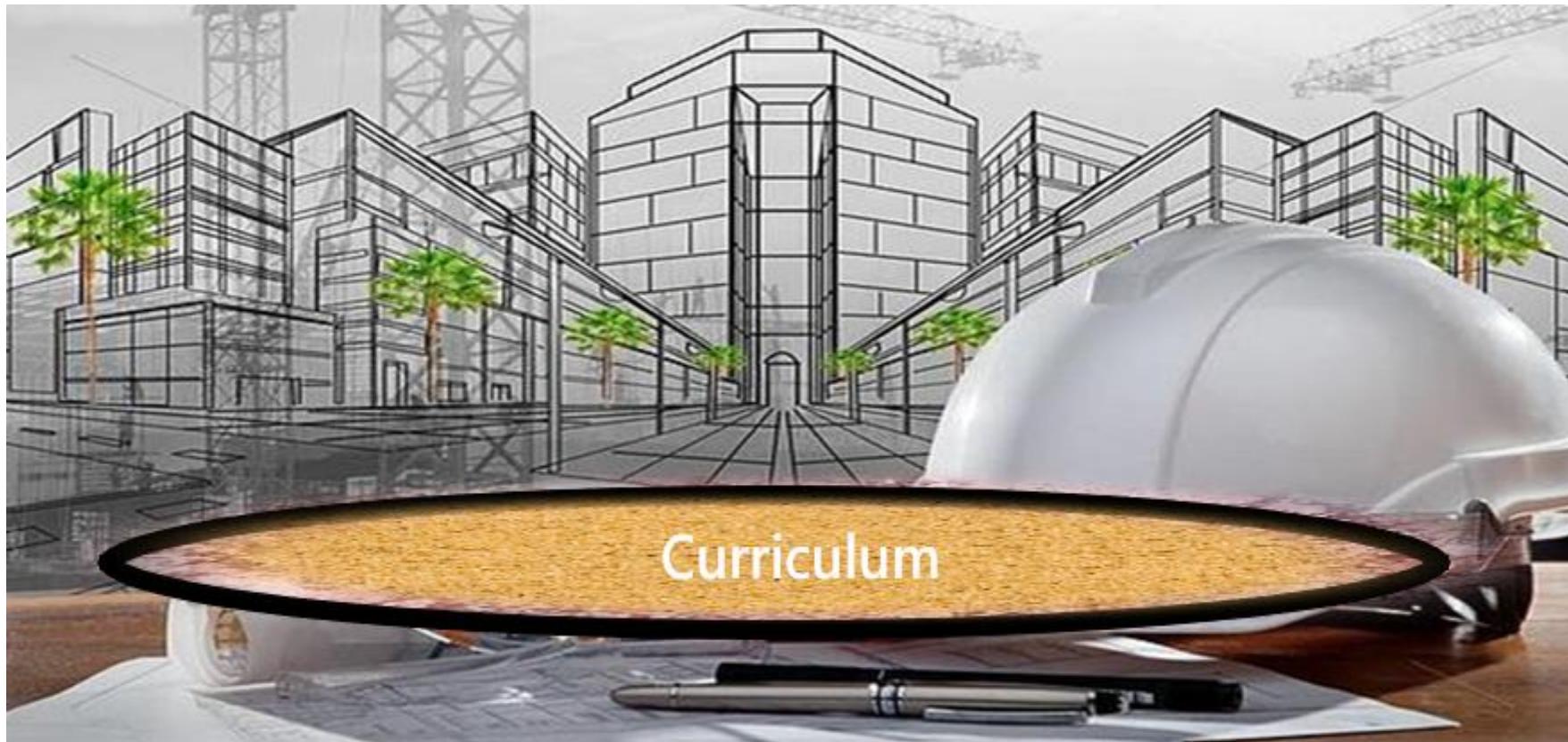




National Vocational Certificate Level 3 Assistant Surveyor in Civil Technology



**NATIONAL VOCATIONAL AND TECHNICAL TRAINING COMMISSION (NAVTC)
GOVERNMENT OF PAKISTAN**



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0732B&CE-2: Perform Compass Traversing	Error! Bookmark not defined.
0732B&CE-3: Carryout Plane Table Survey	Error! Bookmark not defined.
0732B&CE-4: Perform Levelling	Error! Bookmark not defined.
0732B&CE-5: Perform Reciprocal Levelling.....	Error! Bookmark not defined.
0732B&CE-6: Perform Long and Cross Sectioning	Error! Bookmark not defined.
0732B&CE-7: Perform Tachometry	Error! Bookmark not defined.
0732B&CE-8: Perform Contouring.....	Error! Bookmark not defined.
0732B&CE-9: Perform hydrographic Survey	Error! Bookmark not defined.
0732B&CE-10: Compute Volume by Contouring.....	Error! Bookmark not defined.
9.2. <i>Civil Engineering Drawing</i>	Error! Bookmark not defined.
0732B&CE-011. Produce Templates, Title Block / Strip & Draw Lines	Error! Bookmark not defined.



0732B&CE-012. Perform Lettering and Printing on Sheet.....	Error! Bookmark not defined.
0732B&CE-013. Construct Scale for Drawings	Error! Bookmark not defined.
0732B&CE-014. Construct Geometrical Figures	Error! Bookmark not defined.
0732B&CE-015. Produce Orthographic Projection	Error! Bookmark not defined.
0732B&CE-016. Perform Sectioning	Error! Bookmark not defined.
0732B&CE-017. Perform Dimensioning on Drawings	Error! Bookmark not defined.
0732B&CE-018. Produce Pictorial Drawings	Error! Bookmark not defined.
0732B&CE-019. Develop Symbols of Engineering Drawings	Error! Bookmark not defined.
0732B&CE-020. Produce Cross Section of Wall.....	Error! Bookmark not defined.
0732B&CE-021. Develop Building Drawings	Error! Bookmark not defined.
0732B&CE-22. Perform House Planning.....	Error! Bookmark not defined.
0732B&CE-023. Produce Layout Plans for Building Services.....	Error! Bookmark not defined.
0732B&CE-024. Produce Drawings of Sanitary Structures	Error! Bookmark not defined.
9.3. Building Materials.....	Error! Bookmark not defined.
0732B&CE-025. Identify bricks	Error! Bookmark not defined.
0732B&CE-026. Dress stone for masonry	Error! Bookmark not defined.
0732B&CE-027. Prepare slaked lime	Error! Bookmark not defined.
0732B&CE-028. Identify and store cement for construction.....	Error! Bookmark not defined.
0732B&CE-029. Select sand for construction.....	Error! Bookmark not defined.
0732B&CE-030. Identify ferrous and non-ferrous metals	Error! Bookmark not defined.
0732B&CE-031. Identify advanced construction materials	Error! Bookmark not defined.
0732B&CE-032. Work Safely in Construction Industry	Error! Bookmark not defined.
0732B&CE-033. Interpret Simple Building Plans.....	Error! Bookmark not defined.
0732B&CE-034. Read and Interpret plans and Specifications	Error! Bookmark not defined.
0732B&CE-035. Apply power and hand tools in construction	Error! Bookmark not defined.
9.4. Workshop Practice - I (wood working)	Error! Bookmark not defined.
0732B&CE-036. Carry out OH & S requirement in workshop	Error! Bookmark not defined.
0732B&CE-037. Determine properties and types of locally manufactured timber	Error! Bookmark not defined.
0732B&CE-038. Sharpen carpentry tools	Error! Bookmark not defined.
0732B&CE-039. Apply hand tools.....	Error! Bookmark not defined.
0732B&CE-040. Perform wooden joinery work	Error! Bookmark not defined.
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0732B&CE-042. Apply traditional spirits polishing techniques	Error! Bookmark not defined.
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0732B&CE-045. Construct a basic timber product.....	Error! Bookmark not defined.
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0732B&CE-046. Carry Out Oh & S Requirement in Workshop	Error! Bookmark not defined.
0732B&CE-047. Maintain Safety	Error! Bookmark not defined.
0732B&CE-048. Perform Electrical Wiring	Error! Bookmark not defined.
0732B&CE-049. Install electrical system	Error! Bookmark not defined.
0732B&CE-050. Construct Circuits.....	Error! Bookmark not defined.
0732B&CE-051. Measure Properties of Electricity.....	Error! Bookmark not defined.
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 9.11 Construction II	Error! Bookmark not defined.
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0732B&CE-132. Lay paving	Error! Bookmark not defined.
0732B&CE-133. Perform concrete, tiles and mosaic flooring.....	Error! Bookmark not defined.
0732B&CE-134. Perform marble/granite flooring	Error! Bookmark not defined.
0732B&CE-135. Apply water proofing remedial processes	Error! Bookmark not defined.
0732B&CE-136. Apply and install sealants.....	Error! Bookmark not defined.
0732B&CE-137. Perform water proofing works	Error! Bookmark not defined.



0732B&CE-138. Apply water proofing tools and equipment	Error! Bookmark not defined.
0732B&CE-139. Perform water proofing of basements	Error! Bookmark not defined.
0732B&CE-140. Apply water proofing to internal wet areas	Error! Bookmark not defined.
0732B&CE-141. Install Physical termite barriers	Error! Bookmark not defined.
0732B&CE-142. Erect and dismantle slip formwork	Error! Bookmark not defined.
0732B&CE-143. Install trench support	Error! Bookmark not defined.
0732B&CE-144. Construct underpinning	Error! Bookmark not defined.
0732B&CE-145. Carry out reinforced concrete work	Error! Bookmark not defined.
0732B&CE-146. Work safely on roofs	Error! Bookmark not defined.
0732B&CE-147. Install roof components	Error! Bookmark not defined.
0732B&CE-148. Install roof drainage	Error! Bookmark not defined.
0732B&CE-149. Lay roof tiles	Error! Bookmark not defined.
0732B&CE-150. Erect roof trusses	Error! Bookmark not defined.
9.12. Quantity Surveying	<i>Error! Bookmark not defined.</i>
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0732B&CE-154. Produce Annual/Special repair estimates-Building and Road	Error! Bookmark not defined.
0732B&CE-155. Evaluate Earth work for Civil Engineering structures	Error! Bookmark not defined.
0732B&CE-156. Produce detailed estimate of Arterial roads	Error! Bookmark not defined.
0732B&CE-157. Produce material statements	Error! Bookmark not defined.
0732B&CE-158. Analyse Rates of different items of work for building	Error! Bookmark not defined.
0732B&CE-159. Produce of rough cost estimate of water supply scheme	Error! Bookmark not defined.
0732B&CE-160. Produce rough cost estimate of Sewerage scheme	Error! Bookmark not defined.
0732B&CE-161. Evaluate value & standard rent of an existing building	Error! Bookmark not defined.
0732B&CE-162. Produce Detailed Estimate of Culverts	Error! Bookmark not defined.
0732B&CE-163. Produce Detailed Estimate of Bridge	Error! Bookmark not defined.
9.13 Water Supply	<i>Error! Bookmark not defined.</i>
0732B&CE-164. Estimate demand for Water Supply	Error! Bookmark not defined.
0732B&CE-165. Prepare sketches of aqueducts & water pipes	Error! Bookmark not defined.
0732B&CE-166. Draw sketches of intakes	Error! Bookmark not defined.
0732B&CE-167. Plan water treatment (Clarification)	Error! Bookmark not defined.
0732B&CE-168. Plan water treatment (Filtration)	Error! Bookmark not defined.
0732B&CE-169. Plan water distribution system	Error! Bookmark not defined.



9.14. Strength of Materials	<i>Error! Bookmark not defined.</i>
0732B&CE-170. Locate centroid of different sections	<i>Error! Bookmark not defined.</i>
0732B&CE-171. Find out Moment of Inertia of Different Sections	<i>Error! Bookmark not defined.</i>
0732B&CE-172. Produce Shear Force and Bending Moment Diagrams	<i>Error! Bookmark not defined.</i>
0732B&CE-173. Find Hardness of Metals	<i>Error! Bookmark not defined.</i>
0732B&CE-174. Conduct Tensile Strength Test	<i>Error! Bookmark not defined.</i>
9.17 Soft Skills	<i>Error! Bookmark not defined.</i>
0732B&CE175- Develop workplace policy and procedures for sustainability	<i>Error! Bookmark not defined.</i>
0732B&CE176- Manage meetings	<i>Error! Bookmark not defined.</i>
0732B&CE177- Manage recruitment selection and induction processes	<i>Error! Bookmark not defined.</i>
0732B&CE178- Manage personal work priorities and professional development	<i>Error! Bookmark not defined.</i>
0732B&CE179- Manage workforce planning	<i>Error! Bookmark not defined.</i>
0732B&CE180- Undertake project work	<i>Error! Bookmark not defined.</i>
0732B&CE181- Identify and communicate trends in career development	<i>Error! Bookmark not defined.</i>
0732B&CE182- Apply specialist interpersonal and counseling interview skills	<i>Error! Bookmark not defined.</i>
0732B&CE183- Work safely in an office environment	<i>Error! Bookmark not defined.</i>
0732B&CE184- Develop workplace documents	<i>Error! Bookmark not defined.</i>
0732B&CE185- Prepare and implement negotiation	<i>Error! Bookmark not defined.</i>
0732B&CE186- Maintain professionalism in the workplace	<i>Error! Bookmark not defined.</i>
0732B&CE187- Maintain professional development and career professionalism	<i>Error! Bookmark not defined.</i>
0732B&CE188- Organize schedules	<i>Error! Bookmark not defined.</i>
9.16 Construction III	<i>Error! Bookmark not defined.</i>
0732B&CE-189. Erect and dismantle formwork to suspended slabs, columns, beams and walls	<i>Error! Bookmark not defined.</i>
0732B&CE-190. Operate elevated platforms	<i>Error! Bookmark not defined.</i>
0732B&CE-191. Construct, erect and dismantle formwork for stairs and ramps	<i>Error! Bookmark not defined.</i>
0732B&CE-192. Evaluate materials for multi-storey buildings	<i>Error! Bookmark not defined.</i>
0732B&CE-193. Apply structural principles to the construction of large, high rise and complex buildings	<i>Error! Bookmark not defined.</i>
0732B&CE-194. Install fire and smoke containment systems	<i>Error! Bookmark not defined.</i>
0732B&CE-195. Inform clients about thermal performance of residential buildings	<i>Error! Bookmark not defined.</i>
0732B&CE-196. Design air conditioning and ventilation system	<i>Error! Bookmark not defined.</i>
0732B&CE-197. Design acoustic of an auditorium	<i>Error! Bookmark not defined.</i>
0732B&CE-198. Insulate sound insulation products in building	<i>Error! Bookmark not defined.</i>
0732B&CE-199. Install ceiling insulation	<i>Error! Bookmark not defined.</i>
0732B&CE-200. Design an earthquake resistant building	<i>Error! Bookmark not defined.</i>



0732B&CE-201. Coordinate maintenance and repair of buildings	Error! Bookmark not defined.
0732B&CE-202. Assess construction faults in buildings	Error! Bookmark not defined.
0732B&CE-203. Repair and rectify concrete	Error! Bookmark not defined.
0732B&CE-204. Repair wall and floor tiles	Error! Bookmark not defined.
0732B&CE-205. Apply building codes and standards to building projects	Error! Bookmark not defined.
9.17 Concrete Technology	Error! Bookmark not defined.
0732B&CE-206. Test the Properties of Cement	Error! Bookmark not defined.
0732B&CE-207. Find Out Strength of Cement	Error! Bookmark not defined.
0732B&CE-208. Test the Properties of Aggregate	Error! Bookmark not defined.
0732B&CE-209. Test the Properties of Fresh Concrete	Error! Bookmark not defined.
0732B&CE-210. Destructive Tests on Hardened Concrete	Error! Bookmark not defined.
0732B&CE-211. Perform Non-Destructive Tests on Hardened Concrete	Error! Bookmark not defined.
9.18. Advanced Quantity Surveying	Error! Bookmark not defined.
0732B&CE-212. Produce Detailed Estimate of Water Tanks	Error! Bookmark not defined.
0732B&CE-213. Produce Detailed Estimate of Wells	Error! Bookmark not defined.
0732B&CE-214. Produce Detailed Estimate of Steel Structures	Error! Bookmark not defined.
0732B&CE-215. Produce Detailed Estimate of RCC Framed Structure	Error! Bookmark not defined.
0732B&CE-216. Produce Detailed Estimate of Building Services	Error! Bookmark not defined.
0732B&CE-217. Produce Detailed Estimates Using Computer Software -Excel	Error! Bookmark not defined.
0732B&CE-218. Produce Project of Road in AutoCAD Civil 3D software	Error! Bookmark not defined.
9.19. Construction Management	Error! Bookmark not defined.
0732B&CE-219. Produce Pre-Qualification Documents & collect expression of interest	Error! Bookmark not defined.
0732B&CE-220. Set Evaluation Criteria for the assessment	Error! Bookmark not defined.
0732B&CE-221. Produce Tender Documents & Collect Proposals	Error! Bookmark not defined.
0732B&CE-222. Perform Tender Evaluation & Award of Contract	Error! Bookmark not defined.
0732B&CE-223. Perform Post-Award Legal/Contract Requirements and Finance	Error! Bookmark not defined.
0732B&CE-224. Maintain record of Stores	Error! Bookmark not defined.
0732B&CE-225. Perform Variation Orders, Claims and Dispute Adjudication Board	Error! Bookmark not defined.
9.20 Sanitary Engineering	Error! Bookmark not defined.
0732B&CE-226. Design sanitary sewers	Error! Bookmark not defined.
0732B&CE-227. Design storm water sewers	Error! Bookmark not defined.
0732B&CE-228. Layout of sewers	Error! Bookmark not defined.
0732B&CE-229. Prepare sketches of sewer appurtenance	Error! Bookmark not defined.
0732B&CE-230. Construct Sewers	Error! Bookmark not defined.



0732B&CE-231. Maintain Sewers .....	.....Error! Bookmark not defined.
0732B&CE-232. Install Sewage Pumps .....	.....Error! Bookmark not defined.
0732B&CE-233. Produce sketches of sewage treatment plant .....	.....Error! Bookmark not defined.
0732B&CE-234. Dispose sewage .....	.....Error! Bookmark not defined.
9.21. Engineering Mechanics .....	.....Error! Bookmark not defined.
0732B&CE-235. Design Homogeneous Beams .....	.....Error! Bookmark not defined.
0732B&CE-236. Determine deflection of beams .....	.....Error! Bookmark not defined.
0732B&CE-237. Determine Load Carrying Capacity of Columns .....	.....Error! Bookmark not defined.
0732B&CE-238. Evaluate Efficiency of Riveted and Welded Joints .....	.....Error! Bookmark not defined.
0732B&CE-239. Analyze Forces in Truss Members .....	.....Error! Bookmark not defined.
0732B&CE-240. Determine Stability of Retaining Wall .....	.....Error! Bookmark not defined.
d. National Diploma in Civil Technology Level 5 .....	.....Error! Bookmark not defined.
9.22. Transportation Engineering I .....	.....Error! Bookmark not defined.
0732B&CE-241. Develop construction plan of Tunnels .....	.....Error! Bookmark not defined.
0732B&CE-242. Produce sketches of an airport .....	.....Error! Bookmark not defined.
0732B&CE-243. Produce sketches of permanent Way .....	.....Error! Bookmark not defined.
0732B&CE-244. Produce sketches of points and crossings .....	.....Error! Bookmark not defined.
0732B&CE-245. Produce sketches of station yards and signals .....	.....Error! Bookmark not defined.
0732B&CE-246. Produce sketches of harbor .....	.....Error! Bookmark not defined.
9.23. Hydraulics Engineering .....	.....Error! Bookmark not defined.
0732B&CE-247. Determine Hydrostatic pressure .....	.....Error! Bookmark not defined.
0732B&CE-248. Apply Hydro kinematic Principles .....	.....Error! Bookmark not defined.
9.24. Soil Mechanics .....	.....Error! Bookmark not defined.
0732B&CE-249. Determine moisture content and specific gravity of soil .....	.....Error! Bookmark not defined.
0732B&CE-250. Determine Atterberg's Limits .....	.....Error! Bookmark not defined.
0732B&CE-251. Identify Type of Soil .....	.....Error! Bookmark not defined.
0732B&CE-252. Conduct soil compaction tests .....	.....Error! Bookmark not defined.
0732B&CE-253. Determine permeability of soil .....	.....Error! Bookmark not defined.
0732B&CE-254. Investigate shear strength of soil .....	.....Error! Bookmark not defined.
0732B&CE-255. Find out bearing capacity of soil .....	.....Error! Bookmark not defined.



9.25. Bridge EngineeringError! Bookmark not defined.

0732B&CE-256. Produce sketches of bridges w. r. t. functionsError! Bookmark not defined.

0732B&CE-257. Produce sketches of bridges w. r. t. material of constructionError! Bookmark not defined.

0732B&CE-258. Produce sketches of bridges w. r. t. type of super structureError! Bookmark not defined.

0732B&CE-259. Produce sketches of bridges w. r. t. floor typeError! Bookmark not defined.

0732B&CE-260. Produce sketches of culverts, low level and high-level causewayError! Bookmark not defined.

9.26. Environmental TechnologyError! Bookmark not defined.

0732B&CE-261. Determine Water PollutionError! Bookmark not defined.

0732B&CE-262. Evaluate Air PollutionError! Bookmark not defined.

0732B&CE-263. Determine Noise PollutionError! Bookmark not defined.

0732B&CE-264. Evaluate Solid Waste PollutionError! Bookmark not defined.

0732B&CE-265. Adopt occupational health and safetyError! Bookmark not defined.

0732B&CE-266. Respond to Natural DisasterError! Bookmark not defined.

9.27. Construction Project planning and ManagementError! Bookmark not defined.

0732B&CE267- Develop Project Management Life CycleError! Bookmark not defined.

0732B&CE268- Develop Preliminary Project PlanError! Bookmark not defined.

0732B&CE269- Develop Construction Project PlanError! Bookmark not defined.

0732B&CE270- Conduct on-site supervision of construction projectsError! Bookmark not defined.

0732B&CE271- Perform Basic operation in Primavera P6Error! Bookmark not defined.

0732B&CE272- Perform road Project Activities Scheduling in Primavera P6Error! Bookmark not defined.

0732B&CE273- Perform road Project Resources Costing &Planning in Primavera P6Error! Bookmark not defined.

0732B&CE274- Manage construction Project in Primavera P6Error! Bookmark not defined.

0732B&CE275- Identify Project Risk and Consequences on Project life cycleError! Bookmark not defined.

0732B&CE276- Perform Evaluation to assess the severity of Risk and formulate the strategy to manage the riskError! Bookmark not defined.

9.28. Transportation Engineering IIError! Bookmark not defined.

0732B&CE277- Plan Route Alignment of HighwayError! Bookmark not defined.

0732B&CE278- Design Highway GeometricsError! Bookmark not defined.

0732B&CE279- Perform tests on stone metal for pavement constructionError! Bookmark not defined.

0732B&CE280- Perform tests on bitumenError! Bookmark not defined.

0732B&CE281- Prepare drawings of flexible/rigid pavementError! Bookmark not defined.

0732B&CE282- Plan highway drainageError! Bookmark not defined.



0732B&CE283-	Develop maintenance plan for roadsError! Bookmark not defined.
9.29.	Irrigation Engineering.....Error! Bookmark not defined.
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0732B&CE285-	Design Canals.....Error! Bookmark not defined.
0732B&CE286-	Produce sketches of Hydraulic structuresError! Bookmark not defined.
9.30.	R.C.C. Design .....	.....Error! Bookmark not defined.
0732B&CE287-	Design and Draw Reinforcement for Beams .....	.....Error! Bookmark not defined.
0732B&CE288-	Design and Draw Reinforcement for Slabs.....Error! Bookmark not defined.
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0732B&CE290-	Design and Draw Reinforcement for FootingsError! Bookmark not defined.
0732B&CE291-	Design and Draw Reinforcement for StairsError! Bookmark not defined.
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0732B&CE292-	Develop Project for construction of RCC framed Structure Class Room.Error! Bookmark not defined.
Learning Unit.....		.....Error! Bookmark not defined.
0732B&CE293-	Develop Project plan for construction of RCC OHR of 10000-gal (UK) capacity.....	.....Error! Bookmark not defined.
0732B&CE294-	Develop Project plan for construction of Water Supply Scheme .....	.....Error! Bookmark not defined.
0732B&CE295-	Develop Project plan for construction of sewerage scheme .....	.....Error! Bookmark not defined.
0732B&CE296-	Develop Project plan for construction of Highway .....	.....Error! Bookmark not defined.
0732B&CE297-	Develop Project plan for construction of Irrigation Canal .....	.....Error! Bookmark not defined.
9.32.	Entrepreneurial Skills. .....	.....Error! Bookmark not defined.
0732B&CE298-	Investigate micro business opportunities .....	.....Error! Bookmark not defined.
0732B&CE299-	Develop a micro business proposal .....	.....Error! Bookmark not defined.
0732B&CE300-	Develop a marketing plan and business plan.....	.....Error! Bookmark not defined.
0732B&CE301-	Organize finances for the micro business.....	.....Error! Bookmark not defined.
0732B&CE302-	Manage human resources. ....	.....Error! Bookmark not defined.
0732B&CE303-	Market products and services. ....	.....Error! Bookmark not defined.
0732B&CE304-	Monitor and review business performance. ....	.....Error! Bookmark not defined.
0732B&CE305-	Negotiate for resolving business issues.....	.....Error! Bookmark not defined.
9.33	Green Skills.	



National Vocational Certificate Level 3 Assistant Surveyor in Civil Technology



0732B&CE306- Perform Green Skills in Construction

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1. Introduction

Civil engineering is considered as the first discipline of the various branches of engineering after military engineering, and includes the designing, planning, construction, and maintenance of the infrastructure. The works include roads, bridges, buildings, dams, canals, water supply and numerous other facilities that affect the life of human beings. Civil engineering is intimately associated with the private and public sectors, including the individual homeowners and international enterprises. It is one of the oldest engineering professions, and ancient engineering achievements due to civil engineering include the pyramids of Egypt and road systems developed by the Romans.

Civil engineering has a significant role in the life of every human being, though one may not truly sense its importance in our daily routine. The function of civil engineering commences with the start of the day when we take a shower, since the water is delivered through a water supply system including a well-designed network of pipes, water treatment plant and other numerous associated services. The network of roads on which we drive while proceeding to school or work, the huge structural bridges we come across and the tall buildings where we work, all have been designed and constructed by civil engineers. Even the benefits of electricity we use are available to us through the contribution of civil engineers who constructed the towers for the transmission lines. In fact, no sphere of life may be identified that does not include the contribution of civil engineering. Thus, the importance of civil engineering may be determined according to its usefulness in our daily life. Therefore, industry expectations for skilled workforce are also dynamic which can only be managed through setting relevant competency standards in collaboration with the leading industries. Being cognizant of this fact, National Vocational & Technical Training Commission (NAVTC) developed competency standards for Civil Technology under National Vocational Qualifications Framework (NVQF). These competency standards have been developed by a Qualifications Development Committee (QDC) and validated by the Qualifications Validation Committee (QVC) having representation from the leading Construction, Real States & Builder industry of the country.

2. Purpose of the Qualification:

The purpose of this qualifications is to set high professional standards for civil technology sector. The specific objectives of developing these qualifications are as under:

- Improve the professional competence of the trainees
- Provide opportunities for recognition of skills attained through non-formal or informal pathways



- Improve the quality and effectiveness of training and assessment for civil technology industry
- Enable the existing workforce to capacitate themselves in new technologies and methods

3. Overall objectives of training program

The Civil qualification of level 5 consists of both the theoretical and practical details and having the following Occupations

1. Civil Surveyor
2. Draftsman
3. Quantity Surveyor
4. Quantity Surveyor after Draftsman
5. Materials Technician
6. Construction Quality control Supervisor
7. Mason
8. Plumber
9. Domestic Electrician.
10. Site supervisor

4. Entry level of trainees

National Vocational Certificate Level 1 & 2 (Site Assistant in Civil Technology)	Middle
National Vocational Certificate Level 3 (Assistant Surveyor in Civil Technology)	Level 1 & 2
National Vocational Certificate Level 4 (Site Supervisor in Civil Technology)	Level 3
National Diploma in Civil Technology Level 5	Level 4



5. Minimum qualification for teachers

- B. Tech in Civil Technology 4 Years
- B.Sc. / B.E. in Civil Engineering 4 Years
- D. A. E. in Civil Technology with 3 Years teaching experience
- Must be able to communicate effectively

Medium of instruction

English, and Urdu.

6. Duration of the course:

The proposed curriculum is composed of **306 modules** that will be covered in **3600 Learning hours**. Duration of the course is proposed to be Three years. The total weightage for technical modules is 3600 hours. A total of 1200 hours have been reserved for allied subjects i.e. Islamic studies, English, Mathematics, Physics and Chemistry.

The details of technical modules are given as under:

Level 1- 2 = 6 months. (Single Semester)

Level - 3 = 6 months. (Single Semester)

Level - 4 = 1 Year. (Two Semesters)

Level - 5 = 1 Year. (Two Semesters)

The overall distribution of contact hours and Credit Hours is given below:

Total.	3600 hours. & 360 Credits
Theory.	976 hours (27.11 %)
Practical.	2624 hours (72.89 %)



National Vocational Certificate Level 3 Assistant Surveyor in Civil Technology



The distribution of contact hours and credit hours in each level is given below:

Level 1- 2 = 6 months (16 weeks)

Total. 592 hours. & 59.2 Credits
Theory. 128 hours (22 %)
Practical. 464 hours (78 %)

Level - 3 = 6 months (16 weeks)

Total. 608 hours. & 60.8 Credits
Theory. 128 hours (21 %)
Practical. 480 hours (79 %)

Level - 4 = 1 Year (16 weeks + 16 Weeks)

Total. 1200 hours. & 120 Credits
Theory. 240 hours (20 %)
Practical. 960 hours (80 %)

Level - 5 = 1 Year (16 weeks + 16 Weeks)

Total. 1200 hours. & 120 Credits
Theory. 480 hours (40 %)
Practical. 720 hours (60 %)



7. Description and structure of the course

Following is the structure of the course:

(National Vocational Certificate Level 3 Assistant Surveyor in Civil Technology)

Module Code	Competency Standard	Category	Level	Theory	Practical	Total	Credit Hour
	9.06 Advanced Surveying			48	192	240	24
0732B&CE053	Measure Angles by Theodolite	Core	3	4	18	22	2.2
0732B&CE054	Perform Trigonometric Levelling by Theodolite	Core	3	3	9	12	1.2
0732B&CE055	Perform Traversing by Theodolite	Core	3	4	15	19	1.9
0732B&CE056	Set Out Horizontal Curves by Theodolite	Core	3	4	18	22	2.2
0732B&CE057	Set out Vertical Curves by Theodolite	Core	3	3	9	12	1.2
0732B&CE058	Carry out Triangulation by Theodolite	Core	3	3	21	24	2.4
0732B&CE059	Perform Temporary Adjustment of Total Station	Core	3	4	9	13	1.3
0732B&CE060	Measure Distance by Total Station	Core	3	4	12	16	1.6
0732B&CE061	Measure Angles by Total Station	Core	3	4	18	22	2.2
0732B&CE062	Measure Area by Total Station	Core	3	3	18	21	2.1
0732B&CE063	Set out Curves by Total Station	Core	3	4	9	13	1.3
0732B&CE064	Perform Integration of GPS	Core	3	2	6	8	0.8
0732B&CE065	Measure Co-ordinates by GPS	Core	3	2	6	8	0.8
0732B&CE066	Set out Civil Engineering Structures by GPS	Core	3	4	24	28	2.8



	9.07 AutoCAD			32	128	160	16
0732B&CE067	Perform Basic Computer Operations	Core	3	3	6	9	0.9
0732B&CE068	Perform Drafting Settings and Formatting	Core	3	2	6	8	0.8
0732B&CE069	Perform Dimensioning, Lettering & Plotting	Core	3	2	6	8	0.8
0732B&CE070	Develop 2d Drawings of Structures	Core	3	3	15	18	1.8
0732B&CE071	Produce Drawing of Framed Structure Building	Core	3	3	18	21	2.1
0732B&CE072	Develop Sectioning Drawing for foundations	Core	3	3	18	21	2.1
0732B&CE073	Develop Drawings for Doors & Windows	Core	3	2	9	11	1.1
0732B&CE074	Produce Drawings of Stairs and Stair Cases	Core	3	2	9	11	1.1
0732B&CE075	Produce Drawings of Water Tanks	Core	3	3	18	21	2.1
0732B&CE076	Produce Drawings Of Cross Drainage Works	Core	3	2	6	8	0.8
0732B&CE077	Develop 3d Drawings	Core	3	4	6	10	1
0732B&CE078	Produce Civil Technology Drawings	Core	3	3	11	14	1.4
	9.08 Construction I			16	112	128	12.8
0732B&CE079	Perform Simple Levelling	Core	2	0.5	3	3.5	0.35
0732B&CE080	Lay out Building plans	Core	2	0.5	5	5.5	0.55
0732B&CE081	Carryout excavation and install supports	Core	2	1	5	6	0.6
0732B&CE082	Place Concrete in Foundations	Core	2	0.5	3	3.5	0.35
0732B&CE083	Prepare for construction Process (Brick/ block laying)	Core	3	0.5	6	6.5	0.65
0732B&CE084	Mix Cementitious materials (Mortar & Concrete)	Core	3	1	3	4	0.4
0732B&CE085	Install flashing and damp-proof course	Core	3	1	3	4	0.4
0732B&CE086	Carry out brick work	Core	3	0.5	6	6.5	0.65



0732B&CE087	Construct Cavity Wall	Core	3	0.5	6	6.5	0.65
0732B&CE088	Construct Curved Wall	Core	3	1	6	7	0.7
0732B&CE089	Construct Masonry arches (semi-circular and segmental)	Core	3	1	6	7	0.7
0732B&CE090	Construct Scaffolding	Core	3	0.5	6	6.5	0.65
0732B&CE091	Install doors and window frames	Core	3	0.5	6	6.5	0.65
0732B&CE092	Prepare Surface and fix tiles	Core	3	1	3	4	0.4
0732B&CE093	Prepare Surface for Painting	Core	3	0.5	6	6.5	0.65
0732B&CE094	Paint by spray, brush and roller	Core	3	0.5	6	6.5	0.65
0732B&CE095	Apply stains and clear timber finishes	Core	3	0.5	6	6.5	0.65
0732B&CE096	Prepare site layout of civil engineering projects	Core	3	0.5	6	6.5	0.65
0732B&CE097	Construct masonry steps and stairs	Core	3	1	6	7	0.7
0732B&CE098	Install stairs	Core	3	1	9	10	1
0732B&CE099	Prepare for solid dry wall plastering	Core	3	1	3	4	0.4
0732B&CE100	Apply plaster	Core	3	1	3	4	0.4
	9.09 Plumbing			16	32	48	4.8
0732B&CE101	Identify plumbing tools & equipment	Core	3	4	2	6	0.6
0732B&CE102	Perform cutting, threading & reaming	Core	3	2	4	6	0.6
0732B&CE103	Make water connection	Core	3	1	4	5	0.5
0732B&CE104	Layout for domestic water supply	Core	3	1	4	5	0.5
0732B&CE105	Join pipes & fittings	Core	3	3	5	8	0.8
0732B&CE106	Install plumbing fixtures	Core	3	2	4	6	0.6
0732B&CE107	Install & repair water pumps	Core	3	1	4	5	0.5



0732B&CE108	Install turbine pumps	Core	3	2	5	7	0.7
	9.10 Digital Skills	32		16	16	32	3.2
0732B&CE109	Install computer operating systems and hardware	Generic	3	1	1	2	0.2
0732B&CE110	Operate digital media technology	Generic	3	0.5	0.5	1	0.1
0732B&CE111	Perform computer operations	Generic	3	1	1	2	0.2
0732B&CE112	Use computer applications	Generic	3	0.5	0.5	1	0.1
0732B&CE113	Create user documentation	Generic	3	0.5	0.5	1	0.1
0732B&CE114	Create technical documentation	Generic	3	0.5	0.5	1	0.1
0732B&CE115	Create basic databases	Generic	3	0.5	0.5	1	0.1
0732B&CE116	Use social media tools for collaboration and engagement	Generic	3	1	1	2	0.2
0732B&CE117	E-Commerce- SEO (Search Engine Optimization)	Generic	3	0.5	0.5	1	0.1
0732B&CE118	E-Commerce- SCM (Supply Chain Management)	Generic	3	0.5	0.5	1	0.1
0732B&CE119	E-Commerce- Social Media Marketing	Generic	3	0.5	0.5	1	0.1
0732B&CE120	Use digital devices	Generic	3	1	1	2	0.2
0732B&CE121	Operate word-processing applications	Generic	3	1	1	2	0.2
0732B&CE122	Operate spreadsheet applications	Generic	3	1	1	2	0.2
0732B&CE123	Operate presentation packages	Generic	3	1	1	2	0.2
0732B&CE124	Perform writing and editing tasks	Generic	3	1	1	2	0.2
0732B&CE125	Write and Edit Copy	Generic	3	0.5	0.5	1	0.1
0732B&CE126	Build Java applets	Generic	3	0.5	0.5	1	0.1
0732B&CE127	Manipulate Images (Illustrator)	Generic	3	0.5	0.5	1	0.1
0732B&CE128	Manipulate Images (Photoshop)	Generic	3	0.5	0.5	1	0.1



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0732B&CE129	Design simple web page layouts	Generic	3	1	1	2	0.2
0732B&CE130	Apply introductory programming techniques	Generic	3	1	1	2	0.2



8. Scheme of Studies.

(National Vocational Certificate Level 3 Assistant Surveyor in Civil Technology)

Code	Name of Subjects	Category	Numbers of Module	Contact Hour			Credit	Periods per week		
				Th	Pr	Total		Th	Pr	Total
000000000	Advanced Surveying	Technical	14	48	192	240	24	3	12	15
000000000	AutoCAD	Technical	18	32	128	160	16	2	8	10
000000000	Construction Techniques I	Technical	22	16	112	128	12.8	1	7	8
000000000	Plumbing	Technical	08	16	32	48	4.8	1	2	3
000000000	Digital Skills	Technical	22	16	16	32	3.2	1	1	2
000000000		Allied								
000000000		Allied								
Total			78	128	480	608	60.8	8	30	38

9. Detail of Modules Level wise

a. National Vocational Certificate Level 3 Assistant Surveyor in Civil Technology

9.6. Advanced Surveying

0732B&CE-053: Measure Angles by Theodolite

Objective: This module covers the knowledge and skills required to perform angle measurement of different angles by Theodolite with its basic components. It also covers the knowledge by using Theodolite Surveying.



