



## DEPARTMENT OF CHEMICAL ENGINEERING

Date: 17.06.2022




### Minutes of Board of Studies Meeting





Board of Studies (BoS) meeting of B.Tech., Chemical Engineering programme was conducted on 16.06.2022 to 17.06.2022 in blended mode from 10.30 onwards. The Bos meeting was held at office Head of the department, Department of Chemical Engineering, VFSTR, Vadlamudi and virtual meeting link through Zoom link was: <https://us06web.zoom.us/j/82118001719?pwd=VjhLTjljUkJPtWt6d2NZamxnVjNnQT09>.

#### **Agenda of the BoS Meeting:**

1. To Discuss and finalize the curriculum structure and detailed syllabus of B.Tech., Chemical Engineering Programme for the regulation 2022.
2. To approve the R22 curriculum and syllabus of B.Tech., Chemical Engineering Programme and recommend to the Academic council.
3. Any other points with the permission of Chairperson.

The following members were present either thorough offline or online.

| S. No. | Name and designation of the Member   | Position                      | Signature   |
|--------|--|-------------------------------|---|
| 1.     | Dr. M. Ramesh Naidu,<br>Professor and Head,<br>Chemical Engineering Department,<br>VFSTR   | Chairperson                   |  |
| 2.     | Dr. Y. PydiSetty,<br>Professor, Dept. of Chemical<br>Engineering, NIT Warangal. Mobile<br>9491824392;<br>mail: peddisetti1971@gmail.com    | External Member<br>(Academic) | Attended online   |
| 3.     | Dr. S.V. Satyanarayana,<br>Professor, Dept. of Chemical<br>Engineering, JNTU Anantapur,<br>mobile: 9849509167,<br>mail: svsatya7@gmail.com | External Member<br>(Academic) | Attended online   |
| 4.     | Dr. P. Bangaraiah,<br>Professor, Chemical Engineering<br>Department, VFSTR   | Internal Member               |  |
| 5.     | Dr. B. Sumalatha,<br>Assoc. Prof., Chemical Engineering<br>Department, VFSTR   | Internal Member               |  |

|     |   |                          |  |
|-----|---|--------------------------|--|
| 6.  | Dr. P. Vijetha,<br>Assoc. Prof., Chemical Engineering<br>Department, VFSTR  | Internal Member          |   |
| 7.  | Dr. P. Ashok Kumar,<br>Professor, Chemical Engineering<br>Department, VFSTR   | Nominee (Dean-<br>R&D)   |   |
| 8.  | Dr. Satyajit Mukherjee,<br>Asst. Prof., Chemical Engineering<br>Department, VFSTR   | Nominee (School<br>Dean) |   |
| 9.  | Dr. K. Krishnaiah,<br>Dean academics and Professor, Dept.<br>of Chemical Engineering, IIT<br>Tirupathi, A.P., mobile:9444070950,<br>mail: krishnak@iittp.ac.in                | Invitee                  | Attended online  |
| 10. | Dr. G. S. Venkata ratnam<br>Senior Principal Scientist (Retired),<br>Central Leather Research Institute<br>Adyar, Chennai,<br>Mobile; 9444464670,<br>mail:gsvratnam@gmail.com | Invitee                  | Attended online  |
| 11. | Dr. Anwar Ali Khan.<br>Assoc. Prof., Chemical Engineering<br>Department, VFSTR  | Member<br>Secretary      |  |

Chairperson Dr. M. Ramesh Naidu, Professor and Head, department of Chemical Engineering, VFSTR opened the meeting by welcoming and introducing the external members, invitees to the internal members. Chairperson presented about the *NEP 2020 Compliant Regulation - R22* which emphasis on creating *learning centric* (continuous learning and continuous assessment model), offering B.Tech., B.Tech. with Honours/ Research Honours/ Minor/ Add-on Diploma, Dual degree (B.Tech. + M.Tech./MBA, or M.Tech. + Ph.D.), providing multiple entry and multiple exits.

