

# DEPARTMENT OF CHEMICAL ENGINEERING

## BOARD OF STUDIES

### MINUTES OF THE MEETING

**DATE: 28.01.2023**

**VENUE: DEPARTMENT MEETING HALL**

Meeting was commenced by Chairman, Board of Studies with the brief introduction of Industry expert, Academic experts and internal members. At the outset, he briefed the agenda of meeting as to revise and revamp B.Tech. Chemical Engineering curriculum without violating norms of the Anna University and the institute level guidelines implemented in CIT which is mentioned as follows:

1. Total Credits for B.Tech. Chemical Regular should be in the range of 160-165.
2. Total Credits for B.Tech. Chemical Lateral Entry should be in the range of 120-125.
3. Each semester should be in the form of either in pattern1 (5 Theory + 2 Laboratory + 2 Mandatory Courses) or in pattern2 (6 Theory + 2 Laboratory + 2 Mandatory Courses)
4. There should be maximum of eight electives out of which two electives are under open elective category and the remaining six electives are under professional electives category.

In continuation to the Welcome address, B.Tech. Chemical Engineering Curriculum was presented by BoS coordinators. While presenting the curriculum, suggestions or recommendations given by the expert members are listed as follows:

1. Dr.A.Arunagiri-Subject Expert recommended to change 'Physics for Chemical Engineers' as 'Engineering Physics' and 'Electrical Drives and Control' as 'Electrical Machines and Drives'.
2. Moreover, Dr.A.Arunagiri suggested to combine the following subjects to reduce the total credits.
  - Chemical Engineering Thermodynamics-I (Fourth Semester) & Chemical Engineering Thermodynamics-II (Fifth Semester) shall be combined as Chemical Engineering Thermodynamics.

- Process Instrumentation & Instrumental methods of analysis shall be combined as 'Instrumental Analysis'.
  - Fundamentals of Computing-I and Fundamentals Computing -II may be combined as 'Programming for Engineers'.
3. There was a suggestion to set the syllabus of Chemical Process calculations by incorporating following modifications.
- Unit-3 Humidity and Saturation shall be combined with Unit-2.
  - Unit -4 and Unit-5 can be set as Energy balance for reactive systems and Energy Balance for non-reactive systems.
4. Dr.A.Arunagiri & Dr.V.Sivakumar – Subject Expert have recommended to prepone 'Mechanical Operations' to third semester and 'Chemical Process Industries' to fourth semester respectively.
5. Mr.C.Sampath Kumar- Industry Expert suggested to combine 'Biology for Engineers' and 'Biochemical Engineering' as a unique course.
6. All the members have unanimously accepted to modify the title of subject as 'Probability and Statistics' rather as 'Statistics and Special Functions'.
7. Dr.K.Ganesamoorthy – Internal Expert have suggested as to allot four credits for 'Probability and Statistics' instead of 3 credits.
8. Dr.A.Arunagiri and Dr.V.Sivakumar have suggested to assign 4 credits for Mass Transfer-II and 3 Credits for Mass Transfer-I respectively.
9. Similarly, there was a suggestion to assign 4 credits for Chemical Reaction Engineering-II and 3 credits for Chemical Reaction Engineering-I.
10. Dr.M.Arul Mozhi -University Nominee have instructed to include following subjects in the B.Tech. Chemical Engineer.
- Drugs and Pharmaceutical Technology
  - Food Technology
  - Petroleum Refining and Petro Chemical Technology
  - Petrochemical Technology
  - Process Intensification
  - Artificial Intelligence and Machine Learning
  - Flow sheeting Laboratory.
  - Seminar, Plagiarism in ethics and technical writing
  - Design and Analysis of experiments

### Overall Comments & Vote of Thanks

- Dr.M.Arulmozhi commented that overall curriculum and syllabi looks good and subjects are oriented with current technology development.
- Dr.V. Sivakumar have commented that overall structure of the curriculum is very good and excellent.
- Dr.A.Arunagiri have commented that entire chemical syllabus is very good.
- Mr.CS.Sampath Kumar commented that over all syllabus is good.

Finally, chairman have thanked all the members for their presence and valuable suggestions. Meeting was overed with good Dine and tea.



