

**BOS Minutes**

**R16**

**B.Tech - Chemical**



**VIGNAN'S**  
Foundation for Science, Technology & Research  
**UNIVERSITY**  
(Established by JGC Act of 1956)

## DEPARTMENT OF CHEMICAL ENGINEERING




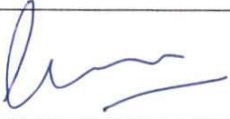




Date: 17.05.2016

Minutes of Board of Studies (BOS) meeting of B.Tech Chemical Engineering program held on 17-05-2016 at office Head of the department, Department of Chemical Engineering, Vignan's University, Vadlamudi.

### Agenda of the meeting:

1. To discuss and finalize structure and detailed syllabus for B.Tech Chemical Engineering program applicable from 2016-17 admitted batch.

### Members present:

S.No	Name	Members	Signature
1.	Dr. M. Ramesh Naidu, Head, Department of Chemical Engineering, Vignan's University	Chairman, BOS	
2.	Dr. G. Prabhakar, Professor, Dept. of Chemical Engineering, S V University, Tirupathi.	Invited member	
3.	Dr. V. V. Basava Rao, Dean, Faculty of Technology, OUCT, Osmania University, Hyderabad.	Invited member	
4.	Sri R. Banerjee Babu, General Manager, Production, JOCIL, Dikiparu.	Invited member	
5.	Dr. M. Prasad Babu, Manager, R&D-DSB, NFCL, Hyderabad NFCL.	Invited member	
6.	Mr. P. Ashok Kumar, Associate Professor, Department of Chemical Engineering, Vignan's University.	Internal Member	
7.	Mr. P. Bangarajah, Associate Professor, Department of Chemical Engineering, Vignan's University	Internal Member	
8.	Dr. Krishna C Etika, Associate Professor, Department of Chemical Engineering, Vignan's University.	Internal Member	

### Minutes of the BOS meeting

1. The chairman greeted all the BOS members.
2. The chairman emphasized broad objectives of the proposed changes in the course structure of B.Tech Chemical Engineering.
3. The chairmen also elucidated in detail the suggestions and remarks communicated from various stakeholders.
4. The members of the BOS painstakingly observed the proposals of Department of Chemical Engineering in the light of suggestions made by experts and recommended a new course structure for B.Tech Chemical Engineering program.

#### **After the discussion it is resolved to:**

1. Propose and approve course structure for all 4 years of B.Tech. Program in Chemical Engineering (Appendix-I).
2. Propose and approve detailed syllabus for the 4 year of B.Tech. Program in Chemical Engineering with effect from the academic year 2016-17. The proposed structure and syllabus are applicable for 2016 admitted batch onwards.
3. Stakeholder's feedback is collected, analyzed and given paramount priority while designing the curriculum and their suggestions are implemented.
4. The curriculum follows choice-based credit system.
5. Major restructuring has taken place in the Curriculum with theoretical courses amalgamated with laboratory sessions along with Minor Projects.
6. Major reformation has taken place in the curriculum by offering new electives such as Solid Waste management and Treatment, Effluent Treatment Methods, Nonconventional Energy Sources, Environmental Regulations and Impact Assessment etc.
7. The total percentage of syllabus revision for B.Tech Chemical Engineering Program is 47%.
8. The curriculum is encompassing the courses that enable employability or entrepreneurship or skill development (Appendix -II).
9. In the B.Tech. Chemical Engineering revised regulation R16, the significant changes are made in the content of all courses and hence the courses are considered as new courses (Appendix -III).

## APPENDIX – I

### Course Structure

#### I Year I Semester

Course Title	L	T	P	C
Engineering Mathematics-I	3	1	2	5
Engineering Physics	3	-	-	3
Technical English Communication	3	-	2	4
Basics of Computers and Internet	3	-	2	4
Computer Programming	3	1	2	5
Basics of Engineering Products	3	-	2	4
English Proficiency and Communication Skills	-	-	2	1
Engineering Physics Laboratory	-	-	3	2
<b>Total</b>	<b>18</b>	<b>2</b>	<b>15</b>	<b>28</b>

