

Department of Chemical Engineering

Dept.: CHEM. ENGG.
Ref. No. 20.13.....BCHE.3204
5/12/2013

December 5, 2013

Enclosed please find DFB minutes (item 4) with respect to new Curriculum. The following list of items are enclosed.

1. Credit Distribution
2. List of Chemical Engineering Department Core Courses
3. Proposed Scheduling of Chemical Engineering Department Courses
4. Proposed List of Departmental Electives



(S.Basu)
Head of Dept.

Dean (Academics)

gk 9/12

✓
1. UCIC file

2. B-scan & Email to me.

gk



Department of Chemical Engineering

December 5, 2013

Minutes of DFB meeting held on 6th November, 22nd November, 25th November and 28th November 2013.

Members Present:-

- | | | |
|-------------------------------|---|-----------|
| 1. Prof. S. Basu | - | Chairman |
| 2. Prof. S K Gupta | | |
| 3. Prof. A.K. Gupta | | |
| 4. Prof. K.K. Pant | | |
| 5. Prof. Rajesh Khanna | | |
| 6. Prof. Anurag Singh Rathore | | |
| 7. Prof. B.P. Mani | | |
| 8. Prof. S. Roy | | |
| 9. Dr. Anupam Shukla | | |
| 10. Dr. V.V. Buwa | | |
| 11. Dr. Munawar Shaik | | |
| 12. Dr. Sreedevi | | |
| 13. Dr. Jayati Sarkar | | |
| 14. Dr. Gaurav Goel | | |
| 15. Dr. Ali Haider | | |
| 16. Dr. Jyoti Phirani | | |
| 17. Dr. S. K. Pattanayek | | |
| 18. Dr. A.K. Saroha | - | Secretary |

1. Minutes of meeting held on October 15, 2013 were confirmed.
2. **Proposal to float New course by the Department of Chemistry (Course CYL698 Food Chemistry and Biochemistry):** - DFB did not have any comments on the course proposed by the Department of Chemistry.
3. **Academia-Industry Partnership:-** HOD informed the DFB that DSCL, Kota has approached the Department for collaborating in solving the plant operation bottlenecks and developing technologies for new products, the details of which were circulated to the faculty members via e-mail. Chairman encouraged the faculty members for R&D collaboration with industry and informed that a possible visit to Kota could be planned on 12/13, December, 2013.
4. **Curriculum Review:-**
 - a. The 'Credits Distribution' and the 'Departmental Core Courses' for the undergraduate program were finalized and are listed in Annexure 1 and Annexure 2 respectively. The DFB decided that the B.Tech in Chemical Engineering will require a total of 151 credits, out of which 67 credits will be Departmental Core and 12 credits will be for Departmental Electives.
 - b. DFB discussed the schedule for floating of courses in various semesters and is shown in Annexure 3.

c. Departmental specialization

It has been suggested by CRC's that Departments can design one or more baskets of departmental courses of 20 credits for offering the departmental specialization. The DFB decided to offer the following specializations :

1. **Energy and Environment**
2. **Process Engineering, Modelling and Optimization**
3. **Biotechnology and Engineering of Complex Fluids**

d. The CRC has suggested that the Departmental specialization baskets may include a project course of 6 to 8 credits. DFB decided that a student can opt for the following options:

- a) 5 elective courses ($5 \times 3 = 15$ credits)+1 project of 5 credits
- b) 7 elective courses ($7 \times 3 = 21$ credits)

e. The Departmental elective courses were discussed and are listed in Annexure 4.

