

**GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT**

**COURSE CURRICULUM  
COURSE TITLE: PROJECT-II  
COURSE CODE: 3360613**

<b>Diploma Programme in which this course is offered</b>	<b>Semester in which offered</b>
Civil Engineering	SIXTH

**1. RATIONALE**

One of the important criteria of “Project” is to develop the ability of “learning to Learn” on its own. This would go a long way helping the students in keeping pace with future changes in technology and in the acquisition of knowledge and skills as and when needed. The course of the “Project” is designed with an aim to all these requirements of the students. This will include planning of the Programme, which must be completed within the time allocated.

The Project should never have a single solution and process of arriving at a particular solution, the student must be required to make number of decisions after study information as he has gathered from experiments, surveys, analysis etc.

The Project is also included with Seminar with the aim to develop certain set communication skills (preparation of report, writing survey report writing lab. experiment results writing conclusions of the work done and physical phenomenon observed, participating in group discussions, verbally defending the project in the form of Seminar etc.)

The curricula for each course make specific mention of some of the major aims and objectives of the programme as a whole, these should be assigned due importance in the planning of teaching methodologies,

The programme aims at developing in the student, knowledge and skills to match the current and projected needs of industry/ user systems, social awareness and professional attitudes. In relation to the course and topics to be taught, the student will have to constantly update himself and keep pace with the changing technologies and the current and projected needs of user systems. Another important aspect is the development of the attitude of enquiry, the inculcation of sound study and work habits, side by side with the development of the overall personality as well as positive attitudes.

**2. COMPETENCY**

The course content should be taught and implemented with the aim to develop different types of skills so that students are able to acquire following competencies:

- 1 To develop of inquisitive rush, innovative skill and confidence to work independently
2. To participate effectively in group work
3. To collect relevant data
4. To plan and organize the work
5. To analyse and synthesise the data
6. To relate knowledge various courses in lacking a live problem
7. To make appropriate decision
8. To conduct a survey and investigation

9. To solve industry problems
10. To develop ability during field project work
11. To develop cost consideration
12. To design the components on broad lines
13. To prepare a drawings and plans for works
14. To assess the financial implication and feasibility of the scheme
15. To prepare the technical reports

### 3. COURSE OUTCOMES

The theory should be taught and practical should be carried out in such a manner that students are able to acquire different learning outcomes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

The students will be able to

- Know the questions to which he is finding answers through experimental work.
- Perform the practical work with appropriate accuracy.
- Reduce the experimental readings to the form of answers required.
- Understand clearly what the reader will want to know.
- Give brief but clear answers.
- Convince the reader that the answers are valid.
- Present a reasoned discussion of the significance of the answers he offers.

### 4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
L	T	P		Theory Marks		Practical Marks		
L	T	P	C	ESE	PA	ESE	PA	100
0	0	6	6	---	---	40	60	

**Legends:** L-Lecture; T – Tutorial/Teacher Guided Theory Practice; P - Practical; C – Credit, ESE - End Semester Examination; PA - Progressive Assessment

### 4. COURSE DETAILS

**Each Project batch must not exceed 8 students.**

During the semesters, Students will have to write two types of reports.

1. Course-work reports : i.e. reports for communication with your tutor or guide , Technical reports to communicate with a specific individual who might be a ‘senior’ person in the formats specified by Gujarat Technological University.
2. A summary of work carried out , the readings, calculations, results and answers in numerical or graphical form, and a discussion of the results, answers and conclusions.

Effort should be made to identify actual field problems to be given as project work to the students. Project selected should not be too complex which is beyond the

comprehension level of the students. The placement of the students for such a practical cum project work should match with the competency profile and interest of students. Students may be assessed both by industry and polytechnic faculty.