#### I Year II Semester

Course Title	L	T	P	C
Engineering Mathematics-II	3	1	2	5
Engineering Chemistry	3	-	-	3
Engineering Graphics	1	-	3	3
Basics of Electrical and Electronics Engineering	3	-	2	4
Engineering Chemistry Laboratory	-	-	3	2
Environmental Science and Technology	2	-	-	2
Work shop Practice	-	-	3	2
Basics of Chemical Engineering	3	-	-	3
<b>Total</b>	<b>15</b>	<b>1</b>	<b>13</b>	<b>24</b>

## II Year I Semester

Course Title	L	T	P	C
Probability and Statistics	4	-	-	4
Soft Skills Laboratory	-	-	2	1
Data Structures	3	-	2	4
Materials Science and Technology	4	-	-	4
Chemical Process Calculations	3	1	-	4
Momentum Transfer	3	-	2	4
Process Instrumentation	3	1	-	4
Employability and Life Skills Elective*	-	-	-	1-3
<b>Total</b>	<b>20</b>	<b>2</b>	<b>6</b>	<b>26-28</b>

## II Year II Semester

Course Title	L	T	P	C
Professional Communications Laboratory	-	-	2	1
Chemical Engineering Thermodynamics-I	3	1	-	4
Mechanical Unit Operations	3	-	2	4
Organic Chemistry	3	1	2	4
Process Heat Transfer	3	-	2	4
Department Elective	-	-	-	3
Department / Open Elective	-	-	-	3-4
Employability and Life Skills Elective*	-	-	-	1-3
<b>Total</b>	<b>12</b>	<b>2</b>	<b>8</b>	<b>24-27</b>

### III Year I Semester

Course Title	L	T	P	C
Chemical Engineering Thermodynamics-II	3	1	-	4
Chemical Reaction Engineering-I	3	-	2	4
Mass Transfer Operations-I	3	-	2	4
Process Dynamics and Control	3	-	2	4
Department / Open Elective	-	-	-	3-4
Department Elective	-	-	-	3
Employability and Life Skills Elective*	-	-	-	1-3
<b>Total</b>	<b>12</b>	<b>1</b>	<b>6</b>	<b>23-26</b>

### III Year II Semester

Course Title	L	T	P	C
Professional Ethics	2	-	-	2
Chemical Reaction Engineering-II	3	-	2	4
Chemical Technology	3	-	2	4
Mass Transfer Operations-II	3	-	2	4
Process Modeling and Simulation	3	-	2	4
Department Elective	-	-	-	3
Department / Open Elective	-	-	-	3-4
Employability and Life Skills Elective*	-	-	-	1-3
<b>Total</b>	<b>17</b>	<b>-</b>	<b>8</b>	<b>25-28</b>

#### IV Year I Semester

Course Title	L	T	P	C
Management Science	3	-	-	3
Chemical Engineering Plant Design and Economics	3	1	-	4
Chemical Process Equipment Design	3	-	2	4
Optimization of Chemical Processes	3	1	-	4
Transport Phenomena	3	1	-	4
Department Elective	-	-	-	3
Department / Open Elective	-	-	-	3-4
Employability and Life Skills Elective*	-	-	-	1-3
<b>Total</b>	<b>15</b>	<b>3</b>	<b>2</b>	<b>22-25</b>

#### IV Year II Semester

Course Title	L	T	P	C
Project work / Internship	-	-	30	15
<b>Total</b>	<b>-</b>	<b>-</b>	<b>30</b>	<b>15</b>

L = Lecture ; T = Tutorial ; P = Practical ; C = Credits

The courses that are highlighted denote implementation of 'Choice Based Credit System (CBCS)'

## **R-16 Department Elective Courses**

### **STREAM - 1: ENVIRONMENTAL AND SAFETY ENGINEERING**

<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
Effluent Treatment Methods	3	-	-	3
Solid Waste Management and Treatment	3	-	-	3
Environmental Regulations and Impact Analysis	3	-	-	3
Industrial Safety and Hazard Analysis	3	-	-	3

### **STREAM - 2: MINERAL PROCESSING**

<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
Mineral Process Technology	3	-	-	3
Mining Methods and Unit Operations	3	-	-	3
Physical Separation Process	3	-	-	3
Extraction Metallurgy	3	-	-	3

### **STREAM - 3: PHARMACEUTICAL AND FINE CHEMICALS**

<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
Pharmaceuticals Chemistry	3	-	-	3
Pharmaceutical and Fine Chemicals	3	-	-	3
Pharmaceutical Analytical Techniques	3	-	-	3
Drug Design and Formulation	3	-	-	3