5. **Internal Review 2013**

The DFB finalized the following sections of the "Internal Review 2013" documents:

1. Curriculum
2. Outreach / External Stakeholder engagement



(S. Basu)
DFB Chairman



(A.K. Saroha)
DFB Secretary

Annexure 1

Credits Distribution:

Category	Total Credits	Remarks
Basic Sciences	22	As per Senate decision
Engineering Arts and Science	18	As per Senate decision
Humanities and Social Sciences	15	As per Senate decision
Programme Linked Engineering Arts & Science	7	3 CY + 4 AM materials course
Department Core	67	Includes 4 credits of B Tech project + 5 lab credits
Department Elective	12	4 courses of 3 credits each
Open Category	10	
TOTAL	151	

Annexure 2

List of Chemical Engineering Department Core Courses

S. No.	Course Title	Credits
1. (L)	Transport Phenomena	(3-1-0) 4
2. (L)	Material and Energy Balance	(2-2-0) 4
3. (L)	Chemical Engineering Thermodynamics	(3-1-0) 4
4. (L)	Chemical Process Technology	(3-1-0) 4
5. (L)	Chemical Reaction Engineering I	(3-1-0) 4
6. (L)	Chemical Reaction Engineering II	(3-0-0) 3
7. (L)	Fluid Mechanics for Chemical Engineers	(3-1-0) 4
8. (L)	Heat Transfer	(3-1-0) 4
9. (L)	Mass Transfer I	(3-0-0) 3
10. (L)	Mass Transfer II	(3-1-0) 4
11. (L)	Fluid-Particle Mechanics	(3-1-0) 4
12. (L)	Process Dynamics and Control	(3-1-0) 4
13. (L/P)	Numerical Methods in Chemical Engineering	(3-0-2) 4
14. (L)	Introduction to Industrial Biotechnology	(3-0-0) 3
15. (L)	Introduction to Chemical Engineering Materials	(3-0-0) 3
16. (P/L)	Instrumentation and Automation	(1-0-3) 2.5
17. (P)	Chemical Engineering Laboratory I	(0-0-3) 1.5
18. (P)	Chemical Engineering Laboratory II	(0-0-3) 1.5
19. (P)	Chemical Engineering Laboratory III	(0-0-3) 1.5
20. (P)	B. Tech. project	(0-0-8) 4
	Total Core Credits	67

Annexure 3

Proposed Scheduling of Chemical Engineering Department Courses

	Lecture Course 1	Lecture Course 2	Lecture Course 3	Lecture Course 4	Other / Lecture Course 5	Other	Other
Sem. I	Math 1 (3-1-0)	AM (3-1-0)	PH (3-0-0) + (0-0-4)	-	Engg. Vis. (0-0-4)	Language (0-0-2)	PE & SR (0-0-2) + Intro. To Engg. (0-0-2)
Sem. II	Maths 2 (3-1-0)	EE (3-1-0)	CY (3-0-0) + (0-0-4)	CS (3-0-2)	Prod. Rel (0-0-4)	Language (0-0-2)	PE & SR (0-0-2) + Intro. To Engg. (0-0-2)
Sem. III	CY special (3-0-0)	Nurm. Meth. (3-0-2)	TP (3-1-0)	MEB (2-2-0)	Biology (3-0-2) / Env. (2-0-0)	-	Intro. To Dept. (0-0-2)
Sem. IV	Thermo (3-1-0)	CRE-I (3-1-0)	FM (3-1-0)	HT (3-1-0)	Biology (3-0-2) / Env. (2-0-0)	AM Mat. Sc (3-1-0)	
Sem. V	MT-I (3-0-0)	CRE-II (3-0-0)	FPM (3-1-0)	CHE Mat. Sc. (3-0-0)	Control (3-1-0)	HU	CHE Lab 1 (0-0-3)
Sem. VI	MT-II (3-1-0)	DE (3-0-0)	Ind. Biotech. (3-0-0)	CPT (3-1-0)	Instru. & Auto. (1-0-3)	DE (3-0-0) / HU	CHE Lab. 2 (0-0-3)
Sem. VII	DE 4	DE 5 / HU	Open	Open	BTP I (0-0-8)	DE / Open / HU	CHE Lab. 3 (0-0-3)
Sem. VIII	DE / Open / HU	DE / Open / HU	DE / Open / HU	DE / Open / HU	DE / Open / HU	DE / Open / HU	

Note: Department would prefer Nurm. Methods in Chemical Engg. (3-0-2) course to come in Lecture Course 2 slot in Sem. III, subject to availability of AM Mat. Sc. (3-1-0) in Sem IV. To be discussed with AM Department.