Duration: 22 Hours

Theory: 04 Hours

Practice: 18 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Adjust theodolite temporarily on a station point	Trainee will be able to: <ul style="list-style-type: none">Identify the EquipmentSet Theodolite on tripod at station pointPerform centering and levelling on station point	<ul style="list-style-type: none">TheodoliteTypes of theodolitesTerms; centering, transiting, face left, Face right, swinging the telescope, axis of level tube, horizontal & vertical axisProcedure of temporary adjustment of a theodolite <p>Practical Activity</p> <ul style="list-style-type: none">Adjust theodolite temporarily on a station point	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpenerRulerPegs <p>T&E</p> <ul style="list-style-type: none">CalculatorMeasuring steel TapeRanging rodsDigital TheodoliteTripodHammerThread	Class Room and Survey Field
LU2. Measure Horizontal Angle by Repetition Method	Trainee will be able to: <ul style="list-style-type: none">Adjust theodolite on station point OSet angle to $0^{\circ}0'0''$ at given point ARecord reading of angle at point B as angle AOB	<ul style="list-style-type: none">Procedure of measuring horizontal angles by repetition method. <p>Practical Activity</p> <ul style="list-style-type: none">Measure Horizontal Angle by Repetition Method	Theory-01 Hrs Practice-06 Hrs Total- 07 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerRulerPegs <p>T&E</p> <ul style="list-style-type: none">CalculatorMeasuring steel TapeRanging rods	Class Room and Survey Field



	<ul style="list-style-type: none">Repeat angle measurement three times for each faceCalculate mean of the readings			<ul style="list-style-type: none">Digital TheodoliteTripodHammerThread	
LU3. Measure Horizontal Angle by Reiteration Method	Trainee will be able to: <ul style="list-style-type: none">Adjust theodolite on station point OSet angle to $0^{\circ}0'0''$ at given point A<ul style="list-style-type: none">Bisect the second point B, C and D to record angle readings between AOB, BOC and CODClose the horizon by bisecting the D to A to check if angle is 360Adjust error according to standardRepeat the procedure by changing face	<ul style="list-style-type: none">Procedure of measuring horizontal angles by reiteration method. <p>Practical Activity</p> <ul style="list-style-type: none">Measure Horizontal Angle by Repetition Method	<p>Theory-01 Hrs</p> <p>Practice-06 Hrs</p> <p>Total- 07 Hrs</p>	<ul style="list-style-type: none">PencilEraserField BookSharpenerRulerPegs <p>T&E</p> <ul style="list-style-type: none">CalculatorMeasuring steel TapeRanging rodsDigital TheodoliteTripodHammerThread	Class Room and Survey Field
LU4. Measure Vertical Angle	Trainee will be able to <ul style="list-style-type: none">Adjust theodolite on station	<ul style="list-style-type: none">Procedure of measuring vertical angles. <p>Practical Activity</p>	<p>Theory-01 Hrs</p> <p>Practice-03 Hrs</p> <p>Total- 04 Hrs</p>	<ul style="list-style-type: none">PencilEraserField BookSharpnerRuler	Class Room and



	<ul style="list-style-type: none">• Set theodolite for vertical angle measurement• Record vertical angle by sighting the object• Take 2 more readings for mean	<ul style="list-style-type: none">• Measure Vertical Angle		<ul style="list-style-type: none">• PegsT&E• Calculator• Measuring steel Tape• Ranging rods• Digital Theodolite• Tripod• Hammer	Survey Field
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0732B&CE-054: Perform Trigonometric Levelling by Theodolite

Objective: This module covers the knowledge and skills required to perform process of determining the differences of elevations of stations from observed vertical angles and known distances. The vertical angles are measured by means of theodolite. Measurements are to be carried out in two or sometimes three stages. The said levelling is to be done by Theodolite.

Duration: 12 Hours

Theory: 03 Hours

Practice: 09 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Carryout Trigonometric Levelling (base is accessible of point)	Trainee will be able to: <ul style="list-style-type: none">Adjust theodolite on a station point from where altitude point is accessibleSet theodolite for vertical angle measurementTake reading on bench markRecord vertical angle of point to whom elevation is to be determinedMeasure horizontal distance from the station to the pointCalculate elevation of point by trigonometry	<ul style="list-style-type: none">Trigonometric levellingMethod of determining elevation of accessible point <p>Practical Activity</p> <ul style="list-style-type: none">Find out height of a building or tower	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	<p>T&E</p> <ul style="list-style-type: none">PencilEraserField BookSharpnerRulerPegs <ul style="list-style-type: none">CalculatorMeasuring steel TapeRanging rodsDigital TheodoliteTripodHammer	Class Room and Survey Field



LU2. Carryout Trigonometric Levelling (base is inaccessible of point)	Trainee will be able to: <ul style="list-style-type: none">Mark two station points in a line<ul style="list-style-type: none">Adjust theodolite on a station point closer to point of observationSet theodolite for vertical angle measurement<ul style="list-style-type: none">Record vertical angle from closer station pointAdjust theodolite on second station point which is farther from point but in line of first station pointRecord vertical angle from second station pointMeasure distance between station pointsCalculate elevation of point by trigonometry	<ul style="list-style-type: none">Method of determining elevation of inaccessible point Practical Activity <ul style="list-style-type: none">Find out height of a inaccessible point	Theory-02 Hrs Practice-06 Hrs Total- 08 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerRulerPegs T&E <ul style="list-style-type: none">CalculatorMeasuring steel TapeRanging rodsDigital TheodoliteTripodHammer	Class Room and Survey Field
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0732B&CE-055: Perform Traversing by Theodolite

Objective: This module covers the knowledge and skills required to perform **Traverse** in the field of surveying to establish control networks. It is also used in geodesy. **Traverse** networks involve placing survey stations along a line or path of travel, and then using the previously surveyed points as a base for observing the next point.

Duration: 19 Hours

Theory: 04 Hours

Practice: 15 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Perform traversing of an area (by Digital theodolite)	<p>Trainee will be able to:</p> <ul style="list-style-type: none">Mark station points which would cover areaRecord bearing of first line by prismatic compassAdjust theodolite on first station pointRecord horizontal internal or external angle between lines originating from first station pointShift theodolite to the next stationsRecord horizontal internal or external angle between lines	<ul style="list-style-type: none">Traverse & its typesMethods of traversingStandards of accuracy of traversingCheck of open & closed traverseCalculation of angles from given bearings and vice versa <p>Practical Activity</p> <ul style="list-style-type: none">Perform traversing of an area	Theory-02 Hrs Practice-09 Hrs Total-11 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpenerRulerPegs <p>T&E</p> <ul style="list-style-type: none">CalculatorMeasuring steel TapeRanging rodsDigital TheodoliteTripodCompassHammerThread	Class Room and Survey Field



	<ul style="list-style-type: none">• Measure the distances between the station points• Compile the data				
LU2. Plot traverse of the area (by Gale's traverse table)	Trainee will be able to: <ul style="list-style-type: none">• Compile the data in Gale's Table• Apply necessary corrections• Calculate co-ordinates• Convert the dependent co-ordinates into independent co-ordinates• Calculate the area• Plot the traverse	<ul style="list-style-type: none">• Introduction to coordinates, types and technical terms.• Computation of co-ordinates and computation of missing data associated with theodolites traversing• Balancing the traverse by different methods• Plotting & graphical adjustment of closing error <p>Practical Activity</p> <ul style="list-style-type: none">• Plot traverse of area (by Gale's traverse table)	Theory-02 Hrs Practice-06 Hrs Total- 08 Hrs	<ul style="list-style-type: none">• Pencil• Eraser• Drawing sheet• Sharpener• Ruler• T- Scale• Protractor• Compass• Drafting Triangles T&E <ul style="list-style-type: none">• Drawing Table	Class Room and Drawing Hall



0732B&CE-056: Set Out Horizontal Curves by Theodolite

Objective: This module covers the knowledge and skills required to set Horizontal Curves of the two important transition elements in geometric design for highways. A horizontal curve provides a transition between two tangent strips of roadway, allowing a vehicle to negotiate a turn at a gradual rate rather than a sharp cut.

Duration: 22 Hours

Theory: 04 Hours

Practice: 18 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Set out Horizontal Curve by Taking offsets from Long Chord	Trainee will be able to: <ul style="list-style-type: none">Compute and compile data for setting out curveMark station points for setting out curve with help of theodoliteMark tangent lines and long chordLocate points of curve by taking normal offsets from long chordLay curve by lime	<ul style="list-style-type: none">Definition, types and necessity of curvesDesignation of curvesElements and notation of simple circular curves & their relationshipCalculation of data & method of setting out simple circular curve by Taking offsets from Long Chord <p>Practical Activity</p> <ul style="list-style-type: none">Set out simple circular curve by Taking offsets from Long Chord	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerRulerPegsLime T&E <ul style="list-style-type: none">CalculatorMeasuring steel TapeRanging rodsDigital TheodoliteTripodHammer	Class Room and Survey Field
LU2. Set out Horizontal Curve by	Trainee will be able to: <ul style="list-style-type: none">Compute and compile data for setting out curve	<ul style="list-style-type: none">Setting out simple curve beyond obstaclesCalculation of data & method of setting out simple circular curve by	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerRuler	Class Room and



Taking offsets from Tangent	<ul style="list-style-type: none">• Mark station points for setting out curve with help of theodolite• Mark tangent lines and long chord• Locate points of curve by taking normal offsets from tangent• Locate points of curve by taking radial offsets from tangent• Lay curve by lime	<p>Taking offsets from Tangent</p> <p>Practical Activity</p> <ul style="list-style-type: none">• Set out simple circular curve by taking offsets from tangent		<ul style="list-style-type: none">• Pegs• Lime <p>T&E</p> <ul style="list-style-type: none">• Calculator• Measuring steel Tape• Ranging rods• Digital Theodolite• Tripod• Hammer	Survey Field
LU3. Set out Horizontal Curve by deflection angle method	<p>Trainee will be able to:</p> <ul style="list-style-type: none">• Compute and compile data for setting out curve• Adjust the theodolite on first tangent point T₁• Locate second tangent point T₂• Set the half deflection angle at point T₁ and mark the intersection point• Set angle 0° 0' 0" by bisecting the intersection point• Set the angle for 1st chord	<ul style="list-style-type: none">• Calculation of data & method of setting out simple circular curve by deflection angle <p>Practical Activity</p> <ul style="list-style-type: none">• Set out simple circular curve by deflection angle method	<p>Theory-01 Hrs</p> <p>Practice-06 Hrs</p> <p>Total- 07 Hrs</p>	<ul style="list-style-type: none">• Pencil• Eraser• Field Book• Sharpner• Ruler• Pegs• Lime <p>T&E</p> <ul style="list-style-type: none">• Calculator• Measuring steel Tape• Ranging rods• Digital Theodolite• Tripod• Hammer	Class Room and Survey Field



	<ul style="list-style-type: none">• Fix peg on the point• Set all the angles• Set chord of curve• Lay curve by lime				
LU4. Set out transition curve in the field	<p>Trainee will be able to:</p> <ul style="list-style-type: none">• Compute and compile data for setting out curve<ul style="list-style-type: none">• Set two points T1, T2 at shift of curve• Erect pole in direction of B from T1 and T2• Start setting out from T1• Start setting out from T2• Set out circular arc• Lay curve by lime	<ul style="list-style-type: none">• Description, types and necessity of transition curves. Characteristics, elements & notation of transition curve and their inter relationship• Introduction to super elevation and methods of calculation length of transition curve with numerical problems• Calculation of data and methods of setting out of transition curve <p>Practical Activity</p> <ul style="list-style-type: none">• Set out transit curve	<p>Theory-01 Hrs Practice-06 Hrs Total- 07 Hrs</p>	<ul style="list-style-type: none">• Pencil• Eraser• Field Book• Sharpner• Ruler• Pegs• Lime <p>T&E</p> <ul style="list-style-type: none">• Calculator• Measuring steel Tape• Ranging rods• Digital Theodolite• Tripod• Hammer	<p>Class Room and Survey Field</p>



0732B&CE-057: Set Out Vertical Curves by Theodolite

Objective: This module covers the knowledge and skills required to perform Vertical Curves of the two important transition elements in geometric design for highways. A vertical curve provides a transition between two sloped roadways, allowing a vehicle to negotiate the elevation rate change at a gradual rate rather than a sharp cut.

Duration: 12 Hours

Theory: 03 Hours

Practice: 09 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Interpret to set out vertical curve	Trainee will be able to: <ul style="list-style-type: none">Compute and compile data for setting out curveIdentify gradients and rate of change of gradientLocate point of intersectionCalculate length of vertical curveCalculate tangent correctionsFind out levels of curveDraw vertical curve	<ul style="list-style-type: none">Explain vertical curvesIntroduction to vertical curves,Types of vertical curves, elements, terms and their inter relationship.Calculation of data and Setting out vertical curves <p>Practical Activity</p> <ul style="list-style-type: none">Prepare data of vertical curve and draw it.	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	<ul style="list-style-type: none">PencilEraserDrawing sheetSharpnerRulerT- ScaleProtractorCompassDrafting Triangles <p>T&E</p> <ul style="list-style-type: none">Drawing Table	Class Room and Drawing Hall
LU2. Set out Vertical Curve in the field	Trainee will be able to: <ul style="list-style-type: none">Set the theodolite on first tangent point T_1Locate second tangent point T_2	<ul style="list-style-type: none">Various steps in setting out vertical curves <p>Practical Activity</p> <ul style="list-style-type: none">Prepare data of vertical curve and draw it.	Theory-02 Hrs Practice-06 Hrs Total- 08 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerRulerPegsScotch tape	Class Room and Survey Field



	<ul style="list-style-type: none">• Fix the poles at intermediate points• Perform leveling to find NSL• Mark the point on pole by using the difference in NSL			<p>T&E</p> <ul style="list-style-type: none">• Permanent Marker• Calculator• Measuring steel Tape• Digital Theodolite• Tripod• Prism• Hammer• Thread• Hammer	
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0732B&CE-058: Carry Out Triangulation by Theodolite

Objective: This module covers the knowledge and skills required to perform series or network of triangles in order to determine the distances and relative positions of points spread over an area, especially by measuring the length of one side of each triangle and deducing its angles and the length of the other two sides by observation from this baseline.

Duration: 24 Hours

Theory: 03 Hours

Practice: 21 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Mark station points by dividing the area by triangles	Trainee will be able to: <ul style="list-style-type: none">• Reconnaissance area• Mark stations covering the area• Divide the area in triangles• Fix a base line acceding to standards	<ul style="list-style-type: none">• Introduction & types of triangulation.• Well condition and ill condition in Triangulation• Selection of station points <p>Practical Activity</p> <ul style="list-style-type: none">• Mark station points by dividing the area by triangles	Theory-0.5 Hrs Practice-03 Hrs Total- 3.5 Hrs	<p>T&E</p> <ul style="list-style-type: none">• Pencil• Eraser• Field Book• Sharpner• Ruler• Pegs <p>T&E</p> <ul style="list-style-type: none">• Calculator• Measuring steel Tape• Ranging rods• Digital Theodolite• Tripod• Hammer	Class Room and Survey Field
LU2. Measure the base line	Trainee will be able to: <ul style="list-style-type: none">• Identify equipment• Measure the base line• Apply corrections	<ul style="list-style-type: none">• Measurement of base line• Correction of base line measurement <p>Practical Activity</p> <ul style="list-style-type: none">• Measure base line	Theory-01 Hrs Practice-06 Hrs Total- 07 Hrs	<p>T&E</p> <ul style="list-style-type: none">• Pencil• Eraser• Field Book• Sharpner• Ruler• Pegs <p>T&E</p> <ul style="list-style-type: none">• Calculator• Measuring steel Tape• Ranging rods• Digital Theodolite• Tripod• Hammer	Class Room and Survey Field



				<ul style="list-style-type: none">• Calculator• Measuring steel Tape• Ranging rods• Tripod• Thermometer• Spring Balance• Hammer	
LU3. Measure the angles for triangulation	Trainee will be able to: <ul style="list-style-type: none">• Identify equipment• Fix theodolite on a station point• Measure the angles• Shift the instrument on next station point• Measure all the required angles	<ul style="list-style-type: none">• Measurement procedure of horizontal angles <p>Practical Activity</p> <ul style="list-style-type: none">• Measure angles for triangulation	<p>Theory-01 Hrs</p> <p>Practice-09 Hrs</p> <p>Total- 10 Hrs</p>	<ul style="list-style-type: none">• Pencil• Eraser• Field Book• Sharpner• Ruler• Pegs <p>T&E</p> <ul style="list-style-type: none">• Calculator• Measuring steel Tape• Ranging rods• Digital Theodolite• Tripod• Hammer	Class Room and Survey Field
LU4. Calculate the area	Trainee will be able to <ul style="list-style-type: none">• Compile data obtained from survey• Calculate missing data• Apply formula• Calculate the area	<ul style="list-style-type: none">• Methods to solve Triangles• Sine rule and its application in triangulation <p>Practical Activity</p> <ul style="list-style-type: none">• Calculate area of triangulation	<p>Theory-0.5 Hrs</p> <p>Practice-03 Hrs</p> <p>Total- 3.5 Hrs</p>	<ul style="list-style-type: none">• Pencil• Eraser• Field Book• Sharpner• Ruler	Class Room



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0732B&CE-059: Perform Temporary Adjustment of Total Station

Objective: This module covers the knowledge and skills required to Temporary adjustment of total station on a station point. It is set of operations which are performed on a total station to make it ready for taking observations. These include its initial setting up on a tripod or other stand, centering, levelling up and focusing of eyepiece.

Duration: 13 Hours

Theory: 04 Hours

Practice: 09 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Adjust temporarily total station on a given point	Trainee will be able to: <ul style="list-style-type: none">Identify the equipmentUnfold tripodPerform centering of total station at station pointPerform leveling of total stationAdjust foot screws & center the bubbleFocus the telescope	<ul style="list-style-type: none">Introduction, types, main parts and accessories of Total StationsProcedure of temporary adjustment of total station <p>Practical Activity</p> <ul style="list-style-type: none">Perform temporary adjustment of total station on a given point	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerRulerPegs <p>T&E</p> <ul style="list-style-type: none">CalculatorMeasuring steel TapeRanging rodsTotal StationTripodHammer	Class Room and Survey Field
LU2. Set the Total station Electronically	Trainee will be able to: <ul style="list-style-type: none">Set instrument on station point	<ul style="list-style-type: none">Functions and modes of a Total Station	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerRuler	Class Room and



	<ul style="list-style-type: none">• Fix battery• Turn on instrument• Show opening screen as "MEAS" screen.• Adjust foot screw• Rotate instrument 90 degree• Repeat method and check	<ul style="list-style-type: none">• Setting of parameters, tilt correction and preparation for observations/ operations <p>Practical Activity</p> <ul style="list-style-type: none">• Perform temporary adjustment of total station on a given point		<ul style="list-style-type: none">• PegsT&E• Calculator• Measuring steel Tape• Total Station• Tripod• Prism• Hammer	Survey Field
LU3. Set co-ordinates of occupied station	Trainee will be able to: <ul style="list-style-type: none">• Set instrument on station point• Turn on instrument• Select co-ordinate menu• Input co-ordinates.• Check Result	<ul style="list-style-type: none">• Co-ordinates• Setting and calculation co-ordinate value of occupied station, setting height of instrument & height of reflector <p>Practical Activity</p> <ul style="list-style-type: none">• Set co-ordinates of occupied station	Theory-02 Hrs Practice-03 Hrs Total- 05 Hrs	<ul style="list-style-type: none">• Pencil• Eraser• Field Book• Sharpner• Ruler• PegsT&E• Calculator• Measuring steel Tape• Total Station• Tripod• Prism• Hammer	Class Room and Survey Field



0732B&CE-060: Measure Distance by Total Station

Objective: This module covers the knowledge and skills required to identify the taken measurement horizontal, vertical and inclined by Total Station with its components.

Duration: 16 Hours

Theory: 04 Hours

Practice: 12 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Measure distance by Total Station (Horizontal & Vertical)	Trainee will be able to: <ul style="list-style-type: none">Set up total station on station point & install batteryShow opening screen at measuring modeInput the co-ordinates of the station pointSet the prism on the required pointRecord readingsRecheck distance by steel tape	<ul style="list-style-type: none">Methods of measurement of horizontal and vertical distances <p>Practical Activity</p> <ul style="list-style-type: none">Practice to measure distance by Total Station (Horizontal & Vertical)	Theory-02 Hrs Practice-03 Hrs Total- 05 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerRulerPegs <p>T&E</p> <ul style="list-style-type: none">CalculatorMeasuring steel TapeTotal StationTripodPrismHammer	Class Room and Survey Field
LU2. Measure distance by Total Station (Inclined Distance)	Trainee will be able to: <ul style="list-style-type: none">Set up total station on station point & install batteryShow opening screen at inclined measurementSet the prism on the required point	<ul style="list-style-type: none">Methods of measurement of inclined distance <p>Practical Activity</p> <ul style="list-style-type: none">Practice to measure distance by Total Station (Inclined Distance)	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerRulerPegs <p>T&E</p> <ul style="list-style-type: none">Calculator	Class Room and Survey Field



	<ul style="list-style-type: none">• Adjust Total station toward Prism• Record readings on screen• Recheck distance by invar tape		<ul style="list-style-type: none">• Measuring steel Tape• Total Station• Tripod• Prism• Hammer	
LU3. Stack out different point at various distances on a line	Trainee will be able to: <ul style="list-style-type: none">• Set up total station on station point• Select stack out menu• Select the method to stake out the point• Select "XY" to stake out by coordinates• Use the keypad to enter the coordinates or distances	<ul style="list-style-type: none">• Methods to stack out different point at various distances on a line <p>Practical Activity</p> <ul style="list-style-type: none">• Practice to stack out different point at various distances on a line	<p>Theory-01 Hrs</p> <p>Practice-06 Hrs</p> <p>Total- 07 Hrs</p>	<ul style="list-style-type: none">• Pencil• Eraser• Field Book• Sharpner• Ruler• Pegs <p>T&E</p> <ul style="list-style-type: none">• Calculator• Measuring steel Tape• Total Station• Tripod• Prism• Hammer <p>Class Room and Survey Field</p>



0732B&CE-061: Measure Angles by Total Station

Objective: This module covers the knowledge and skills required to identify the Total station with its components and function. It also cover the Kinematics techniques for using Total Station in the field along with its safety precautions.

Duration: 22 Hours

Theory: 04 Hours

Practice: 18 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Measure horizontal angles by Total Station	Trainee will be able to: <ul style="list-style-type: none">Identify station pointsSet total station on intermediate station pointFix ranging rod on the first pointFix ranging rod on the other pointSight first pointSet $0^{\circ} - 0' - 0''$ on total station for horizontal angleSight the other pointRecord the measurementRepeat by changing face	<ul style="list-style-type: none">Methods of measuring horizontal angles, bearings and co-ordinates by total station. <p>Practical Activity</p> <ul style="list-style-type: none">Practice to measure horizontal angle by repetition method with total station	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerRulerPegs <p>T&E</p> <ul style="list-style-type: none">CalculatorMeasuring steel TapeDigital TheodoliteTripodPrismHammerThread	Class Room and Survey Field
LU2. Measure vertical angles by Total Station	Trainee will be able to: <ul style="list-style-type: none">Select the station pointSet total station on station point	<ul style="list-style-type: none">Methods of measuring vertical angles <p>Practical Activity</p>	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerRuler	Class Room and



	<ul style="list-style-type: none">• Sight the first point• Set 0°-0'-0" on total station for vertical angle• Sight the prism• Record measurement for vertical angle• Set percentage for Angle	<ul style="list-style-type: none">• Practice to measure vertical angle with total station		<ul style="list-style-type: none">• PegsT&E• Calculator• Measuring steel Tape• Digital Theodolite• Tripod• Prism• Hammer	Survey Field
LU3. Measure the height of an object with total station by using REM	Trainee will be able to: <ul style="list-style-type: none">• Set up total station on station point• Place the mirror target on the ground at the corner of the building• Record the mirror target height from the range pole scale• Set target height by setting target height• Lock position with horizontal and vertical clamps• Take observation using REM menu• Unlock the vertical clamp and sight in the top of the building corner• Re-lock vertical clamp• Record height BY using REM	<ul style="list-style-type: none">• Procedure to measure the height of an object with total station by using REM <p>Practical Activity</p> <ul style="list-style-type: none">• Practice to measure the height of an object with total station by using REM	Theory-01 Hrs Practice-06 Hrs Total- 07 Hrs	<ul style="list-style-type: none">• Pencil• Eraser• Field Book• Sharpner• Ruler• PegsT&E• Calculator• Measuring steel Tape• Digital Theodolite• Tripod• Prism• Hammer	Class Room and Survey Field



LU4. Measure the distance between different station points with the help of occupied point (MLM) by using measure data or by using coordinate data	Trainee will be able to <ul style="list-style-type: none">• Set up total station on station point• Place the mirror on reference point• Measure the reference point• Aim at the first target point• Measure the target point• Aim at the second target point• Measure the second target point• Record results	<ul style="list-style-type: none">• Method of measuring the distance between different station points with the help of occupied point (MLM) by using measure data or by using coordinate data <p>Practical Activity</p> <ul style="list-style-type: none">• Practice to measure the height of an object with total station by using REM	Theory-01 Hrs Practice-06 Hrs Total- 07 Hrs	<ul style="list-style-type: none">• Pencil• Eraser• Field Book• Sharpner• Ruler• Pegs <p>T&E</p> <ul style="list-style-type: none">• Calculator• Measuring steel Tape• Digital Theodolite• Tripod• Prism• Hammer	Class Room and Survey Field
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0732B&CE-062: Measure Area by Total Station

Objective: This module covers the knowledge and skills required to adjust total station on a station point temporarily and to find out the area of plots and transfer data into computer by networking method.

Duration: 21 Hours

Theory: 03 Hours

Practice: 18 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Measure the area of a traverse by direct field observations	Trainee will be able to: <ul style="list-style-type: none">Set up total station on station pointCreate a file name using file managementEnter instrument height and prism code after setting zero against point number or nameMeasure first point and save itTurn the total station to second pointRepeat the steps to the rest of the stationsCalculate area by using functions of total station	<ul style="list-style-type: none">Method to measure the area of a traverse by direct field observations. <p>Practical Activity</p> <ul style="list-style-type: none">Practice to measure the area of a traverse by direct field observations.	Theory-1.5 Hrs Practice-09 Hrs Total- 10.5 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerRulerPegs <p>T&E</p> <ul style="list-style-type: none">CalculatorMeasuring steel TapeDigital TheodoliteTripodPrismHammer	Class Room and Survey Field
LU2. Measure area for rectangular Plot	Trainee will be able to: <ul style="list-style-type: none">Set up the total stationTurn on total station	<ul style="list-style-type: none">Method to measure the area of a rectangular plot by direct field observations.	Theory-1.5 Hrs Practice-09 Hrs Total- 10.5 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpner	Class Room and



	<ul style="list-style-type: none">• Position the horizontal circle.• Select boundary points• Apply area command• Show Area• Recheck Mathematically	Practical Activity <ul style="list-style-type: none">• Practice to measure the area of a traverse by direct field observations.		<ul style="list-style-type: none">• Ruler• Pegs <p>T&E</p> <ul style="list-style-type: none">• Calculator• Measuring steel Tape• Digital Theodolite• Tripod• Prism• Hammer• 	Survey Field
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0732B&CE-063: Set Out Curves by Total Station

Objective: This module covers the knowledge and skills required to adjust total station on a station point temporarily and to lay the curves with its different methods in Railway and Roads. It also helps to transfer data into PC.

Duration: 13 Hours

Theory: 04 Hours

Practice: 09 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Set horizontal curve by Total Station (by Coordinates)	Trainee will be able to: <ul style="list-style-type: none">Compute and compile data for setting out curveLocate station points by total stationAdjust total station on a station pointLocate points of curveLay curve by lime	<ul style="list-style-type: none">Co-ordinatesSetting and calculation co-ordinate value of occupied station, setting height of instrument & height of reflectorStack out method of total station <p>Practical Activity</p> <ul style="list-style-type: none">Set out horizontal curve by total station (by coordinates)	Theory-02 Hrs Practice-06 Hrs Total- 08 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerRulerPegsLime <p>T&E</p> <ul style="list-style-type: none">CalculatorMeasuring steel TapeTotal StationTripodPrismHammerThread	Class Room and Survey Field
LU2. Set Vertical curve by Total Station	Trainee will be able to: <ul style="list-style-type: none">Compute and compile data for setting out curveLocate station points by total station	<ul style="list-style-type: none">Co-ordinatesSetting and calculation co-ordinate value of occupied station, setting height of instrument & height of reflector	Theory-02 Hrs Practice-03 Hrs Total- 05 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerRulerPegsScoth tape	Class Room and Survey Field



	<ul style="list-style-type: none">• Adjust total station on a station point• Locate points of curve<ul style="list-style-type: none">• Mark points of curve on poles	Practical Activity <ul style="list-style-type: none">• Set out vertical curve by total station		<ul style="list-style-type: none">• Permanent Marker <p>T&E</p> <ul style="list-style-type: none">• Calculator• Measuring steel Tape• Digital Theodolite• Tripod• Prism• Hammer• Thread	
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0732B&CE-064: Perform Integration of GPS

Objective: This module covers the knowledge and skills required to Identify the parts of GPS, Identify modes/functions of GPS, traverse the area by static techniques, traverse the area by Stop & Go techniques and traverse the area by Real Time Kinematics techniques. Its also cover a unique position of a specific feature. With this information, one can navigate back to it. However, one cannot relate this “feature position” to any other “feature position” unless one is standing at the site and other features are visible.

Duration: 08 Hours

Theory: 02 Hours

Practice: 06 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Identify parts of GPS	Trainee will be able to: <ul style="list-style-type: none">Identify GPSIdentify type of GPSIdentify parts of GPSInstall battery to GPS	<ul style="list-style-type: none">Introduction to GPS & its types.Working of GPSProcess of Data in GPS Practical Activity <ul style="list-style-type: none">Identify parts of GPS	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerT&EHandheld GPS	Class Room and Survey Lab
LU2. Identify modes / functions of GPS	Trainee will be able to: <ul style="list-style-type: none">Identify modes of GPSIndicate functions of GPSIdentify parameters of GPSIdentify sources of Errors in GPS	<ul style="list-style-type: none">Functions and modes of GPS.Setting parameters Practical Activity <ul style="list-style-type: none">Prepare GPS for operation	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerT&EHandheld GPS	Class Room and Survey Lab



0732B&CE-065: Measure Co-ordinates by GPS

Objective: This module covers the knowledge and skills required to draw Co-ordinates by GPS on given station point. It also helps to transfer data into PC.

Duration: 08 Hours

Theory: 02 Hours

Practice: 06 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Set out co-ordinates by GPS	Trainee will be able to: <ul style="list-style-type: none">Set out GPSTurn ON GPSFind your co-ordinatesTap cross hair iconHold the blue dotNote co-ordinate location	<ul style="list-style-type: none">CoordinatesLocation of Pakistan in coordinatesMethod to input coordinates by GPS <p>Practical Activity</p> <ul style="list-style-type: none">Set out coordinates of a station point by GPS	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerPegs <p>T&E</p> <ul style="list-style-type: none">Handheld GPSHammers	Class Room and Survey Field
LU2. Set coordinates within REFLEXW by GPS	Trainee will be able to: <ul style="list-style-type: none">Set out GPSTurn ON GPSUse REFLEXW modeView profile by google mapUse Processing optionsTake 3-D, topographyGenerate Data	<ul style="list-style-type: none">REFLEXW by GPSMethod to set coordinates within REFLEXW by GPS <p>Practical Activity</p> <ul style="list-style-type: none">Set coordinates within REFLEXW by GPS	Theory-01 Hrs Practice-03 Hrs Total- 04 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerPegs <p>T&E</p> <ul style="list-style-type: none">Handheld GPSHammer	Class Room and Survey Field



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10.



0732B&CE-066: Set Out Civil Engineering Structures by GPS

Objective: This module covers the knowledge and skills required to use the Global Positioning System (GPS) as a tool for Civil Engineering on monitoring the vibrations of large road structures, notably the bridges. To be characterized as a structural tool it was developed and tested a method which is based on the interferometry principle. The method uses the L1 carrier phase that needs to be collected from only two satellites.

Duration: 28 Hours

Theory: 04 Hours

Practice: 24 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Set out Civil Engineering Structures by GPS (BY USING THE CLASSIC RTK TECHNIQUE)	Trainee will be able to: <ul style="list-style-type: none">Set GPS at station pointInstall batterySelect "RTK" Network ApproachApply (R.T) Real Time Positioning by GPSUse GPS Derived "COORDINATES"Use Laser Pointing SystemEvaluate "RTK" Accuracy Results	<ul style="list-style-type: none">RTK TechniqueMethod to set out structures by GPS (BY USING THE CLASSIC RTK TECHNIQUE) <p>Practical Activity</p> <ul style="list-style-type: none">Set out Civil Engineering Structures by GPS (BY USING THE CLASSIC RTK TECHNIQUE)	Theory-02 Hrs Practice-12 Hrs Total- 14 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpnerPegsLime <p>T&E</p> <ul style="list-style-type: none">Handheld GPSHammer	Class Room and Survey Field
LU2. Use 3-D data interpretation By GPS	Trainee will be able to: <ul style="list-style-type: none">Import data from GPSProcess DataCheck Results.	<ul style="list-style-type: none">Introduction to GIS<ul style="list-style-type: none">REFLEXW3D-datainterpretation of REFLEXW	Theory-02 Hrs Practice-12 Hrs Total- 14 Hrs	<ul style="list-style-type: none">PencilEraserField BookSharpner <p>T&E</p> <ul style="list-style-type: none">Handheld GPS	Class Room and



	<ul style="list-style-type: none">• Generating a 3D-file without interpolation• Generating a 3D-file from Reflexw formatted parallel 2D-lines• Generating a 3D-file with interpolation (done within the 3Ddatainterpretation)• Resulting REFLEXW 3D-datafile• combine different 3D-datafiles• Processing a 3D-data file (done within the 2D-dataanalysis) <p>Practical Activity</p> <ul style="list-style-type: none">• Practice to use 3-D data interpretation By GPS	<ul style="list-style-type: none">• Data Cable• C.P.U• Mouse• Keyboard• Multimedia• Printer• USB	Computer Lab
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9.7. AutoCAD

0732B&CE-67. Perform Basic Computer Operations.

Objective: This module covers the knowledge and skills required to prepare report on the health and safety considerations while working on C.P.U, recognize basic C.P.U hardware, software, applications and perform general troubleshooting, demonstrate your skills of MS Word, MS PowerPoint, MS Excel as well as installation and troubleshooting of Operating System and software.

Duration: 9.0 Hours

Theory: 3.0 Hours

Practice: 6.0 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Investigate and prepare a short report on the health and safety considerations while working on IT equipment.	Trainee will be able to: <ul style="list-style-type: none">Observe Considerations: light (natural, artificial),Identify any hazard riskPerform CAD (Computer screens, electrical protection devices)Repetitive work, working postures, Incorrect screen settings, working without break	<ul style="list-style-type: none">Introducing HSEPreparing working environmentConnecting PC to electricityConnecting multimediaSetting out workInstalling CAD Software <p>Practical Activity prepare a short report on the health and safety considerations while working for IT Equipment</p>	Theory 0.5 Hrs Practice-1 Hrs Total- 1.5 Hrs	Drawing Sheet Duster A4-Papers Soft wares Tools C.P.U & LCD Key board Mouse Data cables Printer USB Multimedia	Computer Lab



LU-2. Configure C.P.U System	Trainee will be able to: <ul style="list-style-type: none">• Connect C.P.U components and peripherals as per requirements• Install System software and applications software according to the Instruction Manual• Troubleshoot Applications to trace and fix faults (if any) to bring it in a running condition• Follow health, safety and security procedures to ensure safe working environment	<ul style="list-style-type: none">• Understanding Operating systems• Procedure of Installation the software application.• Connecting system to electric supply• Introducing and Connecting data cables• Troubleshooting the application• Troubleshooting the software• Ensuring HSE• Margin setting• Page layout <p>Practical Activity Configure C.P.U System before preparing file.</p>	Theory 0.5Hrs Practice-2 Hrs Total- 2.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab
LU-3. Create a document Using MS Word	Trainee will be able to: <ul style="list-style-type: none">• Compose a document as per requirements• Assign name and location to save a file in word file format	<ul style="list-style-type: none">• Understand Operating systems.• Describing procedure of Installation of software applications. (MS Word)• Locating Open, close files and manage files.• Describing Hardware and Software.	Theory 0.5Hrs Practice-1 Hrs Total- 1.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools	Computer Lab



	<ul style="list-style-type: none">Format Word Document according to given requirementsGenerate hard copy according to job requirements	<ul style="list-style-type: none">Accessing a CD / DVD / ROM and Data traveller.Troubleshooting hardware and software problems.Assigning the file nameFormatting the documentGenerating Hard CopyMargin settingPage layout <p>Practical Activity Create a document Using MS Word</p>		C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	
LU-4. Prepare a Worksheet Using MS Excel	Trainee will be able to <ul style="list-style-type: none">Develop a worksheet as per given dataFormat the worksheet according to given job requirementsApply Formulas according to given criteriaGenerate Charts/Graphs according to the given data	<ul style="list-style-type: none">Basic formatting bold, italic & centre. (M.S. Excel)Save a filePrint a fileHyperlinking and referencingApply FormulasShort Keys use in MS Office <p>Practical Activity Create Worksheet Using MS Excel</p>	Theory 0.5Hrs Practice-1 Hrs Total- 1.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables	Computer Lab



				LCD Printer USB	
LU-5. Prepare presentation in power point software.	Trainee will be able to <ul style="list-style-type: none">Insert Slides with different Layouts according to requirements of presentationInsert text, tables, images, etc. according to the requirementsApply a set of effects to animate the slide according to requirementsApply Slide Transitions on Slides according to requirementApply Sound Effects on Objects / text / images according to job requirements.	<ul style="list-style-type: none">Basic formatting bold, italic & centre. (POWER POINT)Create slidesChange font & color on slidesEditing on slidesSave a filePrint a fileHyperlinking and referencingInsert and deletes slidesImages insert in slidesSet animationsTransit slidesSound effects in slides <p>Practical Activity Create presentation in power point software.</p>	Theory 1.0 Hrs Practice-1 Hrs Total- 2.0 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab



0732B&CE-68. Perform Drafting Settings and Formatting

Objective: This module covers the knowledge and skills required to create two dimensional drawings by using various tools and commands, create & modify objects and drawings in AutoCAD to meet specific targets according to civil technology requirements.

Duration: 8.0 Hours

Theory: 2.0 Hours

Practice: 6.0 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Set up user interface for require specifications	Trainee will be able to: <ul style="list-style-type: none">Load the AutoCAD software.Set the units, Limits, coordinate system, Workspace,Set Object Snap Settings.Set up the grid, snap, ortho, tracking settings.Save AutoCAD drawing files in different file formats (DWG, DWT).	<ul style="list-style-type: none">Basic Drawing SettingsSoftware InstallingUnit SettingCo. Ordinates settingSetting OSNAPortho, tracking settings.Saving a file of CADPrinting a file of CAD <p>Practical Activity Set up user interface for require specifications</p>	Theory 1.0Hrs Practice-2 Hrs Total- 3.0 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U & LCD Key board Mouse Data cables Printer USB Multimedia	Computer Lab
LU-2. Perform formation of entities- line,	Trainee will be able to:	<ul style="list-style-type: none">Use Direct distance entry system for drawing lines	Theory0.5Hrs Practice-2 Hrs	Drawing Sheets Duster	Computer Lab



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line type, text, layers, points, dimensioning.	<ul style="list-style-type: none">Setup user interface settings for required specificationsLoad centre line, dashed line, border, dot.Create layer with lines, colours, weight.Format text styles & multiline styles.Format dimension styles.Format point styles. <p>Practical Activity Perform formation of entities- line, line type, text, layers, layer, points, dimensioning in Auto CAD Software</p>	<ul style="list-style-type: none">Set U.C.S for different situationsUnderstanding Basic CommandsAngles and lines setting in AutoCADCreating layer and its settingLoading of centre line and bordersFormatting text styleFormatting Dimension styleFormatting point style	Total- 2.5 Hrs	A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	
LU-3. Create templates of sheets sizes A2, A3 & A4 having geometrical figures in 2D.	Trainee will be able to: <ul style="list-style-type: none">Setup user interface settings for required specificationsFormat the line, line type, text, layers, points.Draw rectangle with line command by adopting coordinates- rectangular (absolute & relative).Draw, polygons, ellipse & circle.	<ul style="list-style-type: none">Defining templatesDifferent geometrical figuresSetting up user interface to given specificationFormatting different lines, text, layers etcPrepare ellipse or polygonsTitle block creating	Theory 0.5Hrs Practice-2 Hrs Total- 2.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse	Computer Lab



	<ul style="list-style-type: none">• Create title block layout for sheets sizes A2, A3 & A4.• Use Design centre for inserting styles in new file.• Save the files in DWT format.	<ul style="list-style-type: none">• Inserting style and manage different styles• Saving & Printing the aid file <p>Practical Activity</p> <p>Create templates of sheets sizes A2, A3 & A4 having geometrical figures in 2D.</p>	Data cables LCD Printer USB Multimedia	
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0732B&CE-69. Perform Dimensioning and Printing, Lettering and Plotting

Objective: This module covers the knowledge and skills required to create 3- Dimensional Models by using various tools and commands in AutoCAD software, demonstrate skills to modify 3D objects and models to ensure civil technology requirements and present a rendered 3D Model final outcome.

