



B. Tech. in Mechanical Engineering

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM UNIVERSITY EXAM	TWO TERM EXAM	TEACHER ASSESSMENT*	END SEM UNIVERSITY EXAM	TEACHER ASSESSMENT*				
BTME801	DS	DISSERTATION/INTERNSHIP/MAJOR PROJECT	0	0	0	600	200	0	0	32	16

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 20 marks.

Course Educational Objectives (CEOs):

(A) To develop the ability to solve a specific problem right from its identification and literature review till the successful solution of the same. (B) To train the students in preparing project reports and to face reviews and viva voce examination.

Course Outcomes (COs):

After completion of this course the students are expected to be able to

1. Identify real world problems of mechanical engineering and related systems.
2. Interpret the working of mechanical engineering systems.
3. Apply the principles of mechanical engineering in real world systems.
4. Criticize and experiment to arrive at solutions for real world mechanical engineering problems.
5. Analyse and evaluate to obtain solution for problems in mechanical engineering systems.
6. Develop a prototypes/models, experimental set-up and software systems necessary to meet the objectives.
7. Identify methods and materials to carry out experiments/develop code.
8. Reorganize the procedures with a concern for society, environment and ethics.
9. Analyze and discuss the results to draw valid conclusions.
10. Prepare a report as per recommended format and defend the work.

Syllabus

1. Major Project

Each project will cover all the aspects (to the extent possible) of real life application of concepts studied under the program. . Alternately, a few research problems also may be identified for investigation. The project shall be driven by realistic constraints like that related to economic, environmental, social, political, ethical, health & safety, manufacturability and sustainability. The outcomes to be attained by students by doing the project work shall be spelt out clearly. A project report is to be submitted on the topic which will be evaluated during the final review. Assessment procedure will be as spelt out in the regulations.

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2. Internship

Alternately, a student is encouraged to take an industrial project with reputed organizations or firms chosen by the institute. In such cases the student will stay with the firm and carry out the project. The project will be guided by the faculty member and the concerned officer in the industry. All the requirements spelt out under 'MAJOR PROJECT' above, shall be incorporated under this work also. However reviews will be conducted in the institute which the student shall attend.

2.1 Course Description

An internship experience provides the student with an opportunity to explore career interests while applying knowledge and skills learned in the classroom in a work setting. The experience also helps students gain a clearer sense of what they still need to learn and provides an opportunity to build professional networks.

2.2 Learning Goals

The internship will provide students with the opportunity to:

1. Gain practical experience within the business environment.
2. Acquire knowledge of the industry in which the internship is done.
3. Apply knowledge and skills learned in the classroom in a work setting.
4. Develop a greater understanding about career options while more clearly defining personal career goals.
5. Experience the activities and functions of business professionals.
6. Develop and refine oral and written communication skills.
7. Identify areas for future knowledge and skill development.

3. General Rules of Selection/Allotment of Dissertation Title and Its Submission

3.1) The selection of dissertation title should be non-trivial, analytical, practical/hardware implementation based, application oriented (relevant to the need of industries) and should involve the elementary research and/or development effort based on a specific theme.

3.2) Students may be encouraged to undertake industry defined dissertation. For the industry defined dissertation there shall be one external supervisor of the industry and one internal supervisor of student's own department. It will be the sole responsibility of internal supervisor to define the research problem, scope, methodology and possible outcome from the dissertation in consultation with external supervisor.

3.3) Supervisors for the dissertation can suggest the titles of dissertation considering their long term goal for research.

3.4) Students can also discuss the titles of their choice or titles given from industries with the supervisors and if feasible and accepted by supervisors, can be included in the list of suggested titles.

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3.5) Consolidated list of suggested dissertation titles will be communicated to the students in semester VIII

3.6) In case, if two students give choice for same title; title will be allotted based on merit.

3.7) Final allotment of titles and supervisors will be published on notice board in consultation with Head of the Department.

3.8) Requirement of change in the title of dissertation work should be applied to the Head of the Department with sufficient reasons for the change, before the exam of Dissertation Progress Review-I.

3.9) After Dissertation Progress Review-I exam, change of the title will be permitted based on the comments of internal examiner. Such cases should apply for the change in titles and should get approval from the Head of the Department.

4. Dissertation Work in Collaboration with Industry

4.1) It is preferable that students, with the approval of the Head of the Department, visit industry or a Research Laboratory for data collection, discussion of the dissertation, experimental work, survey, field studies, etc. during the project period. Projects sponsored by the Industries or R&D organizations will be encouraged and a close liaison with such organizations will be maintained.