**Dr.M.Thirumarimurugan**

Chairman

Board of Studies

Department of Chemical Engineering

**COIMBATORE INSTITUTE OF TECHNOLOGY**  
(Government Aided Autonomous Institution Affiliated to Anna University)

**B.Tech. CHEMICAL ENGINEERING**

**Curriculum from the Academic Year-2023**

**SUBJECTS OF STUDY**  
**SEMESTER-I**

Code	Name of the Subject	L	T	P	C	CAT
<b>Theory</b>						
T1	Technical English	2	2	0	4	HSC
T2	Differential and Integral Calculus	3	1	0	4	BSC
T3	Engineering Physics	3	0	0	3	BSC
T4	Physical Chemistry	3	0	0	3	BSC
T5	Mechanics of Solids	3	0	0	3	ESC
T6	Fundamentals of Computing-I	3	0	0	3	ESC
<b>Practical</b>						
P1	Engineering Graphics	0	0	2	1	ESC
P2	Computer laboratory	0	0	2	1	ESC
<b>Mandatory Courses</b>						
MC1	Induction Programme	15 Hours				MC
MC2	Soft skills /Environmental science	0/2	0/0	3/0		MC
<b>TOTAL</b>					<b>22</b>	

**SEMESTER-II**

Code	Name of the Subject	L	T	P	C	CAT
<b>Theory</b>						
T1	Matrices, Fourier Series and Transforms	3	1	0	4	BSC
T2	Organic Chemistry	3	0	0	3	BSC
T3	Material Science	3	0	0	3	BSC
T4	Heat Power Engineering	3	0	0	3	ESC
T5	Electrical Machines and Drives	3	0	0	3	ESC
T6	Fundamentals of Computing-II	3	0	0	3	ESC
<b>Practical</b>						
P1	Language laboratory	0	0	4	2	HSC
P2	Basic Science Laboratory	0	0	2	1	ESC
<b>Mandatory Courses</b>						
MC1	Soft Skills	0	0	3	--	MC
MC2	Co-Curricular Activities	0	0	2	--	MC
<b>TOTAL</b>					<b>22</b>	

### SEMESTER-III

Code	Name of the Subject	L	T	P	C	CAT
<b>Theory</b>						
T1	Differential Equations and Boundary Value Problems	3	1	0	4	BSC
T2	Biology for Chemical Engineers	3	0	0	3	BSC
T3	Fluid Mechanics for Chemical Engineers	3	0	0	3	PCC
T4	Process Instrumentation	3	0	0	3	PCC
T5	Chemical Process Industries-I	3	0	0	3	PCC
T6	Chemical Process Calculations	3	1	0	4	PCC
<b>Practical</b>						
P1	Physical and Organic Chemistry Laboratory	0	0	2	1	ESC
P2	Electrical Drives Laboratory	0	0	2	1	ESC
<b>Mandatory Courses</b>						
MC1	Soft Skills	0	0	3	--	MC
MC2	Human Values and Professional Ethics	2	0	0	--	MC
<b>TOTAL</b>						<b>22</b>

### SEMESTER-IV

Code	Name of the Subject	L	T	P	C	CAT
<b>Theory</b>						
T1	Probability and Statistics	3	0	0	3	BSC
T2	Mechanical Operations	3	0	0	3	PCC
T3	Heat Transfer	2	1	0	3	PCC
T4	Mass Transfer-I	3	1	0	4	PCC
T5	Chemical Engineering Thermodynamics	3	1	0	4	PCC
T6	Instrumental Methods of Analysis	3	0	0	3	PCC
<b>Practical</b>						
P1	Fluid Mechanics Laboratory	0	0	2	1	PCC
P2	Technical and Instrumental Analysis Laboratory	0	0	2	1	PCC
<b>Mandatory Courses</b>						
MC1	Soft Skills	0	0	3	--	MC
MC2	Seminar and Technical Writing	0	0	3	--	MC
<b>TOTAL</b>						<b>22</b>

### SEMESTER-V

Code	Name of the Subject	L	T	P	C	CAT
<b>Theory</b>						
T1	Numerical Methods in Chemical Engineering	2	1	0	3	PCC
T2	Mass Transfer-II	2	1	0	3	PCC
T3	Chemical Reaction Engineering-I	3	1	0	4	PCC
T4	Biochemical Engineering	3	0	0	3	PEC
T5	Elective-I	3	0	0	3	PEC
T6	Elective-II	3	0	0	3	PEC
<b>Practical</b>						
INTERNSHIP						
		-	-	-	1	EEC
P1	Heat Transfer Laboratory	0	0	2	1	PEC
P2	Mechanical Operations Laboratory	0	0	2	1	PEC
<b>Mandatory Courses</b>						
MC1	Soft Skills	0	0	3	--	MC
MC2	Professional Development Course	0	0	3	--	MC
<b>TOTAL</b>						<b>22</b>