### **STREAM - 4: POLYMER AND PLASTICS ENGINEERING**

<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
Polymer Structure and Property Relationship	3	-	-	3
Manufacturing of Industrial Polymers	3	-	-	3
Polymer Processing Technology	3	-	-	3
Polymer Testing Methods	3	-	-	3

**STREAM - 5: PETROLEUM ENGINEERING**

Course Title	L	T	P	C
Petroleum Production Operations	3	-	-	3
Petroleum Refinery Engineering	3	-	-	3
Petrochemicals	3	-	-	3
Natural Gas Engineering	3	-	-	3

**INDIVIDUAL ELECTIVE COURSES**

Course Title	L	T	P	C
Conventional Energy Sources	3	-	-	3
Non Conventional Energy Sources	3	-	-	3
Energy Management and Auditing	3	-	-	3
Energy Integration	3	-	-	3

  
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**DEPARTMENT OF CHEMICAL ENGINEERING**

**APPENDIX - II**

**List of courses that enable employability or entrepreneurship or skill development in the R-16 B.Tech – Chemical Engineering**

Sl. No.	Semester (Year)	Core / Elective	Course Name	Employability/ Entrepreneurship/ Skill development
1	First Year (Semester I)	Core	Engineering Mathematics - I	Skill development
2	First Year (Semester I)	Core	Engineering Physics	Skill development
3	First Year (Semester I)	Core	Technical English Communication	Employability
4	First Year (Semester I)	Core	Basics of Computers and Internet	Skill development
5	First Year (Semester I)	Core	Computer Programming	Skill development
6	First Year (Semester I)	Core	Basics of Engineering Products	Skill development
7	First Year (Semester I)	Core	English Proficiency and Communication Skills	Employability
8	First Year (Semester I)	Core	Engineering Physics Laboratory	Skill development
9	First Year (Semester II)	Core	Engineering Mathematics - II	Skill development
10	First Year (Semester II)	Core	Engineering Chemistry	Skill development
11	First Year (Semester II)	Core	Engineering Graphics	Skill development
12	First Year (Semester II)	Core	Basics of Electrical and Electronics Engineering	Skill development
13	First Year (Semester II)	Core	Engineering Chemistry Laboratory	Skill development
14	First Year (Semester II)	Core	Environmental Science and Technology	Skill development
15	First Year (Semester II)	Core	Work shop Practice	Skill development
16	First Year (Semester II)	Core	Basics of Chemical Engineering	Skill development
17	Second Year	Core	Probability and Statistics	Skill development

	(Semester I)			
18	Second Year (Semester I)	Core	Soft Skills Laboratory	Skill development
19	Second Year (Semester I)	Core	Data Structures	Skill development
20	Second Year (Semester I)	Core	Materials Science and Technology	Skill development
21	Second Year (Semester I)	Core	Chemical Process Calculations	Skill development
22	Second Year (Semester I)	Core	Momentum Transfer	Skill development
23	Second Year (Semester I)	Core	Process Instrumentation	Skill development
24	Second Year (Semester I)	Employability Skills	Employability and Life Skills Elective	Employability
25	Second Year (Semester II)	Core	Professional Communications Laboratory	Skill development
26	Second Year (Semester II)	Core	Chemical Engineering Thermodynamics-I	Skill development
27	Second Year (Semester II)	Core	Mechanical Unit Operations	Skill development
28	Second Year (Semester II)	Core	Organic Chemistry	Skill development
29	Second Year (Semester II)	Core	Process Heat Transfer	Skill development
30	Second Year (Semester II)	Department Elective	Effluent Treatment Methods	Skill development
31	Second Year (Semester II)	Department Elective	Mineral Process Technology	Skill development
32	Second Year (Semester II)	Department Elective	Pharmaceuticals Chemistry	Skill development
33	Second Year (Semester II)	Department Elective	Polymer Structure and Property Relationship	Skill development
34	Second Year (Semester II)	Department Elective	Petroleum Production Operations	Skill development
35	Second Year (Semester II)	Department Elective	Conventional Energy Sources	Skill development
36	Second Year (Semester II)	Employability Skills	Employability and Life Skills Elective	Employability
37	Third Year (Semester I)	Core	Chemical Engineering Thermodynamics-II	Skill development
38	Third Year (Semester I)	Core	Chemical Reaction Engineering-I	Skill development
39	Third Year	Core	Mass Transfer Operations-I	Skill development