Duration: 8.0 Hours

Theory: 2.0 Hours

Practice: 6.0 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Perform dimensioning of drawing.	Trainee will be able to: <ul style="list-style-type: none">• Select dimension styles as per scale.• Dimension the drawing by applying dimension styles as per scale.• Dimension location of object.• Dimension drawing aligned dimension, continuous dimension, base line dimension and leader.	<ul style="list-style-type: none">• Drafting settings (Unites, Limits, Snap• Auto (On & Off) Snap setting with their application• Dimension location for given objects.• Layer options with their application.• Text and their application• Multi line text application• Arrows and leaders <p>Practical Activity Perform dimensioning of given drawing with different patterns in Auto CAD Software.</p>	Theory 0.5 Hrs Practice-2 Hrs Total- 2.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab



LU-2. Perform lettering (Text) of styles.	Trainee will be able to: <ul style="list-style-type: none">• Select & Insert multi-line text style lettering for drawing type.• Select & Insert single-line text style lettering for notes on drawing.• Select & Insert single-line text style lettering for schedule on drawing.• Select & Insert single-line text style lettering for schedule on drawing.	<ul style="list-style-type: none">• Defining lettering• Lettering types• Importance of lettering in Auto CAD• Text styles (Single and double line)• Lettering on new and old drawing• Inclined lettering• Default lettering <p>Practical Activity Perform lettering (Text) with different styles on new and old drawing in Auto CAD. Software.</p>	Theory 0.5 Hrs Practice-2 Hrs Total- 2.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab
LU-3. Create Layouts for printing for Printing.	Trainee will be able to: <ul style="list-style-type: none">• Perform setting in layouts as per required scale• Perform setting in layouts as per required orientation.• Plot drawing on scale according to required size.	<ul style="list-style-type: none">• Printing importance• Printing option• Printing command• Attach printer with CPU by data cable.• Select scale for printing• Plot drawing for printing	Theory 1.0 Hrs Practice-2 Hrs Total- 3.0 Hrs	Printing Papers Duster A4-Papers Soft wares Tools C.P.U & LCD	Computer Lab



		<p>Practical Activity</p> <p>Create Layouts for printing a drawing on Auto CAD Software.</p>		Key board Mouse Data cables Printer USB Multimedia	
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0732B&CE-70. Develop 2D Drawings of Structures

Objective: This module covers the knowledge and skills required to create two dimensional drawings by using various tools and commands, create & modify objects and drawings in AutoCAD to meet specific targets according to civil technology requirements.

Duration: 18.0 Hours

Theory: 3.0 Hours

Practice: 15.0 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Perform basic settings for AutoCAD.	Trainee will be able to: <ul style="list-style-type: none">Setup drawing interface for required specificationsCreate formation of entities- line, line type, layers.Create styles- text, points, multi-linesCreate lines and multi-lines	<ul style="list-style-type: none">Setting up different commands and tools.Modify commands and tools.HATCHING concepts in AutoCAD.Zooming optionsFeatures of Tools palettes window and their applicationDesign centre feature- Scale and paper sizesMulti line formation <p>Practical Activity</p> <p>Perform basic settings for an object by “AutoCAD” software.</p>	Theory 0.5 Hrs Practice- 2 Hrs Total- 2.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab



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LU-2. Execute draw commands objects.	Trainee will be able to: <ul style="list-style-type: none">Draw construction lines.Draw lines with precision as per standards.Draw curves with precision as per standards.Hide the construction lines layer.	<ul style="list-style-type: none">Commands and tools.Describe and use modify commands and tools.Lines precisionCurve with PrecisionLayer with its hide commandConstruction of lineMulti Lines <p>Practical Activity</p> <p>Execute draw commands objects with its dimension and lettering.</p>	Theory 0.5Hrs Practice-3 Hrs Total- 3.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab
LU-3. Perform application of Modify tools / commands to delete whole or part of surplus entities.	Trainee will be able to: <ul style="list-style-type: none">Apply FILLET & TRIM, ERASE, BREAK commands to delete whole or part of surplus entities in given scenario.	<ul style="list-style-type: none">Apply draw commands and tools.Use modify commands and tools.HATCHING concepts in AutoCAD.Use zooming optionsFeatures of Tools palettes window and their application	Theory 0.5Hrs Practice-3 Hrs Total- 3.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools	Computer Lab



	<ul style="list-style-type: none">• Apply CHAMFER, EXTEND & FILLET to modify corners.• Apply SCALE, LENGTHEN, STRETCH for multiple purposes.	<ul style="list-style-type: none">• Design centre feature Scale and paper sizes• Fillet & extend command• Chamfer command <p>Practical Activity</p> <p>Perform application of Modify tools / commands to delete whole or part of surplus entities.</p>		C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	
LU-4. Change properties of objects to meet set standards.	Trainee will be able to <ul style="list-style-type: none">• Apply ROTATE to rotate & MOVE to move objects.• Use OFFSET, MIRROR, ARRAY & copy to create multiple objects.• Modify properties by SCALE, EXPLODE, PEDIT, JOIN for multiple purposes.	<ul style="list-style-type: none">• Rotate command• Move and Shift Command• Mirror & Array command• Modify object with its properties• Scale command• Edit & P. edit command• Join & Explode command <p>Practical Activity</p> <p>Change properties of objects to meet set standards.</p>	Theory 0.5Hrs Practice-3 Hrs Total- 3.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer	Computer Lab



				USB Multimedia	
LU-5. Assign symbols to specified materials	Trainee will be able to <ul style="list-style-type: none">Set the scale factors for hatching patterns.Select specified area / object on drawing.Apply the hatch to the area.Calculate hatched area by Auto CAD command	<ul style="list-style-type: none">Defining symbolsHatching of SymbolsHatching of specified areaOsnap on / offEdit properties of objects.Lettering commandLine & Multi line commandCircle and arc command <p>Practical Activity Assign symbols to specified materials to a given objects.</p>	Theory 0.5 Hrs Practice- 2 Hrs Total- 2.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab
LU-6. Modify drawing objects using	Trainee will be able to <ul style="list-style-type: none">Perform inquiry commands to get area & distance of object.	<ul style="list-style-type: none">Extend commandTrim CommandStretch commandBreak and scale drawn items.	Theory 0.5 Hrs Practice- 2 Hrs Total- 2.5 Hrs	Drawing Sheet Duster A4-Papers	Computer Lab



properties option.	<ul style="list-style-type: none">• observe the objects properties- location, linear & angular measurements, and other drafting formations.• Modify the objects properties- location, linear & angular measurements, and other drafting formations• Apply linear measurements with other drafting formations• Apply angular measurements with other drafting formations <ul style="list-style-type: none">• Joining of lines• Changing layer colour <p>Practical Activity</p> <p>Modify drawing objects using properties option on Auto CAD Software</p>		Soft wares Tools C.P.U & LCD Key board Mouse & USB Data cables Printer Multimedia	
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0732B&CE-71. Produce Drawing of Framed Structure Building

Objective: This module covers the knowledge and skills required to draw architectural & structural drawing for a double storey RCC framed structure building (key plan, layout plan, detailed plan, elevations, sections, structural drawing of building components), detailed drawing of steel trussed roof shed (60' x 40') and sketches of arches, floors & roofs.

Duration: 21 Hours

Theory: 3.0 Hours

Practice: 18.0 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Prepare architectural drawings of a Small two storey RCC framed Structure Building.	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw frame.• Distribute space of drawing sheet.• Draw key plan, layout plan, detailed plan of building, roof drainage plan & Floor plan of building.• Draw Elevation, and sections of building.• Perform lettering, printing & dimensioning.• Prepare schedule of area, openings and fittings.	<ul style="list-style-type: none">• architectural Drawings.• Differentiate between key plan and lay out plan• drainage• elevation• lettering <p>Practical Activity</p> <p>Draw Architectural drawings of a Small two storey RCC framed Structure Building.</p>	Theory 0.5 Hrs Practice-3 Hrs Total- 3.5 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square French Curves	Computer Lab



	<ul style="list-style-type: none">Indicate North directionPerform printing for drawing			Scales Card Compass Protractor Stencils	
LU-2. Prepare structural drawings of a Small two storey RCC framed Structure Building.	Trainee will be able to: <ul style="list-style-type: none">Draw structural detail of roof, floor, and lintels.Draw title strip on sheet.Draw Reinforcement details of RCC column with base, beams, slabs, and stairs.Perform lettering, printing & dimensioning.Indicate North directionPerform printing for drawing	<ul style="list-style-type: none">Sketch out the x-section of lintels and arches.The various parts of lintels and arches.Different types of floors.Draw the sketches of different parts of floors.The standard proportions for the different layers of floors.Different types of roofs i.e. R.C.C and R.B roof and Pre-cast roof slabs. <p>Practical Activity Prepare structural drawings of a Small two storey RCC framed Structure Building.</p>	Theory 0.5 Hrs Practice-3 Hrs Total- 3.5 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square French Curves Scales (Card, Plane & Diagonal)	Computer Lab



				Compass Protractor Stencils	
LU-3. Prepare detailed drawing of steel trussed roof shed (60' x 40')	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw shed.• Distribute space of drawing sheet.• Draw plan of shed.• Draw frame of truss with roofing detail- sheets, purlin, gutter, ridging and wind ties.• Draw detail of joints and fixing at support.• Perform lettering, printing & dimensioning.• Indicate North direction• Perform printing for drawing	<ul style="list-style-type: none">• Label the sketches of different parts of trusses.• Distribute the space for different views evenly on drawing sheet.• Different types of sloping roof.• Draw the sketches of steel trusses up to 40' span from the given data.• joint for truss• Gutter• wind tie <p>Practical Activity</p> <p>Prepare detailed drawing of steel trussed roof shed (60' x 40')</p>	Theory-0.5Hrs Practice-3 Hrs Total- 3.5 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square French Curves Scales (Card, Plane & Diagonal) Compass	Computer Lab



				Protractor Stencils	
LU-4. Draw sketches of arches	Trainee will be able to <ul style="list-style-type: none">• Select the suitable instruments to draw sketches.• Draw title strip on sheet OR block.• Distribute space of drawing sheet.• Sketch semi-circular, circular, segmental, two cusp, three cusp, elliptical, & flat arches.• Perform lettering and dimensioning.• Indicate North direction• Perform printing for drawing	<ul style="list-style-type: none">• Arches• Differentiate between lintel and Arches• segmental arches• bulls' eye arch• flat arch• reinforcement for arch <p>Practical Activity</p> <p>Draw sketches of different arches</p>	Theory 0.5Hrs Practice-3 Hrs Total- 3.5 Hrs	Drawing Graph Sheets Duster Pencils Eraser Sharpener Sand paper Stencil Paper Tools Drawing Board Tee Square Set Square French Curves Scales Card Compass Protractor Stencils	Computer Lab



LU-5. Draw sketches of roofs	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw sketches.• Draw title strip on sheet OR block.• Distribute space of drawing sheet.• Sketch first class mud roof, 2nd Class mud roof, R.C.C, R.B slabs, Pre-cast, roof. Jack arch and sloping roofs.• Perform lettering and dimensioning.• Indicate North direction• Perform printing for drawing	<ul style="list-style-type: none">• different types of roofs i.e. first class mud roofing, 2nd Class mud roofing, R.C.C and R.B roof and Pre-cast roof slabs.• Different types of sloping roof.• Sloping angle• Pitch <p>Practical Activity</p> <p>Draw sketches of different floors</p>	Theory 0.5Hrs Practice-3 Hrs Total- 3.5 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper	Tools Drawing Board Tee Square Set Square French Curves Scales Cards Compass Protractor Stencils	Computer Lab
LU-6. Draw sketches of floors	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw sketches.	<ul style="list-style-type: none">• Different types of floors.• Draw the sketches of different parts of floors.	Theory 0.5Hrs Practice-3 Hrs	Drawing Graph Sheets Duster	Computer Lab	



	<ul style="list-style-type: none">• Draw title strip on sheet OR block.• Distribute space of drawing sheet.• Sketch conglomerate, mosaic, terrazzo, glazed tile, brick tile, wooden, vinyl, rubber, cork, & tuff tile floors.• Perform lettering and dimensioning.• Indicate North direction• Perform printing for drawing	<ul style="list-style-type: none">• The standard proportions for the different layers of floors.• terrazzo floor• glazed floor• tuff tile with its type <p>Practical Activity</p> <p>Draw sketches of different floors</p>	Total- 3.5 Hrs	Pencils Eraser Sharpener Sand paper Stencil Paper	Tools Drawing Board Tee Square Set Square French Curves Card Scales Compass Protractor Stencils
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0732B&CE-72. Develop Sectionals Drawing for Foundations

Objective: This module covers the knowledge and skills required to draw structural drawing of raft foundation, grillage foundation, Pile Foundation, well foundation, spread footing, column base & pillar.

Duration: 21.0 Hours

Theory: 3.0 Hours

Practice: 18.0 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Prepare structural detail of Raft foundation.	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.• Distribute space of drawing sheet.• Draw structural steel drawings of raft foundation.• Perform printing for drawing	<ul style="list-style-type: none">• Sketch the raft foundations• Type of foundation• structural steel for foundation• Calculate the depth and breadth required for spread footings. <p>Practical Activity Prepare structural detail of Raft foundation.</p>	Theory 0.5 Hrs Practice-4 Hrs Total- 4.5 Hrs	Drawing Graph Sheets Duster Pencils Eraser Sharpener Sand paper Stencil Paper Tools Drawing Board Tee Square Set Square French Curves Card Scales	Computer Lab



				Compass Protractor Stencils	
LU-2. Prepare structural detail of Grillage foundation.	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.• Distribute space of drawing sheet.• Draw structural drawings of grillage foundation.• Perform printing for drawing	<ul style="list-style-type: none">• Sketch the spread footing.• Sketch the grillage foundation.• need for grillage foundation• Describe type of foundations• Describe structural design for grillage foundation <p>Practical Activity Prepare structural detail of Grillage foundation.</p>	Theory 0.5 Hrs Practice-4 Hrs Total- 4.5 Hrs	Drawing Graph Sheets Duster Pencils Eraser Sharpener Sand paper Stencil Paper Tools Drawing Board Tee Square Set Square French Curves Card Scales Compass Protractor Stencils	Computer Lab



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LU-3. Prepare structural detail of Pile foundation.	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.• Distribute space of drawing sheet.• Draw structural steel drawings of Pile foundation.• Perform printing for drawing	<ul style="list-style-type: none">• Sketch the well and pile foundation.• Sketch the caisson foundations.• importance of pile foundation• Differentiate between shallow and deep foundation <p>Practical Activity Prepare structural detail of Pile foundation.</p>	Theory 0.5 Hrs Practice-4 Hrs Total- 4.5 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square French Curves Scales Cards, Compass Protractor Stencils	Computer Lab
LU-4.	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.	<ul style="list-style-type: none">• Sketch and label the raft & pile foundations with steel reinforcement.	Theory 0.5 Hrs Practice-3 Hrs	Drawing Sheets Duster	Computer Lab



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Prepare structural detail of Well foundation.	<ul style="list-style-type: none">Distribute space of drawing sheet.Draw structural drawings of well foundation.Perform printing for drawing <p>Practical Activity Prepare structural detail of Well foundation.</p>	<ul style="list-style-type: none">method to distribute space on drawing sheetsteel reinforcement for well foundation	Total- 3.5 Hrs	<p>Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper</p> <p>Tools Drawing Board Tee Square Set Square French Curves Scales Card Compass Protractor Stencils</p>	
LU-5. Prepare structural detail of spread footing, pillar, foundations & column base.	Trainee will be able to <ul style="list-style-type: none">Select the suitable instruments to draw foundation.Distribute space of drawing sheet.	<ul style="list-style-type: none">Calculate the depth and breadth required for spread footings.footingcolumn basefooting	Theory 1.0 Hrs Practice-3 Hrs Total- 4.0 Hrs	<p>Drawing and Graph Sheets Duster Pencils Eraser</p>	Computer Lab



	<ul style="list-style-type: none">• Draw structural drawings of spread footing, pillar, & column footing.• Perform printing for drawing	<ul style="list-style-type: none">• footing reinforcement <p>Practical Activity</p> <p>Prepare structural detail of spread footing, pillar, foundations & column base.</p>		Sharpener Sand paper Stencil Paper Tools Drawing Board Tee Square Set Square French Curves Card Scales Compass Protractor Stencils	
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0732B&CE-73. Develop Drawings for Doors & Windows

Objective: This module covers the knowledge and skills required to draw sketches of ledged, ledged & batten, louvers, collapsible, sliding, rolling, revolving doors, sketches glazed, louvers windows and detailed drawings of panelled & glazed, flush and wire gauzed doors & windows.

Duration: 11.0 Hours

Theory: 2.0 Hours

Practice: 9.0 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Prepare sketches of doors	Trainee will be able to: <ul style="list-style-type: none">Select the suitable instruments to draw foundation.Distribute space of drawing sheet.Sketch the ledged, ledged & batten, louvers, collapsible, sliding, rolling, revolving doors.Sketch glazed, louvers windows.Perform lettering & dimensioning.Perform printing for drawing	<ul style="list-style-type: none">Need of doors.Clerestory ventilators.The different types of doors.The various parts of doors.glazed doorlouvers doorVentilator. <p>Practical Activity</p> <p>Draw structural drawing of Panelled & Glazed, Flush and Wire Gauzed Doors on drawing sheet by scale with long and cross section.</p>	Theory-1 Hrs Practice-3 Hrs Total- 4 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square French Curves	Computer Lab



				Card Scales Compass Protractor Stencils Templates	
LU-2. Prepare structural drawing of Panelled & Glazed Doors & Windows	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.• Distribute space of drawing sheet.• Draw detailed plan, sections & elevation panelled & glazed door & window.• Perform lettering & dimensioning.• Perform printing for drawing	<ul style="list-style-type: none">• The various parts of windows.• importance of windows• the different materials used for windows and ventilators• Sketch the elevations, sectional plans and vertical sections of windows and ventilators.• Parts of doors <p>Practical Activity Draw structural drawing of Paneled & Glazed, Flush Doors & Windows on drawing sheet by scale with long and cross section.</p>	Theory-0.5 Hrs Practice-3 Hrs Total- 3.5 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square French Curves	Computer Lab



				Card Scales Compass Protractor Stencils Templates	
LU-3. Prepare structural drawing of Flush and Wire Gauzed Doors & Windows	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.• Distribute space of drawing sheet.• Draw detailed plan, sections & elevation flush door& window.• Draw detailed plan, sections & elevation wire gauzed door& window.• Perform lettering & dimensioning.• Perform printing for drawing	<ul style="list-style-type: none">• The various parts of windows.• importance of windows• the different materials used for windows and ventilators• Sketch the elevations, sectional plans and vertical sections of windows and ventilators.• Parts of doors and CW <p>Practical Activity</p> <p>Draw structural drawing of Wire Gauzed Windows & Doors on drawing sheet by scale with long and cross section.</p>	Theory-0.5 Hrs Practice-3 Hrs Total- 3.5 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square	Computer Lab



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				French Curves Card Scales Compass Protractor Stencils Templates	
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0732B&CE-74. Produce Drawings of Stairs and Stair Case.

Objective: This module covers the knowledge and skills required to draw sketches of open newel, straight, bifurcated, geometrical, circular, spiral, & dog-legged stair & Structural drawings of Dog-legged and Spiral Stair cases.

Duration: 11.0 Hours

Theory: 2.0 Hours

Practice: 9.0 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Prepare sketches of stairs	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.• Distribute space of drawing sheet.• Sketch open newel, straight, bifurcated, geometrical, circular, spiral, & dog-legged stair.• Perform lettering & dimensioning.• Perform printing for drawing	<ul style="list-style-type: none">• stair and stair case• The terms and parts used in different types of stairs.• The stairs according to their layout.• Suitability for different type of stairs.• Flight of stair.• pitch• Differentiate between tread and riser.• landing• Winder. <p>Practical Activity</p>	Theory-1 Hrs Practice-3 Hrs Total- 4 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square French Curves	Computer Lab



		Draw structural and detail drawings of Different type of stairs on drawing sheet.		Scales (Card, Plane & Diagonal) Compass Protractor Stencils Templates	
LU-2. Prepare structural drawing of Dog-legged Stair	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.• Distribute space of drawing sheet.• Draw detailed plan & sections of dog legged stair.• Draw detailed plan & sections spiral stair case• Perform lettering & dimensioning.• Perform printing for drawing	<ul style="list-style-type: none">• The stairs according to their materials.• Design procedure for straight stair.• Sketch the plans and sections of different types of stairs according to their layout.• Spiral Stair.• Dog legged stair.• Well in stair• quarter landing <p>Practical Activity Draw structural and detail drawings of Dog-legged Stair Case by scale on drawing sheet.</p>	Theory-0.5Hrs Practice-3 Hrs Total- 3.5 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square French Curves	Computer Lab



				Scales (Card, Plane & Diagonal) Compass Protractor Stencils Templates	
LU-3. Prepare structural drawing of Spiral Stair Case.	Trainee will be able to: <ul style="list-style-type: none">Select the suitable instruments to draw foundation.Distribute space of drawing sheet.Draw detailed plan & sections of dog legged stair.Draw detailed plan & sections spiral stair casePerform lettering & dimensioning.Perform printing for drawing	<ul style="list-style-type: none">The stairs according to their materials.Design procedure for straight stair.Sketch the plans and sections of different types of stairs according to their layout.Spiral Stair.Dog legged stair.Well in stairquarter landing <p>Practical Activity</p> <ul style="list-style-type: none">Draw structural and detail drawings of SPIRAL Stair Case by scale on drawing sheet.	Theory-0.5Hrs Practice-3 Hrs Total- 3.5 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square French Curves	Computer Lab



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				Scales (Card, Plane & Diagonal) Compass Protractor Stencils Templates	
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0732B&CE-75. Produce Drawings of Water Tanks

Objective: This module covers the knowledge and skills required to draw masonry underground masonry water tank, RCC Circular Surface Water tank and Square RCC overhead water Tank.

Duration: 21.0 Hours

Theory: 3.0 Hours

Practice: 18.0 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Prepare structural drawing of RCC surface circular water tank.	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.• Distribute space of drawing sheet.• Draw detailed plan & sections of masonry underground water tank.• Draw reinforcement detailed drawing.• Perform lettering & dimensioning.• Perform printing for drawing	<ul style="list-style-type: none">• Water tank.• The terms and parts used in different types of water tanks.• Inlet & outlet for the tanks.• The suitability of each type of water tank.• design aspects circular water tank. <p>Practical Activity Prepare structural drawing of RCC surface circular water tank.</p>	Theory-1 Hrs Practice-4 Hrs Total- 5 Hrs	Drawing Graph Sheets Duster Pencils Eraser Sharpener Sand paper Stencil Paper Tools Drawing Board Tee Square Set Square French Curves Card Scales	Computer Lab



				Compass Protractor Stencils Templates	
LU-2. Prepare structural drawing of RCC square overhead water tank.	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.• Distribute space of drawing sheet.• Draw detailed plan of RCC surface water tank.• Draw detailed cross sections of RCC surface water tank.• Draw reinforcement detailed drawing.• Perform lettering and dimensioning.• Perform printing for drawing	<ul style="list-style-type: none">• Water tank.• The terms and parts used in different types of water tanks.• The tanks according to their material, & level.• The suitability of overhead water tank.• reinforcement for water tank• Overflow pipe for tank. <p>Practical Activity</p> <p>Prepare structural drawing of RCC square overhead water tank.</p>	Theory-1 Hrs Practice-5 Hrs Total- 6 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square French Curves Card Scales Compass	Computer Lab



				Protractor Stencils Templates	
LU-3. Prepare structural drawing of RCC Circular overhead water tank.	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.• Distribute space of drawing sheet.• Draw detailed plan & sections of RCC overhead water tank.• Draw reinforcement detailed drawing.• Perform lettering and dimensioning.• Perform printing for drawing	<ul style="list-style-type: none">• Sketch the plans and sections of different types of water tanks.• Reinforcement for circular water tank.• Formula for finding area when diameter is given.• Foundation for overhead tank.• Printing process for the drawing. <p>Practical Activity Prepare structural drawing of RCC circular overhead water tank.</p>	Theory-0.5Hrs Practice-5 Hrs Total- 5.5 Hrs	Drawing Papers Duster Pencils Eraser Sharpener Stencil Paper Tools Drawing Board Tee Square Set Square French Curves Card Scales Compass Protractor Stencils Templates	Computer Lab



				Protector	
LU-4. Prepare structural drawing of RCC Rectangular overhead water tank.	Trainee will be able to: <ul style="list-style-type: none">Select the suitable instruments to draw foundation.Distribute space of drawing sheet.Draw detailed plan & sections of RCC overhead water tank.Draw reinforcement detailed drawing.Perform lettering and dimensioning.Perform printing for drawing	<ul style="list-style-type: none">Sketch the plans and sections of different types of water tanks.Reinforcement for rectangular water tank.Formula for finding area when diameter is given.Foundation for overhead tank.Printing process for the drawing. <p>Practical Activity</p> <ul style="list-style-type: none">Prepare structural drawing of RCC rectangular overhead water tank.	Theory-0.5Hrs Practice-4 Hrs Total- 4.5 Hrs	Paperss Duster Pencils Eraser Sharpener Stencil Paper Tools Drawing Board Tee Square Set Square French Curves Card Scales Compass Protractor Stencils Templates	Computer Lab



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				Protector	
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0732B&CE-76. Produce Drawings of Cross Drainage Structures.

Objective: This module covers the knowledge and skills required to draw detailed drawing of RCC Deck high level 2 spans bridge, Prepare detailed drawing of masonry segmental arched single span bridge and Prepare detailed drawing of steel plate girder single span bridge.

Duration: 8.0 Hours

Theory: 2.0 Hours

Practice: 6.0 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Prepare detailed drawing of RCC Deck high level 2 spans bridge	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.• Distribute space of drawing sheet.• Draw detailed plan, elevation & sections of RCC deck 2 span high level bridge.• Draw reinforcement detailed drawing.• Perform lettering & dimensioning.• Perform printing for drawing	<ul style="list-style-type: none">• Bridge• Deck• cause way• Reinforcement for bridge.• lettering on sheet• causeway• span of bridge• Abutments• type of wing walls• Type of foundation for bridge.• Uses of reinforcement for bridges <p>Practical Activity</p> <p>Prepare detailed drawing of RCC Deck high level 2 spans bridge</p>	Theory 0.5 Hrs Practice 1.5Hrs Total- 2.0 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square French Curves	Computer Lab



			Scales (Card, Plane & Diagonal) Compass Protractor Stencils Templates		
LU-2. Prepare detailed drawing of masonry segmental arched single span bridge.	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.• Distribute space of drawing sheet.• Draw detailed plan & sections of Segmental Arch single span bridge.• Perform lettering & dimensioning.• Perform printing for drawing	<ul style="list-style-type: none">• Sketch the X-section of concrete Road structure.• Various parts of culverts i.e. abutment, wing wall, toe wall parapet, base plate.• Sketch the Plan, Foundation Plan, Long Section and X-Section of Culvert.• The various terms used in Bridge.• Differentiate between culvert and Bridge.• The various types of bridges. Practical Activity	Theory 0.5 Hrs Practice 2.5Hrs Total-3.0 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square French Curves	Computer Lab



		Prepare detailed drawing of masonry segmental arched single span bridge on drawing sheet.		Scales (Card, Plane & Diagonal) Compass Protractor Stencils Templates	
LU-3. Prepare detailed drawing of masonry segmental arched triple span bridge.	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.• Distribute space of drawing sheet.• Draw detailed plan & sections of Segmental Arch triple span bridge.• Perform lettering & dimensioning.• Perform printing for drawing	<ul style="list-style-type: none">• Plate girder bridges.• Foundation Plan, Long section and X-Section of two Span Bridge.• Sketch the detailed drawing of 25' span masonry arch bridge.• deck for segmental arch bridge. <p>Practical Activity</p> <p>Prepare detailed drawing masonry segmental arched triple span bridge on drawing sheet</p>	Theory 0.5 Hrs Practice 1.0Hrs Total- 1.5 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square French Curves	Computer Lab



				Card Scales Compass	
LU-4. Prepare detailed drawing of steel plate girder bridge for single span	Trainee will be able to: <ul style="list-style-type: none">• Select the suitable instruments to draw foundation.• Distribute space of drawing sheet.• Draw detailed plan & sections of steel plate girder bridge for single span.• Draw reinforcement detailed drawing.• Perform lettering & dimensioning.• Perform printing for drawing	<ul style="list-style-type: none">• Steel Plate girder bridges.• Foundation Plan, Long section and X-Section of single Span girder Bridge.• Sketch the detailed drawing of 25' span plate girder steel bridge.• deck for plate girder bridge. <p>Practical Activity Prepare detailed drawing steel plate girder bridge for single span</p>	Theory 0.5 Hrs Practice 1.0Hrs Total- 1.5 Hrs	Drawing Sheets Duster Pencils Eraser Sharpener Sand paper Graph Papers Stencil Paper Tools Drawing Board Tee Square Set Square French Curves Card Scales Compass	Computer Lab

0732B&CE-77. Develop 3D Drawings

Objective: This module covers the knowledge and skills required to create 3- Dimensional Models by using various tools and commands in AutoCAD software, demonstrate skills to modify 3D objects and models to ensure civil technology requirements and present a rendered 3D Model final outcome.



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Duration: 10.0 Hours

Theory: 4.0 Hours

Practice: 6.0 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Develop 3D Objects	Trainee will be able to: <ul style="list-style-type: none">Setup & save 3D Drawing Interface for required specificationsSetup 3D User Interface settings for required specificationsCreate 3D Objects with given measurementsPerform printing for drawing	<ul style="list-style-type: none">Defining 3D DrawingsImportance of 3D DrawingsTypes of 3D DrawingsSet up and interface for 3D DrawingsCreating 3D DrawingsModifying 3D Drawings <p>Practical Activity Develop 3D Objects as per given data.</p>	Theory-1.5Hrs Practice-2 Hrs Total- 3.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab
LU-2. Manipulate 3D Objects Using 3D Editing Tools	Trainee will be able to: <ul style="list-style-type: none">Modify 3D Objects in line with the requirements	<ul style="list-style-type: none">3D Navigate Control- functionsCamera settingImportance of scene creation.	Theory-1.5Hrs Practice-2 Hrs Total- 3.5 Hrs	Drawing Sheets Duster A4-Papers	Computer Lab



	<ul style="list-style-type: none">• Make customized 3D Models according to the requirements of the given job• Convert 3D Face Objects into Single Mesh Objects• Perform printing for drawing	<ul style="list-style-type: none">• PRESET views such as isometric, top, bottom, front, left, etc.• Modifying 3D Drawing• 3D Editing with editing tools• Describe Perspective projection and parallel projection• Describe walk and Constrained Orbit. <p>Practical Activity Manipulate 3D Objects Using 3D Editing Tools</p>		<p>Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia</p>	
LU-3. Render 3D Model	<p>Trainee will be able to:</p> <ul style="list-style-type: none">• Apply material to required 3D Model as per given specifications• Apply lights to get the requisite scene of required 3D model• Assign cameras to execute different views of required 3D Model• Render and print the 3D model according to required size and orientation	<ul style="list-style-type: none">• Defining Rendering• Rendering importance• Rendering command with their application• 3D model material specification• 3D model light requisition scene• Assigning camera with commands• 3D Model orientation <p>Practical Activity Render 3D Model as given data.</p>	<p>Theory-1.0Hrs Practice-2 Hrs Total- 3.0 Hrs</p>	<p>Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U & LCD Key board Mouse Data cables</p>	Computer Lab



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	<ul style="list-style-type: none">• Perform printing for rendered model		Printer USB Multimedia	
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0732B&CE-78. Produce Civil Technology Drawings

Objective: This module covers the knowledge and skills required to Printout on A4 paper drawings of c-type residential building, Printout on A2 paper submission drawings of a small two storey R.C.C. framed structure building, Printout on A4 paper x-sections of canals, drains and roads and Printout on A4 paper drawings of masonry 10 ft segmental arched culvert.

Duration: 14.0 Hours

Theory: 3.0 Hours

Practice: 11.0 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare & printout on A4 paper drawings of c-type residential building.	Trainee will be able to: <ul style="list-style-type: none">Setup drawing interface for required specificationsSetup user interface settings for required specificationsDraw detailed plan of C type building.Draw front & side elevation of C type building.Draw x-section of C type building.Adjust layouts in viewports for printing C type building.Perform lettering & dimensioning	<ul style="list-style-type: none">Definition & importance for printingPrinting Paper sizeSet up for printingInterface required for printing the Auto CAD DrawingUser interface setting for printingDefining view point and its adjustmentPrinting command <p>Practical Activity</p> <p>Prepare & printout on A4 paper drawings of c-type residential building.</p>	Theory-1.0Hrs Practice-2 Hrs Total- 3.0 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tracing Paper Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab



LU2. Prepare & printout on A2 paper submission drawings of a small two storey R.C.C. framed structure building	Trainee will be able to: <ul style="list-style-type: none">Setup drawing interface for required specificationsSetup user interface settings for required specificationsDraw detailed plans of framed structure building.Draw front & side elevation of framed structure building.Draw site plan, layout plan of framed structure.Draw x-sections of framed structure building.Draw reinforcement detail of RCC structures.Adjust layouts in viewports for printing frame structure building.Perform lettering & dimensioningPrint the drawings	<ul style="list-style-type: none">Drawing submission introductionImportance of drawing submissionSetup interface settingImportance for interface settingInterface specificationsPlotting and printing the drawing on drawing sheetPrintout site layout planPrint different x-section for building drawings.Adjusting view point layout. <p>Practical Activity</p> <p>Prepare & printout on paper submission drawings of a small two storey R.C.C. framed structure building along with their reinforcement.</p>	Theory-0.5Hrs Practice-3 Hrs Total- 3.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tracing paper Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab



LU3. Prepare & printout on A4 paper x-sections of canals and drains	Trainee will be able to: <ul style="list-style-type: none">Setup drawing interface for required specificationsSetup user interface settings for required specificationsDraw cross section of canal fully in cutting, fully in filling and partly in cutting & partly in filling.Draw cross section of national highway dual carriage in rural and built up area.Draw cross section of district highway double lane in rural and built up area.Draw x-sections of type-I, type-II & type 8 drainsAdjust layouts in viewports for printing frame structure building.Perform lettering & dimensioningPrint the drawings	<ul style="list-style-type: none">Setup interface settingImportance for interface settingInterface specificationsPrint cutting and filling cross sections for canals and drainsHighway cross sections printingDrains producing, importance and its printingAdjust layout in viewportPrint frame structure drawings <p>Practical Activity</p> <p>Prepare & printout on different size of paper x-sections of canals, drains and roads.</p>	Theory-0.5Hrs Practice-2 Hrs Total- 2.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab
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LU4. Prepare & printout on A4 paper x-sections of roads.	Trainee will be able to <ul style="list-style-type: none">Setup drawing interface for required specificationsSetup user interface settings for required specificationsDraw cross section of canal fully in cutting, fully in filling and partly in cutting & partly in filling.Draw cross section of national highway dual carriage in rural and built up area.Draw cross section of district highway double lane in rural and built up area.Draw x-sections of type-I, type-II & type 8 drainsAdjust layouts in viewports for printing cross section of road.Perform lettering & dimensioning	<ul style="list-style-type: none">procedure of printing drawings.Importance of drawings printingInterface required specificationRoads x-sections, Plans and its printing <p>Practical Activity Prepare & printout on different size paper, drawings of roads.</p>	Theory-0.5Hrs Practice-2 Hrs Total- 2.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab
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LU5. Prepare & printout on A4 paper drawings of masonry 10 ft segmental arched culvert.	Trainee will be able to <ul style="list-style-type: none">Setup drawing interface for required specificationsSetup user interface settings for required specificationsDraw detailed plan, & layout plan of culvert.Draw long section & cross section of culvert.Draw elevation of culvert.Adjust layouts in viewports for printing segmental arch culvert.Perform lettering & dimensioningPrint the drawings	<ul style="list-style-type: none">procedure of printing drawings.Importance of drawings printingInterface required specificationculverts x-sections, Plans and its printing <p>Practical Activity</p> <ul style="list-style-type: none">Prepare & printout on different size paper, drawings of culverts.	Theory-0.5Hrs Practice-2 Hrs Total- 2.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab
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9.8. Construction I

0732B&CE-79. Perform Simple Levelling

Objective: This module covers the knowledge and skills required to Prepare for work, Perform manual leveling and Cleanup work area.

Duration: 3.5 Hours

Theory: 0.5 Hours

Practice: 3 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for work.	<p>Trainee will be able to:</p> <ul style="list-style-type: none">Requirements of the job are determined and various levels are obtained.Work health and safety (WHS) and environmental requirements associated with levelling activities are adhered to throughout the work.Quality assurance requirements are identified and adhered to according to workplace requirements.	<ul style="list-style-type: none">Workplace and equipment safety requirementsSteps to access relevant information, including codes and technical standardsSI system of measurementsSimple calculations relating to carrying out levellingPractical activity:Plan simple leveling of floor area in lab.	Theory- 0.16 Hrs Practical-1 Hrs Total- 1.16 Hrs	Pencil Ruler Calculator	Class Room and Construction lab



	<ul style="list-style-type: none">Tools and equipment, including personal protective equipment, are selected and checked for serviceability.				
LU2. Perform manual leveling.	Trainee must be able to <ul style="list-style-type: none">Identify height to be transferred from drawings, plans or instructions.Carryout hand levelling and operate according to manufacturer instructions.Levels are taken and marked according to job requirements.	<ul style="list-style-type: none">Different types of levelling equipment, their applications and their method of operationProcess of establishing, and checking levels and alignmentJob safety analysis (JSA) and safe work method statements (SWMS) <p>Practical activity:</p> <ul style="list-style-type: none">Perform manual leveling of lab floor.	Theory- 0.18 Hrs Practical-1.5 Hrs Total- 1.68 Hrs	Spirit level	Class room and Construction Lab
LU3. Clean up work area	Trainee must be able to <ul style="list-style-type: none">Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.Tools plant and equipment are cleaned, checked for faults and maintained and stored in accordance with workplace practices	<ul style="list-style-type: none">Explanation of need for store in a projectClassification of stores- stock <p>Practical activity:</p> <ul style="list-style-type: none">Clean the area and tools and store it in proper storage area in lab.	Theory-0.16 Hrs Practical 0.5 Hrs Total- 0.66 Hrs	Broom Duster	Construction Lab



0732B&CE-80. Lay out Building plans

Objective: This module covers the knowledge and skills required to identify and select hand, power and pneumatic tools for given tasks and safely use and maintain a minimum of rule, tape, square, hammer, hand saw, hand plane, chisel, shovel, wheelbarrow, sledge hammer, pick, mattock and crow bar and pinch bar for given tasks.