### SEMESTER-VI

Code	Name of the Subject	L	T	P	C	CAT
<b>Theory</b>						
T1	Process Dynamics and Control	2	1	0	3	PCC
T2	Chemical Reaction Engineering-II	2	1	0	3	PCC
T3	Chemical Process Safety	3	0	0	3	PCC
T4	Neural Networks and Data Science	3	0	0	3	PCC
T5	Elective-III	3	0	0	3	PCC
T6	Elective-IV	3	0	0	3	PCC
<b>Practical</b>						
P1	Mass Transfer Laboratory	0	0	2	1	PCC
P2	Reaction Engineering Laboratory	0	0	2	1	PCC
	MINI PROJECT	0	0	4	2	EEC
<b>Mandatory Courses</b>						
MC1	Soft Skills/Professional Development Course	0	0	3	--	MC
<b>TOTAL</b>						<b>22</b>

## SEMESTER-VII

Code	Name of the Subject	L	T	P	C	CAT
<b>Theory</b>						
T1	Transport Phenomena	2	1	0	3	PCC
T2	Process Economics and Management	2	1	0	3	PCC
T3	Process Modeling and Simulation	3	0	0	3	PCC
T4	Process Plant Utilities	3	0	0	3	PCC
T5	Elective-V	3	0	0	3	PEC
T6	Elective-VI	3	0	0	3	PEC
<b>Practical</b>						
P1	Process Equipment Design and Drawing	0	0	2	1	PCC
P2	Process Control and Simulation Laboratory	0	0	2	1	PCC
<b>TOTAL CREDITS</b>					<b>20</b>	

## SEMESTER-VIII

Code	Name of the Subject	L	T	P	C	CAT
<b>Theory</b>						
T1	Elective-VII	3	0	0	3	PEC
T2	Elective-VIII	3	0	0	3	PEC
<b>Practical</b>						
	Project Work and Viva-Voce	0	0	12	6	EEC
<b>TOTAL CREDITS</b>					<b>12</b>	

**TOTAL CREDITS - REGULAR : 164**

**TOTAL CREDITS - LATERAL : 120**

### List of Verticals offered by Department for the award of B.Tech.

#### Honours:

- |       |                                    |   |              |
|-------|------------------------------------|---|--------------|
| i).   | Petroleum Process Technology       | - | Vertical -I  |
| ii).  | Energy Engineering                 | - | Vertical-II  |
| iii). | Industrial Biotechnology           | - | Vertical-III |
| iv).  | Environmental Safety Engineering   | - | Vertical-IV  |
| v).   | Computational Chemical Engineering | - | Vertical-V   |
| vi).  | Chemical Plant Design              | - | Vertical-VI  |

<b>VERTICAL-I PETROLEUM PROCESS TECHNOLOGY</b>		
S.No	Name of Course	Credits
1.	Petroleum Chemistry	3
2.	Primary Refining Technology	3
3	Secondary Refining Technology	3
4.	Refinery advancements and regulations	3
5.	Petroleum Equipment Design	3
6.	Petrochemical Technology	3
7.	Process Engineering	3
TOTAL CREDITS (Any Six subjects in above list)		<b>18</b>

<b>VERTICAL-II ENERGY ENGINEERING</b>		
S.No	Name of Course	Credits
1.	Bio Energy	3
2.	Renewable Energy	3
3	Pinch Technology	3
4.	Hydrogen and Fuel Cell Technology	3
5.	Power Plant Engg	3
6.	Non-renewable sources	3
7.	Sustainability Engineering	3
8.	Energy Management in Chemical Industries	3
TOTAL CREDITS (Any Six subjects in above list)		<b>18</b>

<b>VERTICAL-III INDUSTRIAL BIOTECHNOLOGY</b>		
S.No	Name of Course	Credits
1.	Bio Chemistry	3
2.	Bioprocess Technology	3
3	Fermentation & Bioprocessing	3
4.	Bio Separation & Downstream processing	3
5.	Enzyme Immobilisation	3
6.	Bio Reactor Design	3
TOTAL CREDITS		<b>18</b>

<b>VERTICAL-IV ENVIRONMENTAL AND SAFETY ENGINEERING</b>		
S.No	Name of Course	Credits
1.	Air Pollution Engineering	3
2.	Waste Water Treatment	3
3.	Solid waste Management	3
4.	Environmental Impact Assessment	3
5.	Process Safety	3
6.	Risk and Hazop Analysis	3
TOTAL CREDITS		<b>18</b>

<b>VERTICAL-V COMPUTATIONAL CHEMICAL ENGINEERING</b>		
S.No	Name of Course	Credits
1.	Computational Techniques	3
2.	Optimization of Chemical Processes	3
3.	Pinch Analysis and Heat Exchange network	3
4.	Chemical Process Flow sheeting'	3
5.	Computational Fluid Dynamics	3
6.	Design and Analysis of experiments	3
TOTAL CREDITS		<b>18</b>

