

**Bachelor of Technology (B.Tech)**

**B. Tech. IV: SEM-VII**

**Subject Name: Project – I**

**Subject Code: BTCH16701**

**Type of course:** Professional core course

**Prerequisite:** Chemical Engineering courses (Basic science, Engineering Science and core courses), Effective Technical Communication and Design Engineering

**Rationale:** To enhance employability skills of the students Project is required. It provides practical experience in a field of Chemical Engineering and help to reinforce theoretical knowledge gained in different courses to solve real life challenges. The students are given opportunity to study and learn the new developments and techniques, which can lead them to self-employment or even employment generation through extension of the work done in training.

**Teaching Scheme:**

TEACHING SCHEME				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	100
0	0	4	2	-	-	-	60	40	

**CA1:**Continuous Assessment (assignments/projects/open book tests/closed book tests **CA2:** Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems **TEE:** Term End Examination **TEP:** Term End Practical Exam (Performance and viva on practical skills learned in course) **CA3:** Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

**Content:**

- The students are required to form teams of 3-4 students (the team size vary depending upon the project type, hence there is no any restrictions on team size) for working on their final year project.
- With the guidance of a Faculty Member, they will start working to find a problem, the solution of which would constitute their final year project. The problem may be found by studying the products or processes of an industry through an industrial internship.
- Alternatively students can also take a research problem identified by the Faculty Members or it could be the idea of student, which is approved by the Faculty Guide.

Guidelines are to be followed during the semester.

**1. Scouting for the problem**

(Within the period of summer vacation (one month), before start of semester seven)

The problem may be found by studying the products or processes of an industry through an

**Industrial internship of 4 weeks.**

**2. Problem Definition**

(During first month of semester seven)

After primary observations, the team of students shall perform the detailed **feasibility study of the topic intended to work upon.**

Every team of students needs to discuss their visit of Industries with the faculty guide and with other groups by preparing images/charts/diagrams for explaining flow of ideas clearly. The problem statement, to be defined, shall be based on the user study and needs, role play, observation, empathy, primary prior art search and understanding of the macro system, etc.

Topic selection can be made related to new developments within the field, understanding basic fundamentals by exploring different applications, construction/building of an experimental setup validating a theoretical model and developing further on a new research idea.

**Bachelor of Technology (B.Tech)**

1st review will be conducted by the end of 2<sup>nd</sup> week of the date of term commencement to clarify the finalized problem statement.

**3. Detailed Literature Survey**

(By the end of fourth week of semester seven)

Students teams need to search for patents and other related literature for their selected problem statement to check the already existing ways to solve similar problem and to find out about existing similar innovations. Students are required to make proper documentation of published work (research papers/patents etc.) studied under the guidance of faculty.

**4. Roadmap ahead**

(on or before 8<sup>th</sup> week of semester seven)

Based on exhaustive literature study students are required to fix the experimental procedures in case of projects involving experiments. In case of projects involving modelling/simulation, define the objective function to fix problem statement based on the research gap identified from last two reviews.

**5. Future line of action for semester 8**

Students are required to summarize the work carried out in semester 7 and to plan in detail about the work to be carried out in semester 8.

6. The performance of the student will be assessed based on the written report, weekly diary & a presentation to the committee consisting of two expert faculty members assigned from the University. The evaluation by external examiner shall be made considering the all guidelines.

**Guidelines for 4 week Internship**

1. It shall be of minimum duration of 4 week.
2. The internship shall be a full time for the whole duration.
3. A detailed daily diary is supposed to be maintained by student. It shall be signed duly by the concerned supervisor of industry. It shall be submitted to the department.
4. A student is required to submit a presentation and a comprehensive report about the work carried out in the internship, to a committee formed by head of department after completion of the internship.
5. A certificate shall be attached with this report duly signed by the competent authority of the industry for the successful completion of the internship. An attendance report shall also be attached with this report.
6. The internal marks shall be divided as decided by the head.
7. An attendance report shall be sent to the department at the start of 7<sup>th</sup> semester.
8. The project report shall be submitted to the institute which may include the objective of internship, about the industry, process, product line, equipment/machineries involved, divisions/sections in the industry, any competitor, scope of some improvement in the process/product/efficiency, benefit by the training etc.

<b>Suggested Specification Table with Marks: % Distribution of Marks</b>					
<b>R Level</b>	<b>U Level</b>	<b>A Level</b>	<b>N Level</b>	<b>E Level</b>	<b>C Level</b>
5	10	30	30	15	10

**Legends: R: Remembrance; U: Understanding; A: Application; N: Analyze; E: Evaluate; C: Create and above Levels (Revised Bloom's Taxonomy)**

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

**Bachelor of Technology (B.Tech)**

**Course Outcome:**

Sr. No.	CO Statement After learning this subject, students will be able to	Marks % weightage
CO-1	Analyze Chemical Engineering research task or problem that are innovative, research and/or industry linked based on the suitable methodology	20
CO-2	Identify the gap between research outcomes and the proposed objective through scientific literature study.	20
CO-3	Interpret and prepare patent and other published research literatures as a part of literature survey	30
CO-4	Develop and Design either a product or a process.	20
CO-5	Justify technical outcomes, information and conclusions by means of formal presentations, drawings and report to apply commercially.	10

**Mapping with POs:**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P O1 0	PO 11	P O1 2	PS O1	PS O2	PS O3
CO-1	2	2	2	2	2	2	2	3	3	3	3	3	3	2	3
CO-2	2	3	2	2	3	2	2	3	3	2	3	3	3	2	3
CO-3	3	3	2	2	2	3	3	3	3	3	3	3	3	3	3
CO-4	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3
CO-5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
<b>Rationale*</b>	<b>13</b>	<b>14</b>	<b>9</b>	<b>9</b>	<b>11</b>	<b>13</b>	<b>13</b>	<b>15</b>	<b>15</b>	<b>10</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>13</b>	<b>14</b>

**Rationale\*:** Explaining why it is matching this particular program outcome

List of Open learning website: NPTEL lectures. Simulation software SCLAB learning version is available free online.