# Proposed Syllabus Structure for B. Chemical Engineering Course

| Semester – I | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **No** | **Subjects** | **Credits** | **Hrs/Week** | | | **Marks for various Exams** | | | | |
| | | | **L** | **T** | **P** | **C. A.** | **M.S. – I** | **M.S. – II** | **E. S.** | **Total** |
| CHT 1201 | Organic Chemistry-I | 4 | 3 | 1 | 0 | 30 | 30 | 30 | 60 | 150 |
| CHT 1401 | Analytical Chemistry | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| MAT 1101 | Applied Mathematics-I | 4 | 2 | 2 | 0 | 30 | 30 | 30 | 60 | 150 |
| PYT 1101 | Applied Physics – I | 4 | 3 | 1 | 0 | 30 | 30 | 30 | 60 | 150 |
| GET 1101 | Engineering Graphics-I | 4 | 0 | 0 | 6 | 50 | --- | --- | 50 | 100 |
| PYP 1102 | Physics Laboratory | 2 | 0 | 0 | 4 | 25 | --- | --- | 25 | 50 |
| CHP 1202 | Organic Chemistry Laboratory | 2 | 0 | 0 | 4 | 25 | --- | --- | 25 | 50 |
| | TOTAL: | 23 | 10 | 5 | 14 | | | | | 750 |
| **SEMESTER – II** | | | | | | | | | | |
| **No.** | **Subjects** | **Credits** | **Hrs/week** | | | **Marks for various Exams** | | | | |
| | | | **L** | **T** | **P** | **C. A.** | **M.S. – I** | **M.S. – II** | **E. S.** | **Total** |
| CHT 1203 | Organic Chemistry-II | 4 | 3 | 1 | 0 | 30 | 30 | 30 | 60 | 150 |
| CHT 1301 | Physical Chemistry | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| CET 1501 | Material & Energy Balance Calculations | 4 | 2 | 2 | 0 | 30 | 30 | 30 | 60 | 150 |
| MAT 1102 | Applied Mathematics-II | 4 | 2 | 2 | 0 | 30 | 30 | 30 | 60 | 150 |
| PYT 1103 | Applied Physics – II | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| CHP 1222 | Physical & Analytical Chemistry Lab. | 2 | 0 | 0 | 4 | 25 | --- | --- | 25 | 50 |
| HUP 1101 | Communication Skills | 2 | 0 | 0 | 4 | 50 | --- | --- | --- | 50 |
| | Total | 22 | 11 | 7 | 8 | | | | | 750 |
| **SEMESTER – III** | | | | | | | | | | |
| **No.** | **Subjects** | **Credits** | **Hrs /week** | | | **Marks for various Exams** | | | | |
| | | | **L** | **T** | **P** | **C. A.** | **M.S. – I** | **M.S. – II** | **E. S.** | **Total** |
| CET 1301 | Chem. Eng. Thermodynamics-I | 4 | 3 | 1 | 0 | 30 | 30 | 30 | 60 | 150 |
| CET 1101 | Momentum and Mass Transfer | 4 | 3 | 1 | 0 | 30 | 30 | 30 | 60 | 150 |
| GET 1301 | Structural Mechanics | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| GET 1401 | Electrical Engineering and Electronics | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| CET 1502 | Industrial & Engineering Chemistry | 4 | 3 | 1 | 0 | 30 | 30 | 30 | 60 | 150 |
| GEP 1302 | Structural Mechanics Lab. | 2 | 0 | 0 | 4 | 25 | --- | --- | 25 | 50 |
| GEP 1402 | Electrical Engg and Electronics Laboratory | 2 | 0 | 0 | 4 | 25 | --- | --- | 25 | 50 |
| MAT | Engineering Applications of Computers | 2 | 0 | 0 | 4 | 25 | --- | --- | 25 | 50 |
| | Total | 24 | 13 | 5 | 12 | | | | | 800 |
| **SEMESTER – IV** | | | | | | | | | | |
| **No.** | **Subjects** | **Credits** | **Hrs/week** | | | **Marks for various Exams** | | | | |
| | | | **L** | **T** | **P** | **C. A.** | **M.S. – I** | **M.S. – II** | **E. S.** | **Total** |
| GET 1201 | Energy Engineering | 4 | 3 | 1 | 0 | 30 | 30 | 30 | 60 | 150 |
| BST 1101 | Biological Sciences | 4 | 3 | 1 | 0 | 30 | 30 | 30 | 60 | 150 |
| CET 1401 | Chemical Engineering Operations | 4 | 2 | 2 | 0 | 30 | 30 | 30 | 60 | 150 |
| CET 1302 | Chem. Eng. Thermodynamics-II | 4 | 3 | 1 | 0 | 30 | 30 | 30 | 60 | 150 |
| CH/PY/MA/GE/HU | Elective I (Outside Chem. Engg. Dept.) | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| GEP 1102 | Engineering Graphics -II | 2 | 0 | 0 | 4 | 25 | --- | --- | 25 | 50 |
| CEP | Chemical Engineering Laboratory | 4 | 0 | 0 | 6 | 50 | --- | --- | 50 | 100 |
| | Total | 25 | 13 | 6 | 10 | | | | | 850 |