<b>VERTICAL-VI CHEMICAL PLANT DESIGN</b>		
S.No	Name of Course	Credits
1.	Chemical Plant Design	3
2.	Plant Layout	3
3.	Design Safety	3
4.	Material Selection	3
5.	Statutory Requirements & Customer Care	3
6.	Piping and Instrumentation	3
TOTAL CREDITS		<b>18</b>

**List of Verticals offered to another Department for the award of B.Tech. Minor**

- i). Business Data Analytics
- ii). Environmental and Sustainability
- iii). Public Administration
- iv). Entrepreneurship

<b>VERTICAL-I BUSINESS DATA ANALYTICS</b>		
S.No	Name of Course	Credits
1.	Statistics for Management	3
2.	Data mining for business intelligence	3
3.	Human resource Analytics	3
4.	Marketing and Social media analytics	3
5.	Operation and Supply chain analytics	3
6.	Financial Analytics	3
<b>TOTAL CREDITS</b>		<b>18</b>

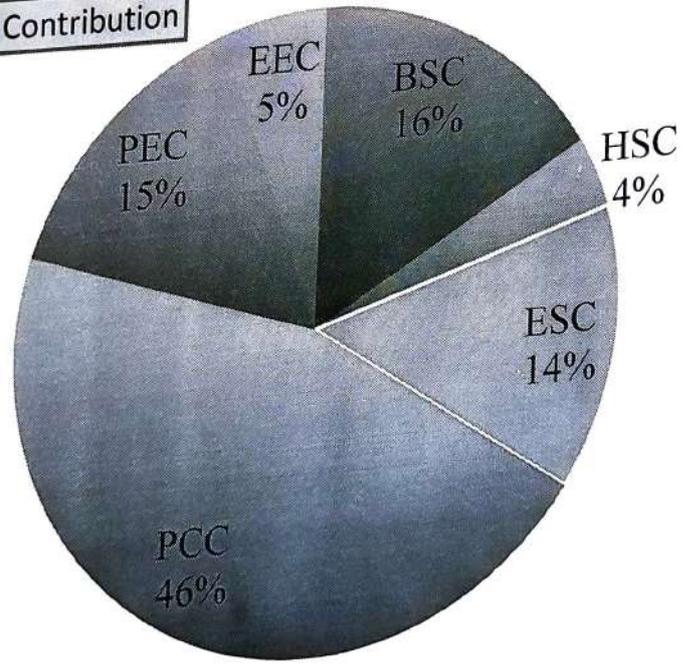
<b>VERTICAL-II Environmental and Sustainability</b>		
S.No	Name of Course	Credits
1.	Sustainable Infrastructure Development	3
2.	Sustainable Agriculture and Environmental Management	3
3.	Sustainable Biomaterials	3
4.	Materials for Energy Sustainability	3
5.	Green Technology	3
6.	Environmental Quality Monitoring	3
7.	Integrated Energy Planning	3
<b>TOTAL CREDITS (Any Six)</b>		<b>18</b>

<b>VERTICAL-III Public Administration</b>		
S.No	Name of Course	Credits
1.	Principles of public admin	3
2.	Constitution of India	3
3.	Public Personnel Admin	3
4.	Administrative theories	3
5.	Indian Administrative system	3
6.	Public Policy Administration	3
<b>TOTAL CREDITS (Any Six)</b>		<b>18</b>

<b>VERTICAL-IV Entrepreneurship</b>		
S.No	Name of Course	Credits
1.	Foundations of Entrepreneurship	3
2.	Team building Management for business	3
3.	Creativity and Innovation in entrepreneurship	3
4.	Principles of marketing management	3
5.	HR Management	3
6.	Psychology for Engineers	3
<b>TOTAL CREDITS (Any Six)</b>		<b>18</b>

CATEGORY/ SEMESTER	BSC	HSC	ESC	PCC	PEC	OEC	EEC	TOTAL CREDITS
I	10	4	8	--	--	--	--	22
II	10	2	10	--	--	--	--	22
III	4	--	5	13	--	--	--	22
IV	3	--	--	19	--	--	--	22
V	--	--	--	15	6	--	1	22
VI	--	--	--	14	6	--	2	22
VII	--	--	--	14	6	--	--	20
VIII	--	--	--	--	6	--	6	12
<b>TOTAL CREDITS</b>	<b>27</b>	<b>6</b>	<b>23</b>	<b>75</b>	<b>24</b>	<b>--</b>	<b>9</b>	<b>164</b>
<b>Contribution</b>	<b>16.5%</b>	<b>3.7%</b>	<b>14%</b>	<b>45.7%</b>	<b>14.6%</b>	<b>--</b>	<b>5.5%</b>	

Percentage Contribution



Legend for the pie chart:

- BSC
- HSC
- ESC
- PCC
- PEC
- EEC