



Gyanmanjari
Innovative University

Course Syllabus
Gyanmanjari Institute of Technology
Semester-7 (B.Tech.)

Subject: Project – BETXX17352

Type of course: Major Project Work

Prerequisite: Effective Technical Communication and Design Engineering

Rationale:

Project Work is an essential component for enhancing the employability skills of students. It provides an opportunity to apply the theoretical knowledge acquired during the academic program to solve real-world problems. Through project development, students gain hands-on experience in system design, implementation, testing, and problem-solving. It also encourages innovation, creativity, teamwork, and project management skills. Furthermore, project work exposes students to emerging technologies, modern development tools, and industry practices, thereby improving their technical competence and professional readiness. The experience gained through project work can also inspire entrepreneurial initiatives and contribute to employment generation through the development of practical and innovative solutions.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
CI	T	P	C	Theory Marks		Practical Marks		
				ESE	MSE	V	P	
0	0	0	6	0	0	80	20	100

(Legends: CI-Classroom Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.)



Content:

The pre-final semester of all Engineering programs is dedicated to Major Project Work. Through this project, students are expected to apply the theoretical knowledge, practical skills, and engineering principles acquired during their academic program to develop innovative, sustainable, and industry-relevant solutions to real-world problems. In the Major Project Work, students are expected to:

Project:

- Identify and define the problem statement, along with a detailed explanation of the purpose, scope, and necessity of the proposed project.
- Conduct an extensive literature review and study existing research, technologies, methodologies, and solutions related to the chosen project domain.
- Analyze the technical, operational, economic, and feasibility aspects of the proposed project.
- Design an appropriate methodology and formulate a systematic approach for project development and execution.
- Select suitable tools, technologies, hardware, software, and other resources required for project implementation.
- Develop, implement, and test the proposed solution in accordance with the defined objectives and specifications.
- Identify practical challenges and constraints encountered during project implementation and devise effective solutions to overcome them.
- Refine and improve the design through iterative development to enhance project performance and reliability.
- Optimize the project in terms of cost, resource utilization, computational complexity, scalability, efficiency, security, power consumption, and overall performance.
- Evaluate and validate the project outcomes using appropriate testing methodologies and performance metrics.
- Compare the obtained results with existing systems, published work, or similar design specifications to demonstrate the effectiveness of the proposed solution.
- Prepare a comprehensive project report documenting the problem statement, literature review, methodology, implementation details, results, analysis, conclusions, and references.
- Deliver intermediate and final seminars before the Department Project Committee to present project progress, achievements, and outcomes.
- Demonstrate the completed project and defend the work before the Department Project Committee during the final evaluation.



- Draw meaningful conclusions based on the project findings and recommend possible future enhancements or extensions.
- Explore opportunities for intellectual property generation, patent filing, research paper publication, product development, or entrepreneurial ventures based on the project outcomes.

Course Outcome:

After learning the course students should be able to:	
CO1	Identify an engineering problem through literature survey and formulate appropriate project objectives.
CO2	Plan, design and implement an engineering solution using suitable methodologies, tools and resources.
CO3	Evaluate the developed solution through experimentation, analysis and validation.
CO4	Prepare technical documentation and effectively communicate project outcomes through reports, demonstrations and presentations.

General Guidelines for Major Project Work:

Project Selection:

- The project should be relevant to the student's respective engineering discipline and should demonstrate the application of core engineering principles, modern tools, and emerging technologies.
- Students are encouraged to select projects that address real-world problems and provide practical, innovative, and sustainable solutions.
- The project topic should be sufficiently challenging and demonstrate the application of engineering concepts, engineering knowledge, analytical ability and problem-solving skills.
- Preference shall be given to **Industry Defined Projects (IDPs)** that address real-world industrial challenges in collaboration with industries, startups, research organizations, or government organizations, subject to approval by the Department Project Committee.
- Preference shall be given to projects involving emerging technologies and innovative solutions relevant to the respective engineering discipline, including Automation, Robotics, Industry 4.0, Smart Systems, Renewable Energy, Advanced Manufacturing, Digital Technologies, AI, ML, IoT, Data Analytics, Cloud Computing, Cyber Security, and other contemporary engineering domains with practical and societal impact.



- Duplicate project topics from previous years or projects copied from online sources are strictly prohibited.
- The project title and scope must be finalized only after approval from the project guide and department project committee.

Project Planning and Development:

- Students should clearly define the problem statement, objectives, scope, expected outcomes, and methodology before commencing the project.
- A comprehensive literature review and study of existing solutions should be carried out.
- The project shall follow a systematic development methodology including requirement analysis, design, implementation, testing, and validation.
- Proper documentation of project activities, meeting records, progress reports, and development milestones should be maintained throughout the project duration.
- Students should demonstrate individual contributions and active participation in all phases of the project.

Implementation and Evaluation:

- The project should include appropriate design, development, testing, performance evaluation, and result analysis.
- Relevant tools, software, hardware, laboratory facilities and engineering resources, and technologies should be selected based on project requirements.
- Students should perform comparative analysis with existing solutions wherever applicable.
- Ethical, security, privacy, and sustainability aspects should be considered during project development.
- The final solution should be functional, validated, and supported by measurable outcomes.

Report and Presentation:

- Students must prepare the project report in the prescribed format provided by the department.
- All references, datasets, software libraries, and research papers used in the project must be properly cited.
- Students shall present their work during progress reviews, intermediate seminars, and final project evaluations.
- The final presentation should clearly demonstrate the problem statement, methodology, implementation, results, conclusions, and future scope.



Assessment Scheme:

- Review-I
- **Mid Semester Review**
- Review-II
- Final Viva
- Every student/team shall compulsorily undergo one Mid Semester Internal Review conducted by the Department Project Review Committee for assessing project progress, methodology, implementation status and future work plan.

Research and Innovation:

- Students are encouraged to develop innovative solutions with potential for societal impact, industry application, or commercialization.
- Wherever feasible, students should explore opportunities for research paper publication, patent filing, product development, startup initiatives, or technology transfer.
- Projects with interdisciplinary collaboration and industry relevance are highly encouraged.

Academic Integrity:

- Plagiarism, unauthorized copying, fabrication of results, and use of third-party projects without proper acknowledgment are strictly prohibited.
- Students must ensure originality in project work and adhere to the academic and ethical standards of the institute.
- Any violation of academic integrity policies may result in project rejection or disciplinary action.



Project Report Guidelines:

The project report shall be prepared according to the standard format prescribed by the department.

The report should normally contain the following sections:

1. Cover Page
2. Certificate from Institute
3. Certificate from Industry (if applicable)
4. Declaration by Students
5. Acknowledgement
6. Abstract
7. Table of Contents
8. List of Figures
9. List of Tables
10. List of Abbreviations
11. Introduction
12. Literature Review
13. Problem Statement
14. Objectives
15. Methodology
16. System Design / Experimental Setup
17. Implementation
18. Results and Discussion
19. Conclusion and Future Scope
20. References (IEEE format)
21. Appendices (if required)



Report Formatting

- Paper Size: A4
- Font: Times New Roman
- Font Size: 12 pt
- Line Spacing: 1.5
- Margin: 1 inch on all sides

A detailed report template shall be provided separately by the Department. Students are required to submit the report in a spiral bound copy.