Duration: 5.5 Hours

Theory: 0.5 Hours

Practice: 5 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Plan and prepare	<p>Trainee will be able to:</p> <ul style="list-style-type: none">Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant information for <i>planning and preparation</i>.Safety (OHS) requirements are followed in accordance with safety plans and policies.Signage and barricade requirements are identified and implemented.Tools and equipment selected to carry out tasks are consistent with job requirements, checked for serviceability,	<ul style="list-style-type: none">Site and equipment safety (OHS) requirementsJob safety analysis (JSA) and safe work method statementsConstruction plan, symbols and construction terminologyProcesses for interpreting engineering drawings and sketchesProject quality requirements <p>Practical activity: Interpret lay out of a 5 marla house and prepare materials and equipment.</p>	Theory-0.07 Hrs Practical-0.71 Hrs Total- 0.78 Hrs	Pencil Eraser Notebook	Class Room



	<p>and any faults are rectified or reported prior to commencement.</p> <ul style="list-style-type: none">• Material quantity requirements are calculated in accordance with plans, specifications and quality requirements.• Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.• Environmental requirements are identified for the project in accordance with environmental plans and statutory and regulatory authority obligations, and are applied.				
LU2. Identify and indicate site boundaries.	<p>Trainee will be able to:</p> <ul style="list-style-type: none">• Survey pegs at corners of site are located and identified in accordance with job drawings, specifications and site topography.• String lines are set accurately into position to identify site boundary markings in accordance with site plan and survey pegs.	<ul style="list-style-type: none">• Application and requirements for line, level and plumb in construction projects• Basic construction processes <p>Practical activity: Mark boundaries of given lay out in college ground.</p>	Theory-0.07 Hrs Practical- 0.71 Hrs Total- 0.78 Hrs	Survey lab tools	Class Room and college ground



LU3. Set out first line for building alignment.	<p>Trainee must be able to:</p> <ul style="list-style-type: none">Measurements of building line from boundary or existing building are determined from site drawings for setting out.Approximate position and length of line, plus building clearance measurement at each end, are determined for hurdle location in accordance with site plan and survey pegs.Pegs and hurdles/profiles are installed approximately level across and between one another with adequate provision to mark footing width on hurdle/profile in accordance with job drawings and specifications.Location for line is accurately marked with nails on hurdles/profiles and line is set taut into position to true alignment with boundary in accordance with job drawings and specifications without error	<ul style="list-style-type: none">Steps of processes for setting outTypes, characteristics, technical capabilities and limitations of setting out devices. <p>Practical activity: Set out lines for alignment in college ground.</p>	Theory-0.07 Hrs Practical-0.71 Hrs Total- 0.78 Hrs	Survey lab tools	Class Room and college ground
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LU4. Set out right angled corners.	Trainee must be able to <ul style="list-style-type: none">Corner of building is determined on set building line to true measurement from adjacent boundary and marked with peg in accordance with job drawings and specifications.Right angle is set up to line from corner peg using triangulation principles.Hurdles/profiles are installed to approximate level of other hurdles and line is set taut to right angled alignment.	<ul style="list-style-type: none">Setting out techniques <p>Practical activity: Set out right angled corners from corner peg using triangulation principles in college ground.</p>	Theory-0.07 Hrs Practical-0.81 Hrs Total- 0.88 Hrs	Survey lab tools	Class Room and college ground
LU5. Install other building lines.	Trainee must be able to <ul style="list-style-type: none">Hurdles for remaining building lines are installed to appropriate locations, approximately level with established hurdles in accordance with job drawings and specifications.Measurements for remaining building lines are accurately marked and nailed on hurdles to dimensions from site drawings.String lines are set taut into position to nailed locations on hurdles in accordance	<ul style="list-style-type: none">Site isolation and traffic control responsibilities and authorities <p>Practical activity: Set string lines in position for remaining building lines in college ground.</p>	Theory-0.07 Hrs Practical-0.61 Hrs Total- 0.68 Hrs	Survey lab tools	Class Room and college ground



	with job Class Room and college ground drawings and specifications.					
LU6. Building lines are checked for square	Trainee must be able to <ul style="list-style-type: none">Diagonal measurements are checked for square and lines are adjusted to provide square relationship within 5mm tolerance over minimum diagonal length of 15m.Measurements are checked for accuracy.	<ul style="list-style-type: none">Basic mathematical techniques associated with setting out <p>Practical activity: Check all building lines to provide a square relationship.</p>	Theory-0.07 Hrs Practical-0.71 Hrs Total- 0.78 Hrs	Survey lab tools	Class Room and college ground	
LU7. Clean up	Trainee must be able to <ul style="list-style-type: none">Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.Tools plant and equipment are cleaned, checked for faults and maintained and stored in accordance with workplace practices	<ul style="list-style-type: none">Explanation of need for store in a projectClassification of stores- stock <p>Practical activity: Clean the area and tools and store it in proper storage area in lab.</p>	Theory-0.07 Hrs Practical-0.71 Hrs Total- 0.78 Hrs			



0732B&CE-81. Carryout excavation and install supports

Objective: This module covers the knowledge and skills required to excavate and install trench and excavation support on a new or existing site, in order to make provisions for footings/slabs or to provide/repair/divert services.

Duration: 6 Hours

Theory: 1 Hours

Practice: 5 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Plan and prepare	Trainee will be able to: <ul style="list-style-type: none">Work instructions are confirmed with supervisor.Material quantity requirements are calculated in accordance with specifications.Material quantity requirements are calculated in accordance with specifications.Materials needed are obtained, checked for compliance and prepared	<ul style="list-style-type: none">Steps to Interpret Plans, specifications and drawingscommon skills and knowledge specified in the introduction to these RMCSCommonly used in-ground servicesmaterial quality requirementcalculation of material quantity <p>Practical activity: Interpret excavation lay out of a 5 Marla house calculate quantities required.</p>	Theory-0.125 Hrs Practical-0.625 Hrs Total- 0.75 Hrs	Pencil Eraser Notebook	Class Room
LU2. Locate excavation site and erect safety equipment	Trainee will be able to: <ul style="list-style-type: none">Excavation site is located, and line and depth are established from site plans and instructions.	<ul style="list-style-type: none">Setting out techniquesUse of levelling equipment <p>Practical activity:</p>	Theory-0.125 Hrs Practical-0.625 Hrs Total- 0.75 Hrs	Hoe Trowel Rake Mattock	Class Room and



	<ul style="list-style-type: none">• Service points and the excavation limits are set and marked.• Temporary drainage system is established to divert surface and sub-surface water.• Service markers are identified and interference with underground services avoided.	Mark boundaries of given lay out of 5 Marla house in college ground.		Spade shovel PPEs	college ground
LU3. Dig Excavations	Trainee must be able to: <ul style="list-style-type: none">• Excavations are safely dug with hand tools to ensure correct route, line and depth.• Machine operator is assisted with excavation to ensure correct route, line and depth.• Trench or excavation support is installed if required.	<ul style="list-style-type: none">• Description of excavation materials• Description of excavation techniques• Definition of excavation.• Types of excavation supports. <p>Practical activity: Dig excavation on marked layout of 5 Marla house in college ground.</p>	Theory-0.125 Hrs Practical-0.75 Hrs Total- 0.875 Hrs	Hoe Trowel Rake Mattock Spade shovel PPEs	Class Room and college ground
LU4. Perform Clean up.	Trainee must be able to <ul style="list-style-type: none">• Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.• Tools plant and equipment are cleaned, checked for faults and maintained and	<ul style="list-style-type: none">• Purpose of maintaining and cleaning equipment and tools <p>Practical activity: Clean the area and tools and store it in proper storage area in lab.</p>	Theory-0.125 Hrs Practical-0.5 Hrs Total- 0.625Hrs	Cleaning tools	Class Room and college ground



	stored in accordance with workplace practices.				
LU5. Plan and prepare for installing trench support	Trainee must be able to <ul style="list-style-type: none">Access, interpret and apply trench support documentation, and ensure the work activity is compliantObtain, read, interpret, clarify and confirm work requirementsIdentify and address potential risks, hazards and environmental issues, and implement control measuresSelect and wear personal protective equipment appropriate for work activitiesIdentify, obtain and implement traffic signage requirementsSelect, and check for faults, equipment and/or attachments for work activitiesObtain and interpret emergency procedures, and be prepared for fire/accident/emergency	<ul style="list-style-type: none">Definition of shoring.Description types and components of shoring.Safety measures during excavationTypes of signage and barricades used during excavation activity <p>Practical activity: Set out safety measures and use PPEs for installing trench support.</p>	Theory-0.125 Hrs Practical-0.625 Hrs Total- 0.75 Hrs	Pencil Eraser Notebook	Class Room and college ground
LU6. Install trench shoring	Trainee must be able to	<ul style="list-style-type: none">Procedure to install shoring.Shoring elements. <p>Practical activity:</p>	Theory-0.125 Hrs	Battens Props planks	Class Room and



	<ul style="list-style-type: none">• Communicate with plant operator and ensure the excavation of trenches complies with site plan, line and depth• Determine and prepare shoring method• Set out positioning of shoring• Position/erect shoring within the trench• Secure shoring in position and ensure structural conformity with regulations• Clean out excavation• Locate ladders for safe access and egress	Install shoring elements in designed excavation in lab/college ground.	Practical-0.625 Hrs Total- 0.75 Hrs	sole plate	college ground
LU7. Remove trench shoring	Trainee must be able to <ul style="list-style-type: none">• Release jacking mechanisms and remove ladders• Check shoring and prepare it for lifting from the trench• Remove shoring from trench and store it	<ul style="list-style-type: none">• Explanation of need of shoring• Explanation jacking.• Procedure to remove jacking <p>Practical activity: Remove the shoring elements from trench in lab / college ground.</p>	Theory-0.125 Hrs Practical-0.625 Hrs Total- 0.75 Hrs	Battens Props planks sole plate	Class Room and college ground
LU8. Conduct housekeeping activities	Trainee must be able to <ul style="list-style-type: none">• Clear work area and dispose of or recycle materials• Clean and maintain condition of equipment, ensure suitability for use, and address/report issues	<ul style="list-style-type: none">• Understanding of equipment's usage and maintenance <p>Practical activity: Clean the area and tools and store it in proper storage area in lab.</p>	Theory-0.125 Hrs Practical-0.625 Hrs Total- 0.75 Hrs	Cleaning tools	College ground



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	<ul style="list-style-type: none">• Manage/report hazards, and maintain a safe working environment• Process written records				
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0732B&CE-082. Place Concrete in Foundations

Objective: This module covers the knowledge and skills required to identify and select hand, power and pneumatic tools for given tasks and safely use and maintain a minimum of rule, tape, square, hammer, hand saw, hand plane, chisel, shovel, wheelbarrow, sledge hammer, pick, mattock and crow bar and pinch bar for given tasks.

Duration: 3.5 Hours

Theory: 0.5 Hours

Practice: 3 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Plan and prepare	Trainee will be able to: <ul style="list-style-type: none">Work instructions are confirmed with supervisor.Material quantity requirements are calculated in accordance with specifications.Material quantity requirements are calculated in accordance with specifications.Materials needed are obtained, checked for compliance and prepared	<ul style="list-style-type: none">Concrete ingredients ratioConcrete materialsBatching techniques <p>Practical activity: Calculate the tools and materials required in concrete placing and plan the activity.</p>	Theory-0.125 Hrs Practical-1 Hrs Total- 1.125 Hrs	Pencil Eraser Notebook	Class Room
LU2. Define and prepare work area	Trainee will be able to: <ul style="list-style-type: none">Concrete is received, checked for debris and discharged into wheelbarrow, kibble, pump or hopper.	<ul style="list-style-type: none">Requirements of area where concrete is placeConcrete setting time <p>Practical activity:</p>	Theory-0.125 Hrs Practical-0.5 Hrs	Water tight platform / sheet	Class Room and Construction lab



	<ul style="list-style-type: none">Location of concrete placement is determined from plans and specifications and is checked to be free of debris and waste.	Identify any water tight surface in lab	Total- 0.65 Hrs		
LU3. Place, screed and level concrete	Trainee must be able to: <ul style="list-style-type: none">Concrete is placed in horizontal layers into location to mark out levels.Height of vertical drop of concrete is minimized to avoidSegregation of concrete materials.Poured concrete is consolidated during process using compaction or vibration method.Finished levels are checked using appropriate levelling device.Concrete is screened to correct levels and grades using appropriate straight edged tool/formwork-mounted screed.	<ul style="list-style-type: none">Finishing techniques of concrete and tools usedWhat is Concrete segregationVibrators typesCompaction requirement in concreteTypes, characteristics, uses and limitations of plant, tools and equipment <p>Practical activity: pPace concrete in specified area of lab and apply levelling techniques</p>	Theory-0.125 Hrs Practical-1 Hrs Total- 1.125 Hrs	Chutes Line pumps Measuring tapes and rules, mechanized dumpers Rakes Screed boards shovels, stipple devices Trowels /troweling machines Vibrators Wheelbarrows	Class Room and Construction lab
LU4. Clean up.	Trainee must be able to <ul style="list-style-type: none">Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.	<ul style="list-style-type: none">What is the purpose of maintaining and cleaning equipment and tools? <p>Practical activity:</p>	Theory-0.125 Hrs Practical-0.5 Hrs	Cleaning tools	Class Room and Construction lab



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	<ul style="list-style-type: none">Tools plant and equipment are cleaned, checked for faults and maintained and stored in accordance with workplace practices.	Set out right angled corners from corner peg using triangulation principles in college ground.	Total- 0.65 Hrs		
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0732B&CE-083. Prepare for construction Process (Brick/ block laying)

Objective: This module covers the knowledge and skills required to to Plan work, Set out brickwork/ blockwork, Lay bricks/blocks forming steps and wing walls and Clean up

Duration: 6.5 Hours

Theory: 0.5 Hours

Practice: 6 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Plan work	Trainee will be able to: <ul style="list-style-type: none">Work instructions are confirmed with supervisor.Material quantity requirements are calculated in accordance with specifications.Material quantity requirements are calculated in accordance with specifications.Materials needed are obtained, checked for compliance and prepared	<ul style="list-style-type: none">Definition of masonry work.Types of brick masonry.Understanding of Plans, specifications and drawings <p>Practical activity: Calculate the materials and tools required in brick /block masonry work.</p>	Theory-0.125 Hrs Practical-1.5 Hrs Total- 1.625 Hrs	Pencil Eraser Notebook	Class Room
LU2. Set out brickwork/ blockwork	Trainee will be able to: <ul style="list-style-type: none">Work platform is erected in accordance with workplace requirements.	<ul style="list-style-type: none">Characteristics and applications of materials for masonry steps and stairs construction	Theory-0.125 Hrs		Class Room and



	<ul style="list-style-type: none">• Location and relative level of prepared footing are checked from job drawings and specifications.• Rise and going of flight and individual steps are calculated to codes and workplace requirements.• Flight and individual steps are set out from calculations and job drawings.	<ul style="list-style-type: none">• Description of the types Stairs.• Explanation of elements of stairs. <p>Practical activity: Set out brickwork/ blockwork in construction lab.</p>	Practical- 2 Hrs Total- 2.125 Hrs		Construction lab
LU3. Mix concrete	<p>Trainee must be able to:</p> <ul style="list-style-type: none">• Mortar mix is prepared to required conformity and bricks/blocks are laid to set out according to specifications.• Base brickwork is constructed to specifications.• Steps are formed square, level, plumb and true and laid to specified bond.• Profile of steps is constructed to bond and design, aligned and plumb to specifications.• Parallel wing walls are formed to step alignment in accordance with specifications.	<ul style="list-style-type: none">• Techniques of masonry steps and stairs construction• Procedure of Horizontal and vertical Leveling• Definition of wing wall <p>Practical activity: Mix concrete in construction lab.</p>	Theory-0.125 Hrs Practical-1.5 Hrs Total- 1.625 Hrs	Bolsters, brick buggies and brick grabs, brooms, buckets, Concrete mixers, Dumpy levels, Elevators, Forklifts, Hammers (bricks, club and scotch), hoses, Jig saws,	Class Room and Construction lab



	<ul style="list-style-type: none">Jointing is carried out to work specifications.Brickwork/block work is laid to line, set out with gauge and completed to work specifications.Brick/block faces are cleaned free of mortar.		jointing tools, Line blocks and line pins Margin or raking tools, masonry saws, masonry squares, hoists, measuring tapes and rules, mortar boards, Pallet trolleys, Plumb rules, profiles Scaffolds, shovels, small petrol or diesel engines and	
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				compressor spirit levels, straight edges string lines, Trowels, Wheel barrows	
LU4. Clean up.	Trainee must be able to <ul style="list-style-type: none">Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.Tools plant and equipment are cleaned, checked for faults and maintained and stored in accordance with workplace practices.	<ul style="list-style-type: none">Purpose of maintaining and cleaning equipment and tools. Practical activity: Clean the area and maintain equipment's	Theory-0.125 Hrs Practical-1 Hrs Total- 1.125 Hrs	Cleaning tools	Class Room and construction lab

0732B&CE-084. Mix Cementitious materials (Mortar & Concrete)

Objective: This module covers the knowledge and skills required to Plan work, mix mortar, mix concrete and Clean up

Duration: 4 Hours

Theory: 1 Hours

Practice: 3 Hours



Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Plan work	<p>Trainee will be able to:</p> <ul style="list-style-type: none">Work instructions are confirmed with supervisor.Material quantity requirements are calculated in accordance with specifications.Material quantity requirements are calculated in accordance with specifications.Materials needed are obtained, checked for compliance and prepared	<ul style="list-style-type: none">Definition of mortar.Types of mortarIngredients in mortarDefinition of ConcreteTypes of concrete.Ingredients in concrete <p>Practical activity: Calculate the materials and tools required in mortar and concrete</p>	Theory- 0.25 Hrs Practical-0.95 Hrs Total- 1.2 Hrs	Pencil Eraser Notebook	Class Room
LU2. Mix mortar	<p>Trainee will be able to:</p> <ul style="list-style-type: none">Work platform is erected in accordance with workplace requirements.Location and relative level of prepared.Mix dry ingredients according to standardsAdd water to desired consistency in 3 steps and mix wellApply the mortar.	<ul style="list-style-type: none">Steps to mix mortar.W/c requirementExplanation of different characteristics of mortar. <p>Practical activity: Mix mortar.</p>	Theory- 0.25 Hrs Practical-0.55 Hrs Total- 0.8 Hrs	Water tight platform / sheet brooms, buckets, Concrete mixers, Dumpy levels, hoses, shovels, small petrol or diesel engines spirit	Class Room and construction lab



				levels, straight edges string lines, Trowels, Wheelbarrows	
LU3. Mix concrete.	Trainee must be able to: <ul style="list-style-type: none">Work platform is erected in accordance with workplace requirements.Location and relative level of prepared.Mix dry ingredients according to standardsAdd water to desired consistency in 3 steps and mix wellApply the concrete.	<ul style="list-style-type: none">Techniques of mixing concreteDefinition of concrete. <p>Practical activity: Mix concrete in construction lab</p>	Theory- 0.25 Hrs Practical-0.75 Hrs Total- 1 Hrs	brooms, buckets, Concrete mixers, Dumpy levels, hoses, shovels, small petrol or diesel engines spirit levels, straight edges string lines, Trowels, Wheelbarrows	Class Room and construction lab
LU4. Clean up.	Trainee must be able to <ul style="list-style-type: none">Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.Tools plant and equipment are cleaned, checked for faults and	<ul style="list-style-type: none">Explanation of purpose of maintaining and cleaning equipment and tools. <p>Practical activity: Clean up.</p>	Theory- 0.25 Hrs Practical-0.75 Hrs Total- 1 Hrs	Cleaning tools	Class Room and construction lab



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	maintained and stored in accordance with workplace practices.				
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0732B&CE-085. Install flashing and damp-proof course

Objective: This module covers the knowledge and skills required to required install flashings and damp proofing products to different **types** and styles of buildings.

Duration: 4 Hours

Theory: 1 Hours

Practice: 3 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Plan work	Trainee will be able to: <ul style="list-style-type: none">Work instructions are confirmed with supervisor.Material quantity requirements are calculated in accordance with specifications.Material quantity requirements are calculated in accordance with specifications.Materials needed are obtained, checked for compliance and prepared	<ul style="list-style-type: none">Definition of waterproofingDescription of waterproofing materials.Definition of DPC. <p>Practical activity: Calculate the materials and tools required in installing damp proof course</p>	Theory-0.2 Hrs Practical-0.6 Hrs Total- 0.8 Hrs	Pencil Eraser Notebook	Class Room
LU2. Prepare for work.	Trainee will be able to:	<ul style="list-style-type: none">Characteristics and applications of materials to install flashings and DPC	Theory-0.2 Hrs	Water tight platform / sheet	Class Room and



	<ul style="list-style-type: none">• Type of flashing and damp proofing material are identified in accordance with and state of structure.• Area of structure for damp proofing is identified from or site inspection and inspected for defects.• Defects are corrected and surface preparation of structure requiring damp proofing is carried out to manufacturer specifications	<ul style="list-style-type: none">• Types Stairs• Explanation of elements of stairs• Explanation of surface defects.• Surface preparation for DPC. <p>Practical activity: Mark boundaries of drawn lay out in college ground.</p>	Practical-0.6 Hrs Total- 0.8 Hrs		construction lab
LU3. Install damp proof course	<p>Trainee must be able to:</p> <ul style="list-style-type: none">• Damp proof is installed in accordance with work specifications.• Flashing or damp-proof course is laid and lapped in accordance with specifications.• Damp proof material is applied with a consistent mortar bed on top and bottom.• Damp proof course is folded to follow shape of surrounding structures	<ul style="list-style-type: none">• Procedure of Laying of DPC. <p>Practical activity: Set out lines for alignment in college ground.</p>	Theory-0.2 Hrs Practical-0.6 Hrs Total- 0.8 Hrs	Bolsters, brick buggies and brick grabs, brooms, buckets, Concrete mixers, Dumpy levels, Elevators, Forklifts, Hammers (bricks, club and scotch), hoses, Jig saws, jointing tools, Line blocks and line pins Margin or raking tools, masonry saws, masonry squares, hoists,	Class Room and construction lab



				measuring tapes and rules, mortar boards, Pallet trolleys, Plumb rules, profiles Scaffolds, shovels, small petrol or diesel engines and compressors spirit levels, straight edges string lines, Trowels Wheel barrows	
LU4. Install moisture proof barrier or flashings	Trainee must be able to: <ul style="list-style-type: none">• Flashing materials are prepared for application to surrounding structures in accordance with requirements.• Flashing material is laid, lapped and joined to follow shape of surrounding structure.	<ul style="list-style-type: none">• Definition and purpose of flashing <p>Practical activity: Set out right angled corners from corner peg using triangulation principles in college ground.</p>	Theory-0.2 Hrs Practical-0.6 Hrs Total- 0.8 Hrs	Bolsters, brick buggies and brick grabs, brooms, buckets, Concrete mixers, Dumpy levels, Elevators, Forklifts, Hammers (bricks, club and scotch), hoses, Jig saws, jointing tools, Line blocks and line pins	Class room and construction lab



	<ul style="list-style-type: none">• Flashings or moisture barrier material is formed and sealed around openings.• Flashing and damp-proof course are installed to project outside of mortar joint on external surface, and outside of brickwork in accordance with specifications.			Margin or raking tools, masonry saws, masonry squares, hoists, measuring tapes and rules, mortar boards, Pallet trolleys, Plumb rules, profiles Scaffolds, shovels, small petrol or diesel engines and compressor spirit levels, straight edges string lines, Trowels, Wheelbarrows	
LU5. Clean up.	Trainee must be able to <ul style="list-style-type: none">• Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.• Tools plant and equipment are cleaned, checked for faults and maintained and stored in	<ul style="list-style-type: none">• Purpose of maintaining and cleaning equipment and tools. <p>Practical activity: Set out right angled corners from corner peg using triangulation principles in college ground.</p>	Theory-0.2 Hrs Practical-0.6 Hrs Total- 0.8 Hrs	Cleaning tools	Class Room and construction lab



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	accordance with workplace practices.				
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0732B&CE-086. Carry out brick work

Objective: This module covers the knowledge and skills required to lay and construct brick and masonry buildings.

Duration: 6.5 Hours

Theory: 0.5 Hours

Practice: 6 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Plan work	<p>Trainee will be able to:</p> <ul style="list-style-type: none">Work instructions are confirmed with supervisor.Material quantity requirements are calculated in accordance with specifications.Material quantity requirements are calculated in accordance with specifications.Materials needed are obtained, checked for compliance and prepared	<ul style="list-style-type: none">Definition of veneer constructionExplanation of materials used in veneer construction. <p>Practical activity: Calculate the materials and tools required in veneer construction.</p>	Theory-0.083 Hrs Practical-1 Hrs Total- 1.083 Hrs	Pencil Eraser Notebook	Class Room
LU2. Set out brickwork/ block work.	<p>Trainee will be able to:</p> <ul style="list-style-type: none">Bricks/blocks are identified, selected and checked for conformity with specifications.Work platform is erected in accordance with workplace requirements.	<ul style="list-style-type: none">Characteristics and applications of materials for veneer construction.Explanation of types brick bond pattern mostly used.	Theory-0.083 Hrs Practical-1 Hrs Total- 1.083 Hrs	Water tight platform / sheet	Class Room and construction lab



	<ul style="list-style-type: none">• Location and structural details of brickwork/block work are identified from plans.• Base brickwork construction, below and above floor is set out to location, dimensions and specifications.	Practical activity: Lay brickwork/ block work for a straight wall in lab.			
LU3. Install damp proof course	Trainee must be able to: <ul style="list-style-type: none">• Mortar mix is prepared and checked for conformity and bricks/blocks laid to set out to specification.• Brickwork/blockwork gauge is determined and set out rod is prepared.• Base brickwork/blockwork is constructed for veneer construction to requirements of regulations and specifications.• Sub-floor ventilation is installed in accordance with specifications.	<ul style="list-style-type: none">• Description of Surface requirement for placing DPC.• Explanation of Materials used as DPC. Practical activity: Install DPC above brick wall in lab.	Theory-0.083 Hrs Practical-1 Hrs Total- 1.083 Hrs	Bolsters, brick buggies and brick grabs, brooms, buckets, Concrete mixers, Dumpy levels, Elevators, Forklifts, Hammers (bricks, club and scotch), hoses, Jig saws, jointing tools, Line blocks and line pins Margin or raking tools, masonry saws, masonry squares, hoists,	Class Room and construction lab



				measuring tapes and rules, mortar boards, Pallet trolleys, Plumb rules, profiles Scaffolds, shovels, small petrol or diesel engines and compressor spirit levels, straight edges string lines, Trowels, Wheelbarrows	
LU4. Construct Veneer Walls	Trainee will be able to: <ul style="list-style-type: none">Structural frame is checked to ensure it is ready for brick or block veneer construction maintaining minimum cavity.Damp proof courses are installed to specifications.Ventilation for veneer construction is built to specifications.	<ul style="list-style-type: none">Explanation of elements of veneer wallDescription of wall tiesDescription of purpose of lintelDefinition of weep holesControl joint purpose and design.	Theory-0.085 Hrs Practical-1.5 Hrs Total- 1.585 Hrs	Bolsters, brick buggies and brick grabs, brooms, buckets, Concrete mixers, Dumpy levels, Elevators, Forklifts,	Class Room and construction lab



	<ul style="list-style-type: none">• Wall ties are positioned and correctly fixed to framework to specifications.• Openings are constructed and flashings installed.• Cavities are kept clear of mortar droppings and bridging.• Lintels are installed.• Top brickwork/ block work is constructed to eaves/gable level in accordance with standards.• Veneer gable is constructed as required by plans and specifications.• Walls are built to gauge straight and true in plumb, line and level within standards tolerance.• Control joints are formed in accordance with locations on job drawings and specifications.• Weep holes, brick/block reinforcing and wall flashing are located and built in to.• Sill bricks are cut where required and laid to line in accordance with work specifications.	<ul style="list-style-type: none">• Definition of dry wall• Definition of sheathing <p>Practical activity: Construct a veneer wall, also provide an opening in it in lab area.</p>		Hammers (bricks, club and scotch), hoses, Jig saws, jointing tools, Line blocks and line pins Margin or raking tools, masonry saws, masonry squares, hoists, measuring tapes and rules, mortar boards, Pallet trolleys, Plumb rules, profiles Scaffolds, shovels, small petrol or diesel engines and compressors spirit levels, straight edges string lines,	
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				Trowels, Wheelbarrows	
LU5. Rake/ rule joints and clean face.	Trainee will be able to: <ul style="list-style-type: none">• Joints of laid brickwork/block work are raked or ruled to correct depth and profile in accordance with work specifications.• Brickwork/block work is brushed down prior to drying to remove unwanted mortar and face is cleaned.• Excess mortar is removed from brick/block work surfaces and cavities are cleaned free of mortar and debris.	<ul style="list-style-type: none">• Explanation of types of brick joints• Definition of raking of joints.• Types of raking. <p>Practical activity: Rake the joints in brick wall in lab.</p>	Theory-0.083 Practical-1 Hrs Total- 1.083		Class Room and construction lab
LU6. Clean up	Trainee must be able to <ul style="list-style-type: none">• Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.• Tools plant and equipment are cleaned, checked for faults and maintained and stored in accordance with workplace practices.	<ul style="list-style-type: none">• Explanation of purpose of maintaining and cleaning equipment and tools. <p>Practical activity: Set out right angled corners from corner peg using triangulation principles in college ground.</p>	Theory-0.083 Practical-0.5 Total- 0.583	Cleaning tools	Class Room and construction lab



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0732B&CE-087. Construct Cavity Wall

Objective: This module covers the knowledge and skills required to prepare for work, set out brickwork/ blockwork, construct base of brickwork/ block work, position door and window frames, construct brick walls, rake or rule joints, and clean up.

Duration: 6.5 Hours

Theory: 0.5 Hours

Practice: 6 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for work	<p>Trainee will be able to:</p> <ul style="list-style-type: none">Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant <i>information</i>, confirmed and applied to determine bricklaying and block laying tasks.Safety (OHS) requirements are followed in accordance with safety plans and policies.	<ul style="list-style-type: none">Definition of cavity wallExplanation of elements of cavity wall construction.Steps of processes for the calculation of material requirements, quality requirements <p>Practical activity: Calculate the materials and tools required in cavity construction.</p>	Theory-0.07 Hrs Practical-0.85 Hrs Total- 0.92 Hrs	Pencil Eraser Notebook	Class Room



<ul style="list-style-type: none">• Signage and barricade requirements are identified and implemented.• Plant, tools and equipment selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.• Material quantity requirements are calculated in accordance with plans, specifications and <i>quality requirements</i>.• <i>Materials</i> appropriate to the work application, including required fire resistance rating, are identified, obtained, prepared, safely handled and located ready for use.• Environmental requirements are identified for the project in accordance with environmental plans and statutory and regulatory				
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	authority obligations, and are applied.				
LU2. Set out brickwork/ block work.	Trainee will be able to: <ul style="list-style-type: none">Bricks/blocks are identified, selected and checked for conformity with specificationsWork platform is erected in accordance with workplace requirements.Location and structural details of brickwork/block work are identified from plans.Base brickwork construction, below and above floor is set out to location, dimensions and specifications.Load bearing brickwork, including engaged piers, dwarf walls, isolated piers and corbelling are	<ul style="list-style-type: none">Characteristics and techniques of cavity wall construction. <p>Practical activity: Lay brickwork/ block work for cavity wall of in straight line in lab.</p>	Theory-0.07 Hrs Practical-0.85 Hrs Total- 0.92 Hrs	Bolsters, brick buggies and brick grabs, brooms, buckets, Concrete mixers, Dumpy levels, Elevators, Forklifts, Hammers (bricks, club and scotch), hoses, Jig saws, jointing tools, Line blocks and line pins Margin or raking tools, masonry saws, masonry squares,	Class Room and construction lab



	<p>set out to job drawings and specifications.</p> <ul style="list-style-type: none">• Cavity brick wall is set out to requirements of job drawings.			<p>hoists, measuring tapes and rules, mortar boards, Pallet trolleys, Plumb rules, profiles Scaffolds, shovels, small petrol or diesel engines and compressor spirit levels, straight edges string lines, Trowels Wheel barrows</p>	
LU3. Construct Base of	<p>Trainee must be able to:</p> <ul style="list-style-type: none">• Mortar mix is prepared and checked for	<ul style="list-style-type: none">• What is Surface requirement for placing DPC.	Theory-0.07 Hrs	Bolsters, brick buggies and brick grabs,	Class Room and



brickwork/ block work.	<p>conformity and bricks/blocks laid to set out to specification.</p> <ul style="list-style-type: none">Brickwork/block work gauge is determined and set out rod is prepared.Base brickwork/block work is constructed for cavity construction to requirements of regulations and specifications.	<ul style="list-style-type: none">What are the Materials used as DPC.Techniques of cavity brick construction, including: - anti- termite measures, closing of cavities and capping systems, damp proofing, floor, wall and roof members, gable and eaves construction, lintels and load bearing components, stepped and level flashing for parapets and gables, sub-floor construction, tying components, ventilation, vermin control <p>Practical activity: Construct a base of brick work for cavity wall in lab.</p>	Practical-0.85 Hrs Total- 0.92 Hrs	brooms, buckets, Concrete mixers, Dumpy levels, Elevators, Forklifts, Hammers (bricks, club and scotch), hoses, Jig saws, jointing tools, Line blocks and line pins Margin or raking tools, masonry saws, masonry squares, hoists, measuring tapes and rules, mortar boards, Pallet Trolleys,	construction lab
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			Plumb Rules, profiles Scaffolds, shovels, small petrol or diesel engines and compressor spirit levels, straight edges string lines, Trowel Wheel barrows	
LU4. Position door and window frames.	Trainee will be able to: <ul style="list-style-type: none">Window frames are located and built in to cavity walls to specification, and are protected from mortar droppings during construction.Door jambs are located, built in and fixed to cavity walls and single leaf walls according to job drawings and specifications	<ul style="list-style-type: none">Explanation of types of doorExplanation of elements of door and door frame.Procedure to install door and window in cavity wallDescription of purpose of cavity wall <p>Practical activity: Install door in cavity wall construction in lab.</p>	Theory-0.07 Hrs Practical-0.85 Hrs Total- 0.92 Hrs	Class Room and construction lab



LU5. Construct brick walls.	Trainee will be able to: <ul style="list-style-type: none">Brick or block cavity construction walls are constructed to job specifications and standards.Damp proof courses and flashings are laid/built in to job specifications.Ventilation for solid brick construction is built to requirements of job specification and regulations.Walls are to be straight and true in plumb, line and level within standard tolerances.Wall ties are positioned to comply with standards.Openings are constructed and flashing is installed to job specifications.Lintels are installed to job specifications.	<ul style="list-style-type: none">Gable and parapet.Lateral support system for ceiling.Procedure for hz and vt leveling of cavity wallMortar and c concrete requirements. <p>Practical activity: Provide wall, ties DPC, lintel, control joints, weep holes and levelling of cavity wall in lab.</p>	Theory-0.07 Hrs Practical-0.85 Hrs Total- 0.92 Hrs	Bolsters, brick buggies and brick grabs, brooms, buckets, Concrete mixers, Dumpy levels, Elevators, Forklifts, Hammers (bricks, club and scotch), hoses, Jig saws, jointing tools, Line blocks and line pins Margin or raking tools, masonry saws, Masonry squares Hoists, Measuring tapes and rules, Mortar	Class Room and construction lab
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	<ul style="list-style-type: none">Control joints are formed in accordance with locations on job drawings and standards.Weep holes, brick reinforcing, vermin proofing and wall flashings are located and built in to job specifications.Gables and parapets are constructed by plans and specifications.Sill bricks are cut and laid to line in accordance with job specifications.Tie down and lateral support systems for ceiling/roof structures are installed to walls in accordance with plans, specifications and standards.			Boards Pallet trolleys, Plumb rules, profiles Scaffolds, shovels, small petrol or diesel engines and compressor spirit levels, straight edges string lines, Trowels Wheelbarrows	
LU6. Rake or rule joints	Trainee will be able to: <ul style="list-style-type: none">Joints of laid brickwork/block work are raked or ruled to correct depth and profile in accordance with job specifications.	<ul style="list-style-type: none">Procedure for raking the joints. Practical activity Rake the joints in brick cavity wall in lab.	Theory-0.07 Hrs Practical-0.85 Hrs Total- 0.92 Hrs	Raking tools	



	<ul style="list-style-type: none">Brickwork/block work is brushed down prior to drying to remove unwanted mortar.Excess mortar is removed from brick/block work surfaces and cavities are cleaned free of mortar and debris in accordance with manufacturer recommendations, job specifications and standards.				
LU7. Clean up.	<p>Trainee must be able to</p> <ul style="list-style-type: none">Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.Tools plant and equipment are cleaned, checked for faults and maintained and stored in accordance with workplace practices.	<ul style="list-style-type: none">Description of purpose of maintaining and cleaning equipment and tools. <p>Practical activity: Clean the area and check tools and equipment</p>	Theory-0.07 Hrs Practical-0.85 Hrs Total- 0.92 Hrs	Cleaning tools	Class Room and construction lab



0732B&CE-088. Construct Curved Wall

Objective: This module covers the knowledge and skills required to Plan work, Set out curve for construction of curved masonry wall, Lay curved wall, Finish Joints and Clean up

Duration: 7 Hours

Theory: 1 Hours

Practice: 6 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for work	Trainee will be able to: <ul style="list-style-type: none">Work instructions are confirmed with supervisor.Tools and equipment are selected as required, checked for serviceability and any faults are fixed or reported.Material quantity requirements are calculated in accordance with specifications.Materials needed are obtained, checked for compliance and prepared.	<ul style="list-style-type: none">Cavity wallElements of cavity wall construction.Processes for the calculation of material requirements, quality requirements <p>Practical activity: Calculate the materials and tools required in curved wall construction.</p>	Theory-0.2 Hrs Practical-1.2 Hrs Total- 1.4 Hrs	Pencil Eraser Notebook	Class Room
LU2. Set out curve for construction of curved masonry wall	Trainee will be able to: <ul style="list-style-type: none">Planned curve points are plotted from job drawings and all trammel centers are established on footing slab.	<ul style="list-style-type: none">Geometric calculation <p>Practical activity: Plot curved line on floor in construction lab.</p>	Theory-0.2 Hrs Practical-1.2 Hrs Total- 1.4 Hrs	Measuring tape	Class Room and construction lab



	<ul style="list-style-type: none">Curve of wall is planned to specified location from trammel or plotted points and marked on the footing slab.				
LU3. Lay curved wall.	<p>Trainee must be able to:</p> <ul style="list-style-type: none">Mortar is mixed to specifications.Bricks/blocks are laid for first course to planned set out for line and specified bond according to specifications.Gauge is maintained within standard tolerance at every course level.Vertical face alignment is maintained.Bricks/blocks are laid level over the length of the wall to the established plan profile.Bricks/blocks are laid to specified bond with perpendicular joints (perpends) maintained in a vertical lineConstruction is completed to requirements of job drawings and specifications	<ul style="list-style-type: none">Procedure of laying curved wallTypes of bricks (w.r.t cutting) <p>Practical activity: Construct a curved wall on a planned curved line in construction lab.</p>	Theory-0.2 Hrs Practical-1.9 Hrs Total- 2.1 Hrs	Bolsters, brick buggies and brick grabs, brooms, buckets, Concrete mixers, Dumpy levels, Elevators, Forklifts, Hammers (bricks, club and scotch), hoses, Jig saws, jointing tools, Line blocks and line pins Margin or raking tools, masonry saws, masonry squares,	Class Room and construction lab



			hoists, measuring tapes and rules, mortar boards, Pallet trolleys, Plumb rules, profiles Scaffolds, shovels, small petrol or diesel engines and compressor spirit levels, straight edges string lines, Trowels Wheelbarrows		
LU4. Finish Joints.	Trainee will be able to: <ul style="list-style-type: none">Excess mortar is removed from brick/ blockwork surfaces in accordance with work specifications.	<ul style="list-style-type: none">Finishing techniques of brick wall Practical activity: Rake / rule the brick wall.	Theory-0.2 Hrs Practical-1.2 Hrs Total- 1.4 Hrs	Wire brush Raking tools Masonry square Trowels Duster	Class Room and construction lab



	<ul style="list-style-type: none">• Joints of laid brickwork/blockwork are raked or ruled to correct profile and depth to.• Brickwork/blockwork is brushed down prior to drying.			Broom	
LU5. Clean up.	<p>Trainee must be able to</p> <ul style="list-style-type: none">• Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.• Tools plant and equipment are cleaned, checked for faults and maintained and stored in accordance with workplace practices.	<ul style="list-style-type: none">• Description of purpose of maintaining and cleaning equipment and tools. <p>Practical activity: Clean the area and check tools and equipment</p>	<p>Theory-0.2 Hrs Practical-0.5 Hrs Total- 0.7 Hrs</p>	Cleaning tools	Class Room and construction lab



0732B&CE-089. Construct Masonry arches (semi-circular and segmental)

Objective: This module covers the knowledge and skills required to Plan work, Set out first course for masonry arch, Prepare for arch construction, Construct arch center, Set up arch center, Cut and lay brick/ block to arch, Finish Joints and Clean up

