

Major Project Works for Diploma Programmes in

- 1. Civil Engineering**
- 2. Electrical Engineering**
- 3. Electronics and Communication Engineering**
- 4. Computer Science and Engineering**

For the State of Punjab

MAJOR PROJECT WORKS

INTRODUCTION

A project is an inquiry, conducted personally by a trainee(s) who is responsible for using a variety of methods (e.g. analysis, interpretation, planning etc) to undertake a task or study a subject (knowledge or skill or attitude) and to write a report, or solve a problem etc., in line with the objectives of the project. A project can also be termed as an open-ended assignment, the outcome of which is not known at inception and whose progress depends mostly on the intelligence, skills, creativity and energy of the students.

The project work exposes the students to real life problems and introduces them to the procedures and practices used in industry. The project work also helps the students to gain confidence in tackling problems of their own. The project work is needed to strengthen and supplement the learning experience of students.

Project-based instruction is an authentic instructional model or strategy in which students plan, implement, and evaluate projects that have real-world applications beyond the classroom. Learning activities that are interdisciplinary, long term, and student centered are emphasized, rather than short, isolated lessons. Most important, students find projects fun, motivating, and challenging because they play an active role in choosing the project and in the entire planning process.

Teachers are increasingly working with students who have a wide range of abilities, come from various backgrounds. Institutes are seeking ways to respond to the needs of these students. Project-based instruction provides one way to introduce a wider range of learning opportunities into the classroom. It can engage students from diverse backgrounds because students can choose topics that are related to their own experiences, as well as allow them to use individual learning styles.

There are a wide range of project types such as service learning projects, work-based projects, task-oriented projects, problem-solving projects and so forth, but authentic projects all have in common these defining features:

- Student centered, student directed
- A definite beginning, middle, and end
- Content meaningful to students; directly observable in their environment
- Real-world problems
- Firsthand investigation
- Sensitivity to local culture and culturally appropriate
- Specific goals related to curriculum and institute, district, or state standards
- A tangible product that can be shared with the intended audience
- Connections among academic, life, and work skills
- Opportunity for feedback and assessments from expert sources

- Opportunity for reflective thinking and student self-assessment
- Authentic assessments (portfolios, journals, etc.)

A suggestive criteria for assessing student performance by the external (personnel from industry) and internal (teacher) examiner is given in table below:

Sr. No.	Performance criteria	Max.** marks	Rating Scale				
			Excellent	Very good	Good	Fair	Poor
1.	Selection of project assignment	10	10	8	6	4	2
2.	Planning and execution of considerations	10	10	8	6	4	2
3.	Quality of performance	20	20	16	12	8	4
4.	Providing solution of the problems or production of final product	20	20	16	12	8	4
5.	Sense of responsibility	10	10	8	6	4	2
6.	Self expression/ communication skills	5	5	4	3	2	1
7.	Interpersonal skills/human relations	5	5	4	3	2	1
8.	Report writing skills	10	10	8	6	4	2
9.	Viva voce	10	10	8	6	4	2
Total marks		100	100	80	60	40	20

The overall grading of the practical training shall be made as per following table

	Range of maximum marks	Overall grade
i)	More than 80	Excellent
ii)	79 > 65	Very good
iii)	64 > 50	Good
iv)	49 > 40	Fair
v)	Less than 40	Poor

In order to qualify for the diploma, students must get "Overall Good grade" failing which the students may be given one more chance of undergoing 8 -10 weeks of project oriented professional training in the same industry and re-evaluated before being disqualified and declared "not eligible to receive diploma ". It is also important to note that the students must get more than six "goods" or above "good" grade in different performance criteria items in order to get "Overall Good" grade.

Important Notes

1. This criteria must be followed by the internal and external examiner and they should see the daily, weekly and monthly reports while awarding marks as per the above criteria.
2. The criteria for evaluation of the students have been worked out for 100 maximum marks. The internal and external examiners will evaluate students separately and give marks as per the study and evaluation scheme of examination.