Annexure 4

Proposed List of Departmental Electives

Course Title	Credits
Powder Processing and Technology	3-0-0 (3)
Safety and Hazards in the Process Industries	3-0-0 (3)
Materials of Construction	3-0-0 (3)
Nano Engineering of Soft Materials	3-0-0 (3)
Modern Separation Processes	3-0-0 (3)
Process Utilities and Pipeline Design	3-0-0 (3)
Environmental Engineering and Waste Management	3-0-0 (3)
Heterogeneous Catalysis and Catalytic Processes	3-0-0 (3)
Petrochemical Technology	3-0-0 (3)
Interfacial Engineering	3-0-0 (3)
Fundamentals of Computational Fluid Dynamics	3-0-0 (3)
Process Operation Scheduling	3-0-0 (3)
Process Optimization	3-0-0 (3)
Bioprocessing and Bioseparations	3-0-0 (3)
Structures and Properties of Polymer in Solution	3-0-0 (3)
Membrane Science and Engineering	3-0-0 (3)
Petroleum Refinery Engineering	3-0-0 (3)
Multicomponent Mass Transfer and Staged Operations	3-0-0(3)
Polymer Matrix Composites - Processes and Process Modelling	3-0-0 (3)
Environmental Engineering & Waste Management	3-0-0 (3)
Heterogeneous Catalysis & Catalytic Processes	3-0-0 (3)
Soft Lithographic Methods for Nano-Fabrication	3-0-0 (3)
Special Topics in Chemical Engineering	3-0-0 (3)
Chemical Engineering Mathematics	3-0-0 (3)
Population Balance Modelling	3-0-0 (3)
Advanced Computational Techniques in Chemical Engineering	3-0-0 (3)
Applications of Computational Fluid Dynamics	3-0-0 (3)

Plant Design	3-0-0 (3)
Research and Development in Chemical Industries	3-0-0(3)
Principles of Electrochemical Engineering	3-0-0(3)
Electrochemical Methods	3-0-0(3)
Electrochemical Conversion and storage Devices	3-0-0(3)
Applied Reservoir Engineering	3-0-0(3)
Reservoir Production Engineering	3-0-0(3)
Biomass Conversion and Utilisation	3-0-0(3)
Introduction to Complex Fluids	3-0-0(3)
Transport Phenomena in Complex Fluids	3-0-0(3)
Thermodynamics of Complex Fluids	3-0-0(3)
Simulation Techniques for Complex Fluids	3-0-0(3)
Interfacial Engineering	3-0-0(3)
Polymer Science and Engineering	3-0-0(3)
Structure Properties of Polymers in Solutions and Melts	3-0-0(3)
Granular Material	3-0-0(3)
Nano-Engineering of Soft Materials	3-0-0(3)
Complex Fluids Technology	3-0-0(3)
Kinetics and Molecular Modelling of Heterogenous Catalytic Reactions	3-0-0(3)
Industrial Multiphase Reactors	3-0-0(3)
Process Intensification and Novel Reactors	3-0-0(3)
Experimental Characterization of Multiphase Reactors	3-0-0(3)
Product and Process Integration	3-0-0(3)
Interfacial Engineering and Biomaterials	3-0-0(3)
Chemical Engineering Principles in Diagnostics Applications	3-0-0(3)
Advanced Process Synthesis	3-0-0(3)
Advance Process Control	3-0-0(3)
Process Plant Simulation	3-0-0(3)
Evolutionary Computation	3-0-0(3)