

**Department of Technical Education, Karnataka**  
**DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING**  
**FIFTH & SIXTH SEMESTER**  
**(Final end examination will be in Sixth Semester)**  
**SUBJECT: PROJECT WORK AND INDUSTRIAL VISIT**

**Contact Hrs/Week: 3 Hrs.**

**Contact Hrs: 48 Hrs + 48 Hrs**

As far as possible students should be given application oriented project problems with a view to:

1. Develop an understanding regarding the size and scale of operations and nature of field work in which students are going to play their role after completing the course of study in Electronics and Communication Engineering.
2. Develop an understanding of subject based knowledge given in the classroom in the context of its application at work places.
3. Provide first hand experience to develop confidence amongst the students to enable them to use and apply acquired technical knowledge and skills to solve practical problems of the world of work.
4. Develop special skills and abilities like interpersonal skills, communication skills, attitudes and values.
5. Practical exposure to an industrial activity

For the fulfillment of above competencies, polytechnics may establish close linkage with 8-10 relevant organizations for providing such an experience. It is necessary that each organization is visited well in advance by respective teachers and activities to be performed by students are well defined. The chosen activities should be such which are of curricular interest to students and of professional value to industrial/field organizations.

**Each Project batch must have Minimum of 5 students.**

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 are given below:

- a) Punctuality and regularity (**Log book - mandatory and to be produced during IA verification**)
- b) Initiative in learning/Demonstration and fabrication of model
- c) Level/proficiency of practical skills acquired
- d) Originality
- e) Scope for patentability
- f) Sense of responsibility
- g) Self expression/Communication skills
- h) 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 Electronics and Communication and allied area depending upon the availability of projects. Preference should be given to practical oriented projects.

**1) Industrial Visit**

Students are required to undergo an industrial visit for period of at least 3(Three) working days, either in V/VI semester. After completion of their visit the reports should be prepared. Each Student should write the report independently in view of his own observation in industry. All days for the visit should be accounted for clearly giving attendance particulars. The concern accompanying staff is to check student presence and access progress periodically

### 1.1 Industrial report

Students are required to submit a comprehensive report on factory visit with details of the organization where the training was undergone. The comprehensive report should focus on study of plant/ product /process/ along with intensive in-depth study on anyone of the topics such as processes, methods, tooling, plant layout and equipment, highlighting aspects of quality, productivity of the system. Any data, drawings etc should be incorporated with the consent of the Organization. The comprehensive report should be submitted for the end exam for evaluation.

#### 2) Project work

**According to the local needs, major projects can carried out:**

**The Project Report should consist of following items.**

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

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### **GUIDELINES FOR THE PREPARATION OF PROJECT REPORTS**

1. Project reports should be typed neatly in Times New Roman letters with font size 14 for titles and 12

for text 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 /library
- 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
- Candidate declaration and Certificate in the format enclosed both from the institution 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 and 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 –R S Khandpur, Handbook of Biomedical Instrumentation, 2<sup>nd</sup> Edition, McGraw Hill.
2. For papers – Y.Javadi and I.sattari, Welding distortion in pipes, Journal of pressure vessels and piping, Vol 85, Aug 2008, pp 337-343

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

**I A Marks:**

**Scheme of Evaluation**

1	Log record	05
2	Synopsis & Report	10
3	Presentation	10
	<b>Total</b>	<b>25</b>

**PROJECT EVALUATION: ( At the End of 6<sup>th</sup> semester)**

- |   |                 |
|---|-----------------|
| 1. Relevance of the subject in the present context                      | 10 mark         |
| 2. Literature Review  | 10 mark         |
| 3. Fabrication of the model/Data collection/repair and Overhauling work | 40 mark         |
| 4. Results & Discussion   | 10 mark         |
| 5. Industrial visit report  | 10 mark         |
| 6. Presentation   | 20 mark         |
| <b>TOTAL</b>  | <b>100 mark</b> |

**I A MARKS EVALUATION:**

- |  |                |
|--|----------------|
| 1. First review (During the end of V <sup>Th</sup> semester)   | 25 mark        |
| 2. Second review (During the end of VI <sup>Th</sup> semester) | 25 mark        |
| <b>TOTAL</b>   | <b>50 mark</b> |

**NOTE: 1.**I A marks to be awarded at the end of *EACH SEMESTER*.

2.The candidate declaration and certificate sample copy are enclosed here for incorporation in final project report

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**CANDIDATE'S DECLARATION**

I, ----- the student of Diploma in -----  
Department bearing Reg No-----of -----  
--- hereby declare that I own full responsibility for the information, results and conclusions  
provided in this project work titled “-----  
----- “submitted to **Board of Technical Examinations, Government of Karnataka** 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: -----**

**Reg No-----**

**DEPARTMENT OF TECHNICAL EDUCATION**

**NAME OF THE INSTITUTION**

Address with pin code

Department of .....

**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 -----**  
**---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(s)

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 advise 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 create 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 CARRY OUT A TWO SEMESTER PROJECT

1. Carry out the project work through the V and VI semesters. Preparation must be done during the V semester and based on this, 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.