Duration: 7 Hours

Theory: 1 Hours

Practice: 6Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for work	Trainee will be able to: <ul style="list-style-type: none">Work instructions are confirmed with supervisor.Select Tools and equipment as required, checked for serviceability and any faults are fixed or reported.Material quantity requirements are calculated in accordance with specifications.Materials needed are obtained, checked for compliance and prepared.	<ul style="list-style-type: none">Definition of ArchesExplanation of arch typesProcesses for the calculation of material requirements, quality requirements <p>Practical activity: Calculate the materials and tools required in arch construction</p>	Theory-0.125 Hrs Practical-0.75 Hrs Total-0.875 Hrs	Pencil Eraser Notebook	Class Room
LU2. Set out first course for masonry arch	Trainee will be able to: <ul style="list-style-type: none">Understanding of Geometric calculation drawing	<ul style="list-style-type: none">Understanding of Geometric calculation drawing	Theory-0.125 Hrs	Measuring tape	Class Room and



	<ul style="list-style-type: none">• Location and line of brickwork/blockwork wall are set out on concrete footing/slab to job drawings.• Pan of arch is determined from prepared allotted arch centre plus 4mm.• Arch spans are set out to location for first course.	<ul style="list-style-type: none">• Explanation of Elements of arch <p>Practical activity: Set out first course for masonry arch in construction lab.</p>	Practical-0.75 Hrs Total-0.875 Hrs		construction lab
LU3. Prepare for arch construction.	<p>Trainee must be able to:</p> <ul style="list-style-type: none">• Mortar mix is prepared and bricks/blocks are laid to form wall to set out.• Gauge of abutting walls is maintained within standard tolerance at each course level.• Plumb and alignment of vertical wall face are maintained.• Bricks are cut and laid level and to line over length of wall.• Abutment jambs/piers are laid vertical up to springing line.	<ul style="list-style-type: none">• Procedure of laying curved wall• Types of bricks (w.r.t cutting)• Alignment techniques <p>Practical activity: Construct a curved wall on a planned curved line in construction lab.</p>	Theory-0.125 Hrs Practical-0.75 Hrs Total-0.875 Hrs	Bolsters, brick buggies and brick grabs, brooms, buckets, Concrete mixers, Dumpy levels, Elevators, Forklifts, Hammers (bricks, club and scotch), hoses, Jig saws,	Class Room and construction lab



	<ul style="list-style-type: none">Bricks/blocks are laid in stretcher bond to springing line of arch with perpendicular joints maintained in vertical line.		jointing tools, Line blocks and line pins masonry saws, masonry squares, hoists, measuring tapes and rules, mortar boards, Pallet trolleys, Plumb rules, profiles Scaffolds, shovels, small petrol or diesel engines	
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				and compressor Wheelbarrows	
LU4. Construct arch center.	Trainee must be able to: <ul style="list-style-type: none">• Arch center is set out and curve is drawn up in accordance with specifications and plan.• Plan is transferred to material and cut to shape.	<ul style="list-style-type: none">• Procedure to set center of arch <p>Practical activity Construct arch center in lab</p>	<p>Theory-0.125 Hrs</p> <p>Practical-0.75 Hrs</p> <p>Total-0.875 Hrs</p>		Class room and construction lab
LU5. Set up arch center	Trainee must be able to: <ul style="list-style-type: none">• Height to springing line is determined and height to crown of arch is confirmed to be within standard tolerance.• Height of toms and wedges or adjustable metal props are determined to set up and support timber arch center.• Supports are adjusted to ensure arch center is level at right angles to wall face and level across springing line.	<ul style="list-style-type: none">• Procedure to set formwork of arch• Procedure to Cutting of brick /blocks to designed shape• PPEs to work at height• Description of elements of formwork• Supporting elements of arch <p>Practical activity Set up arch center</p>	<p>Theory-0.125 Hrs</p> <p>Practical-0.75 Hrs</p> <p>Total-0.875 Hrs</p>	<p>Bolsters, brick buggies and brick grabs, brooms, buckets, Concrete mixers, Dumpy levels, Elevators, Forklifts, Hammers (bricks, club and scotch), hoses,</p>	Class room and construction lab



	<ul style="list-style-type: none">Props, toms, packers and wedges are located for easy removal.Position of central key brick/block is established for gauged arch and tape used to mark gauge		Jig saws, jointing tools, Line blocks and line pins masonry saws, masonry squares, hoists, measuring tapes and rules, mortar boards, Pallet trolleys, Plumb rules, profiles Scaffolds, shovels, small petrol or diesel engines	
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				and compressor Wheelbarrows Required formwork elements	
LU6. Cut and lay brick/ block to arch.	Trainee must be able to: <ul style="list-style-type: none">Bricks and blocks are cut and laid on center to form arch to specifications.Joints are maintained to equal size and parallel on the extrados of an arch.Same size wedge shape is maintained on face.Centre line of key brick/block wedge is maintained through vertical center line of arch.Even joint thickness is maintained around extrados for cut brickwork and blockwork.All bricks are cut and laid to maintain even joints.	<ul style="list-style-type: none">Understanding of drawing specification and interpretationProcedure to check hz and vt levels <p>Practical activity Cut and lay brick/ block to arch.</p>	Theory-0.125 Hrs Practical-0.75 Hrs Total-0.875 Hrs	Bolsters, brick buggies and brick grabs, brooms, buckets Elevators, Forklifts, Hammers (bricks, club and scotch), hoses, Jig saws, jointing tools, Line blocks and line pins masonry saws,	



	<ul style="list-style-type: none">• All joints are struck evenly to depth and shape to specifications.			masonry squares, hoists, measuring tapes and rules, mortar boards, Pallet trolleys, Plumb rules, profiles Scaffolds, shovels, small petrol or diesel engines and compressor Wheelbarrows	
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LU7. Finish Joints.	Trainee must be able to: <ul style="list-style-type: none">Excess mortar is removed from brick/block work surfaces in accordance with work specifications.Joints of laid brickwork/block work are raked or ruled to correct profile and depth to.Brickwork/block work is brushed down prior to drying.	<ul style="list-style-type: none">Finishing techniques of brick masonry workProcedure of raking brickwork face of arch <p>Practical activity: Rake / rule the brick arch wall in lab</p>	Theory-0.125 Hrs Practical-0.75 Hrs Total-0.875 Hrs	straight edges string lines, Trowels Broom Raking tools Margin or raking tools	Class Room and construction lab
LU8. Clean up.	Trainee must be able to <ul style="list-style-type: none">Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.Tools plant and equipment are cleaned, checked for faults and maintained and stored in accordance with workplace practices.	<ul style="list-style-type: none">Description of purpose of maintaining and cleaning equipment and tools. <p>Practical activity: Clean the area and check tools and equipment</p>	Theory-0.125 Hrs Practical-0.75 Hrs Total-0.875 Hrs	Cleaning tools	Class Room and construction lab



0732B&CE-090. Construct Scaffolding

Objective: This module covers the knowledge and skills required to erect and dismantle a range of modular scaffolding systems to provide work platforms for construction

Duration: 6.5 Hours

Theory: 0.5 Hours

Practice: 6 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for work	Trainee will be able to: <ul style="list-style-type: none">Work instructions are confirmed with supervisor.Tools and equipment are selected as required, checked for serviceability and any faults are fixed or reported.Material quantity requirements are calculated in accordance with specifications.Materials needed are obtained, checked for compliance and prepared.	<ul style="list-style-type: none">Definition of scaffolding.Explanation of scaffolding typesProcesses for the calculation of material requirements, quality requirements <p>Practical activity: Calculate the materials and tools required in arch construction</p>	Theory-0.083 Hrs Practical-1.5 Hrs Total- 1.583 Hrs	Pencil Eraser Notebook	Class Room
LU2. Whip, tie, splice and inspect ropes	Trainee will be able to: <ul style="list-style-type: none">Ropes and cords are inspected for damage and wear.	<ul style="list-style-type: none">Explanation of Elements of scaffolding	Theory-0.083 Hrs Practical-1 Hrs		Class Room and construction lab



	<ul style="list-style-type: none">Designated rope ends are whipped and spliced in accordance with regulations and project specifications.Bends and hitches are applied and inspected in accordance with project specifications.	<ul style="list-style-type: none">Understanding of specification of scaffolding elements <p>Practical activity: Whip, tie, splice and inspect ropes in lab.</p>	Total- 1.083 Hrs		
LU3. Erect scaffolding	<p>Trainee must be able to:</p> <ul style="list-style-type: none">Purpose for scaffolding is confirmed and associated work tasks are identified.Expected loading on scaffold and supporting structure is determined using load tables and manufacturer specifications.Scaffolding and components are selected and inspected, and damaged components are labelled and rejected.Sole board/base plate is selected in accordance with regulations, legislation, codes of	<ul style="list-style-type: none">Procedure of setting scaffoldingAlignment techniquesDefinition of lifting devices.Procedure of using lifting devicesSafety precaution to Erect scaffoldingPPEs <p>Practical activity: Erect scaffolding in lab.</p>	Theory-0.083 Hrs Practical-1 Hrs Total- 1.083 Hrs	Adjustable base plates, Bends and hitches, box spanners, braces, bracket scaffolds (tank and formwork) Cantilevered hoists (materials only with maximum capacity of 500kg) Couplers and accessories Fiber ropes Gin wheels, guard rails Hammers	Class Room and construction lab



	<p>practice and manufacturer specifications.</p> <ul style="list-style-type: none">• Scaffolding is set out and erected in accordance with regulatory and manufacturer requirements.• Static lines are erected and installed where specified in accordance with regulatory requirements.• Lifting device is assembled and erected where specified.		<p>Ledgers Mesh guards, mid rails, modular and prefabricated scaffolds Podgers hammers, prefabricated components Safety nets, scaffold belts, scaffolding planks shovels, spanners, spirit levels Stairs or ladders, standards, static lines, steel and aluminum tubes Tape measures, torpedo levels, transoms, Wire nips, wrenches.</p>	
LU4. Inspect, repair and alter erected scaffolding	<p>Trainee must be able to:</p> <ul style="list-style-type: none">• Erected modular scaffolding is inspected for damage, corrosion, wear and compatibility.	<ul style="list-style-type: none">• Procedure to inspect erected scaffolding• Role of scaffolder• Repair procedure	<p>Theory-0.083 Hrs Practical-1 Hrs</p>	<p>Class room and construction lab</p>



	<ul style="list-style-type: none">• Current use of scaffolding is checked against original design and is in accordance with regulations and specifications• Scaffolding stability is inspected and confirmed.• Alteration or repair is carried out where specified.• Inspection log and handover is completed and dated, ready for signing by a certified scaffolder.	<ul style="list-style-type: none">• Defects in scaffolding elements• Defects in scaffolding platform <p>Practical activity Inspect, repair and alter erected scaffolding</p>	Total- 1.083 Hrs		
LU5. Dismantle scaffolding	<p>Trainee must be able to:</p> <ul style="list-style-type: none">• Scaffolding is isolated and appropriately signed and barricaded to ensure safe dismantling.• Scaffolding is dismantled using reverse procedure as for erection.	<ul style="list-style-type: none">• Procedure to dismantle scaffolding• Procedure to set signs and barricade• PPEs to work at height• Safety precaution for Dismantle scaffolding <p>Practical activity Dismantle scaffolding in lab.</p>	Theory-0.083 Hrs Practical-1 Hrs Total- 1.083 Hrs	Dismantling tools	Class room and construction lab



LU6. Clean up.	Trainee must be able to <ul style="list-style-type: none">• Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.• Tools plant and equipment are cleaned, checked for faults and maintained and stored in accordance with workplace practices.	<ul style="list-style-type: none">• Description of purpose of maintaining and cleaning equipment and tools. Practical activity: Clean the area and check tools and equipment	Theory-0.083 Hrs Practical-0.5 Hrs Total- 0.583 Hrs	Cleaning tools	Class Room and construction lab
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0732B&CE-091. Install doors and window frames

Objective: This module covers the knowledge and skills required to set out and install timber and metal window and door units of different types, with appropriate weather proofing, smooth access and good security.

Duration: 6.5 Hours

Theory: 0.5 Hours

Practice: 6 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for work	Trainee will be able to: <ul style="list-style-type: none">Work instructions are confirmed with supervisor.Tools and equipment are selected as required, checked for serviceability and any faults are fixed or reported.Material quantity requirements are calculated in accordance with specifications.Materials needed are obtained, checked for compliance and prepared.	<ul style="list-style-type: none">Definition of door and windowExplanation of types of doors and windows.Processes for the calculation of material requirements, quality requirements <p>Practical activity: Calculate the materials and tools required for window/door installation in lab.</p>	Theory-0.083 Hrs Practical-1 Hrs Total- 1.083 Hrs	Pencil Eraser Notebook	Class Room
LU2. Install window units to frame	Trainee will be able to: <ul style="list-style-type: none">Window opening size is checked to be greater than overall window frame.	<ul style="list-style-type: none">Explanation of Elements of door and windows	Theory-0.083 Hrs Practical-1.5 Hrs	Bevels, Chisels Drills, Hammers, hand/power saws, marking equipment, measuring tapes and	Class Room and construction lab



	<ul style="list-style-type: none">• Reveals are joined and fixed securely to frames where specified.• Window unit is located to suit brickwork and eaves finish for veneer construction, whichever is applicable.• Window unit is positioned in place so that head/sill is level and stiles are plumb and in wind, ensuring reveals or frame are finished flush with face of inside wall lining.• Window is packed and fixed to wall frame through/to studs, in accordance with specified fixing and fastening methods.	<ul style="list-style-type: none">• Understanding of specification of door and window elements• Process of installation of door/ window• Process of setting out <p>Practical activity: Install window units to frame in lab.</p>	Total- 1.583 Hrs	rules, Nail guns, Protractors Spirit levels, squares (combination/tri), steel squares and fences, string lines Barrel bolts Cabin hooks closers Dead bolts Flash bolts, flashings Handles hinges (butt and parliament) Latches, locks	
LU3. Replace window units/door frames	Trainee must be able to: <ul style="list-style-type: none">• Architraves and nosing are removed.• Sill bricks or cladding are removed where specified.• Fasteners are cut, packing removed and flashing detached from frame.• Window unit/ doorframe is removed.	<ul style="list-style-type: none">• Procedure of Window and door replacement techniques• Safety precaution to work at site• PPEs <p>Practical activity:</p>	Theory-0.083 Hrs Practical-1 Hrs Total- 1.083 Hrs	Bevels Chisels Drills Hammers, hand/power saws Marking equipment, measuring tapes and rules Nail guns	Class Room and construction lab



	<ul style="list-style-type: none">Window unit/door frame and window components are installed to plumb, level and wind	Replace window units/door frames in lab.		Protractors Spirit levels, squares (combination/tri), steel squares and fences, string lines Barrel bolts Cabin hooks closers Dead bolts Flash bolts, flashings Handles hinges (butt and parliament) Latches, locks	
LU4. Architraves and moldings are replaced	Trainee must be able to: <ul style="list-style-type: none">Prepare door opening, and construct and fix jamb.Door frame opening size is checked to be greater than the overall door jamb width and height, allowing for plumbing of stiles, thickness of floor covering, levelling of door head and level of floor.Jamb stiles are marked and cut to length allowing for clearances according to specifications.	<ul style="list-style-type: none">Procedure to inspect door and window frameDefects in alignments <p>Practical activity Architraves and moldings are replaced in lab.</p>	Theory-0.083 Practical-1 Hrs Total- 1.083	Bevels Chisels Drills Hammers, Hrs hand/power saws Marking equipment, measuring tapes and rules Nail guns Protractors	Class room and construction lab



	<ul style="list-style-type: none">• Head is trenched to accommodate jamb stiles allowing for clearance according to specification.• Jamb frame is assembled, squared and braced with rebates flush.• Joints and rebates are cleaned and finished.			<p>Spirit levels, squares (combination/tri), steel squares and fences, string lines</p> <p>Barrel bolts</p> <p>Cabin hooks closers</p> <p>Dead bolts</p> <p>Flash bolts, flashings</p> <p>Handles hinges (butt and parliament)</p> <p>Latches, locks</p>	
LU5. Install door and door unit	<p>Trainee must be able to:</p> <ul style="list-style-type: none">• Door unit is positioned in place so that the head/sill is level and stiles are plumb and in wind, ensuring reveals or frame finished flush with face of inside wall lining.• Door is fitted to jamb allowing for clearances according to specifications with lock stile door backed off facilitating correct operation.• Hinges are marked out on door and jamb.	<ul style="list-style-type: none">• Procedure to dismantle scaffolding• Procedure to install door• Types of fasteners• Fastening methods <p>Practical activity</p> <p>Install door and door unit in lab.</p>	<p>Theory-0.083 Hrs</p> <p>Practical-1 Hrs</p> <p>Total- 1.083 Hrs</p>	<p>Bevels</p> <p>Chisels</p> <p>Drills</p> <p>Hammers, hand/power saws</p> <p>Marking equipment, measuring tapes and rules</p> <p>Nail guns</p> <p>Protractors</p> <p>Spirit levels, squares (combination/tri),</p>	<p>Class room and construction lab</p>



	<ul style="list-style-type: none">• Hinges are fitted to door and jamb.• Final adjustments of door are made.• Door furniture components are fitted and fixed to manufacturer specifications			<p>steel squares and fences, string lines Barrel bolts Cabin hooks closers Dead bolts Flash bolts, flashings Handles hinges (butt and parliament) Latches, locks</p>	
LU6. Perform Clean up.	<p>Trainee must be able to</p> <ul style="list-style-type: none">• Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.• Tools plant and equipment are cleaned, checked for faults and maintained and stored in accordance with workplace practices.	<ul style="list-style-type: none">• Description of procedure of maintaining and cleaning equipment and tools. <p>Practical activity: Clean the area and check tools and equipment</p>	<p>Theory-0.083 Practical-0.5 Total- 0.583</p>	<p>Cleaning tools</p>	<p>Class Room and construction lab</p>



0732B&CE-092. Prepare Surface and fix tiles

Objective: This module covers the knowledge and skills required to prepare surface and fix tiles.

Duration: 4 Hours

Theory: 1 Hours

Practice: 3 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for work	Trainee will be able to: <ul style="list-style-type: none">Work instructions are confirmed with supervisor.Tools and equipment are selected as required, checked for serviceability and any faults are fixed or reported.Material quantity requirements are calculated in accordance with specifications.Materials needed are obtained, checked for compliance and prepared.	<ul style="list-style-type: none">Description of purpose of surface preparationExplanation of types of surface preparation materials.Description of finishing materials.Description of Types of tilesProcesses for the calculation of material requirements, quality requirements <p>Practical activity: Calculate the materials and tools required for surface preparation and tile fixing in lab.</p>	Theory-0.1 Hrs Practical-0.3 Hrs Total- 0.4 Hrs	Pencil Eraser Notebook	Class Room
LU2. Prepare materials for tiling application	Trainee will be able to: <ul style="list-style-type: none">Floor and wall tiling materials are checked to ensure they are suitable and meet specifications.	<ul style="list-style-type: none">Explanation of types of materials for fixing tiles.Definition of adhesives.Properties of adhesives.	Theory-0.1 Hrs Practical-0.3 Hrs	Shovels Spatulas Sponges Bucket	Class Room and construction lab



	<ul style="list-style-type: none">Material preparation is carried out to satisfy the requirements of the specified application process.	<ul style="list-style-type: none">Process of preparation of fixing materials. <p>Practical activity: Prepare materials for tiling application in lab.</p>	Total- 0.4 Hrs		
LU3. Prepare underlay and sheeting substrate	Trainee must be able to: <ul style="list-style-type: none">Assistance with underlay preparation is provided under supervision.Substrate surface is finished to specification, with joints flush and sealed.	<ul style="list-style-type: none">Definition of substrate.Safety precaution to work at sitePPEs <p>Practical activity: Replace window units/door frames in lab.</p>	Theory-0.1 Hrs Practical-0.3 Hrs Total- 0.4 Hrs		Class Room and construction lab
LU4. Prepare render substrate surface	Trainee must be able to: <ul style="list-style-type: none">Surface-mounted construction units and attachments are safely detached.Surfaces of substrate structure are cleaned to remove all loose material.Materials for splash coat are proportioned and mixed to instructions ready for application to wet surface.	<ul style="list-style-type: none">Procedure to prepare substrate surface.Definition of rendering.Definition of curing.Definition of splash coat. <p>Practical activity Prepare render substrate surface in lab.</p>	Theory-0.1 Hrs Practical-0.3 Hrs Total- 0.4 Hrs		Class room and construction lab



	<ul style="list-style-type: none">Horizontal and vertical surrounds are prepared for tiling process in accordance with type of tile and specified finish.Materials for render coat are proportioned and mixed to instructions ready for application.Surface is scratched, rendered, cured and dried in accordance with specifications for tile application				
LU5. Cut tiles as required.	<p>Trainee must be able to:</p> <ul style="list-style-type: none">Tiles are cut without jagged, flaid edges or damage to tile surfaces or finish, in accordance with workplace procedures and manufacturer recommendations.Recess hole or curve is cut by hand or machine to shape and size and to specified tolerance.Tile jolly is edged to form a mitre so that biscuit is not exposed at the joint in accordance with workplace	<ul style="list-style-type: none">Procedure to cut the tiles.Methods of tile cuttingDescription of edges requirementsRecess holes <p>Practical activity</p> <p>Cut tiles as required. in lab.</p>	<p>Theory-0.1 Practical-0.3 Total- 0.4 Hrs</p>	<p>Tile cutters Measuring tape</p>	<p>Class room and construction lab</p>



	procedures and manufacturer recommendations.				
LU6. Fix wall tiles	<p>Trainee must be able to:</p> <ul style="list-style-type: none">• Mortar and/or adhesive is prepared and applied to tile surface in accordance with manufacturer recommendations.• Tiles are prepared and fixed, with pad tiles set to level alignment.• Horizontal joint is checked for straightness, and tile edges and surface alignment are checked for conformity.• Tiles are fixed to alignment maintaining designed pattern to specification.• Even margins are shown around openings, frames and fittings to specification.• Bottom course is cut and fixed to create a rake or square corner in	<ul style="list-style-type: none">• Application of adhesives.• Procedure to fix tiles.• Procedure to check alignment <p>Practical activity Fix wall tiles</p>	Theory-0.1 Practical-0.5 Total- 0.6 Hrs	Brooms, Brushes, Buckets Caulking guns, Cement sheet cutters, Concrete mixers Electrical leads Hammers, Hose and water sprays Ladders, Levelling equipment, Lump hammers Mortar boards Nippers, Power drills, Power screwdrivers, Power grinders, power sanders	Class Room and construction lab



	<p>accordance with drawings and specifications.</p> <ul style="list-style-type: none">• Splayed, manufactured, formed coves are fixed in accordance with drawings and specifications.• Vertical tiles are finished plumb and true to square corners.• Joints are maintained straight and uniform in width with due allowance for tolerance of tile sizes.• Control joints are built in, in accordance with specifications and manufacturer recommendations.• Miter joints are made, maintaining glazing on miter without damage to tile surfaces or finish and maintaining uniformity of miter in accordance with company procedures and manufacturer recommendations		<p>Power grinders and sanders Rags, rubber mallets Sanding blocks, saws, scrapers, shovels, spacers and wedges Spatulas, sponges, squares, squeegees, straight edges, string lines Trowels Wet and dry diamond saws, wheelbarrows, wire brushes, wooden floats Work platforms Tile cutters and scribes</p>	
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				trowels	
LU7. Tile external corners.	<p>Trainee must be able to:</p> <ul style="list-style-type: none">Setting out for plumb, level and square is checked to be within specified tolerance.External corners are checked to ensure surface intersections are straight.Curved bead angle trim or tiles are fixed so that external return and bead are square and measurements are accurate to junction with tiles and set out, where applicable.Tiles are fixed with minimum voids in tile bed while maintaining fully bedded alignment to specifications.Corner is kept square within specified tolerance and finish to specifications.	<ul style="list-style-type: none">Setting out techniques <p>Practical activity Tile external corners in lab</p>	Theory-0.1 Hrs Practical-0.3 Hrs Total- 0.4 Hrs	Brooms, brushes, Buckets Caulking guns, Cement sheet cutters, Concrete mixers Electrical leads Hammers, Hose and water sprays Ladders, Levelling equipment, Lump hammers Measuring tapes and rules, mortar boards, Nippers Pointed grouters, Power drills, Power screwdrivers, Power grinders,	Class Room and construction lab



				power sanders Power grinders and sanders Rags, rubber mallets Sanding blocks, saws, scrapers, shovels, spacers and wedges Spatulas, sponges, squares, squeegees, straight edges, string lines Trowels Wet and dry diamond saws, wheelbarrows, wire brushes, wooden floats Work platforms	
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				Tile cutters and scribes, trowels	
LU8. Tile internal corners	Trainee must be able to: <ul style="list-style-type: none">Internal corner is checked to ensure surfaces are flat and intersection is straight.Tiles are cut where required and fixed to one wall to maintain alignment in accordance with set out and specifications.Tiles are cut where required and fixed abutting adjacent wall tiles to line, set out and specifications.Joints for abutting tiles are made in accordance with designed margin for grouting or for expansion joint, where applicable, to specifications.Coved tile or trim is installed to coved internal wall or wall and floor junctions.	<ul style="list-style-type: none">Setting out techniques <p>Practical activity Tile external corners in lab</p>	Theory-0.1 Hrs Practical-0.3 Hrs Total- 0.4 Hrs	Brooms, Brushes, Buckets Caulking guns, Cement sheet cutters, Concrete mixers Electrical leads Hammers, Hose and water sprays Ladders, Levelling equipment, Lump hammers Measuring tapes and rules, mortar boards Nippers Pointed grouters, Power drills, Power screwdrivers,	Class Room and construction lab



	<ul style="list-style-type: none">• Coved tile or trim is installed so that line is straight and, where applicable, aligned with set out.• Tiles are fixed to cove tile or trim and finish to alignment and specifications.		power grinders, power sanders Power grinders and sanders Rags, rubber mallets Sanding blocks, saws, scrapers, shovels, spacers and wedges Spatulas, sponges, squares, squeegees, straight edges, string lines Trowels Wet and dry diamond saws, wheelbarrows, wire brushes, wooden floats	
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				Work platforms Tile cutters and scribes trowels	
LU9. Grout wall tile face	Trainee must be able to: <ul style="list-style-type: none">• Joints are cleaned and prepared to receive grout according to manufacturer specifications.• Grout is mixed and applied in accordance with workplace and manufacturer specifications and to meet job requirements.• Tiles are cleaned and polished with dry cloth to specifications, removing all dust from surface and joints.	<ul style="list-style-type: none">• Definition of grouting• Description of grouting materials and its characteristics and examples <p>Practical activity: Clean the tiles</p>	<p>Theory-0.1 Practical-0.3 Total- 0.4 Hrs</p>	<p>Broom Brush Sponge Trowel Spatula Dry and wet cloth Pointed grouter</p>	<p>Class Room and construction lab</p>
LU10. Perform Clean up.	Trainee must be able to <ul style="list-style-type: none">• Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.• Tools plant and equipment are cleaned, checked for faults and	<ul style="list-style-type: none">• Description of procedure of maintaining and cleaning equipment and tools. <p>Practical activity: Clean the area and check tools and equipment</p>	<p>Theory-0.1 Practical-0.1 Total- 0.2 Hrs</p>	<p>Cleaning tools</p>	<p>Class Room and construction lab</p>



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	maintained and stored in accordance with workplace practices.				
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0732B&CE-093. Prepare Surface for Painting

Objective: This module covers the knowledge and skills required to prepare new or uncoated surfaces for painting or clear finish, prepare previously coated surfaces for painting or clear finish, remove wallpaper and prepare surface for painting and perform clean up

Duration: 6.5 Hours

Theory: 0.5 Hours

Practice: 6 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for work	Trainee will be able to: <ul style="list-style-type: none">Work instructions are confirmed with supervisor.Tools and equipment are selected as required, checked for serviceability and any faults are fixed or reported.Material quantity requirements are calculated in accordance with specifications.Materials needed are obtained, checked for compliance and prepared.	<ul style="list-style-type: none">Definition of paint and its constituents.Explanation of types of paintsDescription of surface coating terminologiesProcesses for the calculation of material requirements. <p>Practical activity: Calculate the materials and tools required for surface preparation for painting lab.</p>	Theory-0.1 Hrs Practical-1.2 Hrs Total- 1.3 Hrs	Pencil Eraser Notebook	Class Room
LU2. Prepare new or uncoated surfaces for	Trainee will be able to: <ul style="list-style-type: none">Suitability of surface for painting or clear finish application is determined	<ul style="list-style-type: none">Explanation of Properties and surface preparation requirements of new substrates	Theory-0.1 Hrs Practical-1.4 Hrs	Drop sheets, duster brushes Filling knives	Class Room and



painting or clear finish	<ul style="list-style-type: none">in accordance with manufacturer recommendations.Surface preparation method is correctly selected in accordance with the environment, finish and substrate requirements.Surface is prepared to manufacturer specifications in compliance with substrate requirements.Surface imperfections are stopped, filled and sanded to a smooth finish ready for painting.	<ul style="list-style-type: none">Methods to prepare surfaceProcess of preparation of surface before painting. <p>Practical activity: Prepare new or uncoated surfaces for painting or clear finish in lab.</p>	Total- 1.6 Hrs	blades Hammers, hand sanders, heat removal equipment Mechanical sanders Nail punches Putty knives Scrapers Water blasters, wire brushes	construction lab
LU3. Prepare previously coated surfaces for painting or clear finish	<p>Trainee must be able to:</p> <ul style="list-style-type: none">Condition and nature of existing substrate and surface material are determined and tested.Surface preparation method is correctly selected in accordance with the environment, finish and substrate requirements.Surfaces are prepared by removing unwanted coatings and loose debris.	<ul style="list-style-type: none">Definition of substrate.Description of Prevention and/or rectification procedures for surface coating defectsSafety precaution to work at sitePPEsExplanation of types of surface defects. <p>Practical activity:</p>	Theory-0.1 Hrs Practical-1.4 Hrs Total- 1.5 Hrs	Drop sheets, duster brushes Filling knives blades Hammers, hand sanders, heat removal equipment	Class Room and construction lab



	<ul style="list-style-type: none">Surface defects are repaired, filled and sanded to smooth finish ready for painting in accordance with specifications.	Prepare previously coated surfaces for painting or clear finish in lab.		Mechanical sanders Nail punches Putty knives Scrapers Water blasters, wire brushes	
LU4. Remove wallpaper and prepare surface for painting	Trainee must be able to: <ul style="list-style-type: none">Type, condition and nature of existing type of wallpaper are determined prior to removal.Surface preparation method is correctly selected in accordance with the environment, finish and substrate requirements.Wallpaper is removed using the most appropriate method.Surfaces are prepared for paint application by removing loose debris.Surface defects are repaired and imperfections stopped, to smooth	<ul style="list-style-type: none">Procedure to remove wall paper.Description of rendering.Procedure to repair surface <p>Practical activity Prepare render substrate surface in lab.</p>	Theory-0.1 Practical-1.2 Total- 1.3 Hrs	Drop sheets, duster brushes Hrs Hrs Total- 1.3 Hrs	Class room and construction lab



	finish ready for painting in accordance with specifications.			blasters, wire brushes	
LU5. Perform Clean up.	Trainee must be able to <ul style="list-style-type: none">Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.Tools plant and equipment are cleaned, checked for faults and maintained and stored in accordance with workplace practices.	<ul style="list-style-type: none">Description of procedure of maintaining and cleaning equipment and tools. Practical activity: Clean the area and check tools and equipment	Theory-0.1 Hrs Practical-1 Hrs Total- 1.1 Hrs	Cleaning tools	Class Room and construction lab



0732B&CE-094. Paint by spray, brush and roller

Objective: This module covers the knowledge and skills required to apply brushed, rolled or sprayed paint coatings to different materials to form a protective and decorative finish.

Duration: 6.5 Hours

Theory: 0.5 Hours

Practice: 6 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for work	Trainee will be able to: <ul style="list-style-type: none">Work instructions are confirmed with supervisor.Tools and equipment are selected as required, checked for serviceability and any faults are fixed or reported.Material quantity requirements are calculated in accordance with specifications.Materials needed are obtained, checked for compliance and prepared.	<ul style="list-style-type: none">Definition of paint and its constituents.Explanation of types of paintsDescription of surface coating terminologiesProcesses for the calculation of material requirements. <p>Practical activity: Calculate the materials and tools required for surface preparation for painting lab.</p>	Theory-0.07 Hrs Practical-0.8 Hrs Total- 0.87 Hrs	Pencil Eraser Notebook	Class Room
LU2. Prepare work area	Trainee will be able to: <ul style="list-style-type: none">Materials and substrate surfaces are prepared in accordance with manufacturer recommendations.	<ul style="list-style-type: none">Compatibility of preparatory materials and paint systemsMethods to prepare surface	Theory-0.07 Hrs Practical-0.85 Hrs	Drop sheets, Duster Brushes	Class Room and



	<ul style="list-style-type: none">Surfaces not to be painted are protected by drop sheets, masking or removal of objects.Adequate ventilation is provided to maintain a safe environment.	<ul style="list-style-type: none">Process of preparation of surface before painting.Definition of ventilation and purposeExplanation of Types of ventilation <p>Practical activity:</p> <ul style="list-style-type: none">Prepare work area in lab.	Total- 0.92 Hrs	Filling knives and blades filters Hand Sanders, Removal equipment Hose Masking equipment, mechanical sanders Putty knives Scrapers, wire brushes	construction lab
LU3. Mix paint color	<p>Trainee must be able to:</p> <ul style="list-style-type: none">Base color is identified by sample analysis or specification, and correct tint base, paint type and sheen level determined.Colorants suitable for the color match are selected, mixed with the base, allowed to dry and matched against the sample/specification for accuracy.	<ul style="list-style-type: none">Description of Hazards associated with solvents, chemicals and dustDescription of mix proportions of constituentsExamples of base, solvents.Safety precaution to work at sitePPEsExplanation of effect of colorants <p>Practical activity:</p> <p>Mix paint color in lab.</p>	Theory-0.07 Hrs Practical-0.85 Hrs Total- 0.92 Hrs	Brush ware, Brush ware accessories, Drop sheets, Heat and Flame paint Hose Masking equipment, mechanical sanders Nail punches Paint pots and buckets,	Class Room and construction lab



	<ul style="list-style-type: none">Materials for specified paint finish are mixed in accordance with manufacturer recommendations.Correct amounts of paint material are prepared to specified ratio and drying time in accordance with manufacturer specification.			Paint stirrers Putty knives Regulator, roller frames Scrapers,	
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LU4. Apply paint with brush or roller	Trainee must be able to: <ul style="list-style-type: none">Brush and/or roller is selected to suit specified surface profile, size of area, type of paint and finish specified.Sealant, undercoat, intermediate coat and finish coat are applied by brush/roller to achieve the required level of opacity, finish, texture and sheen, in accordance with specifications.	<ul style="list-style-type: none">Explanation of Surface coating technology, including specification of paint systems for interior and exterior painting.Description Theoretical principles relating to adhesion and cohesion of paintTheoretical principles relating to pigmentation and coloring agents, drying and curing processes and the role of solvents <p>Practical activity Apply paint with brush or roller in lab.</p>	Theory-0.07 Hrs Practical-0.85 Hrs Total- 0.92 Hrs	Brush ware, Brush ware accessories Compressor, Conventional spray unit Diaphragm, Hand Sanders, Heat and Flame paint Removal equipment, Masking equipment, Mechanical sanders Nail punches Paint pots and buckets, Paint stirrers Putty knives Regulator, roller frames	Class room and construction lab
LU5. Apply paint by spray	Trainee must be able to	<ul style="list-style-type: none">Description of process of applying spray paints.	Theory-0.07 Hrs	Compressor,	Class Room and



	<ul style="list-style-type: none">Appropriate spray equipment, accessories and lines are selected and set up for operation in accordance with the manufacturer's recommendations.Paint is mixed and the viscosity adjusted to allow for spray painting.Paint is applied to achieve correct finish specifications.	Practical activity Apply paint by spray in lab.	Practical-0.85 Hrs Total- 0.92 Hrs	Conventional spray unit High-volume low-pressure (hvp) spray application, Masking equipment, Mechanical sanders Nail punches Paint pots and buckets, Piston airless Spray unit (electrical, pneumatic and petrol), Spray equipment, Spray guns,	construction lab
LU6. Finish the application	Trainee must be able to <ul style="list-style-type: none">Finished paint surface is cured and tested using curing method in accordance with manufacturer recommendations.	<ul style="list-style-type: none">Procedure to Installation of door and windows Practical activity Finish the application in lab	Theory-0.07 Hrs Practical-0.85 Hrs Total- 0.92 Hrs	Sanders	Class Room and construction lab



	<ul style="list-style-type: none">Doors, windows and furniture removed for painting application are re-installed correctly and without damage to finished				
LU7. Perform Clean up.	<p>Trainee must be able to</p> <ul style="list-style-type: none">Work area is cleaned and waste disposed of, reused or recycled in accordance with work specifications.Tools plant and equipment are cleaned, checked for faults and maintained and stored in accordance with workplace practices.	<ul style="list-style-type: none">Description of procedure of maintaining and cleaning equipment and tools. <p>Practical activity: Clean the area and check tools and equipment</p>	Theory-0.07 Hrs Practical-0.55 Hrs Total- 0.62 Hrs	Cleaning tools	Class Room and construction lab

0732B&CE-095. Apply stains and clear timber finishes

Objective: This module covers the knowledge and skills required to apply stains and clear timber finishes to different material surfaces, to form a protective and decorative finish.