**The following points were discussed in the BoS meeting:**

1. Regulation R22.
2. Curriculum structure with credits, credits distribution.
3. 2 Modules instead of 5 units.
4. Assessment methods (Formative & Summative).
5. Grading Schemes.
6. Electives and streams/pools.
7. Minor / Honor courses.



**The following resolutions made after the discussion:**

1. BoS Members approved the revised regulations, curriculum structure, syllabus of B.Tech., Chemical Engineering programmes and it follows based on the NEP 2020. Curriculum structure is provided in Appendix-I.
2. Major restructuring has taken place in the curriculum which is oriented towards continuous learning and assessment based on Module structure.
3. Major reformation has taken place in the curriculum by offering Honours/Specialization (Petrochemical Engineering) degree or Minor degree thorough 20 more credits with additional courses.
4. The curriculum is encompassing the courses that enable employability or entrepreneurship or skill development, provided in Appendix- II.
5. The significant changes are made in the content of all courses and hence the courses are considered as new courses provided in Appendix- III.
6. Total average percentage of syllabus revised was 50% compared to previous curriculum

Based on the suggestions given by the members, the Chairperson of BoS told that, those fruitful suggestions would be incorporated appropriately in the curriculum and syllabi of the regulation R22 and this will be recommended to the Academic Council of VFSTR for the approval.

There being no further points for discussion, the Chairperson thanks all the external, internal, invited members and announced that the meeting was adjourned.



**Member Secretary**

  
**Chairperson**



## **DEPARTMENT OF CHEMICAL ENGINEERING**

### **APPENDIX I**

#### **B.Tech Programme: Curriculum Structure**

##### **I Year I Semester**

| Sl. No. | Course Title                                       | L         | T        | P         | C         | Remarks           | Course offered by                |
|---------|--|-----------|----------|-----------|-----------|-------------------|----------------------------------|
| 1       | IT Workshop and Chemical Engineering Products      | 1         | 0        | 4         | 3         | Basic Engineering | Department of Chemical Engg.     |
| 2       | Basics of Electrical and Electronics Engineering   | 2         | 0        | 2         | 3         | Basic Engineering | Department of EEE                |
| 3       | Programming in C                                   | 2         | 0        | 4         | 4         | Basic Engineering | Department of T and P            |
| 4       | Applied Chemistry                                  | 2         | 0        | 2         | 3         | Basic Sciences    | Department of Chemistry          |
| 5       | Linear algebra and Ordinary differential equations | 3         | 2        | 0         | 4         | Basic Sciences    | Department of Mathematics        |
| 6       | English Proficiency and Communication Skills       | 0         | 0        | 2         | 1         | Humanities        | Department of English            |
|         | <b>Total</b>                                       | <b>10</b> | <b>2</b> | <b>14</b> | <b>18</b> |                   |                                  |
| 7       | Physical Fitness, Sports & Games – I               | 0         | 0        | 3         | 1         | Binary grade      | Department of Physical Education |
|         | Constitution of India                              | 0         | 2        | 0         | 1         | Binary grade      | Department of T and P            |
|         | <b>Total</b>                                       | <b>10</b> | <b>4</b> | <b>17</b> | <b>20</b> |                   |                                  |

##### **I Year II Semester**

| Sl. No. | Course Title                                       | L         | T        | P         | C         | Remarks           | Course offered by                    |
|---------|--|-----------|----------|-----------|-----------|-------------------|--------------------------------------|
| 1       | Engineering Graphics                               | 2         | 0        | 2         | 3         | Basic Engineering | Department of Mechanical Engg.       |
| 2       | Basic Coding Competency                            | 0         | 1        | 3         | 2         | Basic Engineering | Department of T and P                |
| 3       | Partial differential equations and vector calculus | 3         | 2        | 0         | 4         | Basic Sciences    | Department of Mathematics            |
| 4       | Engineering Physics                                | 2         | 0        | 2         | 3         | Basic science     | Department of Physics                |
| 5       | Technical English Communication                    | 2         | 0        | 2         | 3         | Humanities        | Department of English                |
| 6       | Organic Chemistry for Chemical Engineers           | 3         | 0        | 2         | 4         | Professional core | Department of Chemistry              |
|         | <b>Total</b>                                       | <b>12</b> | <b>3</b> | <b>11</b> | <b>19</b> |                   |                                      |
| 7       | Physical Fitness, Sports & Games – II              | 0         | 0        | 3         | 1         | Binary grade      | Department of Physical Education     |
|         | <b>Orientation Session</b>                         | <b>0</b>  | <b>0</b> | <b>6</b>  | <b>3</b>  | Binary grade      | Student Affairs & Physical Education |
|         | <b>Total</b>                                       | <b>12</b> | <b>3</b> | <b>20</b> | <b>23</b> |                   |                                      |