3. **The external examiner, preferably, a person from industry/organization, who has been associated with the project-oriented professional training of the students, should evaluate the students performance as per the above criteria.**
4. **It is also proposed that two students or two projects which are rated best be given merit certificate at the time of annual day of the institute. It would be better if specific nearby industries are approached for instituting such awards.**

The teachers are free to evolve another criteria of assessment, depending upon the type of project work.

It is proposed that the institute may organize an annual exhibition of the project work done by the students and invite leading Industrial/field organisations in such an exhibition. It is also proposed that two students or two projects which are rated best be given merit certificate at the time of annual day of the institute. It would be better if specific industries are approached for instituting such awards.

LIST OF MAJOR PROJECT WORKS FOR DIPLOMA PROGRAMME IN CIVIL ENGINEERING

1. Study and detailed estimate of different component of modern residential and commercial building
2. Preparation of detailed estimate for low cost two room set residential building
3. Analysis of green building
4. Design of rain water harvesting for a given building
5. Analysis of accidents prone area in your city and remedial measure for them
6. Case study of safety practices in a multi-storied buildings under constructions
7. Concrete Mix Design
8. Case study of repair and maintenance of a given building
9. Preparation of DNIT of a given building for Civil Engineering works
10. Detailed estimate for installing plumbing fixtures
11. Preparing a standard measurement book of a given building
12. Construction of concrete road by using latest
13. Water supply scheme for a govt approved colony
14. Construction estimates of shopping complex
15. Analysis and design of Effluent Treatment Plant (ETP) for an industry
16. Design of soak pit with septic tank for 100 users
17. Design and estimate of two room set building
18. Design of concrete mix by using flyash
19. Setting up of an interlocking pavers fabrication plant
20. Preparation of different Civil Engineering models e.g. beam, one way, two way slab, column etc.
21. Reinforcement detailing as per IS:4326
22. Design of car parking in your polytechnic
23. Design of acoustics for an auditorium
24. To prepare analysis of rates for non -schedule items e.g. aluminium door, windows, work stations etc.
25. Study of retrofitting of a given Civil Engineering works.
26. Survey of your polytechnic by using total station.
27. Traffic volume study and analysis on different roads in a city
28. Case study of a flyover with regard to its various construction components

29. Study and preparation of detailed project report of ready mix concrete (RMC) unit
30. Study and preparation of detailed project report of prefabricated/prestressed concrete components unit
31. 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 earth work
 - Preparation of sub grade with stone ballast
 - Laying of concrete
 - Testing of slump, casting of cubes and testing
 - Material estimating and costing with specifications
 - Technical report writing
32. Water Supply system for a locality
 - Surveying
 - Design of water requirements and water distribution system
 - Preparation of drawing of overhead tank
 - Material estimating and costing
 - Specifications
 - Technical report writing
33. Construction of shopping complex by detailing of RCC drawings, estimating and costing of material
34. Design and construction of septic tank with soak pit for 100 users
35. Design of small residential building including structural members, specifications, estimating and costing of materials, report writing and municipal drawings for water supply and sewerage system

