



Course Syllabus  
Gyanmanjari Science College  
Semester-3 (B.Sc.)

**Subject:** Experimental Exposure in Science Project-I- BSCXX13360

**Type of course:** Major (Core)

**Prerequisite:** Basic Practical Knowledge and Analytic skills

**Rationale:** The basic purpose of this subject is to provide students with a structured, hands-on learning experience that bridges theoretical knowledge with real-world application. By guiding students through the process of selecting, researching, executing, and presenting a project, the syllabus aims to develop critical thinking, research, problem-solving, and communication skills. It encourages independent learning, ethical research practices, and professional presentation abilities, preparing students for both academic success and future career challenges.

**Teaching and Examination Scheme:**

| Teaching Scheme |   |   | Credits | Examination Marks |    |                 |       | Total Marks |
|-----------------|---|---|---------|-------------------|----|-----------------|-------|-------------|
| CI              | T | P | C       | Theory Marks      |    | Practical Marks |       |             |
|                 |   |   |         | ESE(E)            | CA | ESE(V)          | CA(I) |             |
| 0               | 1 | 6 | 4       | 0                 | 0  | 80              | 20    | 100         |

*Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; V – Viva; CA - Continuous Assessment;*



**Course Content:**

| Unit No | Course content   |
|---------|--|
| 1       | <b>Introduction to the Project</b><br>Understanding the scope, purpose, and goals of the project. <ul style="list-style-type: none"> <li>○ Overview of project methodology.</li> <li>○ Project planning and scheduling.</li> <li>○ Selection of project topics.</li> <li>○ Literature review and background research.</li> </ul>   |
| 2       | <b>Project Proposal</b><br>Developing a project proposal that outlines the research question, objectives, methodology, and timeline. <ul style="list-style-type: none"> <li>○ Writing a project proposal.</li> <li>○ Defining project scope and objectives.</li> <li>○ Selecting research methods (qualitative/quantitative).</li> <li>○ Setting timelines and milestones.</li> <li>○ Identifying resources required for the project.</li> </ul> |
| 3       | <b>Literature Review</b><br>Conducting a thorough review of existing research and sources related to the project topic. <ul style="list-style-type: none"> <li>○ Methods of reviewing academic papers and sources.</li> <li>○ Summarizing findings and identifying gaps.</li> <li>○ Developing a theoretical framework for the project.</li> </ul>   |
| 4       | <b>Research Methodology</b><br>Choosing and applying appropriate research methodologies. <ul style="list-style-type: none"> <li>○ Qualitative vs. Quantitative research methods.</li> <li>○ Data collection techniques (On field, Site visit, Surveys, Experiments).</li> <li>○ Data analysis methods (Statistical analysis, Data Interpretation).</li> <li>○ Ethical considerations in research.</li> </ul>                                     |



|   |  |
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| 5 | <b>Data Collection and Analysis</b><br>Collecting and analyzing the data to address the research questions or project goals. <ul style="list-style-type: none"> <li>○ Data collection tools and techniques.</li> <li>○ Organizing and managing data.</li> <li>○ Statistical software/tools for analysis (e.g., SPSS, Excel).</li> <li>○ Interpreting and presenting results.</li> </ul>                  |
| 6 | <b>Project Development/Execution</b><br>Working on the project and applying learned concepts to develop and execute the project. <ul style="list-style-type: none"> <li>○ Identify the Problem or Research Question.</li> <li>○ Literature Review.</li> <li>○ Planning and Design of the experiment.</li> <li>○ Execution/Implementation.</li> <li>○ Analysis and Interpretation.</li> </ul>             |
| 7 | <b>Report Writing</b><br>Documenting the project process, findings, and conclusions in a formal report. <ul style="list-style-type: none"> <li>○ Structure of a project report (Introduction, Methodology, Results, Discussion and Conclusion).</li> <li>○ Writing an abstract and summary.</li> <li>○ Referencing and citation styles (APA, MLA, etc.).</li> <li>○ Proofreading and editing.</li> </ul> |
| 8 | <b>Presentation and Defense</b><br>Presenting the project findings to an academic or professional audience. <ul style="list-style-type: none"> <li>○ Creating an effective PowerPoint/visual presentation.</li> <li>○ Delivering a clear and concise oral presentation.</li> <li>○ Responding to questions and feedback.</li> <li>○ Project defense (if applicable).</li> </ul>                          |



|   |  |
|---|--|
| 9 | <b>Conclusion and Future Work</b>  |
|   | <p>Summarizing project results and suggesting potential future research or improvements.</p> <ul style="list-style-type: none"> <li>○ Key findings and their implications.</li> <li>○ Limitations of the project.</li> <li>○ Recommendations for future research.</li> </ul> |

### Suggested Specification table with Marks (Theory): NA

| Distribution of Theory Marks<br>(Revised Bloom's Taxonomy) |                    |                      |                    |                |                 |               |
|--|--------------------|----------------------|--------------------|----------------|-----------------|---------------|
| Level  | Remembrance<br>(R) | Understanding<br>(U) | Application<br>(A) | Analyze<br>(N) | Evaluate<br>(E) | Create<br>(C) |
| Weightage  | NA                 | NA                   | NA                 | NA             | NA              | NA            |

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.

### Course Outcome:

|  |  |
|--|--|
| After learning the course, the students should be able to: |  |
| CO1  | Gain practical experience in project design, implementation, and evaluation. |
| CO2  | Develop problem-solving skills and the ability to work independently.        |
| CO3  | Enhance research, critical thinking, and communication skills.               |
| CO4  | Prepare and present a professional project report and defense.               |



**Instructional Method:**

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

