SARVAJANIK UNIVERSITY

Sarvajanik College of Engineering and Technology

Mechanical Engineering Department

B. Tech. Semester VIII

Course Name: **Project/Industrial Training** **Course Code: BTME16801**

Type of course: **Project (PROJ)**

Prerequisite: Nil

Rational of course: To enhance the employability skills of the students, Industrial Training or Project work is very much essential. It provides practical experience in a field of Mechanical Engineering and help to reinforce theoretical and practical knowledge gained in different core and elective courses to solve real life challenges.

Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	100
0	0	24	12	00	00	00	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

Contents:

The following guidelines are required to be followed for the Project work.

Industry Internship:

Student will undergo a minimum 12 weeks of internship in an industry to get exposure to the practical aspects of the Mechanical Engineering. In addition, the student may also work on a specified task or project which may be assigned to him/her by industry mentor in coordination with institute mentor. The outcome of the industrial training should be presented in the form of a report. The certificate of completion issued by concerned Industry is mandatory and the same is required to attach in the report.

Objectives:

1. To create competent professionals for the industry.
2. To provide possible opportunities to learn, understand and sharpen the real time technical / managerial skills required at the job
3. To give exposure of the current technological developments relevant to the subject area of training to the students.
4. To learn applying the technical knowledge in real industrial situations
5. To gain experience in technical/project report writing.
6. To give exposure to the students about responsibilities and ethics of the engineer.
7. To become familiarize with various materials, processes, products and their applications along with relevant aspects of quality control.

8. To understand the social, economic and administrative considerations that influence the working environment of industrial organizations.
9. To understand the psychology of the workers and their habits, attitudes and approach to problem solving.
10. To strengthen industry-institute linkage and increase employability of the students.

Guideline for Industry Internship:

1. The internship shall be a full time for the whole duration.
2. A plan for the whole internship duration shall be prepared after joining the industry in the consultation with the industry and institute mentors. It shall contain the activities/ visits to different sections etc. with appropriate timelines.
3. A student should submit a brief proposal about the work to be carried out in the Internship to a department committee formed by head of department within 2 weeks, after starting the internship.
4. A detailed daily diary (project workbook) is to be maintained by student. It shall be duly signed by the concerned supervisor of industry. It shall be submitted to the department at the time of final presentation and also as and when asked by the department.
5. A comprehensive report is required to be prepared and submit to the department at the end of the semester. A certificate shall be attached with this report duly signed by the competent authority of the industry for the successful completion of the internship. Concerned department may also asked for an attendance report of the student.
6. The internal evaluation shall be done at the start of the semester, at the mid of the semester and at the end of the semester (as per project guideline). The internal marks shall be allocated as decided by head of the department.
7. Signed attendance report, progress report shall be sent to/presented to the department during the evaluation stages.
8. The 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.
9. The industry supervisor may be invited at the time of internal and external examination of the internship. It can be an online presence also.
10. The evaluation by external examiner shall be made considering the all guidelines.

OR

General Guidelines for Project

1. It can be either UDP (User defined project) or IDP (Industry defined project).
2. Survey and study published in reputed literature related to project work are required to include as reference material.
3. Patent search analysis is to be done by the students and PSAR (Patent Search Analysis Report) is to be submitted if it is suggested by the project mentor.
4. The group size of the project team shall not be preferably more than 4 students. In case it is required to have more students, it shall be approved by a department committee.

5. The project work shall be carried out under the guidance of a mentor(s) (internal faculty and industry person in case of IDP).
6. Students are required to design the system/ prepare algorithm/ propose methodology/ develop new product or process as a part of the project work and analyse/verify through available resources/references at industry level or institute level/university level.
7. Students may proposed new methodology or approaches for better results.
8. They should optimize/Validate the project work in terms of economic and feasibility in the benefit of society etc.
9. They should also compare the results of the project with other similar projects and justify.
10. The team shall be encouraged to publish project work, if possible.
11. Students must conclude the project work properly and suggest scope of future work.
12. A comprehensive report is required to be prepared and submit to the department at the end of the semester.
13. Intermediate and final presentation/demonstration in presence of the department committee must be arranged for review the progress of the work done. The internal evaluation/scrutiny shall be done at the start of the semester, at the mid of the semester (progress evaluation) and at the end of the semester (final presentation/demonstration). The distribution of internal marks shall be decided by the committee.
14. A presentation by the team shall be made at the beginning of the semester to the department committee formed by head of department. This presentation shall contain the detailed proposal of the project, which includes title of the project, well defined problem and a plan of activities with appropriate timelines. The role of the team members shall preferably be defined as far as possible in this proposal itself.
15. Considering the number of credits and the contact hours (practical hours), substantial amount of work is required to be carried out by students' team. It shall be monitored by the project mentor and the department committee. The evaluation shall be done accordingly with due consideration given to the quality and amount of work by internal and external examiners.

The guidelines about the nature of project work are as following:

1. The project work can be a Design and Development/ Methodology/ Algorithm/ Simulation or Manufacturing depending upon the area and the complexity of the work involved.
2. If it contains only simulation, it shall be comprehensive. The team is expected to know the various aspects of simulation techniques in detail. The team shall be able to explain the results obtained in detail with all the aspects and different cases. Moreover, the simulated results must be verified through results available in literature or performance of experimentation.
3. It can be a Case study, innovative Solution/Practices to real life problems, modeling and analysis, design, optimization, prototype, industry defined problem, development of new laboratory setup at the department etc.
4. If it is a case study, it shall be a real-life case and of high technical relevance and societal benefits.
5. If the project is about a modeling, the team is expected to know the proper mathematical formulation and justification of the modeling, its limitations and its possible applications. The comparison of performance of various models shall be covered as a part of the work. A detailed analysis of the results and its verification shall be done with the help of the model.

6. If the team and guide find it appropriate, the overall work can be combination of different types of work above mentioned.

Course Outcomes (CO):

Sr. No.	CO Statements After learning this subject, students will be able to	Marks % weightage
CO-1	Demonstrate a sound technical knowledge of their selected project topic.	20%
CO-2	Undertake problem identification, formulation and solution.	20%
CO-3	Design engineering solutions to complex problems utilising a systems approach and team work.	30%
CO-4	Communicate with engineers and the community at large in written and oral forms.	20%
CO-5	Demonstrate the knowledge and understanding of engineering and management principle and apply it to assigned project.	10%

Mapping of (CO's) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO-1	3	2	2	2	1			1	1				3	1	1
CO-2	2	3	1	1	1	1	1		2	1	1	1	2	1	1
CO-3	2	1	3	2	3			1	2	1			2	3	1
CO-4						1				3	1	2			2
CO-5	1										3	1			1
Rationale*	**8**	**6**	**6**	**5**	**5**	**2**	**1**	**2**	**5**	**5**	**5**	**4**	**7**	**5**	**6**

*** Rationale - Mapping of CO's with PO's and CO's with PSO's:**

This course highly maps with PO 1,2,12 and PSO. It states that the course will develop Engineering knowledge, Problem analysis, Life-long learning. This Course also focuses on Design / development of solutions, Conduct investigations of complex problems, Modern tool usage, the engineer and society, Environment and sustainability, Ethics, Individual and teamwork, Communication, Project management and finance.

Reference:

- AICTE Model curriculum
- AICTE Internship Policy:
- https://www.aicte-india.org/sites/default/files/AICTE%20Internship%20Policy.pdf