4.2) Students shall acknowledge the involvement and / or contribution of an Industries or R&D organizations for their dissertations.

4.3) Satisfactory completion certificate issued by the Industry or R&D organization should be attached with the dissertation report.

4.4) Internal supervisor, should monitor the progress of his/her students by remaining in contact with the students and external supervisors by emails, video conferencing and/or by making visits to the industries at least once in a month, depending on the need of particular project and as decided by concerned Head of the Department.

5. Supervisors

5.1) Students shall be assigned one or two supervisors(s) from the Institute.

5.2) In case any supervisor leaves the Institute permanently or temporarily for a period exceeding one semester, the Head of the Department shall appoint new supervisor for the concern students. Any such arrangements made, should get approval from Head of the Institute.

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5.3) A faculty can supervise maximum 6 (Six) B.Tech. Dissertations at a time.

5.4) In case of interdisciplinary areas, at least one supervisor must belong to the discipline in which the student is registered.

6. Dissertation Evaluations

6.1) For continuous evaluation (*CE), a comprehensive internal assessment of the dissertation work should be made by an internal review panel formed by Head of the Department, supervisor and at least 2 senior faculty with expertise in same field of dissertation work.

6.2) Internal review panel will review the progress of the students in the last week of 1st, 2nd, 3rd and 4th month of semester VIII (i.e four presentation in front of internal review panel) and finally give his/her assessment of the work done by the students for internal continuous evaluation marks with comments of the review.

6.3) Dissertation and External Viva-Voce:

1. If any student has not done satisfactory work then internal review panel may not allow the student for external practical exam.
2. Review record for all the previous reviews along with remedial review (if applicable) should be maintained by the supervisor and marks will be allotted based on the review.
3. Students must submit a dissertation report on the project work carried out by him/her. The guidelines for preparation of dissertation report shall be followed by every student as per guidelines given by the department
4. The final dissertation report shall be submitted on or before the submission date mentioned in academic calendar.
5. For DISSERTATION, three hard bound copies (for supervisor, department library and student copy) along with a soft copy (in CD containing pdf of the report, certificate of paper published (if any) and detailed paper, with name, enrollment number, branch, year of admission of the student written on the CD) of the dissertation report shall be submitted to the Head of the Department before final examination of DISSERTATION on or before the date notified by the University. Reports must be certified by the supervisor, Head of the Department and the Head of the Institution.
6. Dissertation viva - voce will be held within the date fixed in the academic calendar and the grades will be finalized. External examiner will evaluate dissertation work in semester VIII. For DISSERTATION External examiner shall be from outside the Institution. The external expert who examines the dissertation will conduct the viva voce.

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7. Details of the all internal review (Internal continuous evaluation) and external exams (External Practical) shall be adequately notified so as to enable interested faculty members and students to attend the same.

6.4) Work to be completed by the students till the internal review and external viva (External Pr) exam should be as follows:

Sem	Subject and Sub. Code	Details	Work to be complete
Sem VIII	DISSERTATION PROGRESS REVIEW	DISSERTATION PROGRESS REVIEW I for continuous evaluation (To be taken at the end of 1st month of sem VIII)	Students should demonstrate in-depth knowledge and thoughtful application in stating an in-depth analysis of key theories supporting the study, problem definition must be complete. In this Presentation students have to teach the theory related to dissertation title with 10% of work completion.
		DISSERTATION PROGRESS REVIEW II for continuous evaluation (To be taken at the end of 2nd month of sem VIII)	Literature review and problem definition with objectives should be complete. Presentation of literature review should be in terms of table comparing different points. 20% of work should be complete
		DISSERTATION PROGRESS REVIEW III for continuous evaluation (To be taken at the end of 3 rd month of Sem VIII)	Demonstrate understanding, Application of relevant methodology, techniques and analysis with 40% of work completion.
		DISSERTATION PROGRESS REVIEW IV for continuous evaluation (To be taken at the 4 th Month of Sem VIII)	60% of work should be complete, future action plan/methodology and outcomes must be clear. (If dissertation is based on simulation/analysis and hardware then 100% simulation/analysis work should be complete)
	FINAL DISSERTATION	FINAL DISSERTATION (External-Pr) (To be taken at the end of sem VIII)	100% of work should be complete, reporting the study's main results/findings with clear interpretation and discussion of the results.

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