	(Semester I)			
40	Third Year (Semester I)	Core	Process Dynamics and Control	Skill development
41	Third Year (Semester I)	Department Elective	Solid Waste Management and Treatment	Skill development
42	Third Year (Semester I)	Department Elective	Mining Methods and Unit Operations	Skill development
43	Third Year (Semester I)	Department Elective	Pharmaceutical and Fine Chemicals	Skill development
44	Third Year (Semester I)	Department Elective	Manufacturing of Industrial Polymers	Skill development
45	Third Year (Semester I)	Department Elective	Petroleum Refinery Engineering	Skill development
46	Third Year (Semester I)	Department Elective	Non-Conventional Energy Sources	Skill development
47	Third Year (Semester I)	Employability Skills	Employability and Life Skills Elective	Skill development
48	Third Year (Semester II)	Core	Professional Ethics	Employability
49	Third Year (Semester II)	Core	Chemical Reaction Engineering-II	Skill development
50	Third Year (Semester II)	Core	Chemical Technology	Skill development
51	Third Year (Semester II)	Core	Mass Transfer Operations-II	Skill development
52	Third Year (Semester II)	Core	Process Modeling and Simulation	Skill development
53	Third Year (Semester II)	Department Elective	Environmental Regulations and Impact Analysis	Skill development
54	Third Year (Semester II)	Department Elective	Physical Separation Process	Skill development
55	Third Year (Semester II)	Department Elective	Pharmaceutical Analytical Techniques	Skill development
56	Third Year (Semester II)	Department Elective	Polymer Processing Technology	Skill development
57	Third Year (Semester II)	Department Elective	Petrochemicals	Skill development
58	Third Year (Semester II)	Department Elective	Energy Management and Auditing	Skill development
59	Third Year (Semester II)	Employability Skills	Employability and Life Skills Elective	Employability
60	Fourth Year (Semester I)	Core	Management Science	Employability
61	Fourth Year (Semester I)	Core	Chemical Engineering Plant Design and Economics	Skill development

62	Fourth Year (Semester I)	Core	Chemical Process Equipment Design	Skill development
63	Fourth Year (Semester I)	Core	Optimization of Chemical Processes	Skill development
64	Fourth Year (Semester I)	Core	Transport Phenomena	Skill development
65	Fourth Year (Semester I)	Department Elective	Industrial Safety and Hazard Analysis	Skill development
66	Fourth Year (Semester I)	Department Elective	Extraction Metallurgy	Skill development
67	Fourth Year (Semester I)	Department Elective	Drug Design and Formulation	Skill development
68	Fourth Year (Semester I)	Department Elective	Polymer Testing Methods	Skill development
69	Fourth Year (Semester I)	Department Elective	Natural Gas Engineering	Skill development
70	Fourth Year (Semester I)	Department Elective	Energy Integration	Skill development
71	Fourth Year (Semester I)	Employability Skills	Employability and Life Skills Elective	Employability
72	Fourth Year (Semester II)	Core	Project work / Internship	Employability

  
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(Estd u/s 3 of UGC Act of 1956)

**DEPARTMENT OF CHEMICAL ENGINEERING**

**APPENDIX - III**

**List of new courses in the R-16  
B.Tech – Chemical Engineering Curriculum**

Sl. No.	Semester (Year)	Core / Elective	Course Name
1	First Year (Semester I)	Core	Engineering Mathematics - I
2	First Year (Semester I)	Core	Engineering Physics
3	First Year (Semester I)	Core	Technical English Communication
4	First Year (Semester I)	Core	Basics of Computers and Internet
5	First Year (Semester I)	Core	Computer Programming
6	First Year (Semester I)	Core	Basics of Engineering Products
7	First Year (Semester I)	Core	English Proficiency and Communication Skills
8	First Year (Semester I)	Core	Engineering Physics Laboratory
9	First Year (Semester II)	Core	Engineering Mathematics - II
10	First Year (Semester II)	Core	Engineering Chemistry
11	First Year (Semester II)	Core	Engineering Graphics
12	First Year (Semester II)	Core	Basics of Electrical and Electronics Engineering
13	First Year (Semester II)	Core	Engineering Chemistry Laboratory
14	First Year (Semester II)	Core	Environmental Science and Technology
15	First Year (Semester II)	Core	Work shop Practice
16	First Year	Core	Basics of Chemical Engineering