## II Year I Semester

| Sl. No. | Course Title   | L         | T         | P         | C         | Remarks                          | Course offered by                    |
|---------|--|-----------|-----------|-----------|-----------|----------------------------------|--------------------------------------|
| 1       | Data Structures  | 2         | 2         | 2         | 4         | Basic Sciences                   | Department of T and P                |
| 2       | Probability and Statistics   | 3         | 0         | 2         | 4         | Basic Engineering                | Department of Statistics             |
| 3       | Chemical Engineering Thermodynamics -1   | 2         | 2         | 0         | 3         | Professional core                | Department of Chemical Engg.         |
| 4       | Chemical Process Calculations  | 3         | 2         | 0         | 4         | Professional core                | Department of Chemical Engg.         |
| 5       | Momentum Transfer  | 2         | 2         | 2         | 4         | Professional core                | Department of Chemical Engg.         |
| 6       | Mechanical Unit Operations   | 2         | 2         | 2         | 4         | Professional core                | Department of Chemical Engg.         |
|         | <b>Total</b>   | <b>14</b> | <b>10</b> | <b>10</b> | <b>23</b> |                                  |                                      |
| 7       | Life Skills-I  | 0         | 0         | 2         | 1         | Basic Sciences                   | Student Affairs & Physical Education |
| 8       | NCC/ NSS/ SAC/ E-cell/ Student Mentoring/ Social activities/ Publication with good impact factor (Only 2 students can claim 1 paper /patent). These credits maybe earned on or before the end of IV semester |           |           |           | 1         | Floating credits<br>Binary grade |                                      |
|         | <b>Total</b>   | <b>14</b> | <b>10</b> | <b>12</b> | <b>25</b> |                                  |                                      |

## II Year II Semester

| Sl. No. | Course Title                             | L | T | P | C | Remarks             | Course offered by                |
|---------|--|---|---|---|---|---------------------|----------------------------------|
| 1       | Advanced Coding Competency               | 0 | 0 | 2 | 1 | Basic Engineering   | Department of T and P            |
| 2       | Environmental Studies                    | 1 | 1 | 0 | 1 | Basic Sciences      | Department of Chemistry          |
| 3       | Management Science                       | 2 | 2 | 0 | 3 | Humanities          | Department of Management studies |
| 4       | Professional Communication               | 0 | 0 | 2 | 1 | Humanities          | Department of T and P            |
| 5       | Chemical Engineering Thermodynamics - II | 2 | 2 | 0 | 3 | Professional core   | Department of Chemical Engg.     |
| 6       | Process Heat Transfer                    | 2 | 2 | 2 | 4 | Professional core   | Department of Chemical Engg.     |
| 7       | Department Elective – 1                  | 2 | 2 | 0 | 3 | Department Elective | Department of Chemical Engg.     |
| 8       | Open Elective – 1                        | 2 | 2 | 0 | 3 | Open Elective       |                                  |

|           |                           |           |           |          |           |              |                                      |
|-----------|---------------------------|-----------|-----------|----------|-----------|--------------|--------------------------------------|
|           | <b>Total</b>              | <b>11</b> | <b>11</b> | <b>6</b> | <b>19</b> |              |                                      |
| 9         | Life Skills-II            | 0         | 0         | 2        | 1         | Binary grade | Student Affairs & Physical Education |
|           | <b>Total</b>              | <b>11</b> | <b>11</b> | <b>8</b> | <b>20</b> |              |                                      |
| <b>10</b> | <b>Minor / Honors – 1</b> | 3         | 2         | 0        | 4         |              | Department of Chemical Engg.         |
|           | <b>Total</b>              | <b>14</b> | <b>13</b> | <b>8</b> | <b>24</b> |              |                                      |