The suggested performance criteria is given below:

- a) Punctuality and regularity (Log book - mandatory and produced during IA verification)
- b) Initiative in learning/working at site
- c) Level/proficiency of practical skills acquired
- d) Sense of responsibility
- e) Self-expression/Communication skills
- f) Interpersonal skills.
- g) Report writing skills
- h) Viva voce

Some of suggested projects are given below: These are only guidelines, teacher may take any project related to Civil Engineering depending upon the availability of projects. Preference should be given to practical oriented projects. According to the local needs. The following major projects are suggested:

1. Construction of a small concrete road consisting of following activities
  - Survey and preparation of site plan
  - Preparation of drawings i.e. L-Section and X-Section
  - Estimating of earth work
  - Material estimating and costing with specifications
  - Testing of Aggregates
  - Design of Concrete Mix
  - Preparation of sub grade with stone ballast
  - Laying of concrete
  - Testing of slump, casting of cubes and testing
  - Technical report writing
2. Water Supply /Drainage system for a village / Layout
  - Surveying
  - Design of water requirements and water distribution system
  - Preparation of drawing of overhead tank
  - Material estimating and costing
  - Specifications
  - Technical report writing
3. Construction of shopping complex/School Building/Hostel Building/PHC/Residential Complex/Industrial Building/Bridges/Foundations/Flyovers/Under Passes  
Preparation of detailed drawing – Plan, Elevation, section, layout, structural drawing, working drawing Preparation of Detailed and Abstract Estimate, Quantity of Materials
4. Rainwater harvesting and Recharging
  - Assessment of catchment's area
  - Intensity of rainfall
  - Monitoring during rainy season
  - Quality and Quantity analysis

- Collection of water
  - Recharge pit design
  - Supply of water
5. Water Supply and Sanitary connections for a Multi storied building
    - Preparation of detailed drawing – Plan, Elevation, section, layout, working drawing
    - Preparation of Detailed and Abstract Estimate, Quantity of Materials
  6. Report on Concrete Mix Design with/without Admixtures.
  7. Green Buildings
  8. Solar Farming
  9. Critical Study of existing water supply system
  10. Critical Study of existing Sewerage system
  11. Solid waste management
  12. Bio-medical waste disposal.
  13. Flood water management – case study
  14. Changes in Rainfall pattern and its impact
  15. Traffic Study
  16. Noise Study
  17. Air pollution Study.
  18. Valuation and Rent fixation
  19. Water shed management
  20. Restoration of Lakes.
  21. Repair estimate of existing Buildings

The project report should consist of following items.

1. Introduction
2. Literature survey
3. Study Area
4. Methodology/Design/Tests
5. Result and Discussion
6. Conclusion and scope for future study
7. References.

- One self appraisal form should be attached at the end by the student in his favour regarding the claim of his work relevance , utilities and materialization as well as the gain in terms of cost – benefits , so that teacher can have ease of evaluation.
- The Report should be submitted well before the Exam.

### **Guideline for the Project– II for Diploma Engineering**

1. Project reports should be typed neatly in New Times Roman letters on both sides of the paper with 1.5 line spacing on a A4 size paper (210 x 297 mm). The margins should be: Left - 1.5", Right - 1", Top and Bottom - 0.75".
2. The total number of reports (Soft bound) to be prepared are
  - One copy to the department
  - One copy to the concerned guide(s)
  - One copy to the candidate.
3. Before taking the final printout, the approval of the concerned guide(s) is mandatory and suggested corrections, if any, must be incorporated.
4. Every copy of the report must contain
  - Inner title page (White)
  - Outer title page with a plastic cover
  - Certificate in the format enclosed both from the college and the organization where the project is carried out.
  - An abstract (synopsis) not exceeding 100 words, indicating salient features of the work.
5. The organization of the report should be as follows

<ol style="list-style-type: none"> <li>1. Inner title page</li> <li>2. Abstract or Synopsis</li> <li>3. Acknowledgments</li> <li>4. Table of Contents</li> <li>5. List of table &amp; figures (optional)</li> </ol>	Usually numbered in roman
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- Chapters (to be numbered in Arabic) containing Introduction-, which usually specifies the scope of work and its importance and relation to previous work and the present developments, Main body of the report divided appropriately into chapters, sections and subsections.
- The chapters, sections and subsections may be numbered in the decimal form for e.g. Chapter 2, sections as 2.1, 2.2 etc., and subsections as 2.2.3, 2.5.1 etc.
- The **chapter must be left or right justified (font size 16)**. Followed by the **title of chapter centered (font size 18)**, **section/subsection numbers along with their headings must be left justified** with **section number and its heading in font size 16** and **subsection and its heading in font size 14**. The **body or the text of the report should have font size 12**.