	(Semester II)		
17	Second Year (Semester I)	Core	Probability and Statistics
18	Second Year (Semester I)	Core	Soft Skills Laboratory
19	Second Year (Semester I)	Core	Data Structures
20	Second Year (Semester I)	Core	Materials Science and Technology
21	Second Year (Semester I)	Core	Chemical Process Calculations
22	Second Year (Semester I)	Core	Momentum Transfer
23	Second Year (Semester I)	Core	Process Instrumentation
24	Second Year (Semester I)	Employability Skills	Employability and Life Skills Elective
25	Second Year (Semester II)	Core	Professional Communications Laboratory
26	Second Year (Semester II)	Core	Chemical Engineering Thermodynamics-I
27	Second Year (Semester II)	Core	Mechanical Unit Operations
28	Second Year (Semester II)	Core	Organic Chemistry
29	Second Year (Semester II)	Core	Process Heat Transfer
30	Second Year (Semester II)	Department Elective	Effluent Treatment Methods
31	Second Year (Semester II)	Department Elective	Mineral Process Technology
32	Second Year (Semester II)	Department Elective	Pharmaceuticals Chemistry
33	Second Year (Semester II)	Department Elective	Polymer Structure and Property Relationship
34	Second Year (Semester II)	Department Elective	Petroleum Production Operations
35	Second Year (Semester II)	Department Elective	Conventional Energy Sources
36	Second Year (Semester II)	Employability Skills	Employability and Life Skills Elective
37	Third Year (Semester I)	Core	Chemical Engineering Thermodynamics-II
38	Third Year	Core	Chemical Reaction Engineering-I

	(Semester I)		
39	Third Year (Semester I)	Core	Mass Transfer Operations-I
40	Third Year (Semester I)	Core	Process Dynamics and Control
41	Third Year (Semester I)	Department Elective	Solid Waste Management and Treatment
42	Third Year (Semester I)	Department Elective	Mining Methods and Unit Operations
43	Third Year (Semester I)	Department Elective	Pharmaceutical and Fine Chemicals
44	Third Year (Semester I)	Department Elective	Manufacturing of Industrial Polymers
45	Third Year (Semester I)	Department Elective	Petroleum Refinery Engineering
46	Third Year (Semester I)	Department Elective	Non-Conventional Energy Sources
47	Third Year (Semester I)	Employability Skills	Employability and Life Skills Elective
48	Third Year (Semester II)	Core	Professional Ethics
49	Third Year (Semester II)	Core	Chemical Reaction Engineering-II
50	Third Year (Semester II)	Core	Chemical Technology
51	Third Year (Semester II)	Core	Mass Transfer Operations-II
52	Third Year (Semester II)	Core	Process Modeling and Simulation
53	Third Year (Semester II)	Department Elective	Environmental Regulations and Impact Analysis
54	Third Year (Semester II)	Department Elective	Physical Separation Process
55	Third Year (Semester II)	Department Elective	Pharmaceutical Analytical Techniques
56	Third Year (Semester II)	Department Elective	Polymer Processing Technology
57	Third Year (Semester II)	Department Elective	Petrochemicals
58	Third Year (Semester II)	Department Elective	Energy Management and Auditing
59	Third Year (Semester II)	Employability Skills	Employability and Life Skills Elective
60	Fourth Year (Semester I)	Core	Management Science

61	Fourth Year (Semester I)	Core	Chemical Engineering Plant Design and Economics
62	Fourth Year (Semester I)	Core	Chemical Process Equipment Design
63	Fourth Year (Semester I)	Core	Optimization of Chemical Processes
64	Fourth Year (Semester I)	Core	Transport Phenomena
65	Fourth Year (Semester I)	Department Elective	Industrial Safety and Hazard Analysis
66	Fourth Year (Semester I)	Department Elective	Extraction Metallurgy
67	Fourth Year (Semester I)	Department Elective	Drug Design and Formulation
68	Fourth Year (Semester I)	Department Elective	Polymer Testing Methods
69	Fourth Year (Semester I)	Department Elective	Natural Gas Engineering
70	Fourth Year (Semester I)	Department Elective	Energy Integration
71	Fourth Year (Semester I)	Employability Skills	Employability and Life Skills Elective
72	Fourth Year (Semester II)	Core	Project work / Internship

  
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