### III Year I Semester

| Sl. No.  | Course Title   | L         | T         | P         | C         | Remarks                          | Course offered by            |
|----------|--|-----------|-----------|-----------|-----------|----------------------------------|------------------------------|
| 1        | Soft Skills Lab  | 0         | 0         | 2         | 1         | Humanities                       | Department of T and P        |
| 2        | Chemical Reaction Engineering - I  | 2         | 2         | 2         | 4         | Professional core                | Department of Chemical Engg. |
| 3        | Mass Transfer Operations - I   | 2         | 2         | 2         | 4         | Professional core                | Department of Chemical Engg. |
| 4        | Process Dynamics and Control   | 2         | 2         | 2         | 4         | Professional core                | Department of Chemical Engg. |
| 5        | Department Elective – 2  | 2         | 2         | 0         | 3         | Department Elective              | Department of Chemical Engg. |
| 6        | Open Elective – 2  | 2         | 2         | 0         | 3         | Open Elective                    |                              |
| 7        | Inter-Disciplinary Project- Phase I  | 0         | 0         | 2         | 0         | Project                          | Department of Chemical Engg. |
|          | <b>Total</b>   | <b>10</b> | <b>10</b> | <b>10</b> | <b>19</b> |                                  |                              |
| 8        | NCC/ NSS/ SAC/ E-cell/ Student Mentoring/ Social activities/ Publication with good impact factor (Only 2 students can claim 1 paper /patent). These credits maybe earned on or before the end of VI semester |           |           |           | 1         | Floating credits<br>Binary grade |                              |
|          | <b>Total</b>   | <b>10</b> | <b>10</b> | <b>10</b> | <b>20</b> |                                  |                              |
| <b>9</b> | <b>Minor / Honors – 2</b>  | 3         | 2         | 0         | 4         |                                  | Department of Chemical Engg. |
|          | <b>Total</b>   | <b>13</b> | <b>12</b> | <b>10</b> | <b>24</b> |                                  |                              |

### III Year II Semester

| Sl. No. | Course Title                                | L | T | P | C | Remarks             | Course offered by            |
|---------|---|---|---|---|---|---------------------|------------------------------|
| 1       | Quantitative aptitude and Logical Reasoning | 1 | 2 | 0 | 2 | Humanities          | Department of T and P        |
| 2       | Chemical Reaction Engineering - II          | 2 | 2 | 2 | 4 | Professional core   | Department of Chemical Engg. |
| 3       | Mass Transfer Operations - II               | 2 | 2 | 2 | 4 | Professional core   | Department of Chemical Engg. |
| 4       | Department Elective – 3                     | 2 | 2 | 0 | 3 | Department Elective | Department of Chemical Engg. |



|   |                                      |           |           |          |           |                     |                              |
|---|--------------------------------------|-----------|-----------|----------|-----------|---------------------|------------------------------|
| 5 | Department Elective – 4              | 2         | 2         | 0        | 3         | Department Elective | Department of Chemical Engg. |
| 6 | Open Elective – 3                    | 2         | 2         | 0        | 3         | Open Elective       |                              |
| 7 | Inter-Disciplinary Project- Phase II | 0         | 0         | 2        | 2         | Project             | Department of Chemical Engg. |
|   | <b>Total</b>                         | <b>11</b> | <b>12</b> | <b>6</b> | <b>21</b> |                     |                              |
| 8 | <b>Minor / Honors – 3</b>            | 3         | 2         | 0        | 4         |                     | Department of Chemical Engg. |
|   | <b>Total</b>                         | <b>14</b> | <b>14</b> | <b>6</b> | <b>25</b> |                     |                              |