- The figures and tables must be numbered chapter wise.
- The last chapter should contain the summary of the work carried, contributions if any, their utility along with the scope for further work.

**Reference OR Bibliography:** The references should be **numbered serially** in the order of their occurrence in the text and their numbers should be indicated within square brackets for e.g. [3]. The section on references should list them in serial order in the following format.

1. For textbooks – Dr.V.L.Shah & Veena Gore, Limit State Design of Steel Structures, Structures Publications, 1 Edition, 2009.
  2. For papers - Devid, Insulation design to combat pollution problem, Proc of IEEE, PAS, Vol 71, Aug 1981, pp 1901-1907.
- Only SI units are to be used in the report. Important equations must be numbered in decimal form for e.g.
  - $V = IZ$  ..... (3.2)
  - All equation numbers should be right justified.
  - Separator sheets, used if any, between chapters, should be of thin paper

### **PROGRESSIVE EVALUATION:**

#### **I A Marks:**

1. First review (During the mid part of VI Th semester) 25 mark
2. Second review (During the end of VI Th semester) 25 mark

**TOTAL: 50 mark**

#### **I B Marks:**

<b>1</b>	<b>Log record</b>	<b>10 marks</b>
<b>2</b>	<b>Synopsis&amp; Report</b>	<b>20 marks</b>
<b>3</b>	<b>Presentation</b>	<b>20 marks</b>
	<b>Total</b>	<b>50 marks</b>

**TOTAL MARKS : A+ B = 100 MARKS**

**PROJECT EVALUATION ( At the end of 6th semester): (ESE)**

1. Relevance of the subject in the present context	20 mark
2. Literature Survey	20 mark
3. Experimental observation	40 mark
4. Results & Discussion	30 mark
5. Presentation (Max of 20 Slides)	40 mark
6. Viva	50 marks
<b>TOTAL</b>	<b>200 mark</b>

**CANDIDATE'S DECLARATION**

I, ----- a student of Diploma in -----  
Department bearing PEN -----of -----  
hereby declare that I own full responsibility for the information, results and conclusions  
provided in this project work titled "-----  
----- "submitted to **Gujarat Technological University** for the award of Diploma in --  
----- .To the best of my knowledge, this project work has not been  
submitted in part or full elsewhere in any other institution/organization for the award of any  
certificate/diploma/degree. I have completely taken care in acknowledging the contribution of  
others in this academic work. I further declare that in case of any violation of intellectual  
property rights and particulars declared, found at any stage, I, as the candidate will be solely  
responsible for the same.

**Date:****Place:****Signature of candidate****Name:** -----**PEN** -----



## CERTIFICATE

Certified that this project report entitled -----  
-----”which is being submitted by  
Mr./Ms. ...., Reg. No....., a bonafide  
student of .....in partial fulfillment for the award of **Diploma  
in Civil Engineering** during the year ..... is record of students own work  
carried out under my/our guidance. It is certified that all corrections/suggestions indicated for  
internal Assessment have been incorporated in the Report and one copy of it being deposited  
in the polytechnic library.

The project report has been approved as it satisfies the academic requirements in respect of  
Project work prescribed for the said diploma.

It is further understood that by this certificate the undersigned do not endorse or approve any  
statement made, opinion expressed or conclusion drawn there in but approve the project only  
for the purpose for which it is submitted.