**LIST OF MAJOR PROJECT WORKS FOR DIPLOMA PROGRAMME IN
ELECTRICAL ENGINEERING**

1. Design and fabrication of control panel for various applications in the field of electrical engineering.
2. Rewinding of a single phase/three phase induction motor
3. Fabrication of working model of a solar thermal power plant.
4. Design and fabrication of automated car parking system.
5. Design and fabrication of automated gate control of railway crossing.
6. Design and fabrication of electrical resistive/inductive/capacitive loads.
7. Design and fabrication of remote control of various domestic electrical appliances.
8. Design and fabrication of microcontroller based dc drive system.
9. Design and fabrication of automatic water level control system.
10. Design and fabrication of automatic solar battery charger.
11. Fabrication of automatic star-delta starter.
12. Use of sensor in robotic action.
13. Fabrication of working model of hydro electric power plant.
14. Fabrication of sine wave inverter up to 500VA.
15. Fabrication of water level indicator.
16. Fabrication of rain/fire/ smoke/burglar detector.
17. Fabrication of automatic solar panel based street lights.
18. Fabrication of automatic solar panel based traffic lights
19. Fabrication of automatic voltage stabilizer up to 1 KVA.
20. Fabrication of working model of wind power plant.
21. Fabrication of heat convector blower with humidifier.
22. Fabrication of oil based radiation type room heater.
23. Fabrication of small 1- phase transformer up to 1KVA.
24. Fabrication of UPS up to 500VA.
25. Fabrication of a distribution board as per requirement.
26. Fabrication of Direct-On-Line (DOL) starter.
27. Fabrication of solar tracking system.
28. Fabrication of automatic power factor corrector.

29. Fabrication of electronic choke for fluorescent tubes.
30. Fabrication of electronic fan regulator.
31. Fabrication of desert cooler/ room cooler.
32. Fabrication of electric/solar water heater.
33. Erection, installation & commissioning of electrical equipments.
34. Fault detection & repair of electrical/ electronic instruments.
35. Drawing, estimating and costing of electrical installation of the institution from supplier's pole to the institution distribution board.
36. Drawing, estimating and costing of electrical installation of a workshop having a given number of electrically operated appliances/machines.
37. To study the laying out of underground distribution cable for a small colony starting from main distribution pole.
38. To study the erection of a 5 pole span over head line for a small distance for distribution of electrical energy and to prepare list of material required.
39. Energy audit for the workshop of your institution & to suggest remedies to reduce electricity bills.
40. Estimate the material required to provide a service connection to a consumer's premises for domestic purposes.
41. To survey the load of a given area in a village, small colony, calculate the effective load and find out the sizes of cables/conductors for the proposed distribution system.
42. Designing of light and fan scheme for an institutional or commercial building.
43. To study and estimate the material required during augmentation of a nearby pole mounted sub-station.
44. To study and estimate the material required during augmentation of a nearby in door sub-station.
45. To study and estimate the material required for a solar power station up to 100KW after visiting the actual site (Such power plants have already been installed at LPU at Jalandhar and PEDDA/CREST in Punjab and Chandigarh.
46. To prepare a proposal for substation of your institution , calculating the total load (estimating and costing)
47. Installation of home security system
48. Detection of electricity theft control system with wireless indication system
49. Fabrication of cyclo-converter (frequency changer)

50. Design and fabrication of panel for automatic switching of DG set with supply system
51. Design and fabrication of wireless AC Power transmission.

- **NOTE:** Each student has to take one project individually and one to be shared with a group of four-five students depending upon cost and time involved.
- There is no binding to take up the above projects as it is only a suggestive list of projects.

**LIST OF MAJOR PROJECT WORKS FOR DIPLOMA PROGRAMME IN
ELECTRONICS AND COMMUNICATION ENGINEERING**

1. Microcontroller based moving message display using PC/Stand alone keypad.
2. GSM based home monitoring systems.
3. Microcontroller/PLC – Based Traffic Control Systems.
4. Biometric attendance system.
5. RFID based vehicle parking system.
6. SMS based smart notice board.
7. Wireless based fuse/MCB circuit breaker.
8. Solar panel based inverter charger.
9. Solar system based street light controller.
10. RFID based automatic paid toll tax system.
11. RFID based attendance system.
12. Microcontroller based energy-meter/pre-paid energy-meter
13. Data and voice communication using optical fiber.
14. Vehicle tracking system using GPS/GSM.
15. Microcontroller based Joy-stick operated robotic wheelchair.
16. Automated speed breaking and anti-collision system.
17. Vehicle security systems using GSM.
18. Ultrasonic based vehicle speed monitoring systems for highways.
19. Leakage detection in water/waste water pipe using robotics.
20. Defence robots for military operation.
21. GSM based patient-monitoring systems in hospitals/nursing homes.
22. GSM (mobile phone) based device/appliance controller through SMS (mobile phone).
23. Sensor based automatic dipper controller in vehicles.
24. Microcontroller based liquid level controller.
25. Android based home appliances.
26. Fake currency tester and Currency counter machine.
27. Finger print based voting machine.
28. Programmable based vending machines.
29. Automatic railway crossing.
30. Density based traffic light controller.