#### IV Year I Semester

| Sl. No. | Course Title  | L         | T         | P        | C         | Remarks             | Course offered by            |
|---------|---|-----------|-----------|----------|-----------|---------------------|------------------------------|
| 1       | Chemical Engineering Plant Design and Process Economics | 2         | 2         | 0        | 3         | Professional core   | Department of Chemical Engg. |
| 2       | Chemical Technology                                     | 2         | 2         | 2        | 4         | Professional core   | Department of Chemical Engg. |
| 3       | Department Elective – 5                                 | 2         | 2         | 0        | 3         | Department Elective | Department of Chemical Engg. |
| 4       | Department Elective – 6                                 | 2         | 2         | 0        | 3         | Department Elective | Department of Chemical Engg. |
| 5       | Department Elective – 7                                 | 2         | 2         | 0        | 3         | Department Elective | Department of Chemical Engg. |
| 6       | Department Elective – 8                                 | 2         | 2         | 0        | 3         | Department Elective | Department of Chemical Engg. |
|         | <b>Total</b>  | <b>12</b> | <b>12</b> | <b>2</b> | <b>19</b> |                     |                              |
| 7       | Industry interface course (Modular course)              | 1         | 0         | 0        | 1         | Binary Grades       | Department of Chemical Engg. |
|         | <b>Total</b>  | <b>13</b> | <b>12</b> | <b>2</b> | <b>20</b> |                     |                              |
| 8       | <b>Minor / Honors – 4</b>                               | 3         | 2         | 0        | 4         |                     | Department of Chemical Engg. |
|         | <b>Total</b>  | <b>16</b> | <b>14</b> | <b>2</b> | <b>24</b> |                     |                              |

#### IV Year II Semester

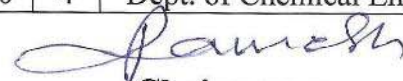
| Sl. No. | Course Title                            | L        | T        | P         | C         | Remarks                                  | Course offered by            |
|---------|---|----------|----------|-----------|-----------|--|------------------------------|
| 1       | Internship / Project Work               | 0        | 2        | 22        | 12        | Project                                  | Department of Chemical Engg. |
|         | <b>Total</b>                            |          |          |           | <b>12</b> |  |                              |
| 2       | <b>Minor / Honors – 5 (for project)</b> | 0        | 2        | 6         | 4         | <b>Theory course may be also offered</b> | Department of Chemical Engg. |
|         | <b>Total</b>                            | <b>0</b> | <b>4</b> | <b>28</b> | <b>16</b> |  |                              |

### List of Department Elective Courses

| Stream  | Course Title                                  | L | T | P | C | Course offered by       |
|---|---|---|---|---|---|-------------------------|
| <b>Stream-1<br/>(Environmental Engineering)</b>         | Environmental Engineering                     | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Air Pollution and Control                     | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Solid Waste Management and Treatment          | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Industrial Effluent Treatment Methods         | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Environmental Regulations and Impact Analysis | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
| <b>Stream-2<br/>(Energy Engineering)</b>                | Conventional Energy Sources                   | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Non-Conventional Energy Resources             | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Green Fuels                                   | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Energy Management and Auditing                | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Energy Integration                            | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Waste Heat Recovery                           | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Waste to Energy Conversion                    | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
| <b>Stream-3<br/>(Safety and Petroleum Engg. )</b>       | Industrial Safety Engineering                 | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Health, Environment and Safety Management     | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Surface Production Operation                  | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Petroleum Refinery Engineering                | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Petrochemicals                                | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Natural Gas Engineering                       | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Natural Gas Hydrates and Coal Bed Methane     | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
| <b>Stream-4<br/>(Courses related to emerging areas)</b> | Transport Phenomena                           | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | MATLAB Programming for Chemical Engineers     | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Aspen Plus: Chemical Engineering Application  | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Novel Separation Processes                    | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Optimization In Chemical Engineering          | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Fundamentals of Nanotechnology                | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Industrial Instrumentation                    | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |
|   | Computational Fluid Dynamics                  | 2 | 2 | 0 | 3 | Dept. of Chemical Engg. |