Guide

Name and signature

Examiners

1

2

**Head of Department**

Dept. of -----

## ROADMAP FOR PROJECT GUIDES

1. The project work is proposed to be carried out during the V and VI semesters so that learners prepare during the V semester, do some field work based on the preparation during the mid semester vacation and report the analysis and inferences during the VI semester.
2. The learners would reach a level of maturity by the time they reach V semester and so a meaningful project lasting for a year can be executed by them.
3. To execute the project with involvement needs constant guidance and monitoring of the progress of the learners by the guide.
4. This does not mean teacher has to advice learners.
5. Be confident about the ability of the learner and “intellectually provoke” them with challenging questions. These questions should prompt the learners to search information and update themselves (to be carried out during the first two weeks).
6. Do not feed information to learners. Instead crate a ‘cognitive dissonance’ (a challenging question or situation that the learner is not able to find an immediate answer but feels the need to search for information to find a solution).
7. Defer judgement on learners and give them identified sources if required like a journal article, book or a web site.
8. Even if the learners report their inability to solve do NOT give or prescribe a solution.
9. Be patient and give time for the learner to construct his knowledge.
10. Give corrective feedback to the learner by challenging his solutions so that his logic is questioned and it develops further.
11. This leads to the first activity viz., literature survey and conceiving a project.
12. During this phase meet the project team in a group and create a healthy competition among the learners to search different sources and synthesise their findings in the group.
13. Aim for bringing out a workable innovative project conceived within the first eight weeks as given in the schedule attached.
14. During these two phases and the third phase the teacher should assess the strengths and weakness of the members of the group and allocate differential work to team members on the remaining tasks to be carried out during the next thirty weeks.
15. This is to ensure active participation of all the members of the team.
16. By the end of the twelfth week finalise the project and a schedule of further activities for each member indicating the time frame in which his activities are to be executed may be made ready. A soft copy of this schedule may be collected from each learner by the guide to follow up.
17. This schedule prepared by each learner need to be documented for checking further progress of the project.
18. The next few phases of the project may require active guidance of the guide especially regarding the sources of collecting data, if a sample data is to be collected the number of units has to be decided, collating the data/fabricating, tryout/analysis and finally coming out with meaningful conclusions or models or application.

19. Data like models, designs, technical specifications, source code, protocols and original records need be collected from one authentic source as there will not be any variation. The teacher may guide the learners to authentic source.
20. Data having limited variability like product/service quality, processes and standards, procedures need to be collected from a sample as there is a variation. The number of units from whom (source) the data is to be collected is called sample. The sample needs to be representative of the expected variation. The decision on the size of the sample and the number of units need guidance from the teacher. For example, data regarding the quality of a product/service need be collected from 3 to 5 personnel at different levels of a service provider or dealers of a product. The numbers given are suggestive but a guide based on his experience has to make valid suggestions.
21. Data having a wide range of variation like customer satisfaction where the customers are members of the public need a larger number of units to accommodate the diversity. A tool like questionnaire with predetermined questions need to be prepared, tried out on a small sample and finalise the questions. Data may be collected from at least 30 units. This number is suggested to apply statistical analysis for meaningful conclusions. Guides may decide on the sample size depending on the accessibility of data.
22. The intention of the above three points viz., 19, 20 and 21 is to ensure objectivity in data collection i.e., to reduce the subjectivity of the human mind.
23. All the above activities need to be completed before three to four weeks before the end of V semester (refer the spread sheet related to scheduling).
24. The learners may be instructed to collect data objectively with identified sample during the next 4 to six weeks which includes the mid semester holidays. This would enable the learners to visit the field and collect data without the constraint of reporting to institution and attending classes on a regular basis.
25. The collected data need to be organised and entered to spread sheets or similar formats for analysis. Qualitative data may be converted to quantitative using a rating scale or similar data organisation procedures.
26. The result of most analysis on spreadsheet could be obtained in tables or graphs as per the requirement.
27. Activities mentioned in points 24, 25 and 26 may be carried out by learners during 4 to 8 weeks after commencement of VI semester.
28. Interpretation of the analysed tables and graphs to arrive at meaningful inference. The guide at this stage may defer his ideas on interpretation allowing the learners to do this. In case the learners err in the process they may be given corrective feedback.
29. A report of the whole process of doing the project may be written, word processed and submitted in triplicate.
30. Guides may contact industries and try to solve their problems so that the learners get a field experience and they get ready for the industry.
31. Innovations and innovative practices may be encouraged among the learners to be pursued as a project. Developing prototypes, (in simulation or real) trying out feasibility of new ideas, changing existing systems by adding modules, combining,

assembling new modules and developing new systems may be given higher priority over routine bookish projects.

