization processes	Ch V A-B, TB

The lectures may be slightly diverge from aforesaid plan based on students 'background & interest in the topic, which may perhaps include special lectures and discussions that would be planned and schedule notified accordingly.

Evaluation scheme:

EC No.	Evaluation Components	Nature of Component	Duration	Weightage	Date & Time	Venue
1	Test-I	Closed Book	50 minutes	25%	10.03.2013(Su9)	To be announced later
2	Quiz-1	Closed book	20 minutes	8%	31.03.2013(Su9)	
3	Test - 2	Open book*	50 minutes	20%	28.04.2013(Su9)	
4	Quiz-2	Closed book	20 minutes	7%	12.05.2013(Su9)	
5	Compre Exam	Closed Book	3 hours.	40%	3.06.2013 Monday AN	

** Only prescribed text book(s) and hand written notes are permitted.*

Mid-sem Grading:
Mid-sem grading will be displayed after two evaluation components or earlier when- ever about 40 % of evaluation components are completed.

Note: A student will be likely to get "NC", if he / she

- Doesn't appear / appear for the sake of appearing for the evaluation components / scoring zero in pre-compre total..

Makeup and Attendance policies:
Make-ups are not given as a routine. It is solely dependent upon the genuineness of the circumstances under which a student fails to appear in a scheduled evaluation component. In such circumstances, prior permission should be obtained from the Instructor-in-Charge (I/C).The decision of the I/C in the above matter will be final.

Attendance: Every student is expected to be responsible for regularity of his/her attendance in class rooms and laboratories, to appear in scheduled tests and examinations and fulfill all other tasks assigned to him/her in every course. A student should have a minimum of 50% of attendance in a course to be eligible to appear for the Comprehensive Examination in that course. For the students under the purview of Academic Counseling Board (ACB), the Board shall prescribe the minimum attendance requirement on a case-to-case basis. Attendance in the course will be a deciding factor in judging the seriousness of a student which may be directly / indirectly related to grading.

General timings for consultation:
Each instructor will specify his / her chamber consultation hours during
which the student can contact him / her in his / her chamber for consultation. (For details see part I)

General instructions:
Students should come prepared for classes and carry the text book(s) or material(s) as prescribed by the Course Faculty to the class.

Notices:
All notices concerning the course will be displayed on the third year Notice Board.

Dr. Vijaya Ilango
Instructor-in-charge

Instructor's Contact Details:
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