Duration: 6.5 Hours

Theory: 0.5 Hours

Practice: 6 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
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LU1. Plan and prepare.	Trainee will be able to: <ul style="list-style-type: none">Work instructions are confirmed with supervisor.Tools and equipment are selected as required, checked for serviceability and any faults are fixed or reported.Material quantity requirements are calculated in accordance with specifications.Materials needed are obtained, checked for compliance and prepared.	<ul style="list-style-type: none">Information of faults and fixing <p>Practical Activity Plan and prepare.</p>	Theory-0.1Hrs Practical-1.2 Hrs Total- 1.3 Hrs	Eraser Pencil Sharpener Scale Notepad Charts Calculator Construction lab tools Pressure	Class Room and Construction Lab
LU2. Prepare materials and application area	Trainee will be able to: <ul style="list-style-type: none">Adjoining surfaces are protected by masking off or covering.Adequate ventilation is provided to maintain a safe environment.Measures are taken to ensure application area remains free of dust and foreign matter.Existing stained or finished surfaces for application are stripped using appropriate techniques.	<ul style="list-style-type: none">Information of Testing techniques and support materials <p>Practical Activity Prepare materials and application area</p>	Theory-0.1Hrs Practical-1.2 Hrs Total- 1.3 Hrs	Personal Protective equipment	Class Room and Construction Lab



LU3. Stain bare timber surface.	Trainee must be able to: <ul style="list-style-type: none">Stain is selected or type of timber in accordance with manufacturer recommendations.Stain is prepared to proportions and consistency in accordance with manufacturer recommendations.Application method for the specified surface, area size and type of finish is selected.Stain is applied to bare timber surface to specifications.Wood filler and putty are selected, mixed, color-matched and applied to timber in accordance with specifications.	<ul style="list-style-type: none">Hazards associated with solvents, chemicals and dustSurface preparation techniques for clear wood finishing Practical Activity Stain bare timber surface	Theory-0.1Hrs Practical-1.3 Hrs Total- 1.4 Hrs	Elevators Forklifts Hammers (bricks, club and scutch), hoses Jigsaws, jointing tools Line blocks and line pins Margin or raking tools, masonry saws, masonry squares, materials hoists, measuring tapes and rules, mortarboards Pallet trolleys, plumb rules, profiles	Class Room and Construction Lab
LU4. Apply finish surface	Trainee must be able to: <ul style="list-style-type: none">Coats of selected clear finish are applied to achieve required level of opacity, finish accordance with specifications.	<ul style="list-style-type: none">The principles relating to pigmentation and coloring agents, drying and curing processes and the role of solvents	Theory-0.1Hrs Practical-1.2 Hrs Total- 1.3 Hrs		Class Room and Construction Lab



	<ul style="list-style-type: none">Drying time is allowed between coat sand clear finish surfaces are cured in accordance with manufacturer recommendations.	Practical Activity Apply finish surface			
LU5. Perform clean up	Trainee must be able to: <ul style="list-style-type: none">Work area is cleaned and waste disposed of reused or recycled in accordance with work specifications.Tools plant and equipment are cleaned, checked for faults and maintained and stored in accordance with work place practices	<ul style="list-style-type: none">Information of faults and maintenance according to the workplace Practical Activity Perform clean up	Theory-0.1Hrs Practical-1.2 Hrs Total- 1.3 Hrs		Class Room and Construction Lab



0732B&CE-096. Prepare site layout of civil engineering projects

Objective: This module covers the knowledge and skills required to Prepare for work, Prepare site for temporary fencing and structures, Co-ordinate the erection of site security fencing/hoarding, Co-ordinate construction of temporary site structures and Co-ordinate storage of tools and machine accessories

Duration: 6 Hours

Theory: 0.5 Hours

Practice: 6 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for work	<p>Trainee will be able to:</p> <ul style="list-style-type: none">• Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details.• Follow Safety (OHS) requirements in Accordance with safety plans and policies.• Identify and implement signage and barricade requirements.• Select plant, tools and equipment to carry out tasks consistent with job requirements, check for serviceability, and any faults	<ul style="list-style-type: none">• Types and purpose of job information/instructions• OH&S requirements for preparing construction sites <p>Practical Activity</p> <p>Prepare for work</p>	Theory-0.1Hrs Practical-1.2 Hrs Total- 1.3 Hrs	Eraser Pencil Sharpener Scale Notepad Charts A real or simulated environment Project resources Organization policies and guidelines Access to relevant resource personnel Relevant legal and statutory documentation	Class Room and Construction lab



	<ul style="list-style-type: none">• Calculate material quantity requirements in accordance with plans, specifications and quality requirements.• Identify, obtain, prepare, and safely handle materials appropriate to the work application				
LU2. Prepare site for temporary fencing and structures	<p>Trainee will be able to:</p> <ul style="list-style-type: none">• Identify services, location and work areas are accurately• Place adequate warning signs and safeguards to support and protect services and substructures identified in work area.• Set up and secure temporary signs, control systems and protective barriers in accordance with job and safety instructions.	<ul style="list-style-type: none">• Physical conditions of site• Tools, machines and equipment• Site fencing and hoarding <p>Practical Activity Prepare site for temporary fencing and structures</p>	Theory-0.1Hrs Practical-1.2 Hrs Total- 1.3 Hrs	Eraser Pencil Sharpener Scale Notepad Charts A real or simulated environment Project resources Organization policies and guidelines Access to relevant resource personnel Relevant legal and statutory documentation	Class Room and Construction lab



LU3. Co-ordinate the erection of site security fencing/hoarding	Trainee will be able to: <ul style="list-style-type: none">• Select appropriate type fencing materials in adequate quantities.• Confirm dimensions of installed fence components to job specifications and/or work instructions.• Check erected fence as meeting security and enclosure requirements	<ul style="list-style-type: none">• Relevant statutory requirements relating to site boundaries• Access and traffic routes• Storage and control of tools and materials Practical Activity Co-ordinate the erection of site security fencing/hoarding	Theory-0.1Hrs Practical-1.2 Hrs Total- 1.3 Hrs	Eraser Pencil Sharpener Scale Notepad Charts A real or simulated environment Project resources Organization policies and guidelines Access to relevant resource personnel Relevant legal and statutory documentation	Class Room and Construction lab
LU4. Co-ordinate construction of temporary site structures	Trainee will be able to: <ul style="list-style-type: none">• Interpret instruction/specification for temporary site structures accurately to the relevant persons.• Lay out temporary site structures to facilitate ease of access and to prevent obstruction of other site activities.	<ul style="list-style-type: none">• Convenient, visible and safe storage• Storage space and zone• Quality standards and specifications Practical Activity	Theory-0.1Hrs Practical-1.2 Hrs Total- 1.3 Hrs	Eraser Pencil Sharpener Scale Notepad Charts	Class Room and Construction lab



	<ul style="list-style-type: none">Check erected temporary site structures as conforming to job specification/instruction given.	Co-ordinate construction of temporary site structures		A real or simulated environment Project resources Organization policies and guidelines Access to relevant resource personnel Relevant legal and statutory documentation	
LU5. Co-ordinate storage of tools and machine accessories	Trainee will be able to: <ul style="list-style-type: none">Lay out Storage facilities correctly and built to specifications.Correctly demonstrate working knowledge of the type of items to be storedOrganize store for proper delivery, checking and control of materials, tools and equipment.	<ul style="list-style-type: none">Working knowledge of the type of items to be storedStorage of materials, tools and equipment <p>Practical Activity Co-ordinate storage of tools and machine accessories</p>	Theory-0.1Hrs Practical-1.2 Hrs Total- 1.3 Hrs	Eraser Pencil Sharpener Scale Notepad Charts A real or simulated environment Project resources Organization policies and guidelines Access to relevant resource personnel	Class Room and Construction lab



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0732B&CE-097. Construct masonry steps and stairs

Objective: This module covers the knowledge and skills required to construct masonry steps, stairs and wing walls for different types and styles of buildings. It includes planning, types and styles of buildings. Set out and installation of the masonry.

Duration: 7 Hours

Theory: 1 Hours

Practice: 6 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for work.	Trainee will be able to: <ul style="list-style-type: none">Obtain, confirm and apply work instructions, including plans, specifications, quality requirements and operational details, from relevant information to determine brick laying and block laying tasks.Follow safety (OHS) requirements in accordance with safety plans and policies.Identify and implement signage and barricade requirements.Select plant, tools and equipment to carry out tasks consistent with job requirements, check for serviceability, and any faults	<ul style="list-style-type: none">Brick bond patterns characteristics and applications of materials for masonry steps and stairs constructionBrick and block expansion and growth, control and articulation joints Practical Activity Prepare for work.	Theory-0.33 Hr Practical-01 Hrs Total- 1.33 Hrs	Pencil Eraser Scale Sharpener Notepad Personal protective equipment for construction industry.	Class Room and Construction lab



	<ul style="list-style-type: none">• Calculate material quantity requirements in accordance with plans, specifications and quality requirements.• Identify, obtain, prepare, and safely handle Materials appropriate to the work application are and located ready for use.				
LU2. Set out brickwork/ block work.	Trainee will be able to: <ul style="list-style-type: none">• Erect work platform in accordance with regulatory and workplace requirements and brick and block stair construction requirements.• Check location and relative level of prepared footing from job drawings and specifications.• Calculate rise and going of flight and individual steps as per codes and workplace requirements.	<ul style="list-style-type: none">• Construction terminology• Materials storage and environmentally friendly waste management• Plans, specifications and drawings <p>Practical Activity Set out brickwork/ block work.</p>	<p>Theory-0.33 Hr Practical-2.5 Hrs Total- 2.83 Hrs</p>	<p>Mason hammer Pointing towels Measuring tape Mason thread Plumb bob Leveling tools (water level, spirit level) Bucket Mortar pan Wooden float Steel float Shovel Spade Wire brush</p>	<p>Class Room and Construction lab</p>



				Screeds (wooden/steel)	
LU3. Lay bricks forming steps and wing walls	Trainee will be able to: <ul style="list-style-type: none">• Prepare mortar mix to required conformity and specifications.• Construct base brickwork to specifications and requirements of standards and codes.• Construct square steps, level, and plumb and lay to specified bond.• Construct design and profile of steps and aligned to bond and plumb to specifications.• Carry out Joints to work specifications.• Set out Brickwork/block work laid to line, with gauge and complete to work specifications.• Clean brick/block faces free of mortar	<ul style="list-style-type: none">• Processes for the calculation of material requirements• Quality requirements• Techniques of masonry steps and stairs construction• Types, characteristics, uses and limitations of plant, tools and equipment• Workplace and equipment safety requirements <p>Practical Activity Lay bricks forming steps and wing walls</p>	Theory-0.33 Hr Practical-2.5 Hrs Total- 2.83 Hrs	Mason hammer Pointing towels Measuring tape Mason thread Plumb bob Leveling tools (water level, spirit level) Bucket Mortar pan Wooden float Steel float Shovel Spade Wire brush Screeds	Class Room and Concrete lab



0732B&CE-098. Install stairs

Objective: This module covers the knowledge and skills required to construct masonry steps, stairs and wing walls for different types and styles of buildings. It includes planning, types and styles of buildings. It includes planning, preparation, set out and installation of the masonry.

Duration: 10 Hours

Theory: 1 Hours

Practice: 9 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Plan and prepare	Trainee will be able to: <ul style="list-style-type: none">Confirm Work instructions in accordance supervisor.Select required tools and equipment, serviceability and any faults.Calculate materials quantity requirements accordance with specifications.Obtain materials needed for compliance, prepared quality requirements.	<ul style="list-style-type: none">Calculation of quantity of materials with respect to specifications <p>Practical Activity Plan and prepare</p>	Theory-0.125 Hrs Practical-1.125 Hrs Total- 1.25 Hrs	Eraser Pencil Sharpener Scale Notepad Drawing sheet Drawing Board Calculator Drawing instruments Personal protective equipment for construction industry.	Class Room and Construction lab
LU2. Select and prepare materials and components	Trainee will be able to: <ul style="list-style-type: none">Identify methods of assembling erected for stairs	<ul style="list-style-type: none">Components of stairsDesign of stairs <p>Practical Activity</p>	Theory-0.125 Hrs Practical-1.125 Hrs	Eraser Pencil Sharpener Scale	Class Room and Construction lab



	<ul style="list-style-type: none">• Check components for appropriate locations in stair structure.• Determine method of assembling and fixing in accordance with stair design and location	Select and prepare materials and components	Total- 1.25 Hrs	Notepad Calculator	
LU3. Assemble strings newels	Trainee must be able to: <ul style="list-style-type: none">• Identify Specific position for stairs• Check measurements and adjustments if applicable.• Assemble Strings and newels to design and specification.• Fix strings to walls temporarily supported or directly fixed in position /specification.	<ul style="list-style-type: none">• Adhesives, fixings and fasteners related to stair construction• Assembling procedures for stairs• Leveling techniques• marking of components <p>Practical Activity Assemble strings newels</p>	Theory-0.125 Hrs Practical-1.125 Hrs Total- 1.25 Hrs	Mason hammer Pointing towels Measuring tape Mason thread Plumb bob Leveling tools (water level, spirit level) Bucket Mortar pan Wooden float Steel float Shovel Spade Wire brush Screeds (wooden/steel)	Class Room and Construction lab
LU4. Install treads and risers	Trainee must be able to	<ul style="list-style-type: none">• Measuring and setting out related to	Theory-0.125 Hrs	Mason hammer Pointing towels	Class Room and



	<ul style="list-style-type: none">Assemble strings and newels temporarily braced in vertical position.Fix treads and risers about newels to assemblyCheck flight is true and squareFit intermediate treads and risers.	assembling and installing stairs Practical Activity Install treads and risers	Practical-1.125 Hrs Total- 1.25 Hrs	Measuring tape Mason thread Plumb bob Leveling tools (water level, spirit level) Bucket Mortar pan Wooden float Steel float Shovel Spade Screeds (wooden/steel)	Construction lab
LU5. Assemble and install landings	Trainee must be able to <ul style="list-style-type: none">Fix bearers, joists and level according to specification.Fix nosing and floor landing according to finish specification basin	<ul style="list-style-type: none">Stair construction and joining methods Practical Activity Assemble and install landings	Theory-0.125 Hrs Practical-1.125 Hrs Total- 1.25 Hrs	Mason hammer Pointing towels Measuring tape Mason thread Plumb bob Leveling tools (water level, spirit level) Bucket Mortar pan Wooden float	Class Room and Construction lab



				Steel float Shovel Spade Wire brush Screeds (wooden/steel)	
LU6. Install handrail and balustrade	Trainee must be able to <ul style="list-style-type: none">Fix balusters/intermediate railing and handrails to form stair balustrade according to specification,Check and ensure plumb fit of Newels prior to final fixingFix hand railings fitted to wall in accordance with specifications	<ul style="list-style-type: none">Fixing of hand rails and balustrade with respect to specifications <p>Practical Activity Install handrail and balustrade</p>	Theory-0.125 Hrs Practical-1.125 Hrs Total- 1.25 Hrs	Mason hammer Pointing towels Measuring tape Mason thread Plumb bob Leveling tools (water level, spirit level) Bucket Mortar pan Wooden float Steel float Shovel Spade Wire brush Screeds (wooden/steel)	Class Room and Construction lab
LU7. Install spiral stair and curved strings	Trainee must be able to <ul style="list-style-type: none">Mark location of stair and first step on floor and erect central post is	<ul style="list-style-type: none">Location of stair caseDevelopment of stairs according to specifications	Theory-0.125 Hrs	Mason hammer Pointing towels Measuring tape	Class Room and



	<p>into true position, fixed at floor and temporarily braced at top.</p> <ul style="list-style-type: none">• Support initial string section temporarily supported in place for assembly, and fit treads and risers into position to specification.• Develop stair progressively with the extending, supporting and fixing of curved string, and complete with head secured to floor/landing, balustrade installed and central post fixed to specifications.	<p>Practical Activity</p> <p>Install spiral stair and curved strings</p>	Practical-1.125 Hrs Total- 1.25 Hrs	Mason thread Plumb bob Leveling tools (water level, spirit level) Bucket Mortar pan Wooden float Steel float Shovel Spade Wire brush Screeds (wooden/steel)	Construction lab
LU8. Secure stair to structure and line spandrel area	<p>Trainee must be able to</p> <ul style="list-style-type: none">• Carry out securing of stair to building during/on completion of assembly.• Frame, line and fix spandrel, where applicable, to specified finish.	<ul style="list-style-type: none">• Types of stairs and elements of stairs• Select and use safe and efficient procedures in installing treads, risers, flooring and nosing <p>Practical Activity</p> <p>Secure stair to structure and line spandrel area</p>	Theory-0.125 Hrs Practical-1.125 Hrs Total- 1.25 Hrs	Mason hammer Pointing towels Measuring tape Mason thread Plumb bob Leveling tools (water level, spirit level) Bucket Mortar pan Wooden float Steel float	Class Room and Construction lab



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				Shovel Spade Wire brush Screeds (wooden/steel)	
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0732B&CE-099. Prepare for solid dry wall plastering

Objective: This module covers the knowledge and skills required effectively carry out the preparation process of dry wall plastering, and applies to effectively prepare the process for carrying out solid plastering work, and applies to individuals working in masonry in the construction industry.

Duration: 4 Hours

Theory: 1 Hours

Practice: 3 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Plan for construction process	<p>Trainee will be able to:</p> <ul style="list-style-type: none">• Assure Quality requirements of company's construction operations• Identify Preparation and planning requirements from drawings/work location and/or supervisor's instructions.• Observe OH&S requirements and accordance with application tasks and workplace environment.• Identify Safety hazards and correct procedures in order to minimize risk to self and others.• Select Materials to supervisor's instructions,	<ul style="list-style-type: none">• Identification of Preparation and planning requirements from drawings• Identification of safety hazards and correct procedures• Selection of materials• Selection of Tools and equipment• Calculation of materials quantity• Safe handling of materials for the work <p>Practical Activity</p> <p>Plan for construction process</p>	Theory-0.2 Hr Practical- 0.6 Hrs Total- 0.8 Hr	Compass Drawing sheet Drawing instruments Drawing Boards Compass Eraser Pencil Sharpener Ruler Notepad Calculator	Class Room and Construction Lab



	<ul style="list-style-type: none">• Select appropriate personal protective equipment, correctly.• Select Tools and equipment consistent with the job requirements.• Select Fixtures/fasteners consistent with job requirements and check for specifications, quality requirements and operational details,• Calculate Materials quantity requirements in accordance with plans, specifications and quality requirements.• Identify Materials appropriate to the work application are, obtained, prepared, safely handled and located ready for use.				
LU2. Prepare work area suitable for construction process	Trainee will be able to: <ul style="list-style-type: none">• Identify activities to be carried out in work area from surfaces to be lined and height to be accessed.• Prepare work area for construction process to supervisor's instructions	<ul style="list-style-type: none">• Knowledge of workplace and equipment safety requirements <p>Practical Activity Prepare work area suitable for construction process</p>	<p>Theory-0.2 Hr Practical- 0.6 Hrs Total- 0.8 Hr</p>	Compass	Class Room and Construction Lab



LU3. Use tools, plant and equipment appropriate for construction process	Trainee must be able to: <ul style="list-style-type: none">Use regular hand and power tools suitable for application process identified to job requirements.Carry out hand and power tools used safely and effectively processes	<ul style="list-style-type: none">Drawings and specifications portable power tools and tools and equipment materials relative to dry wall plastering materials handling <p>Practical Activity Use tools, plant and equipment appropriate for construction process</p>	Theory-0.2 Hr Practical- 0.6 Hrs Total- 0.8 Hr	Construction tools	Class Room and Construction Lab
LU4. Use tools, plant and equipment appropriate for construction process	Trainee must be able to: <ul style="list-style-type: none">Identified Regular hand and power tools suitable for application process to job requirements.Use Hand and power tools safely and effectively to carry out processes.	<ul style="list-style-type: none">Measurement relative to dry wall plasteringFixing and fasteners consistent with drywall plastering requirementsWorkplace communications and cement <p>Practical Activity Use tools, plant and equipment appropriate for construction process</p>	Theory-0.2 Hr Practical- 0.6 Hrs Total- 0.8 Hr	Construction tools	Class room and Construction Lab



LU5. Prepare background of brick, concrete or block work for solid plastering	Trainee must be able to: <ul style="list-style-type: none">Identify Structure and surface prepared.Depressions patched with suitable material to supervisor's instructions.Apply adhesive Concrete surface where appropriate rough.Mix materials for scratch coat to instructions ready for application to wet surface.	<ul style="list-style-type: none">Identification of surfaced preparedApplication of Cornice adhesiveMixing of materials according to instructions <p>Practical Activity Prepare background of brick, concrete or block work for solid plastering</p>	Theory-0.2 Hr Practical- 0.6 Hrs Total- 0.8 Hr	Construction tools	Class room and Construction Lab
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0732B&CE-100. Apply plaster

Objective: This module covers the knowledge and skills required to construct masonry steps, stairs and wing walls for different types and styles of buildings. It includes planning, types and styles of buildings. It includes planning, preparation, set out and installation of the masonry.

Duration: 4 Hours

Theory: 1 Hours

Practice: 3 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for work	<p>Trainee will be able to:</p> <ul style="list-style-type: none">• Work instructions, including plans, specifications, quality requirements and operational details, are obtained, confirmed and applied from relevant information to determine bricklaying and block laying tasks.• Safety (OHS) requirements are followed in accordance with safety plans and policies.• Signage and barricade requirements are identified and implemented.• Plant, tools and equipment selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.	<ul style="list-style-type: none">• Occupational Health and Safety (OHS) Regulations• Composition, properties and specifications of plastering materials• Economic use of materials• Estimation of materials <p>Practical Activity Prepare for work</p>	Theory-0.25 Hrs Practical-0.35 Hrs Total- 0.6 Hrs	Eraser Pencil Sharpener Ruler Notepad Calculator	Class Room and Construction lab



	<ul style="list-style-type: none">• Material quantity requirements are calculated in accordance with plans, specifications and quality requirements.• Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.				
LU2. Prepare mortar mix	Trainee will be able to: <ul style="list-style-type: none">• Select PPE, tools and equipment in accordance with the job requirements.• Estimate materials required as per job specifications.• Prepare the surface/mixing machines for mixing of mortar as per the job requirement.• Mix materials as per the job requirement following standard procedures.• Transport mortar mix as per the job requirement following standard procedures.	<ul style="list-style-type: none">• Selection of tools and equipment• Estimation of materials• Preparing of surface• Mixing of materials as per the standards <p>Practical Activity Prepare mortar mix</p>	Theory-0.25 Hrs Practical-0.95 Hrs Total- 1.2 Hrs	Mason hammer Pointing towels Measuring tape Mason thread Plumb bob Leveling tools (water level, spirit level) Bucket Mortar pan Wooden float	Class Room and Construction Lab



				Steel float Shovel Spade Wire brush Screeds (wooden/st eel)	
LU3. Prepare scaffolding	<p>Trainee will be able to:</p> <ul style="list-style-type: none">• Select and use PPE according to the job requirements.• Select and use tools and equipment as per the job requirement following standard procedures.• Prepare estimate of materials required based on the job requirements.• Prepare scaffolds components as per the job requirement following standard procedures• Erect and assemble scaffolds components as per the job requirements following standard procedures.• Dismantle scaffolding as per the job requirement following standard procedures.• Store or stockpile components following standard procedures.	<ul style="list-style-type: none">• Use of PPEs• Selection and use of tools and equipment• Preparation of estimation of materials• Preparation of scaffolding• Assembling of scaffolding• Dismantling of scaffolding• Storing of components as per specification <p>Practical Activity Prepare scaffolding</p>	Theory-0.25 Hrs Practical-0.95 Hrs Total- 1.2 Hrs	Mason hammer Pointing towels Measuring tape Mason thread Plumb bob Leveling tools (water level, spirit level) Bucket Mortar pan	Class Room and Construction Lab



			Wooden float Steel float Shovel Spade Wire brush Screeds (wooden/steel)	
LU4. Perform plastering work	Trainee will be able to: <ul style="list-style-type: none">• Prepare the surface to be plastered as per the job requirement following standard.• Prepare and apply cement slurry as per the job requirement following standard practices.• Apply mortar mix as per the job requirement to the required specifications following standard procedures.• Cure the plastered surfaces as per the job requirement following standard practices.	<ul style="list-style-type: none">• Preparation of plaster• Preparation and application of cement slurry as per the job requirement following standard practices.• Application of mortar mix as per the job requirement to the required specifications following standard procedures.• Curing of the plastered surfaces as per the job requirement following standard practices.• Practical Activity• Perform plastering work	Theory-0.25 Hrs Practical-0.75 Hrs Total- 1 Hrs	Mason hammer Pointing towels Measuring tape Mason thread Plumb bob Leveling tools (water level, spirit level) Bucket



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				Mortar pan Shovel	
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9.9. Plumbing

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0732B&CE-101. Identify plumbing tools & equipment

Objective: This module covers the knowledge and skills required to interpret layout drawing for Plumbing Lab its specifications, its Requirement for tools and equipment.

Duration: 6.0 Hours

Theory: 04 Hours

Practice: 02 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Draw Layout drawing for Plumbing Lab	Trainee will be able to: <ul style="list-style-type: none">• Mark North Point.• Measure the Lab dimension.• Develop layout drawing• Analyze Signs, Symbols and data• Identify location for Doors and windows.• Identify instruments places.• Identify sitting plan.	<ul style="list-style-type: none">• Explain lay out drawings with its type.• Explain different drawing instruments• Describe different symbols for plumbing <p>Practical Activity Draw layout of plumbing lab</p>	Theory-01 Hrs Practical-1.5Hrs Total- 2.5 Hrs	Pencil Eraser Sharpener Calculator Measuring scale Drawing sheet Drawing board Tee Square Set Square Measuring Tape Computer AutoCAD	Class Room and workshop



LU2. Identify Plumbing Tools & Equipment	Trainee will be able to: <ul style="list-style-type: none">Identify Tools & equipmentCheck for safety hazardsConduct operational testingMaintain professional proficiency	<ul style="list-style-type: none">Explain safety requirements, for the required tools for taskExplain different specification for tools and equipmentExplain procedures for using different toolsDescribe Plumbing History and Plumbing importanceExplain Safety measures while performing Plumbing tasks <p>Practical Activity Identify Plumbing Tools & Equipment</p>	Theory-03 Hrs Practical-0.5 Hrs Total- 3.5 Hrs	T & E Plumbing tools and equipment	Class Room and workshop
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0732B&CE-102. Perform cutting, threading & reaming

Objective: This module covers the knowledge and skills required to perform pipe cutting, its threading and reaming.

Duration: 06 Hours

Theory: 02 Hours

Practice: 04 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Perform Pipe Cutting.	Trainee will be able to: <ul style="list-style-type: none">Identify tools for cutting.Secure work piece firmlyMeasure required LengthUse cutter OR HacksawLoose the cutting PieceCheck length for cutting pieceObserve OHSA	<ul style="list-style-type: none">Comprehend the purpose and application of plumbing toolsExplain safety precaution for using cutter and hacksawExplain the procedure to use of Hack sawPractical ActivityPerform cutting of pipe	Theory-0.5 Hrs Practical-01 Hrs Total- 1.5 Hrs	Pipe Cutting Tools Plumbing pliers, Plumbing wrenches Plumbing spanners, PPEs	Class Room and workshop
LU2. Perform Pipe Threading.	Trainee will be able to: <ul style="list-style-type: none">Identify tools for threading.Adopt safety measuresFix work piece firmlyClamp Threading diePrepare threadingUnclamp the threading dieObserve OHSA	<ul style="list-style-type: none">Describe calibration of threading toolsExplain safety precaution for using threading toolsExplain different type of DiesExplain the procedure to use of threading diePractical ActivityPerform threading of pipe	Theory-1.0 Hrs Practical-02 Hrs Total- 3.0 Hrs	Plumbing pliers, Plumbing wrenches Plumbing spanners, PPEs Threading Tools	Class Room and workshop



LU3. Perform Pipe Reaming.	Trainee must be able to: <ul style="list-style-type: none">Identify tools for Reaming.Adopt safety measuresFix work piece firmlyClamp Threading pipe pieceUse reamerUnclamp pipe pieceObserve OHSA	<ul style="list-style-type: none">Explain safety precaution for using reamerExplain the procedure to use of Reamer <p>Practical Activity</p> <ul style="list-style-type: none">Perform reaming of pipe	Theory-0.5 Hrs Practical-01 Hrs Total- 1.5 Hrs	Plumbing pliers, Plumbing wrenches Plumbing spanners PPEs Reaming tools	Class Room and workshop
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0732B&CE-103. Make water connection

Objective: This module covers the knowledge and skills required to make the new connection for house from the main water.

Duration: 05 Hours

Theory: 01 Hours

Practice: 04 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Make water connection	<p>Trainee will be able to:</p> <ul style="list-style-type: none">Identify work placeDig a pit on connection site to main water supply pipe.Mount the clamp over the main water supply pipe.Set the rubber seal in the clampSet the ferrule at the rubber seal under the clampTighten the screws of the clamp with screw wrenchMark hole in the main pipe with centre punch and hammerConnect the socket on the ferruleConnect the house pipe in the socketFit the sluice/gate and non-return valve in the house water supply line	<ul style="list-style-type: none">Describe different tools and equipment for making new connection for water supplyExplain taking connection procedureExplain cutting and threading proceduresExplain PPEsExplain uses of different toolsExplain clamps with its typeExplain use of valve while taking connectionExplain branch and main pipe <p>Practical Activity</p> <p>Make water connection</p>	Theory-0.75 Hrs Practical-3.5 Hrs Total- 4.25 Hrs	Pipe Cutting Tools, Deburrs OR Reamers Plumbing pliers, Plumbing wrenches Plumbing spanners Plungers, Pressure testing kits, PPEs Clamp for pipe Pipe (G.I OR PPRC)	Class Room and workshop



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LU2. Clean-up work site area	Trainee will be able to: <ul style="list-style-type: none">Clear work area by disposing of materials (reused or recycled) in accordance to legislation and regulationsClean, check, maintain and store tools and equipment according to requirement	<ul style="list-style-type: none">Information of faults and maintenance according to the workplace <p>Practical Activity</p> <ul style="list-style-type: none">Perform clean up	Theory-0.25Hrs Practical-0.5 Hrs Total- 0.75 Hrs		Class Room and workshop
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0732B&CE-104: Layout for domestic water supply

Objective: This module covers the knowledge and skills required for layout domestic water supply in residence and residential schemes.

Duration: 05 Hours

Theory: 01 Hours

Practice: 04 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for works	Trainee will be able to: <ul style="list-style-type: none">Interpret work instructionsPlan according to job requirementsOrganise dutiesSelect appropriate tools & equipment		Theory-0 Hrs Practical-01 Hrs Total- 01 Hrs		workshop
LU2. Lay out for water supply scheme	Trainee will be able to: <ul style="list-style-type: none">Mark North Point on drawing sheetMeasure the Scheme area.Interpret layout plan by scale	<ul style="list-style-type: none">Define water Layout system.Define fundamentals of water reservoirsExplain Types of water sources	Theory-01 Hrs Practical-03 Hrs Total- 04 Hrs	<ul style="list-style-type: none">PencilEraserSharpenerCalculatorMeasuring scale	Class Room and workshop



	<ul style="list-style-type: none">• Identify sources of water supply• Indicate Water Conveyance System.• Show storage Reservoirs• Locate Main, sub main and branches	<ul style="list-style-type: none">• Describe applications of water connections with main to branches• Explain gravity and pressure supply of water		<ul style="list-style-type: none">• Drawing sheet• Drawing board• Tee Square• Set Square• Measuring Tape• Computer• AutoCAD• PPEs	
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0732B&CE-105. Join pipes & fittings

Objective: This module covers the knowledge and skills required to prepare for different type of pipe joints and it's fitting on residential and commercial plumbing works.

Duration: 08 Hours

Theory: 03 Hours

Practice: 05 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Undertake pipe fitting and Installation	Trainee will be able to: <ul style="list-style-type: none">Observe basic principles for pipe fittingsIdentify and select materials for taskIdentify tools and equipment for taskAttach Pipe with fittingsLocate fixtures properlyUndertake pipe leakage testUse PPEs	<ul style="list-style-type: none">Explain signs and symbols for water supply systemExplain method for different type of pipe jointsExplain different types of joints in pipeWhich test are performed for pipe leakage <p>Practical Activity Installation of pipe fittings</p>	Theory-0.42Hrs Practical-0.5 Hrs Total- 0.92 Hrs	Pipe Benders Pipe Cutting Tools, Deburrers Plumbing pliers Plumbing wrenches Plumbing spanners Pressure testing kits PPEs Hack Saw with blade Different Fittings Safety Valve PPRC pipe and fittings	Class Room and workshop
LU2. Install Hot and Cold-Water Supply Pipes	Trainee will be able to: <ul style="list-style-type: none">Observe basic principles for pipe fittingIdentify and select materials for taskIdentify tools and equipment for taskAttach cold Pipe with fittingsAttach Hot Pipe with Geyser and fittingsLocate cross over properly	<ul style="list-style-type: none">Knowledge of Safety requirements for installing cold and hot water pipes in residential buildings.Knowledge of Fittings attach with hot water	Theory-0.42Hrs Practical-01 Hrs Total- 1.42 Hrs	Pipe Bender Pipe Cutting Tools Deburrers Plumbing pliers Plumbing wrenches Plumbing spanners Pressure testing kits PPEs Hot water fittings Hot water accessories	Class Room and workshop



	<ul style="list-style-type: none">• Locate drainage pipes• Undertake pipe leakage test• Use PPEs	<ul style="list-style-type: none">• Explain specifications for cold and hot water connections• Knowledge of faults in hot water pipes• Explain safety values use in geysers <p>Practical Activity Installation of hot and cold water pipes</p>		<p>G.I. & Cost Iron Pipes according to specifications Pipe Vice Hack Saw with blade Different Fittings Geyser Safety Valve</p>	
LU3. Joining Cast iron pipes	<ul style="list-style-type: none">• Trainee must be able to:• Place the spigot end of a pipe inside the bell end of another pipe making sure that both are clean and dry.• Inert the gasket into the hub of joint using yarning iron and then pack to the proper depth by using the packing iron.• Pour the molten lead into the joint up to the top of the hub.• Perform caulking after the lead has solidified and cooled• Align the pipe• Undertake pipe leakage test• Use PPEs	<ul style="list-style-type: none">• Define cast iron pipes• Explain the equipment for installing and fittings of cast iron pipes• Usage of cast iron pipes• Name different types of cast iron pipes <p>Practical Activity</p> <ul style="list-style-type: none">• Joining of cast iron pipe	<p>Theory-0.42Hrs Practical-01 Hrs Total- 1.42 Hrs</p>	<p>Pipe Benders Pipe Cutting Tools, Deburrers Plumbing pliers Plumbing wrenches Plumbing spanners Pressure testing kits PPEs Hack Saw with blade Different Fittings Safety Valve Cost Iron Pipe Lead Cocking Tools</p>	<p>Class Room and workshop</p>



LU4. Join G.I Pipes	<ul style="list-style-type: none">Trainee must be able toObserve basic principles for G.I. pipesSelect materials for taskIdentify tools and equipment for taskThreading & Cutting the PipeTight pipe with socketUndertake pipe leakage testUse PPEs	<ul style="list-style-type: none">Define G.I pipesExplain the equipment for installing and fittings of G.I pipes.Define types of G.I pipesPractical ActivityJoining of G.I pipes	Theory-0.42Hrs Practical-01 Hrs Total- 1.42 Hrs	Pipe Benders Pipe Cutting Tools, Deburrers Plumbing pliers Plumbing wrenches Plumbing spanners Pressure testing kits PPEs Hack Saw with blade Different Fittings Safety Valve G.I Pipes	Class Room and workshop
LU5. Join PPRC Pipes	<ul style="list-style-type: none">Trainee must be able toObserve basic principles for PPRC pipesAdopt safety measuresPrepare welding machine with required dies of diameter.Cut the pipes at right angles to the pipe axis using suitable cutter.Remove any burrs or chips by cleaning the cutting area.Heat the machine up to 260°CMark the welding depth on pipeInsert the end of pipe into the heating sleeve up to the marked welding depth and mount the fitting also.	<ul style="list-style-type: none">Define PPRC pipesExplain the equipment for installing and fittings of PPRC pipes.Usage of PPRC pipesPractical ActivityJoining of PPRC pipes	Theory-0.42Hrs Practical-0.5 Hrs Total- 0.92 Hrs	Pipe Benders Pipe Cutting Tools, Deburrers Plumbing pliers Plumbing wrenches Plumbing spanners Pressure testing kits PPEs Hack Saw with blade Different Fittings Safety Valve PPRC Pipe with fittings Cocking Tools	Class Room and workshop



	<ul style="list-style-type: none">Leave the pipe and fitting on the heating tool until the heating time is elapsed (5 to 7 sec)Remove the pipe and fitting from heating tool and push them immediately into each other up to marked welding depth without rotating.Allow the joint to cool down				
LU6. Joining PVC Pipes	<ul style="list-style-type: none">Clean the ends of pipes to be joined.Make one end of pipe should be cup/bell/ socket type if they are not in required shape.Apply jointing solution in the bell/socket and over the spigot endInsert the spigot end of a pipe into bell/socket of another pipe	<ul style="list-style-type: none">Define PVC pipes and its jointsExplain the equipment for installing and fittings of pipesPractical ActivityJoining of PVC pipes	Theory-0.42Hrs Practical-0.5 Hrs Total- 0.92 Hrs	Pipe Benders Pipe Cutting Tools, Deburrers Plumbing pliers Plumbing wrenches Plumbing spanners Pressure testing kits PPEs Hack Saw with blade Different Fittings PVC pipes Safety Valve	Class Room and workshop
LU7. Joining Concrete Pipes	<ul style="list-style-type: none">Correctly position and bed the first pipe.Prepare the bedding for the second pipe.Apply the seal on the spigot end.Ensure the joint ring is not twisted and correctly located on spigot.	<ul style="list-style-type: none">Define concrete pipes and its jointsExplain the equipment for installing and fittings of pipesExplain drain PipesPractical Activity	Theory-0.42Hrs Practical-0.5 Hrs Total- 0.92 Hrs	Deburrers Plumbing pliers Plumbing wrenches Plumbing spanners Pressure testing kits PPEs Different Fittings Safety Valve Concrete pipes	Class Room and workshop



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	<ul style="list-style-type: none">Centre the socket/bell and fill the gap with cement mortarJoining of concrete pipes			
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0732B&CE-106. Install plumbing fixtures

Objective: This module covers the knowledge and skills required to install plumbing fixtures at work place i-e installation of water closet, flushing cistern, Wash hand Basin, English WC and Urinal.

Duration: 06 Hours

Theory: 02 Hours

Practice: 04Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Install Wash Hand Basin	<p>Trainee will be able to:</p> <ul style="list-style-type: none">Identify safety requirements for installationIdentify tools for workIdentify FixturesPerform measurementsMark out Installation pointTurn the water supply off of the concerned section.Mark and drill pilot holes for the floor fixing screws.Mark, drill and plug the wall holes for basin fixing screwInstall tee stop cock at the end of water supply pipe (hot and cold)Connect the flexible rubber connection pipes with pillar cocks or mixture	<ul style="list-style-type: none">Define hand basin and its types.Use of tools and equipment's for installing wash hand basin.Knowledge of joining techniques for hand basin.Explain wash hand basin Pedestal typeExplain fitting procedure to install wash hand basin <p>Practical Activity</p> <ul style="list-style-type: none">Installing wash hand basin	Theory-0.5 Hrs Practical-0.5 Hrs Total- 1.0 Hrs	Pipe Benders Pipe Cutting Tools Pipe vice with stand Deburrers Plumbing pliers Plumbing wrenches Plumbing spanners Plungers PPEs Wash hand basin Bolt Kit Screws Clamps Hammer Tee cock Pillar cock	Class Room and workshop



	<ul style="list-style-type: none">Fit the coupling in the hole of basin. Fit floor trap under the waste pipe and adjust waste pipe with it.Re-position the pedestal and screw it into proper place.Position the basin and check its level then screw the basin to wall.Inject silicon sealant for sealing.Tighten the pedestal screws.Turn on the water supply and check for leaks.				
LU2. Install English water closet	<p>Trainee will be able to:</p> <ul style="list-style-type: none">Mark out Installation pointCompact and Level the floor at the place of installation of water closet.Place P-trap at compacted and levelled surface.Place the W.C pot on the trap in levelled surface and provide support to it.Fill the P-trap with cement and cloth bandage soaked in cement solution.Connect soil pipe to P-trapConnect tee with soil pipe outside the toilet wall.Joint the vent pipe with small end of tee.	<ul style="list-style-type: none">Define water closet and its typesUse of tools and equipment's for installing water closet.Knowledge of joining techniques for water closetKnowledge of levelling and fixing WC <p>Practical Activity</p> <ul style="list-style-type: none">Installing water closet	Theory-0.5 Hrs Practical-0.5 Hrs Total- 1.0 Hrs	Pipe Benders Pipe Cutting Tools Pipe vice with stand Deburrers Plumbing pliers Plumbing wrenches Plumbing spanners Plungers PPEs Bolt Kit Screws Clamps Hammer	Class Room and workshop



	<ul style="list-style-type: none">• Connect larger end of soil pipe to septic tank.• Attach flush pipe in to the pot hole.• Drill holes at the required place and height for flushing cistern.• Install flushing with screws and joint it with flush pipe.• Fill the earth to required level.• Finish conglomerate floor or tile flooring			P-Trap W.C (Indian & English) Tee cock Pillar cock	
LU3. Install Flushing Cistern	Trainee must be able to: <ul style="list-style-type: none">• Mark out Installation point• Measure height for flushing cistern• Drill holes at the required place and height for flushing cistern.• Install flushing with screws and joint it with flush pipe• Fix flushing pipe• Connect inlet pipe with water supply• Perform final quality inspection• Check Level• Use PPEs	<ul style="list-style-type: none">• Define flushing cistern with its types.• Use of tools and equipment's for installing flushing cistern• Knowledge of installing techniques for flushing cistern <p>Practical Activity</p> <ul style="list-style-type: none">• Install flushing cistern	Theory-0.25 Hrs Practical-0.75 Hrs Total- 1.0 Hrs	Pipe Benders Pipe Cutting Tools Pipe vice with stand Deburrers Plumbing pliers Plumbing wrenches Plumbing spanners Plungers PPEs Bolt Kit Flushing cistern Screws Clamps Tee cock Pillar cock	Class Room and workshop
LU4. Install Urinal	Trainee must be able to <ul style="list-style-type: none">• Mark out Installation point• Turn the water supply off of the concerned section.	<ul style="list-style-type: none">• Define urinal and its types• Use of tools and equipment's for installing urinal• Knowledge of installing techniques for urinal	Theory-0.25 Hrs Practical-0.75 Hrs Total- 1.0 Hrs	Pipe Benders Pipe Cutting Tools Pipe vice with stand Deburrers Plumbing pliers Plumbing wrenches Plumbing spanners Plungers	Class Room and workshop



	<ul style="list-style-type: none">Install adequate support for wall hangers and install wall hangers if needed.Drill the holes at two feet height and drill the holes.Determine the position for waste pipe nipple.Apply thread sealant tape.Install female collar to the waste pipe.Place the gasket on the female collar with the bevelled surface facing away from the collar.Position the urinal on the wall hangers and screwed them.Secure the urinal bottle trap and waste pipe to female collar using the screws.Install the flush valve according to manufacturer instructions.Connect the water supply and complete waste pipe connection.Turn on water supply.Flush and check the entire installation for leakage	<p>Practical Activity</p> <ul style="list-style-type: none">Installing urinal	PPEs Bolt Kit Urinal Urinal with fitting Urinal Cistern		
LU5. Install Sink	<p>Trainee must be able to</p> <ul style="list-style-type: none">Mark out Installation pointMeasure height for sink	<ul style="list-style-type: none">Define sink and its types.Use of tools and equipment's for installing sink.	Theory-0.25 Hrs Practical-0.75 Hrs Total- 1.0 Hrs	Pipe Benders Pipe Cutting Tools Pipe vice with stand Deburrers Plumbing pliers Plumbing wrenches	Class Room and workshop



	<ul style="list-style-type: none">• Install adequate support for wall hangers and install wall hangers if needed.• Fix sink fat measured height with drain pipe• Connect inlet pipe with water supply• Perform final quality inspection• Check Level• Conduct Operational Testing• Use PPEs	<ul style="list-style-type: none">• Knowledge of installing techniques for sink. <p>Practical Activity</p> <ul style="list-style-type: none">• Installing sink		<p>Plumbing spanners Plungers PPEs Bolt Kit Sink with mixer Tee cock Pillar cock</p>	
LU6. Install Bath Tub	<ul style="list-style-type: none">• Mark out Installation point• Measure Height for bath tub• Set and level Bath Tub at designated place• Install a ledger board for supporting tub• Secure the tub to studs according to manufacturer instructions.• Attach drain to tub• Connect the overflow drain• Connect the drain pipe with P-trap• Connect inlet pipe with water supply• Perform leakage test• Perform Safety Precaution• Use PPEs	<ul style="list-style-type: none">• Define bath tub and its types.• Use of tools and equipment's for installing bath tub.• Knowledge of installing techniques for bath tub. <p>Practical Activity</p> <ul style="list-style-type: none">• Installing bath tub	<p>Theory-0.25 Hrs Practical-0.75 Hrs Total- 1.0 Hrs</p>	<p>Pipe Benders Pipe Cutting Tools Pipe vice with stand Deburrers Plumbing pliers Plumbing wrenches Plumbing spanners Plungers PPEs Bolt Kit Shower Geyser Bath Tub with accessories Mallet Tee cock Pillar cock</p>	<p>Class room and workshop</p>



0732B&CE-107. Install & repair water pumps

Objective: This module covers the knowledge and skills required to install drinking water pumps and its repair work.