### List of Honour/Specialization Courses

| Stream                            | Course Title                              | L | T | P | C | Course offered by       |
|-----------------------------------|---|---|---|---|---|-------------------------|
| <b>Petro Chemical Engineering</b> | Surface Production Operation              | 3 | 2 | 0 | 4 | Dept. of Chemical Engg. |
|                                   | Petroleum Refinery Engineering            | 3 | 2 | 0 | 4 | Dept. of Chemical Engg. |
|                                   | Natural Gas Engineering                   | 3 | 2 | 0 | 4 | Dept. of Chemical Engg. |
|                                   | Natural Gas Hydrates and Coal Bed Methane | 3 | 2 | 0 | 4 | Dept. of Chemical Engg. |
|                                   | Petrochemicals                            | 3 | 2 | 0 | 4 | Dept. of Chemical Engg. |

  
Chairperson





**VIGNAN'S**  
Foundation for Science, Technology & Research  
(Deemed to be University)

-Estd. u/s 3 of UGC Act 1956

## **DEPARTMENT OF CHEMICAL ENGINEERING**

### **APPENDIX II**

#### **List of Courses that Enables Employability or Entrepreneurship or Skill Development**

| S. No. | Year and Semester  | Course Title                                       | Percentage of syllabus change from previous curriculum | Employability / Entrepreneurship / Skill development |
|--------|--------------------|--|--|--|
| 1.     | I Year I Semester  | Course Title                                       | Percentage of syllabus change from previous curriculum | Employability / Entrepreneurship / Skill development |
| 2.     | I Year I Semester  | IT Workshop and Chemical Engineering Products      | 100  | Employability  |
| 3.     | I Year I Semester  | Basics of Electrical and Electronics Engineering   | 25   | Skill development                                    |
| 4.     | I Year I Semester  | Programming in C                                   | 60   | Employability  |
| 5.     | I Year I Semester  | Applied Chemistry                                  | 40   | Skill development                                    |
| 6.     | I Year I Semester  | Linear algebra and Ordinary differential equations | 40   | Skill development                                    |
| 7.     | I Year I Semester  | English Proficiency and Communication Skills       | 45   | Skill development                                    |
| 8.     | I Year I Semester  | Physical Fitness, Sports & Games – I               |  | Skill development                                    |
| 9.     | I Year II Semester | Constitution of India                              | 20   | Skill development                                    |
| 10.    | I Year II Semester | Engineering Graphics                               | 20   | Employability  |
| 11.    | I Year II Semester | Basic Coding Competency                            | 60   | Skill development                                    |
| 12.    | I Year II Semester | Partial differential equations and vector calculus | 100  | Skill development                                    |
| 13.    | I Year II Semester | Engineering Physics                                | 20   | Skill development                                    |
| 14.    | I Year II Semester | Technical English Communication                    | 20   | Skill development                                    |
| 15.    | I Year II Semester | Organic Chemistry for Chemical Engineers           | 25   | Skill development                                    |
| 16.    | I Year II Semester | Physical Fitness, Sports & Games – II              |  | Skill development                                    |
| 17.    | II Year I Semester | Orientation Session                                |  | Skill development                                    |