31. Automatic street lighting control systems.
32. ZIGBEE based habitat monitoring application.
33. Robot control using Android.
34. Seismic earthquake detection/measurement.
35. Microcontroller based industrial fault monitoring systems.
36. Flood intimation/alarming over GSM.
37. Automatic irrigation systems.
38. Infra-red thermometer
39. Automatic visitor counter, with automatic door closer.
40. Digital lock.
41. Industry automation using PLC.
42. Bluetooth based device on/off control.
43. ZIGBEE based monitoring system.
44. Infant incubator parameter sensing and mentoring through ZIGBEE wireless.
45. Home automation and security control interface with telephone.

**LIST OF MAJOR PROJECT WORKS FOR DIPLOMA PROGRAMME IN
COMPUTER SCIENCE AND ENGINEERING**

1. Software Information System (SIS) with any of the following modules:
 - a) Attendance
 - b) Sessional Marks
 - c) Fees Detail
2. Library Management System (LMS)
3. Placement Cell Automation System (PCAS)
4. Staff Salary Management System (SSMS)
5. Diary Dispatch System (DDS)
6. Examination management system with following module
 - a) Seating Plan Daily
7. Provisional Certificate Generation
8. Scholarship Automation System
9. Design of Virtual Calendar with modules like:- To-do-list, Reminders/Alerts etc.
10. Design of Statistics Software (any discipline of sports)
11. Online SMS Alert System with following modules
 - a) Broad/Casting Text Messages
 - b) Sending e-mail through SMS
12. Electricity/Public Health/Water Billing System
13. Note-Pad colonin system
14. Implementation of Data Structures Concepts using C/C++
15. Implementation of Graphics Concepts using C/C++ (Without turbo 'C')
16. Design of ATM Simulation using VB/VB.Net
17. LAN Based Chat (Text/Voice) System on Internet
18. Design an Application to Facilitate Sharing of Resources on LAN
19. Hostel/Guest House Management System
20. Developing any of Software Application using any Open Source Simulator
21. Designing Microprocessor Virtual Kit
22. Online Skilled Manpower Services

23. LAN based Notice Board for an Institute/Any Organisation
24. Data Encryption to two or more parties
25. Setup of Private Cloud and its Management
26. Setup Configuration and Management of payment gateway for Generic fee deposit (mobile or web)
27. Installation and Configuration of Routers/Switches by using CISCO simulators
28. Installation Configuration and Management of Firewalls Hardware and Open Source Software Firewalls
29. Controlling of any Web Services by using Mobile Phone Interface
30. Management of server: LINUX/WINDOWS/SOLARIS-file server, HTTP server, Web server, Mail server, Security services their installation and configuration
31. Automatic Vehicle Parking Systems by using RFID with Database
32. Developing Virus and its Anti-virus
33. Developing TSR (Terminate and Stay Resident) based Application
34. Design an e-commerce portal for various commercial services
35. Search Engine Optimization for a particular website
36. Developing an interface and a Data Base of Video Lectures/Slides pertaining to all topics of diploma in Computer Engineering from reputed Educational sites
37. Development of Software to track changes in a Computer Based Curriculum/Course Portal using latest softwares such as PHP, HTML, Drupal, Joomla, Cake PHP etc.
38. Development of an online Question Paper/Quiz Generation System such as Moodle
39. Development of Social Networking website for a particular cause such as Environment, Blood Donations, Cruelty Against Animals, Female Foeticide etc.
40. PC Based Wireless Mobile Robot/Car Control
41. Student Web Portal
42. Development of Online Placement System for a Polytechnic
43. Development of Online Hospital Management System for different activities
44. Android based application for mobile phones
45. Design and Development of Insurance Financial Management System
46. Portal Development for Online Resume Building for the freshers
47. Portal Development of Job Search
48. Online Library Management System
49. E-ticket System for Sports Events/Cinema Halls/College Functions/Cultural Fairs etc.
50. Students Project Record Management System