Duration: 05 Hours

Theory: 01 Hours

Practice: 04 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Install Air ejector Pump	Trainee will be able to: <ul style="list-style-type: none">Mark out Installation pointPerform Safety PrecautionMeasure Pipes with fittingsFix pump with suction & delivery pumpConnect with electricityPerform leakage testUse PPEs	<ul style="list-style-type: none">Knowledge of joining techniques and pipe fittings of air ejector pumpKnowledge of leakage in pipes and pumpsExplain working of air ejector pump <p>Practical Activity</p> <ul style="list-style-type: none">Installation of air ejector pump	Theory-0.25 Hrs Practical-1 Hrs Total- 1.25 Hrs	Pipe Bender Pipe Cutting Tools Chain Pipe Wrench Deburrers Plumbing pliers, Plumbing wrenches Plumbing spanners Plungers Pressure testing kits Radiator tools PPEs Air ejector Pump with fitting	Class Room and workshop
LU2. Install Centrifugal Pump	Trainee will be able to: <ul style="list-style-type: none">Mark out Installation pointPerform Safety PrecautionMeasure Pipes with fittingsFix flanges with suction & delivery pipesConnect with electricityPerform leakage test	<ul style="list-style-type: none">Knowledge of joining techniques and pipe fittings of centrifugal pump.Knowledge of leakage in pipes and in centrifugal pumpsExplain working of centrifugal pump. <p>Practical Activity</p> <ul style="list-style-type: none">Installing centrifugal pump	Theory-0.25 Hrs Practical-1 Hrs Total- 1.25 Hrs	Pipe Bender Pipe Cutting Tools Chain Pipe Wrench Deburrers Plumbing pliers, Plumbing wrenches Plumbing spanners Plungers Pressure testing kits Radiator tools PPEs Centrifugal Pump with fitting.	Class Room and workshop



	<ul style="list-style-type: none">• Use PPEs				
LU3. Install Rotary Pump	Trainee must be able to: <ul style="list-style-type: none">• Mark out Installation point• Perform Safety Precaution• Measure Pipes with fittings• Fix flanges with suction & delivery pipes• Connect with electricity• Perform leakage test• Use PPEs	<ul style="list-style-type: none">• Knowledge of joining techniques and pipe fittings of rotary pump.• Knowledge of leakage in pipes and in rotary pumps• Explain working of rotary pump. <p>Practical Activity</p> <ul style="list-style-type: none">• Installing rotary pump	Theory-0.25 Hrs Practical-1 Hrs Total- 1.25 Hrs	Pipe Bender Pipe Cutting Tools Chain Pipe Wrench Deburrers Plumbing pliers, Plumbing wrenches Plumbing spanners Plungers Pressure testing kits Radiator tools PPEs Rotary Pump with fitting. Electricity	Class Room and workshop
LU4. Carry out repair of Pump	Trainee must be able to <ul style="list-style-type: none">• Perform Safety Precaution• Disconnect electricity and pump• Use PPEs• Check for Fault• Repair it• Refit with suction & delivery pipes• Connect with electricity• Perform leakage test	<ul style="list-style-type: none">• Explain repair for different pumps.• Explain safety measures while performing repair of works• Explain leakage checking with its methods• Knowledge of leakage in pipes and pumps <p>Practical Activity</p> <ul style="list-style-type: none">• Repairing of different pumps	Theory-0.25 Hrs Practical-01 Hrs Total- 1.25 Hrs	Pipe Bender Pipe Cutting Tools Chain Pipe Wrench Deburrers Plumbing pliers, Plumbing wrenches Plumbing spanners Plungers Pressure testing kits Radiator tools PPEs Different Pumps with fittings Electricity	Class Room and workshop



12.

0732B&CE-108. Install turbine pumps

Objective: This module covers the knowledge and skills required to install turbine

Duration: 07 Hours

Theory: 02 Hours

Practice: 05 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Install turbine	<p>Trainee will be able to:</p> <ul style="list-style-type: none">• Mark out Installation point• Use PPEs• Check depth of bore• Adopt Safety Measures• Measure turbine Pipes with fittings• Fix Turbine with flange & Pipes• Insert turbine into bore with tripod & chain pulley• Connect Motor with shaft fittings• Connect electricity and start• Remove tripod• Check discharge	<ul style="list-style-type: none">• Define turbines and its types.• Explain different joining techniques and pipe fittings• Knowledge of leakage testing• Explain turbine impellers with its fittings• Explain installation method into bore.• Explain tripod and chain pulley function	Theory-1.5 Hrs Practical-04 Hrs Total- 5.5 Hrs	Pipe Cutting Tools Chain Pipe Wrench Deburrers Plumbing pliers Plumbing wrenches Plumbing spanners Plungers Pressure testing kits Radiator tools PPEs Turbine with impellers & Motor Electricity Turbine pipe with fittings Pipe wooden / steel clamps	Class Room and workshop



LU2. Clean-up work site area	<ul style="list-style-type: none">Clear work area by disposing of materials (reused or recycled) in accordance to legislation and regulationsClean, check, maintain and store tools and equipment according to requirement	<ul style="list-style-type: none">Information of faults and maintenance according to the workplacePerform clean up	Theory-0.5 Hrs Practical-01 Hrs Total- 1.5 Hrs		Class Room and workshop
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9.10. Digital Skills

0732B&CE109- Install computer operating systems and hardware

Objective: This module covers the performance outcomes, skills and knowledge required to select, configure and use computer operating systems and basic computer hardware

Duration: 2.0 Hours

Theory: 1.0 Hours

Practice: 1.0 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Identify operating system and hardware components	Trainee will be able to: <ul style="list-style-type: none">Determine ICT organizational requirements and specificationsIdentify and select operating systemIdentify appropriate external hardware components1.4 Identify internal hardware components	<ul style="list-style-type: none">Introducing HSEPreparing working environmentConnecting PC to electricityConnecting multimediaSetting out workInstalling CAD Software <p>Practical Activity prepare a short report on the hardware operating system along with its components.</p>	Theory 0.5Hrs Practice-0.5 Hrs Total- 1.0 Hrs	Drawing Sheet Duster A4-Papers Soft wares Tools C.P.U & LCD Key board	Computer Lab



				Mouse Data cables Printer USB Multimedia	
LU-2. Install and configure operating system and application software with hardware components	Trainee will be able to: <ul style="list-style-type: none">Install and configure operating system to meet organizational requirementsIdentify the functions associated with the operating system and associated boot processConfigure power-management settings to minimize power consumption as an environmentally sustainable measureUse both the graphical user interface and the command line interface to perform basic tasks	<ul style="list-style-type: none">Understanding Operating systemsProcedure of Installation the software application.Connecting system to electric supplyIntroducing and Connecting data cablesTroubleshooting the applicationTroubleshooting the softwareEnsuring HSE <p>Practical Activity Configure C.P.U System before installing software.</p>	Theory 0.25Hrs Practice-.25 Hrs Total- 0.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD	Computer Lab



	<ul style="list-style-type: none">• Install or upgrade application software onto the operating system and hardware configuration• Determine the relationship between an application program, the operating system and hardware• 2.7 Identify general differences between the different computer platforms and their respective operating systems			Printer USB Multimedia	
LU-3. Optimize operating system and hardware components	<ul style="list-style-type: none">• Optimize operating system using included tools or third-party utilities• Customize the graphical user interface• Use techniques unique to the command line interface• Set up and configure external hardware components and check functionality• Install drivers as appropriate and check functionality	<ul style="list-style-type: none">• Understand Operating systems.• Describing procedure of Installation of software applications. (MS Word)• Describing Hardware and Software.• Accessing a Data traveler.• Troubleshooting hardware and software problems. <p>Practical Activity Conduct Optimize operating system</p>	Theory 0.25Hrs Practice-0.25Hrs Total- 0.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse	Computer Lab



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				Data cables LCD Printer USB Multimedia	
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0732B&CE110- Operate digital media technology

Objective: This module covers the performance outcomes, skills and knowledge required to identify, select and use a digital media package and supporting technologies.

Duration: 1.0 Hours

Theory: 0.5 Hours

Practice: 0.5 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Use appropriate OHS office work practices	Trainee will be able to: <ul style="list-style-type: none">Use safe work practices to ensure ergonomic, work organization, energy and resource conservation requirements are addressedUse wrist rests and document holders where appropriateUse monitor anti-glare and radiation reduction screens where appropriate	<ul style="list-style-type: none">Basic for OHSApply OHSOHS principlesResponsibilities for ergonomics,Ordinates setting <p>Practical Activity Practice for OHS in lab and office</p>	Theory 1.0Hrs Practice-2 Hrs Total- 3.0 Hrs	Duster A4-Papers Soft wares Tools C.P.U & LCD Key board Mouse Data cables Printer USB Multimedia	Computer Lab



LU-2. Identify and select appropriate digital media package	Trainee will be able to: <ul style="list-style-type: none">Identify the basic requirements of a design brief,Check user environmentResearch and review suitable available digital media packagesSelect an appropriate digital media package to meet design brief requirements	<ul style="list-style-type: none">Set U.C.S for different situationsUnderstanding Basic Commandssupport design brief requirements. <p>Practical Activity Perform formation of digital media package</p>	Theory 0.5Hrs Practice-2 Hrs Total- 2.5 Hrs	Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab
LU-3. Use digital media package	Trainee will be able to: <ul style="list-style-type: none">Procure or create suitable data to meet requirements of the briefManipulate data using digital media package tools	<ul style="list-style-type: none">Defining media packageConfigure media packageSetting up digital media tools.Principles of digital imagingtools	Theory 0.5Hrs Practice-2 Hrs	Duster A4-Papers Soft wares Tools	Computer Lab



	<ul style="list-style-type: none">• Ensure naming and storing of documents in appropriate file format in directories or	<ul style="list-style-type: none">• video and sound file formats, file management and transfer systems• <p>Practical Activity Create data using digital media tools.</p>	Total- 2.5 Hrs	C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	
LU-4. Review digital media design	<ul style="list-style-type: none">• Evaluate design for creative, dramatic and technical quality, file size, and suitability to meet the brief• Test and run any incorporated graphics, video or sound as part of a digital media presentation and present designs in the appropriate format• Review final product against design brief	<ul style="list-style-type: none">• Defining media design package• Configure media design package• Setting up design media tools.• Visual Design• file management and transfer systems for digital media <p>Practical Activity</p> <ul style="list-style-type: none">• Create data using digital media design tools.	Theory 0.5Hrs Practice-2 Hrs Total- 2.5 Hrs	Duster A4-Papers Soft wares Tools C.P.U & LCD Key board Mouse Data cables	



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				Printer USB Multimedia		
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0732B&CE111- Perform computer operations

Objective: This module covers the knowledge, skills and attitudes and values needed to perform computer operations which include inputting, accessing, producing and transferring data using the appropriate hardware and software.

Duration: 2.0 Hours

Theory: 1.0 Hours

Practice: 1.0 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Plan and prepare for task to be undertaken	Trainee will be able to: <ul style="list-style-type: none">Requirements of task are determined as per standardoperating proceduresAppropriate hardware and software is selected according to task assigned and required outcome1.3 Task is planned to ensure	<ul style="list-style-type: none">Drafting settings (Unites, Limits, SnapAuto (On & Off) Snap setting with their applicationLayer options with their application. <p>Practical Activity Perform different task on operating system.</p>	Theory 0.5Hrs Practice- 2 Hrs Total- 0.5 Hrs	Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB	Computer Lab



				Multimedia	
LU-2. Input data into computer	Trainee will be able to: <ul style="list-style-type: none">• Data are entered into the computer using appropriate program/application in accordance with company procedures• Accuracy of information is checked and information is saved in accordance with standard operating procedures• Inputted data are stored in storage media according to requirements• Work is performed within ergonomic guidelines	<ul style="list-style-type: none">• Importance of input data into PC• Text Input Data• Style / type of input data <p>Practical Activity Perform input data in to PC</p>	Theory 0.5Hrs Practice-2 Hrs Total- 2.5 Hrs	Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab



LU-3. Access information using computer	Trainee will be able to: <ul style="list-style-type: none">Correct program/application is selected based on job requirementsProgram/application containing the information required is accessed according to company proceduresDesktop icons are correctly selected, opened and closed for navigation purposesKeyboard techniques are carried out in line with OH & S requirements for safe use of keyboards	<ul style="list-style-type: none">Define access informationAttach data cables with CPUImportance of access information <p>Practical Activity Create Access information using PC.</p>	Theory 1.0 Hrs Practice-2 Hrs Total- 3.0 Hrs	Printing Papers Duster A4-Papers Soft wares Tools C.P.U & LCD Key board Mouse Data cables Printer USB Multimedia	Computer Lab
LU-4. Produce/output data	Trainee will be able to:	<ul style="list-style-type: none">Define output data informationCreate information data fileImportance of output data <p>Practical Activity</p>	Theory 1.0 Hrs Practice-2 Hrs Total- 3.0 Hrs	Printing Papers Duster	Computer Lab



using computer system	<ul style="list-style-type: none">Entered data are processed using appropriate software commandsData are printed out as required using computer hardware/peripheral devices in accordance with standard operating proceduresFiles and data are transferred between compatible systems using computer software, hardware/ peripheral devices in accordance with standard operating procedures	<ul style="list-style-type: none">Create output data by using input		A4-Papers Soft wares Tools C.P.U & LCD Key board Mouse Data cables Printer USB Multimedia	
LU-5. Maintain computer equipment and systems	Trainee will be able to: <ul style="list-style-type: none">Systems for cleaning, minor maintenance and replacement of consumables are implementedProcedures for ensuring security of data, including regular back-ups and virus checks are	<ul style="list-style-type: none">Define PC equipment systemMaintain PC with its different equipmentImportance of Maintaining PC equipment's <p>Practical Activity</p> <ul style="list-style-type: none">Maintain computer system	Theory 1.0 Hrs Practice-2 Hrs Total- 3.0 Hrs	Printing Papers Duster A4-Papers Soft wares Tools	Computer Lab



	<p>implemented in accordance with standard operating procedures</p> <ul style="list-style-type: none">Basic file maintenance procedures are implemented in line with the standard operating procedures		C.P.U & LCD Key board Mouse Data cables Printer USB Multimedia	
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0732B&CE112- Use computer applications

Objectives: This module covers the performance outcomes, skills and knowledge required to identify, select and operate three commercial software packages, including a word-processing, a spreadsheet and presentation application package.

Duration: 1.0 Hours

Theory: 0.5 Hours

Practice: 0.5 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Use appropriate OHS office work practices	Trainee will be able to: <ul style="list-style-type: none">Use safe work practices to ensure ergonomic, work organization, energy and resource conservation requirements are addressedUse wrist rests and document holders where appropriateUse monitor anti-glare and radiation reduction screens where appropriate	<ul style="list-style-type: none">Basic for OHSApply OHSOHS principlesResponsibilities for ergonomics,Ordinates setting <p>Practical Activity</p> <p>Perform basic work practice adopting OHS.</p>	Theory 0.5 Hrs Practice-2 Hrs Total- 2.5 Hrs	Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer	Computer Lab



				USB Multimedia	
LU-2. Install and remove software	Trainee will be able to: <ul style="list-style-type: none">• Select software to be installed• Follow installation instructions• Delete unrequired software	<ul style="list-style-type: none">• Define installation.• Describe importance of installation.• Software installation command• Removal of installation• Differentiate between un-installation and removal <p>Practical Activity Practice to install and un-install the software.</p>	Theory 0.5Hrs Practice-3 Hrs Total- 3.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB	Computer Lab



				Multimedia	
LU-3. Use appropriate word-processing software	Trainee will be able to: <ul style="list-style-type: none">• Select word-processing software appropriate to perform activity• Identify document purpose, audience and presentation requirements, and clarify with personnel as required• Identify organizational requirements for text-based business documents and design document structure and layout to ensure consistency of style and image• Match document requirements with software functions to provide efficient production of documents• Use technical functions, other data and formatting to finalize documents	<ul style="list-style-type: none">• Apply word processing.• Use modify commands and tools.• Install Word software in PC.• Use COMMANDS to un-install the software• Features of installation• Installation steps for Word <p>Practical Activity Install and un-install MS word SOFTWARE into PC.</p>	Theory 0.5Hrs Practice-3 Hrs Total- 3.5 Hrs	Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab



	<ul style="list-style-type: none">• Ensure the naming and storing of documents in appropriate directories or folders and the printing of documents to the required specifications				
LU-4. Use appropriate spreadsheet software	<p>Trainee will be able to</p> <ul style="list-style-type: none">• Select spreadsheet software appropriate to perform activity• Identify document purpose, audience and presentation requirements, and clarify with personnel as required• Enter simple formulas and functions using cell referencing where required• Customize spreadsheet settings and format documents to meet requirements• Ensure the naming and storing of documents in appropriate directories or folders and the	<ul style="list-style-type: none">• Apply MS. Excel.• Use modify commands and tools.• Install MS. Excel software in PC.• Use COMMANDS to un-install the software• Features of installation• Installation steps for MS. Excel <p>Practical Activity Install and un-install MS Excel software into PC.</p>	Theory 0.5Hrs Practice-3 Hrs Total- 3.5 Hrs	Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab



	printing of documents to the required specifications					
LU-5. Use appropriate presentation software	Trainee will be able to <ul style="list-style-type: none">• Select software application package appropriate to perform activity• Identify purpose, audience and presentation requirements, and clarify with personnel as required• Use technical functions, other data and formatting to finalize documents• Ensure documents are named and stored in appropriate directories or folders and printed to required specifications• Make a presentation	<ul style="list-style-type: none">• Defining presentation• Presentation installation software• Define power point• Install power point• Use COMMANDS to un-install the software• Features of installation <p>Practical Activity Install and un-install MS power point software into PC.</p>	Theory 0.5Hrs Practice-2 Hrs Total- 2.5 Hrs	Drawing Sheets Duster A4-Papers Soft wares Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab	



0732B&CE113- Create user documentation

Objective: This module covers the performance outcomes, skills and knowledge required to create user documentation that is clear to the target audience and easy to navigate.

Duration: 1 Hours

Theory: 0.50 Hours

Practice: 0.50 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Determine documentation standards and requirements	Trainee will be able to: <ul style="list-style-type: none">Determine documentation requirementsInvestigate documentation and industry standards for requirements and determine appropriate application to user documentationDesign documentation templates using appropriate software and obtain approval from appropriate person	<ul style="list-style-type: none">Define standards.Differentiate between documents and documentationDocumentation requirementsDocuments design <p>Practical Activity Prepare documentation standards along with its requirements.</p>	Theory 0.5Hrs Practice-3 Hrs Total- 3.5 Hrs	Duster Pencils Eraser Papers Tools C.P.U Key board Mouse Data cables LCD Printer	Computer Lab



				USB Multimedia	
LU-2. Produce user documentation	Trainee will be able to: <ul style="list-style-type: none">Conduct a review of the subject system, program, network or application in order to understand its functionalityGather existing technical, design or user specifications and supporting documentationCreate user documentation based on template to record the operation of the subject system, program, network or application	<ul style="list-style-type: none">Produce standards.Differentiate between documents and documentationDocumentation design <p>Practical Activity Prepare user documentation standards along with its requirements.</p>	Theory 0.5Hrs Practice-3 Hrs Total- 3.5 Hrs	C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab
LU-3. Review and obtain sign-off	Trainee will be able to: <ul style="list-style-type: none">Submit user documentation to target audience for reviewGather and analyze feedback	<ul style="list-style-type: none">Differentiate between documents and documentationDocumentation designAudience to reviewDefine feedbacks	Theory- 0.5Hrs Practice-3 Hrs	Duster Pencils Eraser Sharpener	Computer Lab



	<ul style="list-style-type: none">• Make changes to user documentation• Submit user documentation to appropriate person for approval	Practical Activity Practice for Review and obtain sign-off.	Total- 3.5 Hrs	Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	
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0732B&CE114- Create technical documentation

Objective: This module covers the performance outcomes, skills and knowledge required to create technical documentation that is clear to the target audience and easy to navigate.

Duration: 1.0 Hours

Theory: 0.50 Hours

Practice: 0.50 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Identify and analyze documentation requirements and client needs.	Trainee will be able to: <ul style="list-style-type: none">Consult with client to identify documentation requirementsInterpret and evaluate documentation requirements and confirm details with clientInvestigate industry and documentation standards for requirementsDefine and document the scope of work to be producedConsult with client to validate and confirm the scope of work	<ul style="list-style-type: none">Define documentationEvaluate Documentation requirementsIndustry documentation standardsOffice documentation standardsClient needs for documentation <p>Practical Activity</p> <p>Practice to analyze client needs document requirements.</p>	Theory 0.5Hrs Practice-.5 Hrs Total- 1 Hrs	Duster Pencils Eraser Sharpener Tools C.P.U Key board Mouse Data cables LCD	Computer Lab



				Printer USB Multimedia	
LU-2. Design documentation	Trainee will be able to: <ul style="list-style-type: none">Identify information requirements with reference to layout and document structureCreate document templates and style guides consistent with information requirementsConduct a review of the system in order to understand its functionalityExtract content that meets information requirements according to copyright restrictionsDevelop the structure of the technical documentation giving focus to the flow of information, style, tone and content format	<ul style="list-style-type: none">Differentiate between documents and document structureDocumentation design templatesCopy rights for documentationDefine feedbacksContent that meets information requirementsTechnical documentation <p>Practical Activity</p> <p>Practice for Prepare design documents.</p>	Theory 0.5Hrs Practice- .25Hrs Total- 0.5 Hrs	Duster Pencils Eraser Papers Tools C.P.U Key board Mouse Data cables LCD Printer USB	Computer Lab



	<ul style="list-style-type: none">Validate the technical documentation structure with the client			Multimedia	
LU-3. Develop documentation	Trainee will be able to: <ul style="list-style-type: none">Write technical documentation based on the template and scope of work using the information gatheredTranslate technical terminology into plain English where appropriateApply content format and style according to documentation standards and templates	<ul style="list-style-type: none">Style for design documentationDocumentation design templatesCopy rights for documentationContent for documentationTechnical documentation <p>Practical Activity</p> <p>Practice for Develop design documents.</p>	Theory 0.5 Hrs Practice - .5 Hrs Total - 1.0 Hrs	Duster Pencils Eraser Sharpener Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab



LU-4. Evaluate and edit documentation	Trainee will be able to: <ul style="list-style-type: none">Submit technical documentation to appropriate person for reviewGather and analyze feedbackIncorporate alterations into the technical documentationEdit the technical documentation for technical and grammatical accuracy	<ul style="list-style-type: none">Style for evaluation documentationDocumentation evaluation design templatesEdit documentationAnalyze documentationgrammatical accuracy <p>Practical Activity</p> <p>Practice for evaluate the documents.</p>	Theory 0.5 Hrs Practice-0.5 Hrs Total- 1 Hrs	Duster Pencils Eraser Sharpener Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab
LU-5.	Trainee will be able to	<ul style="list-style-type: none">evaluation for documentsDocumentation evaluation designEdit public documentation	Theory 0.5 Hrs Practice-0.5 Hrs	Duster Pencils	Computer Lab



Prepare documentation for publication	<ul style="list-style-type: none">Check that the completed technical documentation meets client requirements and scope of workSubmit the technical documentation to appropriate person for approvalPrepare the technical documentation for publication and distribution using appropriate channels	<ul style="list-style-type: none">Analyze public documentation grammatical and technical accuracyclient feedback <p>Practical Activity</p> <p>Perform documentation for publication.</p> <p>Prepare structural detail of spread footing, pillar, foundations & column base.</p>	Total- 1 Hrs	Eraser Sharpener Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia
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0732B&CE115- Create basic databases

Objective: This module covers the skills and knowledge required to design, develop and test a database in order to meet a specification. It applies to individuals who may be either database, or web designers, required to create a simple database to store information for an online application, using a simple entity relational database.

Duration: 1 Hours

Theory: 0.5 Hours

Practice: 0.5 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Analyze the requirements for the database	Trainee will be able to: <ul style="list-style-type: none">• Determine the information that the database is required to hold• Develop a written requirement report for the functionality of the database• Complete the documentation, and submit it to the appropriate person for approval	<ul style="list-style-type: none">• Knowledge of principles of open platforms• Knowledge of creation of entities, attributes, and populating• Knowledge of creation of entities, attributes, and populating <p>Practical Activity</p> <p>Perform database</p>	Theory-0.125 Hrs Practice-0.125 Hrs Total- 0.25 Hrs	Duster Pencils Eraser Sharpener Tools C.P.U Key board Mouse Data cables	Computer Lab



				LCD Printer USB Multimedia	
LU-2. Use data modeling to design the database to suit requirements	Trainee will be able to: <ul style="list-style-type: none">Design an entity-relationship (ER) diagram to model the relationships between the entities and the attributes that the database will holdDevelop primary and foreign keys to link the entitiesDevelop a data dictionaryComplete the documentation, and submit it to the appropriate person for approval	<ul style="list-style-type: none">Knowledge of data-modeling techniquesKnowledge of database design, modeling and implementation <p>Practical Activity Perform data modeling to design the database to suit requirements</p>	Theory-0.125 Hrs Practice-0.125 Hrs Total- 0.25 Hrs	Duster Pencils Eraser Sharpener Tools C.P.U Key board Mouse Data cables LCD Printer USB	Computer Lab



				Multimedia	
LU-3. Create a database on a web or database server	Trainee will be able to: <ul style="list-style-type: none">• Use the appropriate language on a web or database server to create one or more databases• 3.2 Use the appropriate language on a web or database server to create tables• 3.3 Populate the database fields	<ul style="list-style-type: none">• Knowledge of internet operation related to web servers and clients• Knowledge of naming conventions appropriate to database design <p>Practical Activity Perform database on a web or database server</p>	Theory-0.125 Hrs Practice-0.125 Hrs Total- 0.25 Hrs	Duster Pencils Eraser Sharpener Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab
LU-4.	Trainee will be able to: <ul style="list-style-type: none">• Test the database on the web or database server	<ul style="list-style-type: none">• Knowledge of security restrictions on servers	Theory-0.125 Hrs Practice-0.125 Hrs	Duster Pencils	Computer Lab



Test the database and debug	<ul style="list-style-type: none">• Ensure that the information represented matches the requirements	<ul style="list-style-type: none">• Knowledge of practice communication, and accessibility, for audiences with special needs. <p>Practical Activity Perform database and debug</p>	Total- 0.25 Hrs	Eraser Sharpener Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	
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0732B&CE116- Create basic databases

Objective: This unit describes the performance outcomes, skills and knowledge required to establish a social networking presence using social media tools and applications. The unit specifically identifies the requirement to review, compare and use different types of social networking tools and applications.

Duration: 2 Hours

Theory: 1 Hours

Practice: 1 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU-1. Describe different types of social media tools and applications	Trainee will be able to: <ul style="list-style-type: none">Explain characteristics of the term social media1.2 Identify different types of social-media tools and applicationsIllustrate some of the issues associated with the use of social	<ul style="list-style-type: none">Knowledge basic technical terminology in relation to social networking and social media applicationKnowledge of uploading images, text files, pdf files, audio files, video filesKnowledge of features and functions of social media applicationsKnowledge of import and export software functions	Theory-0.33 Hrs Practice- 0.33Hrs Total- 0.66 Hrs	Duster Pencils Eraser Sharpener Tools C.P.U Key board Mouse Data cables LCD	Computer Lab



	media tools and applications	Practical Activity Perform different types of social media tools and applications		Printer USB Multimedia	
LU-2. Compare different types of social media tools and applications	Trainee will be able to: <ul style="list-style-type: none">• Select one social media type for review• Review most popular tools and applications within that social media type• Itemize benefits across a range of the most popular tools and applications• Select most appropriate social media tool or application	<ul style="list-style-type: none">• Knowledge of Linking documents• Knowledge of OHS principles and responsibilities for ergonomics, including work periods and breaks• Knowledge of tagging to facilitate collaborative folksonomy Practical Activity Perform different types of social media tools and applications	Theory-0.33 Hrs Practice- 0.33Hrs Total- 0.66 Hrs	Duster Pencils Eraser Sharpener Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab



LU-3. Set up and use popular social media tools and applications	Trainee will be able to: <ul style="list-style-type: none">Identify social media tools and applications for possible implementationInitiate preferred social media tools and applications for useEstablish social media interface using text and file contentInitiate social networking interactionTest and evaluate tools and applications for ease of usePresent findings	<ul style="list-style-type: none">Knowledge of social media applications and proceduresKnowledge of use of input and output devicesKnowledge of use of RSS feeds to connect a social network. <p>Practical Activity Perform popular social media tools and applications</p>	Theory-0.33 Hrs Practice-0.33Hrs Total- 0.66 Hrs	Duster Pencils Eraser Sharpener Tools C.P.U Key board Mouse Data cables LCD Printer USB Multimedia	Computer Lab
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0732B&CE117- E-Commerce- SEO (Search Engine Optimization)

Objective: This module covers the knowledge and skills required to develop efficient E-Marketing strategies in accordance with the Vision and Mission statement of the organization driven by Electronic means

Duration: 01 Hours

Theory: 0.5 Hours

Practice: 0.5 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Identify SEO Techniques	Trainee will be able to: <ul style="list-style-type: none">Apply SEO techniquesEmploy SEO key words	<ul style="list-style-type: none">SEO MethodsSEO key words for web pages translationApply SEO techniques Practical Activity	Theory-0.25 Hrs Practical-0.25Hrs Total- 0.5 Hrs	<ul style="list-style-type: none">Computer	Class Room and workshop
LU2. Indicate SEO (Search Engine Optimization)	Trainee will be able to: <ul style="list-style-type: none">Demonstrate SEO techniques to priorities their site or web application using automated tools	<ul style="list-style-type: none">White-hat, Black-hat SEO techniques for web applicationSEO tools usage Practical Activity	Theory-0.25 Hrs Practical-0.25 Hrs Total- 0.5 Hrs	<ul style="list-style-type: none">Computer	Class Room and workshop



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	<ul style="list-style-type: none">• Develop efficient E-marketing strategies	Identify SEO on web application			
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0732B&CE118- E-Commerce- SCM (Supply Chain Management)

Objective: This module covers the knowledge and skills required to develop efficient E-Marketing strategies in accordance with the Vision and Mission statement of the organization driven by Electronic means

Duration: 01 Hours

Theory: 0.5 Hours

Practice: 0.5 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Identify SCM (Supply Chain Management)	Trainee will be able to: <ul style="list-style-type: none">• Identity potential Suppliers• Select the appropriate supplier• Place order as per requirement/inventory• Inspect received order	<ul style="list-style-type: none">• Procurement Cycle (Launch of RFP/RFQ, Tender, Bidding, Comparative Statement, Award of Contract, Maintenance)• Product delivery and their traceability <p>Practical Activity Identify supply chain management</p>	Theory-0.25 Hrs Practical-0.25 Hrs Total- 0.5 Hrs	Computer	Class Room and workshop
LU2. Prepare updated	Trainee will be able to: <ul style="list-style-type: none">• Techniques to manage• Incorporation of Outsourcing in logistics		Theory-0.25 Hrs Practical-0.25 Hrs	Computer	Class Room and workshop



inventory details	<ul style="list-style-type: none">• Maintain Inventory as per Inventory Control / store keeping techniques• Identity different available transportation mode• Identify steps of reverse SCM i-e from consumer to organization	<ul style="list-style-type: none">• Electronic Data Interchange methodologies and format <p>Practical Activity Prepare inventory</p>	Total- 0.5 Hrs		
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0732B&CE119- E-Commerce- Social Media Marketing

Objective: This module covers the knowledge and skills required to develop efficient E-Marketing strategies in accordance with the Vision and Mission statement of the organization driven by Electronic means

Duration: 01 Hours

Theory: 0.5 Hours

Practice: 0.5 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Identify Media Marketing Techniques	Trainee will be able to: <ul style="list-style-type: none">Identify different Social media marketing techniquesApply suitable Classified Advertisement techniques on social media	<ul style="list-style-type: none">Knowledge of different social media sites that is Facebook, Twitter, LinkedIn, Google+ etc., Comparative Statement, Award of Contract, Maintenance)Skills to regularly update brand/product/service blogs Practical Activity Perform media marketing techniques	Theory-0.25 Hrs Practical-0.25 Hrs Total- 0.5 Hrs	<ul style="list-style-type: none">ComputerInternet	Class Room and workshop



LU2. Develop marketing techniques	Trainee will be able to: <ul style="list-style-type: none">• Perform Electronic Mail Marketing• Creation of Blogs	<ul style="list-style-type: none">• Brand pages creation on social media sites• Direct marketing techniques e.g. Email, SMS (Mobile-Commerce) for the projection of company newsletters <p>Practical Activity</p> <ul style="list-style-type: none">• Create blogs and e-marketing	Theory-0.25 Hrs Practical-0.25 Hrs Total- 0 .5Hrs	<ul style="list-style-type: none">• Computer• Internet	Class Room and workshop



0732B&CE120-

Use digital devices

Objective: This module covers the knowledge and skills required to describe the skills and knowledge required to use a range of digital devices, such as a digital camera, video camera, or personal digital assistant (PDA) device. It applies to individuals who require entry level information and communications technology (ICT) knowledge and literacy skills to support their work in a home office or small office environment.