| SEMESTER – V | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **No.** | **Subjects** | **Credits** | **Hrs /week** | | | **Marks for various Exams** | | | | |
| | | | **L** | **T** | **P** | **C. A.** | **M.S. – I** | **M.S. – II** | **E. S.** | **Total** |
| CET | Mathematical Methods in Chem. Engg. | 4 | 3 | 1 | 0 | 30 | 30 | 30 | 60 | 150 |
| CET 1102 | Heat Transfer | 4 | 2 | 2 | 0 | 30 | 30 | 30 | 60 | 150 |
| CET 1201 | Chemical Reaction Engineering | 4 | 2 | 2 | 0 | 30 | 30 | 30 | 50 | 150 |
| CET 1402 | Separation Processes | 4 | 2 | 2 | 0 | 30 | 30 | 30 | 60 | 150 |
| CET 1202 | Biochemical Engineering | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| CEP 1701 | Chemical Engineering Laboratory | 4 | 0 | 0 | 6 | 50 | --- | --- | 50 | 100 |
| CEP 1702 | Process Simulation Lab – I | 2 | 0 | 0 | 3 | 25 | --- | --- | 25 | 50 |
| | Total | 25 | 11 | 8 | 9 | | | | | 850 |

| SEMESTER – VI | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **No.** | **Subjects** | **Credits** | **Hrs/week** | | | **Marks for various Exams** | | | | |
| | | | **L** | **T** | **P** | **C. A.** | **M.S. – I** | **M.S. – II** | **E. S.** | **Total** |
| CET 1601 | Material Science and Engineering | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| CET 1203 | Multiphase Reaction Engineering | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| CET 1503 | Environmental Engg & Process Safety | 4 | 2 | 2 | 0 | 30 | 30 | 30 | 60 | 150 |
| CET 1703 | Chemical Process Control | 4 | 3 | 1 | 0 | 30 | 30 | 30 | 60 | 150 |
| CET | Chem. Engg. Elective – I | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| CEP 1704 | Chem. Eng. Laboratory | 4 | 0 | 0 | 6 | 50 | --- | --- | 50 | 100 |
| CEP 1705 | Process Simulation Lab – II | 2 | 0 | 0 | 3 | 25 | --- | --- | 25 | 50 |
| GEP 1103 | Equipment Design and Drawing-I | 2 | 2 | 0 | 3 | 25 | --- | --- | 25 | 50 |
| | Total | 25 | 13 | 6 | 12 | | | | | 800 |

**CEP 1710 Internship**

- After the end of the sixth semester examination and before the start of the seventh semester, every student will have to undergo an internship. The Internship would be of 6 credits.
- The internship (preferably Industrial Internship) would be assigned to the student by the Departmental Internship Coordinator, with the approval of Head, Chemical Engineering Department.
- The total duration of the internship would be for a period equivalent to 12 Calendar weeks. This period typically start from 1st May and end before 30th July every year. This means the end semester examination of T. Y. B. Chem. Engg. (Semester VI) should be completed by 25th April every year. The Semester VII (4th Year B. Chem. Engg.) should commence w.e.f. 1st Aug every year. The internship may be completed in one or more organizations as described below.
- The internship could be of the following forms:
  (i) industrial internship in a company (within India or Abroad) involved in R&D / design / manufacturing (QA/QC/Plant Engineering/Stores and Purchase) / marketing / finance / consultancy / Technical services / Engineering / Projects, etc.
  (ii) research internship in reputed Institutes (within India or Abroad) like, ICT, IITs, NITs, IISC, NCL, IICT etc.
- At the end of the internship, each student will submit a written report based on the work carried out during the Internship. The report will be countersigned by the Supervisor from Industry / Institute as the case may be.
- Performance of the student will be assessed based on the written report and a presentation to a committee consisting of two faculty members from the Chemical Engineering Department.
- Students will be assigned a grade based on the written report and a presentation; evaluated by a committee of faculty members.

| SEMESTER – VII (will be of 10 weeks duration) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **No.** | **Subjects** | **Credits** | **Hrs/week** | | | **Marks for various Exams** | | | | |
| | | | **L** | **T** | **P** | **C. A.** | **M.S.** | | **E. S.** | **Total** |
| CET 1504 | Chemical Project Engg. & Economics | 3 | 3 | 1 | 0 | 30 | 30 | | 40 | 100 |
| CET 1505 | Process Development and Engineering | 4 | 4 | 2 | 0 | 45 | 45 | | 60 | 150 |
| HUT 1102 | Perspectives of Society, Sci. & Tech. | 3 | 3 | 1 | 0 | 30 | 30 | | 40 | 100 |
| CET | Modeling of Chem. Engg. Systems | 3 | 3 | 2 | 0 | 30 | 30 | | 40 | 100 |
| CEP 1708 | Project 1: Seminar | 3 | 0 | 0 | 6 | 50 | --- | | --- | 50 |
| CEP 1709 | Project 2: Home Paper – I | 3 | 0 | 0 | 6 | 50 | --- | | --- | 50 |
| | Total | 19 | 13 | 6 | 12 | | | | | 550 |
| **SEMESTER – VIII** | | | | | | | | | | |
| **No.** | **Subjects** | **Credits** | **Hrs /week** | | | **Marks for various Exams** | | | | |
| | | | **L** | **T** | **P** | **C. A.** | **M.S. – I** | **M.S. – II** | **E. S.** | **Total** |
| HUT 1103 | Ind. Psychology & H. R. Management | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| HUT 1104 | Industrial Management – I | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| HUT | Industrial Management – II | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| MAT 1106 | Design & Analysis of Experiments | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| CET | Chem Engg. Elective – II | 3 | 2 | 1 | 0 | 20 | 20 | 20 | 40 | 100 |
| GEP 1104 | Equipment Design and Drawing | 2 | 2 | 0 | 3 | 50 | --- | --- | 50 | 100 |
| CEP 1711 | Project 4: Home Paper – II | 4 | 0 | 0 | 6 | 50 | --- | --- | 100 | 150 |
| | Total | 21 | 12 | 5 | 9 | | | | | 750 |