51. Inventory Management System for any Polytechnic/Industry/Retail/Warehouse/Super-market etc.
52. Employee Cubicle Management System for Institute/Organisation etc.
53. Development of a Web-Based Recruitment Process System for the HR group for a company
54. Online Navigation system for institutes, Hospitals, Fairs, Commercial Establishment etc.
55. Online Leave Management System for Institute staff.
56. Time / Schedule / Meeting Management Software for an Organization
57. Book Shop Automation Software
58. Restaurant Automation Software for billing
59. Judiciary Information System
60. Transport Company Computerization Software
61. Home Budgeting/Accounting System
62. E-learning System/Virtual Lab Development

LIST OF EXPERTS

- a) The following experts participated/contributed for preparing list of major project works for the diploma programme in 'Electronics and Communication Engineering' for the state of Punjab on 6th September, 2013 at NITTTR, Chandigarh.

Sr. No.	Name, Designation and Official address
From Polytechnics	
1.	Shri Gagandeep Singh, Officer Incharge, ECE, Govt . Polytechnic for Women, Sector 10, Chandigarh
2.	Ms. Renu, Lecturer, ECE, CCET, Sector-26, Chandigarh
3.	Shri Mandeep Singh, ECE Deptt. Mehr Chand Polytechnic, Jalandhar
4.	Ms. Suchet Kumari, Lecturer, ECE, Govt. Polytechnic, Ambala City
5.	Shri VM Kalra, HOD, ECE, SJP Polytechnic, Damla, Yamuna Nagar
6.	Shri Jwala Prasad, HOD, ECE, GBN Govt. Polytechnic, Nilokheri, Haryana
7.	Shri Rajesh Kumar, HOD, ECE, Govt. Polytechnic College for Girls, Jalandhar
8.	Ms. Anju Verma, Lecturer, Govt . Polytechnic for Women, Sector 10, Chandigarh
From NITTTR, Chandigarh	
9	Ms. Kanika Sharma, Electronics & Communication Engineering Department
10	Prof. PK Singla, Associate Professor, Curriculum Development Centre Coordinator

- b) The following experts participated/contributed for preparing list of major project works for the diploma programme in 'Computer Engineering' for the state of Punjab on 8th October, 2013 at NITTTR, Chandigarh.

Sr. No.	Name, Designation and Official address
From Field/Industries/Institutions of Higher Learning	
1.	Mr. Naveen Aggarwal, Assistant Professor, UIET, Panjab University, Chandigarh
2..	Mr. Harish Kumar, Associate Professor, UIET, Panjab University, Chandigarh
From Polytechnics	
3	Shri Vipin Arora, Sr. Lecturer, Govt. Polytechnic College for Girls, Jalandhar, Punjab
4.	Shri Santosh Kumar Yadav, CCET, Sector-26, Chandigarh
5.	Ms. Sapna, Lecturer, Pt. JR Govt. Polytechnic College, Hoshiarpur, Punjab
6.	Ms. Rachna, Principal, Govt. Polytechnic College, Hoshiarpur, Punjab
7.	Mr. Mahender Singh, Sr. Lecturer, KC Govt. Polytechnic for Women, Ambala City, Haryana
8	Mr. Munish Gupta, HOD, Govt. Polytechnic, Ambala City, Haryana
9.	Mr. Harinderjit Singh, System Manager, Govt. Institute of Garment Technology, Amritsar
10	Mr. Hardeep Singh Jawanda, HOD, Computer Engineering, Guru Nanak Dev Polytechnic, Ludhiana
From NITTTR, Chandigarh	
11	Ms. Shano Solanki, Associate Professor, Computer Engineering Department
12	Prof. PK Singla, Associate Professor, Curriculum Development Centre Coordinator

- c) The following experts participated/contributed for preparing list of major project works for the diploma programme in 'Electrical Engineering' for the state of Punjab on 29th October, 2013 at NITTTR, Chandigarh.