Duration: 02 Hours

Theory: 01 Hours

Practice: 01 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare to use the digital device	Trainee will be able to: <ul style="list-style-type: none">Review the instruction manual and ensure identified components are availableIdentify the physical components of the digital deviceTurn on and follow access procedures to activate the digital device	<ul style="list-style-type: none">audio-visual devicesperipheral devicesstorage devices <p>Practical Activity Use digital device</p>	Theory-0.25 Hrs Practical-0.25 Hrs Total- 0.5 Hrs	<ul style="list-style-type: none">ComputerDigital devices	Class Room and workshop



	<ul style="list-style-type: none">• Alter the digital device settings to best suit intended use• Configure power management settings where appropriate to minimize power consumption, as an environmentally sustainable measure				
LU2. Set up and use the digital device	<p>Trainee will be able to:</p> <ul style="list-style-type: none">• Identify and set the basic operating, security and menu settings• Navigate and manipulate the screen environment• Customize screen icons and access to applications where applicable• Use the digital device, and save and edit output where applicable	<ul style="list-style-type: none">• basic security functions• basic software operation and associated applications <p>Practical Activity Set up digital device</p>	<p>Theory-0.25 Hrs Practical-0.25 Hrs Total- 0.5 Hrs</p>	<ul style="list-style-type: none">• Computer• Digital devices	<p>Class Room and workshop</p>



	<ul style="list-style-type: none">Identify more advanced features available and use as required				
LU3. Access and use basic connectivity devices	<p>Trainee must be able to:</p> <ul style="list-style-type: none">Connect to external digital devices, such as computer devices or storage devices, to retrieve, copy, move and save informationCheck physical connectivity of computer devices or storage devices to ensure operation and performanceConnect to a printer either through a computer device or directly, and use printer settings and print data	<ul style="list-style-type: none">digital device functionsDigital device settings. <p>Practical Activity</p> <p>Use basic connectivity devices</p>	<p>Theory-0.25 Hrs</p> <p>Practical-0.25 Hrs</p> <p>Total- 0.5 Hrs</p>	<ul style="list-style-type: none">ComputerDigital devices	Class Room and workshop



	<ul style="list-style-type: none">. Access audio-visual devices to view and play a multimedia file				
LU4. Shut down digital device	<p>Trainee must be able to</p> <ul style="list-style-type: none">Save current work and back up important dataClose open programs on the digital device and any computer device or storage deviceShut down digital devices, according to manufacturer instructions	<ul style="list-style-type: none">Device shutdownSafety precautions <p>Practical Activity</p> <p>Shut off digital device.</p>	<p>Theory-0.25 Hrs</p> <p>Practical-0.25 Hrs</p> <p>Total- 0.5 Hrs</p>	<ul style="list-style-type: none">ComputerDigital devices	Class Room and workshop



Objective: This module covers the knowledge and skills required to operate word-processing applications and perform basic operations, including creating and formatting documents, creating tables and printing labels. It applies to individuals in the workplace using fundamental knowledge of word-processing under direct supervision or with limited responsibility

Duration: 02 Hours

Theory: 01 Hours

Practice: 01 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Apply workplace health and safety (WHS) practices	Trainee will be able to: <ul style="list-style-type: none">Use workplace ergonomic work practices and strategiesOrganize work area to ensure an ergonomic work environment	<ul style="list-style-type: none">Workplace health safety practicesStrategies for ergonomic work Practical Activity Apply WHS to workplace	Theory-0.14 Hrs Practical-0.14 Hrs Total- 0.28 Hrs		Class Room and workshop
LU2. Create documents	Trainee will be able to: <ul style="list-style-type: none">Open word-processing application, create document and add data according to information requirementsUse document templates as required	<ul style="list-style-type: none">formatting stylesreadability and appearance of documents Practical Activity Develop document using MS word	Theory-0.14 Hrs Practical-0.14 Hrs Total- 0.28 Hrs	<ul style="list-style-type: none">ComputerMS Word	Class Room and workshop



	<ul style="list-style-type: none">• Use simple formatting tools when creating the document• Save document to directory				
LU3. Customize basic settings to meet page layout conventions	<p>Trainee must be able to:</p> <ul style="list-style-type: none">• Adjust page layout to meet information requirements• Open and view different toolbars• Change font format to suit document purpose• Change alignment and line spacing according to document information requirements• Modify margins to suit the document purpose• Open and switch between several documents	<ul style="list-style-type: none">• Settings for page layout• Customization of page layout <p>Practical Activity Customize page according to requirement</p>	<p>Theory-0.14 Hrs Practical-0.14 Hrs Total- 0.28 Hrs</p>	<ul style="list-style-type: none">• Computer• MS Word	Class Room and workshop



LU4. Format documents	<p>Trainee must be able to</p> <ul style="list-style-type: none">• Use formatting features and styles as required• Highlight and copy text from another area in the document or from another active document• Insert headers and footers to incorporate necessary data• Save document in another file format• Save and close document to a storage device	<ul style="list-style-type: none">• formatting features• Highlight and copy text• headers and footers• Save and close document <p>Practical Activity Prepare a document by inserting header, footer, highlighting text and saving file.</p>	<p>Theory-0.14 Hrs Practical-0.14 Hrs Total- 0.28 Hrs</p>	<ul style="list-style-type: none">• Computer• MS Word	<p>Class Room and workshop</p>
LU5. Create tables	<p>Trainee must be able to</p> <ul style="list-style-type: none">• Insert standard table into document• Change cells to meet information requirements	<ul style="list-style-type: none">• Insert standard table• Insert and delete columns and rows <p>Practical Activity Prepare a time table of your activity using MS word</p>	<p>Theory-0.14 Hrs Practical-0.14 Hrs Total- 0.28 Hrs</p>	<ul style="list-style-type: none">• Computer• MS Word	<p>Class Room</p>



	<ul style="list-style-type: none">Insert and delete columns and rows as necessaryUse formatting tools according to style requirements				
LU6. Add images	<ul style="list-style-type: none">Insert appropriate images into document and customize as necessaryPosition and resize images to meet document formatting needs	<ul style="list-style-type: none">Insert imagesPosition and resize images <p>Practical Activity Add images to a MS word file</p>	Theory-0.14 Hrs Practical-0.14 Hrs Total- 0.28 Hrs	<ul style="list-style-type: none">ComputerMS Word	
LU7. Print documents	<ul style="list-style-type: none">Preview document in print preview modeSelect basic print settingsPrint document or part of document from printer	<ul style="list-style-type: none">Print settingsPreview documentPrint document <p>Practical Activity Print a file</p>	Theory-0.14 Hrs Practical-0.14 Hrs Total- 0.28 Hrs	<ul style="list-style-type: none">ComputerMS WordPrint	



0732B&CE122- Operate spreadsheet applications

Objective: This module covers the knowledge and skills required to operate word-processing applications and perform basic operations, including creating and formatting documents, creating tables and printing labels. It applies to individuals in the workplace using fundamental knowledge of word-processing under direct supervision or with limited responsibility

Duration: 02 Hours

Theory: 01 Hours

Practice: 01 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Create presentations	Trainee will be able to: <ul style="list-style-type: none">Open presentation package and create a simple design for a presentation according to organizational requirementsOpen blank presentation and add text and graphicsApply existing styles within a presentation	<ul style="list-style-type: none">Formal and informal presentationsOutline presentation pitfalls <p>Practical Activity Prepare a presentation</p>	Theory-0.2 Hrs Practical-0.2 Hrs Total- 0.4 Hrs	<ul style="list-style-type: none">ComputerMS office	Class Room and workshop



	<ul style="list-style-type: none">• Use presentation template and slides to create a presentation• Use various tools to improve the look of the presentation• Save presentation to the appropriate storage device and folder				
LU2. Customize basic settings	<p>Trainee will be able to:</p> <ul style="list-style-type: none">• Adjust display to meet user requirements• Open and view different toolbars to view options• Ensure font settings are appropriate for the presentation purpose• View multiple slides at once	<ul style="list-style-type: none">• Technical terminology to read help files and prompts• Font settings <p>Practical Activity Customize file using basic settings</p>	<p>Theory-0.2 Hrs Practical-0.2 Hrs Total- 0.4 Hrs</p>	<ul style="list-style-type: none">• Computer• MS office	Class Room and workshop



LU3. Format presentations	<p>Trainee must be able to:</p> <ul style="list-style-type: none">• Use and incorporate organizational charts and bulleted lists, and modify as required• Add objects and manipulate to meet presentation purposes• Import objects and modify for presentation purposes• Modify slide layout, including text and colors, to meet presentation requirements• Use formatting tools as required within the presentation• Duplicate slides within and across a presentation	<ul style="list-style-type: none">• Design and formatting on the readability and usability of presentations• Save presentation <p>Practical Activity</p> <p>Format a prepared presentation</p>	<p>Theory-0.2 Hrs</p> <p>Practical-0.2 Hrs</p> <p>Total- 0.4 Hrs</p>	<ul style="list-style-type: none">• Computer• MS office	Class Room and workshop
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	<ul style="list-style-type: none">• Reorder sequence of slides and delete slides for presentation purposes• Save presentation in another format• Save to storage device and close presentation				
LU4. Add slide show effects	<p>Trainee must be able to</p> <ul style="list-style-type: none">• Incorporate pre-set animation and multimedia effects into presentation as required to enhance the presentation• Add slide transition effects to presentation to ensure smooth progression through the presentation• Test presentation for overall effect	<ul style="list-style-type: none">• Identify suitable presentation effects for different audiences.• Use onscreen navigation tools <p>Practical Activity Present prepared work using slide show</p>	<p>Theory-0.2 Hrs Practical-0.2 Hrs Total- 0.4 Hrs</p>	<ul style="list-style-type: none">• Computer• MS office	Class Room and workshop



	<ul style="list-style-type: none">• Use onscreen navigation tools to start and stop slide show or move between different slides as required				
LU5. Print presentation and notes	<p>Trainee must be able to</p> <ul style="list-style-type: none">• Select appropriate print format for presentation• Select preferred slide orientation• Add notes and slide numbers• Preview slides and run spell check before presentation• Print selected slides and submit presentation to appropriate person for feedback	<ul style="list-style-type: none">• Print settings• Preview document• Print document <p>Practical Activity</p> <ul style="list-style-type: none">• Print a file	<p>Theory-0.2 Hrs Practical-0.2 Hrs Total- 0.4 Hrs</p>	<ul style="list-style-type: none">• Computer• MS office• Printer	Class Room And workshop



0732B&CE123- Operate presentation packages

Objective: This module covers the knowledge and skills required to operate word-processing applications and perform basic operations, including creating and formatting documents, creating tables and printing labels. It applies to individuals in the workplace using fundamental knowledge of word-processing under direct supervision or with limited responsibility.

Duration: 02 Hours

Theory: 01 Hours

Practice: 01 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Create spreadsheets	Trainee will be able to: <ul style="list-style-type: none">Open the spreadsheet application, create spreadsheet files and enter numbers, text and symbols into cells according to information requirementsEnter simple formulas and functions using cell referencing when requiredCorrect formulas when error messages occur	<ul style="list-style-type: none">Spreadsheet applicationCreate spreadsheet filesFormulas and functionsFunction of spreadsheet applications <p>Practical Activity Prepare a spreadsheet document</p>	Theory-0.2 Hrs Practical-0.2 Hrs Total- 0.4 Hrs	<ul style="list-style-type: none">ComputerMS Office	Class Room and workshop



	<ul style="list-style-type: none">• Use a range of common tools during spreadsheet development• Edit columns and rows within the spreadsheet• Use the auto-fill function to increment data where required• Save the spreadsheet to a folder on a storage device				
LU2. Customize basic settings	<p>Trainee will be able to:</p> <ul style="list-style-type: none">• Adjust page layout to meet user requirements or special needs• Open and view different toolbars• Change font settings so they are appropriate for the document purpose• Change alignment options and line spacing according	<ul style="list-style-type: none">• Terminology related to reading help files and prompts• Font settings• Format cells <p>Theory-0.2 Hrs Practical Activity Prepare a customize file using basic settings</p>	<p>Practical-0.2 Hrs Total- 0.4 Hrs</p>	<ul style="list-style-type: none">• Computer• MS Office	Class Room and workshop



	<ul style="list-style-type: none">to spreadsheet formatting features• Format cell to display different styles as required• Modify margin sizes to suit the purpose of the spreadsheets• View multiple spreadsheets concurrently				
LU3. Format spreadsheet	<p>Trainee must be able to:</p> <ul style="list-style-type: none">• Use formatting features as required• Copy selected formatting features from another cell in the spreadsheet or from another active spreadsheet• Use formatting tools as required within the spreadsheet	<ul style="list-style-type: none">• Effect of formatting and appearance on the readability and usability of spreadsheets• Formatting tools• Saving file <p>Practical Activity</p> <p>Format a prepared spreadsheet</p>	<p>Theory-0.2 Hrs</p> <p>Practical-0.2 Hrs</p> <p>Total- 0.4 Hrs</p>	<ul style="list-style-type: none">• Computer• MS Office	<p>Class Room and workshop</p>



	<ul style="list-style-type: none">Align information in a selected cell as requiredInsert headers and footers using formatting featuresSave spreadsheet as another file typeSave to storage device and close spreadsheet				
LU4. Incorporate object and chart in spreadsheet	Trainee must be able to <ul style="list-style-type: none">Import an object into an active spreadsheetManipulate imported object by using formatting featuresCreate a chart using selected data in the spreadsheetDisplay selected data in a different chartModify chart using formatting features	<ul style="list-style-type: none">Import objectsCreate charts <p>Practical Activity Add objects and charts in spreadsheet</p>	Theory-0.2 Hrs Practical-0.2 Hrs Total- 0.4 Hrs	<ul style="list-style-type: none">ComputerMS Office	Class Room and workshop



LU5. Print spreadsheet	<p>Trainee must be able to</p> <ul style="list-style-type: none">• Preview spreadsheet in print preview mode• Select basic printer options• Print spreadsheet or selected part of spreadsheet• Submit the spreadsheet to appropriate person for approval or feedback	<ul style="list-style-type: none">• Print settings• Preview document• Print document <p>Practical Activity</p> <ul style="list-style-type: none">• Print a file	<p>Theory-0.2 Hrs</p> <p>Practical-0.2 Hrs</p> <p>Total- 0.4 Hrs</p>	<ul style="list-style-type: none">• Computer• MS Office• Printer	Class Room
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0732B&CE124- Perform writing and editing tasks

Objective: This module covers the knowledge and skills required to apply the conventions of plain English to writing and editing tasks of different forms. It also includes editing and proofreading techniques. It applies to individuals in various writing contexts who write and edit texts using appropriate language, style, grammar, spelling, and standard conventions for editing and proofreading.

Duration: 02 Hours

Theory: 01 Hours

Practice: 01 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Apply clear and appropriate language and style to writing and editing tasks	Trainee will be able to: <ul style="list-style-type: none">• Use safe work practices including addressing ergonomic requirements when undertaking writing tasks• Use clear, concise and plain English in writing and editing tasks• Apply appropriate paragraph structure to written material to ensure clarity of	<ul style="list-style-type: none">• Features of clear, concise and plain English language <p>Practical Activity</p> <p>Use appropriate language and style to writing and editing</p>	Theory-0.25 Hrs Practical-0.25 Hrs Total- 0.5 Hrs		Class Room and workshop



	<p>meaning and ease of reading</p> <ul style="list-style-type: none">• Make clear and logical connections between sentences, paragraphs and sections• Determine and incorporate the language and style of the audience				
LU2. Apply the appropriate voice, tone and tense	<p>Trainee will be able to:</p> <ul style="list-style-type: none">• Determine appropriate voice, tone and tense of the written materials according to audience requirements• Maintain consistent voice, tone and tense throughout written material	<ul style="list-style-type: none">• Voice, tone and tense for audience. <p>Practical Activity Use appropriate voice, tone and tense</p>	<p>Theory-0.25 Hrs Practical-0.25 Hrs Total- 0.5 Hrs</p>		<p>Class Room and workshop</p>
LU3. Apply appropriate grammar, spelling and punctuation	<p>Trainee must be able to:</p> <ul style="list-style-type: none">• Apply appropriate grammar conventions to a range of written contexts including use	<ul style="list-style-type: none">• Punctuation and spelling conventions <p>Practical Activity</p>	<p>Theory-0.25 Hrs Practical-0.25 Hrs Total- 0.5 Hrs</p>		<p>Class Room and workshop</p>



	<p>of numbers, quotations, and tables</p> <ul style="list-style-type: none">• Apply appropriate spelling and punctuation conventions in writing and editing tasks.	Use appropriate grammar, spelling and punctuation			
LU4. Perform editing and proofreading tasks to meet requirements	<p>Trainee must be able to</p> <ul style="list-style-type: none">• Edit written material to ensure clear meaning through language and paragraphs, consistent voice, tone and tense• Copyedit written material by checking grammar, spelling and punctuation using standard editing conventions• Proofreading using style guides and by monitoring written material for errors	<ul style="list-style-type: none">• Editing conventions• copyediting of written material• Proofreading <p>Practical Activity</p> <p>Perform editing and proofreading</p>	Theory-0.25 Hrs Practical-0.25 Hrs Total- 0.5 Hrs	Class Room and workshop	



0732B&CE125- Write and Edit Copy

Objective: This unit is about writing and editing copy (i.e. final version of text) for a range of formats in different media

Duration: 1 Hours

Theory: 0.5 Hours

Practice: 0.5 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Undertaking copy-writing for different media	Trainee will be able to: <ul style="list-style-type: none">Present the facts and information in a manner that is coherent, comprehensible and appropriate for the target audienceWrite and edit itemsCraft an engaging narrative, conceptualize and clarify ideasDisplay strong command of the language including correct grammar, spelling, sentence construction, diction and pronunciation skillsEnsure that finished scripts meet legal and regulatory norms, and do not pose any	<ul style="list-style-type: none">Knowledge of editorial standardsKnowledge of resource limitationsKnowledge of structure one's thoughts and ideas <p>Practical Activity Perform copy writing for different media</p>	Theory-0.25 Hrs Practical-0.25 Hrs Total- 0.5 Hrs	Computer	Class Room and workshop



	risks to the individual and/ or organization				
LU2. Undertaking script-writing for various media and types of stories	Trainee will be able to: <ul style="list-style-type: none">Edit a story or script based on the brief and prescribed word/ time limitsWrite and edit items such as: headlines, captions, intros, outros, cues and other types of linksCraft an engaging narrative, conceptualize and clarify ideas and develop stories that meet the broader creative/editorial objectives of the organization, if appropriate to the roleDisplay strong command of the language including correct grammar, spelling, sentence construction, diction and pronunciation skills	<ul style="list-style-type: none">Knowledge of use of wide range of vocabulary and writing techniquesKnowledge of difference between facts and opinion/ point of viewKnowledge of applicable legal and regulatory framework <p>Practical Activity Perform script-writing for various media and types of stories</p>	Theory-0.25 Hrs Practical-0.25 Hrs Total- 0.5 Hrs	Computer	Class Room and workshop



0732B&CE126- Build Java applets

Objective: This unit describes the skills and knowledge required to compile and run an applet that executes in Java-enabled browsers, and interacts with users. It applies to individuals involved in software, web or games development and who are required to build applets, using Java that interacts with users via a browser.

Duration: 1 Hours

Theory: 0.5 Hours

Practice: 0.5 Hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Create Java source file	Trainee will be able to: <ul style="list-style-type: none">• Create a file with a text editor• Create a sub-class of the class Java. Applet.• Ensure that applet sub-class implements at least one of the following methods: init and paint• Define classes that contain instance variables, methods and local variables• Ensure that the init method initializes instance variables, and constructs any graphical interface used in the applet sub-class	<ul style="list-style-type: none">• Knowledge of object-oriented programming concepts <p>Practical Activity Creation java resource file</p>	Theory-0.166 Hrs Practical-0.166 Hrs Total- 0.332 Hrs	Computer	Class Room and workshop



	<ul style="list-style-type: none">• Implement the paint and update methods to manage output that is drawn in the applet window• Incorporate event handling methods• Implement the code that allows a user to enter values, and assigns these values to variables• Use available graphical user interface (GUI) components to allow user interaction with the applet• Specify and load images and sounds• Include comments to describe the behavior of the applet				
LU2. Compile a source file	Trainee will be able to: <ul style="list-style-type: none">• Use a Java compiler to compile the file• Correct errors detected by the compiler• Confirm basic correctness of the file, to ensure that all variables have been initialized	<ul style="list-style-type: none">• Knowledge of theoretical concepts of Java programming <p>Practical Activity Compilation of a source file</p>	Theory-0.166 Hrs Practical-0.166 Hrs Total- 0.332 Hrs	Computer	Class Room and workshop



		<ul style="list-style-type: none">• Ensure the compiler creates a class file, and that the class is interpreted correctly				
LU3.	Run applet	Trainee will be able to: <ul style="list-style-type: none">• Create and name a hypertext markup language (HTML) file, and add APPLET tag• Write the applet class file to match the HTML document that contains an APPLET tag• Confirm that the applet loads and executes correctly• Identify and correct run-time errors• Identify and correct logic errors• Ensure that the appearance of the applet window renders it accessible and intuitive for the user, and that its design complies with organizational standards Ensure that user interaction is implemented efficiently and effectively	<ul style="list-style-type: none">• Knowledge of Australian Computer Society Code of Ethics• Knowledge of browser security restrictions. Practical Activity Run applet	Theory-0.166 Hrs Practical-0.166 Hrs Total- 0.332 Hrs	Computer	Class Room and workshop



0732B&CE127- Manipulate Images (Illustrator)

Objective: This unit describes the skills and knowledge required to compile and manipulate images. It applies to individuals involved in software, image editing and who are required to manipulate images, using Illustrator.

Duration: 1 Hours

Theory: 0.5 Hours

Practice: 0.5 Hours

Familiarize with illustrator interface	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Familiarize with illustrator interface	Trainee will be able to: <ul style="list-style-type: none">• Able to describe differences between raster and vector imaging and uses for both• Understand the capabilities of Illustrator and alternative programs• Able to comfortably navigate Illustrator	<ul style="list-style-type: none">• Knowledge of usage of pen tool <p>Practical Activity Perform illustrator interface</p>	Theory-0.083 Hrs Practical-0.083 Hrs Total- 0.166 Hrs	Computer	Class Room and workshop
LU2. Create and edit basic vector paths	Trainee will be able to: <ul style="list-style-type: none">• Able to use path creation and editing tools• Use the terminology associated with vector paths• Able to save an illustrator file	<ul style="list-style-type: none">• Knowledge of benefits of clipping masks <p>Practical Activity Create and edit basic vector paths</p>	Theory-0.083 Hrs Practical-0.083 Hrs Total- 0.166 Hrs	Computer	Class Room and workshop



	<ul style="list-style-type: none">Export a drawing to various other file types				
LU3. Apply and edit colors in their drawings	Trainee will be able to: <ul style="list-style-type: none">Use variety of basic color tools and settingsCreate a cohesive color themeCreate and edit gradients	<ul style="list-style-type: none">Knowledge of ways to create the perfect shape using path finder panel Practical Activity Apply and edit colors in their drawings	Theory-0.083 Hrs Practical-0.083 Hrs Total- 0.166 Hrs	Computer	Class Room and workshop
LU4. Use specific tools to modify the appearance of paths	Trainee will be able to: <ul style="list-style-type: none">Apply advanced stroke and width settings to a pathUnderstand the basic function and process of using brushes	<ul style="list-style-type: none">Knowledge of ways to make brushes Practical Activity Use specific tools to modify the appearance of paths			
LU5. Create, edit, and combine shapes in a variety of ways	Trainee will be able to: <ul style="list-style-type: none">Use the shape tools effectivelyRotate, reflect, scale, skew, and free transform a shapeUtilize various ways to copy and paste a shapeUse the knife and scissors tools to split paths and shapesCreate a complex shape by combining simple ones Create and edit clipping paths	<ul style="list-style-type: none">Knowledge of usage of layering Practical Activity Create, edit, and combine shapes in a variety of ways	Theory-0.083 Hrs Practical-0.083 Hrs Total- 0.166 Hrs	Computer	Class Room and workshop



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LU6. Apply and edit the appearance of images	Trainee will be able to: <ul style="list-style-type: none">• Able to victories and paint a raster image• Use text effectively• Able to effectively live trace an image• Able to add, edit, and warp text• Apply and edit object effects	<ul style="list-style-type: none">• Knowledge of add, edit and wrap text• Knowledge of apply and edit objects <p>Practical Activity Apply and edit the appearance of images</p>	Theory-0.083 Hrs Practical-0.083 Hrs Total- 0.166 Hrs	Computer	Class Room and workshop
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0732B&CE128- Manipulate Images (Photoshop)

Objective: This unit describes the skills and knowledge required to compile and manipulate images. It applies to individuals involved in software, image editing and who are required to manipulate images, using Illustrator.

Duration: 1 Hours

Theory: 0.5 Hours

Practice: 0.5 Hours

Familiarize with illustrator interface	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Performs basic image edits using Photoshop	Trainee will be able to: <ul style="list-style-type: none">Able to describe differences between raster and vector imaging and uses for bothEdit Photos non-destructivelyAble to comfortably navigate PhotoshopCrop picture effectivelyStraighten the pictureUse the layering process in Photoshop	<ul style="list-style-type: none">Knowledge of basic tools <p>Practical Activity Performs basic image edits using Photoshop</p>	Theory-0.125 Hrs Practical-0.125 Hrs Total- 0.25 Hrs	Computer	Class Room and workshop
LU2. Use masks and combine images	Trainee will be able to: <ul style="list-style-type: none">Make and edit masksMake selectionMake adjustment layers with masks	<ul style="list-style-type: none">Knowledge of organization of layer method <p>Practical Activity Practice of masks and combine images</p>	Theory-0.125 Hrs Practical-0.125 Hrs Total- 0.25 Hrs	Computer	Class Room and workshop



	<ul style="list-style-type: none">• Use masks and layers to combine photos				
LU3. Merge and heal photos	Trainee will be able to: <ul style="list-style-type: none">• Use Photo merge• Fill selections with content aware fill• Use healing tools correctly• Apply Filters to photos	<ul style="list-style-type: none">• Knowledge of effects of masking, brush, cropping, and adjusting layers• Knowledge of short keys for tools <p>Practical Activity Perform merging and healing of photos</p>	Theory-0.125 Hrs Practical-0.125 Hrs Total- 0.25 Hrs	Computer	Class Room and workshop
LU4. Use non-photo elements in Photoshop designs	Trainee will be able to: <ul style="list-style-type: none">• Use text tool• Use brushes• Create shapes• Apply colors and gradients• Apply Layer Effects• Combine elements in pleasing ways	<ul style="list-style-type: none">• Knowledge of processing of opening and saving image• Knowledge of ways to add effects on an image <p>Practical Activity Perform non-photo elements in Photoshop designs</p>	Theory-0.125 Hrs Practical-0.125 Hrs Total- 0.25 Hrs	Computer	Class Room and workshop



0732B&CE129- Design simple web page layouts

Objective: This unit is about writing and editing copy (i.e. final version of text) for a range of formats in different media.

Duration: 2 Hours

Theory: 01 Hours

Practice: 1 Hours

Familiarize with illustrator interface	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Identify main layout sections from design specification	Trainee will be able to: <ul style="list-style-type: none">Identify the required sections of the web pageCreate the web page structure	<ul style="list-style-type: none">Knowledge of standard web and web scripting design principles <p>Practical Activity Perform identification of main layout sections from design specification</p>	Theory-0.33 Hrs Practical-0.33 Hrs Total- 0.55 Hrs	Computer	Class Room and workshop
LU2. Layout the web page to match design specification	Trainee will be able to: <ul style="list-style-type: none">Position document elementsStyle web page elements to match the design specifications	<ul style="list-style-type: none">Knowledge of positioning of documentKnowledge of cascading style sheets (CSS)Knowledge of Hypertext transfer protocol (HTTP) <p>Practical Activity Perform layout the web page to match design specification</p>	Theory-0.33 Hrs Practical-0.33 Hrs Total- 0.55 Hrs	Computer	Class Room and workshop



LU3. Test and validate the layout	Trainee will be able to: <ul style="list-style-type: none">• Test the website in various browsers• Validate the web pages against industry standards	<ul style="list-style-type: none">• Knowledge of web pages against industry standards• Knowledge of hypertext markup language (HTML), or extensible hypertext markup language (XHTML)• Knowledge of World Wide Web consortium (WWWC) standards. <p>Practical Activity Perform test and validate the layout</p>	Theory-0.33 Hrs Practical-0.33 Hrs Total- 0.55 Hrs	Computer	Class Room and workshop
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0732B&CE130- Apply introductory programming techniques

Objective: This unit describes the performance outcomes, skills and knowledge required to undertake introductory programming tasks in the development of a game or application. This unit addresses the knowledge, processes and techniques necessary to develop skills to create simple applications or games.

Duration: 2 Hours

Theory: 1 Hours

Practice: 1 Hours

Familiarize with illustrator interface		Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1.	Apply language syntax and layout	Trainee will be able to: <ul style="list-style-type: none">Apply basic language syntax rulesUse language data types, operators and expressions to create clear and concise codeApply variables and variable scopeUse library functions in a programUse commenting to create clear meaning to code	<ul style="list-style-type: none">Knowledge of language syntax rulesKnowledge of data typesKnowledge of library functions <p>Practical Activity Perform language syntax and layout</p>	Theory-0.2 Hrs Practical-0.2 Hrs Total- 0.4 Hrs	Computer	Class Room and workshop
LU2.	Apply control structures	Trainee will be able to: <ul style="list-style-type: none">Apply language syntax for sequence, selection and iteration constructs	<ul style="list-style-type: none">Knowledge of iteration constructsKnowledge of logical operators	Theory-0.2 Hrs Practical-0.2 Hrs Total- 0.4 Hrs	Computer	Class Room and workshop



	<ul style="list-style-type: none">Use logical operators to create expressions for use in selection and iteration constructs	Practical Activity Perform control structures			
LU3. Code using standard algorithms	Trainee will be able to: <ul style="list-style-type: none">Develop algorithms that use the sequence, selection and iteration constructsCreate and use arraysCode standard sequential access algorithms for reading and writing text files, including end-of-file detection loopsApply string manipulation	<ul style="list-style-type: none">Knowledge of algorithmsKnowledge of arraysKnowledge of standard sequential access algorithms for reading and writing text filesKnowledge of application of string manipulation Practical Activity Perform code using standard algorithms			
LU4. Test code	Trainee will be able to: <ul style="list-style-type: none">Use debugging techniques to trace code execution and examine variable contents to detect and correct errorsCreate and conduct simple tests to confirm code meets design specificationDocument the tests performed and results achieved	<ul style="list-style-type: none">Knowledge of debugging techniques to trace code executionKnowledge of create and conduct simple tests Practical Activity Perform test code	Theory-0.2 Hrs Practical-0.2 Hrs Total- 0.4 Hrs	Computer	Class Room and workshop



LU5. Create an application or game	Trainee will be able to: <ul style="list-style-type: none">• Design an algorithm in response to basic program specifications• Develop the application or game to meet the program specification• Test and confirm that application or game meets the initial specifications	<ul style="list-style-type: none">• Knowledge of design an algorithm• Knowledge of developing the application or game• Knowledge of application or game meets the initial specifications <p>Practical Activity Perform operation on an application or game</p>	Theory-0.2 Hrs Practical-0.2 Hrs Total- 0.4 Hrs	Computer	Class Room and workshop
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10. List of Tools, Equipment and Consumable

06: Advanced Surveying

S#	Tools and Equipment	S#	Consumable Material
1	Digital Theodolite	1.	Lime
2	Total Station complete set along with accessories and software.	2.	Drawing Sheets
3	Dual Frequency GNNS GPS complete set with all accessories and software i/c Battery with Charger.	3.	Lead Pencils
4	Hand Held GPS	4.	Eraser
5	Tribach		
6	Optical plumbets		
7	Target Staff		
8	Single Prism Targets with stands		
9	Triple Prism Targets with stands		
10	Ball Pen Hammer		
11	Spring balances		
12	Ranging rods		
13	Steel Tape		
14	Steel Band		
15	Invar tape		
16	Metallic Tape		
17	Arrows		
18	Pegs		
19	Mallet		
20	Umbrella with stand		
21	Engineer's chain		



22	Thermometers		
23	Drawing Lab Instruments		
24	Computer Lab equipment		

07: AutoCAD

S#	Tools and Equipment	S#	Consumable Material
1	Computer latest model with Server		Printer papers
2	Computer latest model work stations		Printer Toner
3	Laptop computer		USB
4	Net working		Printing Paper Roles
5	UPS 2000 Watt with batteries		Plotter Toner
6	Multimedia Projector		
7	Scanner for A-3 paper		
8	Printer LaserJet		
9	USB Sticks		
10	Computer Chair (will be added in furniture portion) without arm rest – 5 legs base		
11	Computer Table (will be added in furniture portion) $2\frac{1}{2} \times 2 \times 2\frac{1}{2}$		
12	License software for education Latest Versions: Auto CAD M.S Office Antivirus Microsoft windows		
13	Plotter		

08: Construction I

S#	Tools and Equipment	S#	Consumable Material
1.	Brick Making Machine	1.	Sand
2.	Brick Molds	2.	Sand Dust



3.	Hand roller	3.	cement
4.	Thermometer	4.	self-tapping screws
5.	Umbrella with stand	5.	soft sheet nails
6.	PPEs	6.	Wall board adhesive
7.	Calculator	7.	Distemper
8.	Stone masonry instruments	8.	Knotting & Lashing Rope
9.	Scissor	9.	Lime
10.	Mason Trowel	10.	Paint
11.	Pointing Trowel	11.	Bitumen
12.	Troweling Blades	12.	Polythene Sheet
13.	Hammer	13.	Polythene Role for DPC Bricks
14.	Hammer Forged steel rectangle head	14.	
15.	Lump hammers	15.	Chalk
16.	Hammers (bricks, club and scutch)	16.	Luminous Slip
17.	Sledge hammers	17.	Stone Crush
18.	Air compressors and hoses	18.	Lime beds
19.	Bevels	19.	Pencil,
20.	hand/power saws	20.	Eraser,
21.	Core cutting saw	21.	Sharpener,
22.	Jig saws	22.	Drawing sheet,
23.	Masonry saws	23.	Acoustic underlay material, adhesives
24.	Wet and dry diamond saws	24.	Caulking compound, cement mortar (with and without additives)
25.	Marking equipment	25.	Clouts, cornice adhesive, crack suppression membrane
26.	Measuring tapes and rules,	26.	Fixings and fasteners
27.	Metallic Tape 100 feet (30m)	27.	Patching materials, plasterboard nails, pre-mixed and mixed fillers
28.	Steel Tape- Slide Lock, Automatic Returns, Metallic / plastic case, 5-meter, Graduation on both side in feet & meter	28.	Lime Color (Different)
29.	Measuring scale,	29.	Tile Bond



30.	Nail guns	30.	Tile Spacer (Different Sizes)
31.	Protractors	31.	Brick Ballast
32.	squares (combination/tri)	32.	Road Metals
33.	steel squares and fences	33.	Thermophore for Joints 2" & 1" thick
34.	string lines	34.	Water Stopper for Concrete (Plastic)
35.	Line blocks and line pins	35.	Barrel bolts, Cabin hooks closers, Dead bolts, Flash bolts, flashings, handles hinges (butt and parliament), Latches, locks, Metal, Night latches, Passage sets, Timber.
36.	builders' lines	36.	Windows may include: All size windows, Casement, Double hung, Glazed sliding doors, curved and bay, Hopper, Straight and sliding
37.	static lines		
38.	Compass		
39.	Corner Float and float Blades		
40.	Steel float Set (Small, medium, large) Wooden Handle		
41.	Wooden Float (Small, medium, large) Wooden Handle		
42.	Groove Cutter		
43.	Cement sheet cutters		
44.	Tile cutters		
45.	Edger		
46.	Brooms		
47.	Polishers		
48.	Hand Grinders		
49.	Power grinders		
50.	Vibrator		
51.	Vibrating Rod		
52.	Form work		
53.	Molds		
54.	Workability test apparatus		
55.	Core cutting machine		



56.	Hand Drill Machines with drills		
57.	Power drill machines with drills		
58.	Sheet plate		
59.	Plate bar		
60.	Plate rod		
61.	Adjustable base plates		
62.	Channels		
63.	Forgings area		
64.	Casting platform		
65.	Furnace		
66.	Wheel Barrow:		
67.	Bucket		
68.	Paint Scraper Set		
69.	Potien Filler Knife Set		
70.	Chisel Set (9"-12"-18")		
71.	Plumb Bob		
72.	plumb rules		
73.	Straight Edge		
74.	Shovels with handle		
75.	Kassi (Plies) with handle		
76.	Spirit Level (Aluminum 2 ft. length)		
77.	torpedo levels		
78.	Dumpy Level		
79.	Pick Axe		
80.	Tray (Galvanized Iron, 14 SWG) SET		
81.	Pointing Tray		
82.	Striker for vertical joint (pointing)		
83.	Striker for horizontal joint (pointing)		



84.	Bamboo (10 feet)		
85.	Bamboo (15 feet)		
86.	Battens (5'x3½"x2½")		
87.	Shesham Wood Planks (7'x7"x1½")		
88.	Mortar Pan -GI Sheet (20 SWG) Size, 45 cm dia		
89.	mortar boards		
90.	Adjustable Wrench Set- * Hardened Steel, tempered and chrome plated, * Set include 8" (20cm), 12" (30cm), 18" (45cm)		
91.	Mixing Spoon Set- heavy gauge stainless steel, 150mm, 200mm, and 250mm long, round bottom		
92.	Concrete mixers		
93.	Elevators		
94.	Forklifts		
95.	jointing tools		
96.	Margin or raking tools		
97.	materials hoists		
98.	Cantilevered hoists (materials only with maximum capacity of 500kg)		
99.	Wall Scaffolds		
100.	scaffold belts		
101.	scaffolding planks		
102.	bracket scaffolds (tank and formwork)		
103.	prefabricated scaffolds		
104.	braces		
105.	small petrol or diesel engines and compressors,		



106.	Bolsters		
107.	brick buggies		
108.	brick grabs		
109.	Bends and hitches		
110.	box spanners		
111.	Couplers and accessories		
112.	Fiber ropes		
113.	Gin wheels		
114.	guard rails		
115.	Ledgers		
116.	Mesh guards		
117.	mid rails		
118.	modular and prefabricated components		
119.	Safety nets		
120.	Stairs or ladders		
121.	Standards		
122.	steel and aluminum tubes (pipes)		
123.	transoms		
124.	Wire nips		
125.	Pallet trolleys		
126.	profiles		
127.	Brushes		
128.	Caulking guns		
129.	Electrical leads		
130.	Hose and water sprays		
131.	Nippers		
132.	Pointed grouters		
133.	power screwdrivers		



134.	sanders		
135.	Rags		
136.	rubber mallets		
137.	Sanding blocks		
138.	spacers and wedges		
139.	Spatulas		
140.	sponges, squeegees		
141.	wire brushes,		
142.	Work platforms		
143.	scribes		

09: Plumbing

S#	Tools and Equipment	S#	Consumable Material
1.	Adjustable Wrench Set	1.	Complete Set Of Bath Room Fitting
2.	Pipe Wrench Chain Type	2.	Complete Set of Bath Sanitary Fixture
3.	Adjustable Pipe Wrench	3.	Complete set of GI pipe fittings
4.	Pipe Reamer	4.	Complete set of CI pipe fittings
5.	Pipe Vice (Stand Type)	5.	Complete set of PPRC pipe fittings
6.	Pipe Vice (Bench Type)	6.	Cement
7.	Pipe Thread Cutting Kit	7.	Sand
8.	Tap Set	8.	Plastic rings
9.	Pipe Cutter	9.	Spun yarn
10.	Pliers Adjustable	10.	Gasket
11.	Cold Chisel Set	11.	Sealant
12.	Steel Tape	12.	Nut bolts, Clamps, Jute, Rubber Rings
13.	Mason's Spirit Level	13.	Lime
14.	Steel Rule	14.	Plumbing Fixtures each type
15.	Electric Drill Machine	15.	GI, CI, PPRC, Specials each type and size



16.	Screw Driver Set	16.	G.I. Pipe $\frac{1}{2}$ dia
17.	Trowel (200-280 Mm Long Steel)	17.	$\frac{1}{2}$ - $\frac{3}{4}$ reducing socket, elbow, bush
18.	Mortar Pan	18.	Gate valve $\frac{1}{2}$
19.	Shovel With Handle	19.	Gate valve $\frac{3}{4}$
20.	Hack Saw	20.	Check valve $\frac{3}{4}$
21.	Bench Vice	21.	Ball valve $\frac{3}{4}$
22.	Ball Pein Hammer Set	22.	Water meter
23.	Claw Hammer	23.	Ferule valve
24.	Files Set	24.	Hand wash basin
25.	Scissors	25.	Basin brackets
26.	Centre Punch	26.	Pillar cock (swan type)
27.	Melting Pot	27.	Rubber connection 18
28.	Ladle	28.	Copper connection pipe 18
29.	Pipe Yarning and Caulking Tools	29.	Stop cock
30.	Oil Cane	30.	Bib cock
31.	Drill/Bit Set	31.	Flushing cistern (low level)
32.	Complete Set Of Bath Room Fitting	32.	Flushing cistern (high level) (cast iron) 02 no.
33.	Complete Set Of Bath Sanitary Fixture	33.	PVC hockey pipe
34.	Personal Protective equipment, dresses	34.	PVC waste pipe
35.	Plungers,	35.	Waster coupling
36.	Turbine with impellers & Motor Electricity	36.	Water closet (Indian type)
37.	Turbine pipe with fittings	37.	Water closet (English type)
38.	Pipe wooden / steel clamps	38.	Urinal
39.	Wheel barrow	39.	P trap
40.	Umbrella	40.	Cast iron pipe 6 ft size
		41.	C.I cowl
		42.	C.I Tee 4
		43.	Lead
		44.	Lead wool
		45.	Threading taps



		46.	PVC pipe and polyethylene pipe ½ size
		47.	Connection clamp with ¾ socket 4 size 06 no
		48.	Steel foot rule
		49.	Hand measuring tape (3 meter/ 15 ft) 25 no
		50.	Ball Peen hammer ½ kg
		51.	Center punch
		52.	Hacksaw Blade
		53.	Try Square
		54.	Oil cane
		55.	Mobil Oil

10: Digital Skills

S#	Tools and Equipment	S#	Consumable Material
1	Computer latest model with Server		Printer papers
2	Computer latest model work stations		Printer Toner
3	Laptop computer		USB
4	Net working		
5	UPS 2000 Watt with batteries		
6	Multimedia Projector		
7	Scanner for A-3 paper		
8	Printer LaserJet		
9	USB Sticks		
10	Computer Chair (will be added in furniture portion) without arm rest – 5 legs base		
11	Computer Table (will be added in furniture portion) 2½ x 2 x 2½		
12	License software for education Latest Versions: M.S Office Antivirus Microsoft windows		



National Vocational Certificate Level 3 Assistant Surveyor in Civil Technology





11. Members of Curriculum Development Committee

The following members participated in the Curriculum development Committee:

S#	Name	Designation	Organization
1	Engr. Azhar Iqbal Shad	Chief Instructor (Civil)	GCT Raiwind Road, LHR
2	Mr. Imtiaz Ahmed Awan	Sr. Instructor (Civil)	GCT Rasul (Mandi Bahauddin)
3	Mr. Muhammad Amjad Rafique	Sr. Instructor (Civil)	GCT Rasul (Mandi Bahauddin)
4	Engr. Zuneera Ashfaq	Assistant Director	PITAC Lahore
5	Engr. Mohsin Jahanzeb	Instructor (Civil)	GSTC, Faisalabad
6	Engr. Norheen Amina	Consultant	Allied Engineering Services Lahore
7	Engr. Hira Ishtiaq	Consultant.	Allied Engineering Services Lahore
8	Engr. Habiba Mohsin	Design Engineer	JERS Engineering Consultants Lahore
9	Engr. Rana Haroon Mujahid	Deputy Director	C&W Department Govt. of Punjab
10	Engr. Arsalan Hameed Khan	Assistant Manager (Project)	Planning & Project department Lahore Waste Management Company.
11	Mr. Syed Fayyaz Mustafa Naqvi	Junior Instructor	GSTC Faisalabad
12	Engr. Inayat-ur-Rehman	DACUM, Facilitator	Peshawar
13	Mr. Muhammad Ishaq	Director HR	NAVTC, Islamabad