32. The schedule of events proposed is for an investigative project as a model. Guides may alter the prescribed schedule to suit the kind of innovative projects sited in point No.31 above.
33. Industry personnel may be involved in conceiving, executing and evaluating projects. This gives credibility to the institute and acceptance of learners for absorption into the company.

### GUIDELINES TO LEARNERS TO COMPLETE 6<sup>th</sup> SEMESTER PROJECT

1. On the basis of 5<sup>th</sup> Sem. Preparation, field work should be done during the mid Semester vacation and reporting of analysis and inferences should be done in the VI semester.
2. You have the ability and the level of maturity needed to conceive an innovative and meaningful project accomplishing which gives you recognition by the industry and empowers you with the power of knowledge.
3. Understand your strength and weakness and make an effort to find the strength and weakness of other peers in the team.
4. Complement each other's strength rather than compete with peers within the team. This will enable you to complete a comprehensive and innovative project relevant to the industrial needs rather than doing a routine copy of what others have done.
5. Seek guidance from the teacher and update him/her about the progress.
6. Be confident about your ability and that of other members of your group. Take extra efforts to collect information, share with your peers and synthesise your knowledge.
7. Question everything including the ideas of your teacher. Accept the ideas and instructions which are internally consistent (logical).
8. Involve actively in group activities and contribute towards the tasks.
9. Do not depend too much on the teacher as a source of information, search on your own and build your knowledge structure. Search for authentic sources like journal articles, books and authentic sites rather than blogs and tweets.
10. Though brief, record your thoughts and activities including searches immediately.
11. Prepare a schedule for your work on a spread sheet and encourage your peers to do the same.
12. Show your schedule and that of others to the teacher and get his feedback.
13. Keep reviewing the schedule every fortnight and take corrective steps if needed. For doing this keep the general guideline schedule given in the curriculum as a backdrop.
14. Tools used for data collection like instruments, testing machines, questions to be asked and software may be tried out and standardised by the twelfth week of the project. Seek the teacher's help who is experienced in doing this.
15. Collect data dispassionately or objectively (without applying your personal prejudice). Complete this task before the VI semester begins.

16. While entering data into the spread sheet ask your peer member to verify. This will ensure accuracy of data entry.
17. Use appropriate mathematics/statistics for calculations. Seek help from external sources (other than your teacher) if required.
18. The results of your analysis need to be graphically represented and documented. You may also add photographs and video clips to increase the validity.
19. This task needs to be completed within 8 weeks after commencement of VI semester.
20. Interpret the data (after analysis) and arrive at meaningful inferences on your own in discussion with your peers. Get it ratified by your teacher. Suggestions from the teacher may be discussed among your peers and incorporated if they are internally consistent.
21. The project report may be word processed (videos, photographs attached in soft copy) and submitted in triplicate two weeks before the end of VI semester.
22. Involve passionately in the team work, make constructive contributions and come out with an industry friendly project which will equip you in your professional development.

## **COURSE CURRICULUM DEVELOPMENT COMMITTEE**

### **Faculty Members from Polytechnics**

- |                             |   |
|-----------------------------|---|
| <b>(1) Prof. B. V. Modi</b> | <b>Principal – BVPIT(DS) Umarakh Ta-Bardoli</b>     |
| <b>(2) Prof. K K Khatri</b> | <b>L.C.E. - BVPIT(DS) Umarakh Ta-Bardoli</b>        |
| <b>(3) Prof. S M Mistry</b> | <b>Head – Dr. S &amp; S.S. Gandhi College Surat</b> |
| <b>(4) Prof. V K Shah</b>   | <b>Head – Dr. S &amp; S.S. Gandhi College Surat</b> |