Sr. No.	Name, Designation and Official address
From Field/Industries/Institutions of Higher Learning	
1.	Shri SK Sahdev, Associate Dean, Lovely Professional University, Jalandhar
2..	Shri NK Suri, Retd. HOD, Electrical Engineering Department, CCET, Sector-26, Chandigarh
3.	Shri Kulmohan Suri, Retd. HOD, Electrical Engineering Department, CCET, Sector-26, Chandigarh
From Polytechnics	
4.	Shri Gurvinder Paul Singh, HOD, Electrical Engineering Department, Govt. Polytechnic, Amritsar, Punjab
5.	Shri Kashmir Kumar, HOD, Electrical Engineering Department, MC Polytechnic College, Jalandhar, Punjab
6.	Shri Ajitpal Singh, Sr. Lecturer, Govt. Polytechnic College, Khunimajra, Mohali, Punjab
7.	Shri ML Rana, HOD, Electrical Engineering Department, CCET, Sector-26, Chandigarh
8	Dr. Jaswanti, Lecturer, Electrical Engineering Department, CCET, Sector-26, Chandigarh
9.	Mrs. Anshu Sharma, Lecturer, Electrical Engineering Department, CCET, Sector-26, Chandigarh
10	Shri Dharam Pal, HOD, Electrical Engineering Department, Pt. JR Govt. Polytechnic College, Hoshiarpur, Punjab
From NITTTR, Chandigarh	
11	Ms. Shimi SL, Assistant Professor, Electrical Engineering Department
12	Ms. Ritula Thakur, Assistant Professor, Electrical Engineering Department
13	Prof. SK Gupta, Associate Professor, Curriculum Development Centre
Coordinator	

- d) The following experts participated/contributed for preparing list of major project works for the diploma programme in 'Civil Engineering' for the state of Punjab on 30th October, 2013 at NITTTR, Chandigarh.

Sr. No.	Name, Designation and Official address
From Polytechnics	
1.	Shri Sanjay Mahajan, HOD, Civil Engineering Department, MC Polytechnic, Jalandhar
2.	Shri Mohinder Kumar, HOD, Civil Engineering Department, Govt. Polytechnic, Batala
3.	Shri Rabinder Singh, HOD, Civil Engineering Department, GND Polytechnic, Ludhiana
4.	Shri Sivasankara Rao Meda, Lecturer, Civil Engineering Department, CCET, Sector-26, Chandigarh
5.	Shri Sanjiv Kaul, Offricer Incharge, Civil Engineering Department, CCET, Sector-26, Chandigarh
6.	Shri Asim Jain, Sr. Lecturer, Civil Engineering Department, GBN Govt. Polytechnic, Nilokheri, Haryana
7.	Dr. Aradhana Mehta, CCET, Sector-26, Chandigarh
8.	Shri Mohan Lal, HOD, Civil Engineering Department, Pt. JR Govt. Polytechnic College, Hoshiarpur
9.	Shri Vipin Kumar Gupta, HOD, Civil Engineering Department, Thapar Polytechnic, Patiala
10.	Shri Arun Kumar, HOD, Civil Engineering Department, Govt. Polytechnic, Badbar
From NITTTR, Chandigarh	
11	Prof. AK Duggal, Civil Engineering Department
12	Prof. SK Gupta, Associate Professor, Curriculum Development Centre Coordinator