|     |                      |   |     |                   |
|-----|----------------------|---|-----|-------------------|
| 18. | II Year I Semester   | Data Structures   | 40  | Employability     |
| 19. | II Year I Semester   | Probability and Statistics                              | 20  | Skill development |
| 20. | II Year I Semester   | Chemical Engineering Thermodynamics -I                  | 30  | Skill development |
| 21. | II Year I Semester   | Chemical Process Calculations                           | 30  | Skill development |
| 22. | II Year I Semester   | Momentum Transfer                                       | 20  | Skill development |
| 23. | II Year I Semester   | Mechanical Unit Operations                              | 30  | Employability     |
| 24. | II Year II Semester  | Life Skills-I   |     | Skill development |
| 25. | II Year II Semester  | Advanced Coding Competency                              | 60  | Employability     |
| 26. | II Year II Semester  | Environmental Studies                                   |     | Skill development |
| 27. | II Year II Semester  | Management Science                                      | 25  | Entrepreneurship  |
| 28. | II Year II Semester  | Professional Communication                              | 20  | Skill development |
| 29. | II Year II Semester  | Chemical Engineering Thermodynamics - II                | 30  | Skill development |
| 30. | II Year II Semester  | Process Heat Transfer                                   | 30  | Skill development |
| 31. | III Year I Semester  | Life Skills-II  |     | Skill development |
| 32. | III Year I Semester  | Soft Skills Lab   | 20  | Skill development |
| 33. | III Year I Semester  | Chemical Reaction Engineering - I                       | 30  | Skill development |
| 34. | III Year I Semester  | Mass Transfer Operations - I                            | 35  | Skill development |
| 35. | III Year I Semester  | Process Dynamics and Control                            | 30  | Skill development |
| 36. | III Year II Semester | Inter-Disciplinary Project- Phase I                     |     | Employability     |
| 37. | III Year II Semester | Quantitative aptitude and Logical Reasoning             | 100 | Employability     |
| 38. | III Year II Semester | Chemical Reaction Engineering - II                      | 30  | Skill development |
| 39. | III Year II Semester | Mass Transfer Operations - II                           | 30  | Skill development |
| 40. | IV Year I Semester   | Inter-Disciplinary Project- Phase II                    |     | Employability     |
| 41. | IV Year I Semester   | Chemical Engineering Plant Design and Process Economics | 30  | Skill development |
| 42. | IV Year II Semester  | Chemical Technology                                     | 25  | Employability     |
| 43. | Dept. Elective       | Internship / Project Work                               |     | Employability     |



|     |  |   |           |                   |
|-----|--|---|-----------|-------------------|
| 44. |  | Conventional Energy Sources                   | 100       | Skill development |
| 45. |  | Energy Integration                            | 100       | Employability     |
| 46. |  | Energy Management and Auditing                | 30        | Employability     |
| 47. |  | Green Fuels                                   | 100       | Employability     |
| 48. |  | Non-Conventional Energy Resources             | 30        | Employability     |
| 49. |  | Waste Heat Recovery                           | 40        | Employability     |
| 50. |  | Waste to Energy Conversion                    | 100       | Employability     |
| 51. |  | Air Pollution and Control                     | 100       | Employability     |
| 52. |  | Environmental Engineering                     | 100       | Employability     |
| 53. |  | Environmental Regulations and Impact Analysis | 35        | Employability     |
| 54. |  | Industrial Effluent Treatment Methods         | 35        | Employability     |
| 55. |  | Solid Waste Management and Treatment          | 30        | Employability     |
| 56. |  | Health, Environment and safety Management     | 100       | Employability     |
| 57. |  | Industrial Safety Engineering                 | 40        | Employability     |
| 58. |  | Natural Gas Engineering                       | 100       | Employability     |
| 59. |  | Natural Gas Hydrates and Coal Bed Methane     | 100       | Employability     |
| 60. |  | Petrochemicals                                | 30        | Employability     |
| 61. |  | Petroleum Refinery Engineering                | 30        | Employability     |
| 62. |  | Surface Production Operation                  | 100       | Employability     |
| 63. |  | Aspen Plus: Chemical Engineering Application  | 100       | Employability     |
| 64. |  | Computational Fluid Dynamics                  | 35        | Employability     |
| 65. |  | Fundamentals of Nanotechnology                | 30        | Employability     |
| 66. |  | Industrial Instrumentation                    | 100       | Employability     |
| 67. |  | MATLAB Programming for Chemical Engineers     | 35        | Employability     |
| 68. |  | Novel Separation Processes                    | 100       | Employability     |
| 69. |  | Optimization In Chemical Engineering          | 30        | Employability     |
|     |  | <b>Overall</b>                                | <b>50</b> |                   |

  
Chairperson