

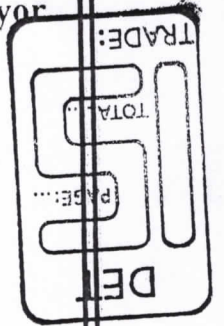
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SYLLABUS FOR ENGINEERING SURVEYOR
Under Industrial School Pattern

INDUSTRIAL SCHOOL PATTERN

The followings are recommended by the Trade Committee

Name of the Trade	: Engineering Surveyor
Qualification	: 10 th Pass
Age	: 15-45 Years
Duration	: 1 Year
Number of Trainees	: 20
Number of Practical Hours	: 36 Hours/Week
Number of Theory Hours	: 12 Hours/Week
Space Required	
Workshop	: 300 Sq ft
Class Room	: 200 Sq ft
Power Required	: 3kw



MEMBERS OF THIS SYLLABUS COMMITTEE

Committee	Name	Designation	Signature
Chairman	R.Prabhakaran B.E	DD / Principal Ambattur ITI	
Member	C.Sivasankaran DCE (Draughtsman Civil)	TO	
Member	C.Amarnath B.E (Draughtsman Civil)	ATO	
Member	A.Shanmugam ITI (Surveyor)	ATO	
Member	S.Sampath (Surveyor) Sangeetha Industrial School		

SYLLABUS FOR ENGINEERING SURVEYOR

Period of Training : 1 Year

PRACTICAL		THEORY
1	<p>Importance of safety and general precautions observed in the Institute and in the Section. Importance of the trade in development of industrial economy of the country. Related instructions, subjects to be taught – Achievement to be made. Recreational and medical facilities and other extra curricular activities of the Institute (All necessary guidance to be provided to the new comers to be come familiar with the working of industrial training institute, system of including store procedure)</p>	<p>Familiarization and importance of the work trade training. Instruments and equipment used in the trade, type of work done by the trainees in the institute, nature of job done by the trainees of the Engineering Surveyor.</p>
2	<p>Practice in unfolding and folding chain – alignment of chain – measurements of distance between two given points and their booking..</p>	<p>introduction about surveying and classification, plane survey, geodetic survey, work of surveyor, measurements and their units – Conventional signs using Engineering Survey.</p>
3	<p>CHAIN SURVEYING Practice in chaining and taking off-set using cross staff – setting out right angles-booking measurements</p>	<p>Chain survey and principles location of points- off-sets and instrument used for the same</p>

SYLLABUS FOR ENGINEERING SURVEYOR

Period of Training : 1 Year

WEEK NO	PRACTICAL	THEORY
4 & 5	<p>Practice in chaining and taking off-set using cross staff –setting out right angles-booking measurements.</p> <p>Practice in conducting chain survey-preparation of rough sketch-selection of base lines and station points.</p> <p>Chain survey of small plots by triangulation booking and plotting the same.</p> <p>Chain Survey of build up plots, locating details, booking and plotting</p>	<p>Procedure in conducting in chain survey-preliminary steps – conditions to be satisfied by survey lines.</p> <p>Filed Book types- methods of entry of check lines – its important.</p> <p>Location of details – types of –sets and their limits – Chain transferring – plotting chain lines- Measuring undulated sloppy ground – Obstacles in chaining.</p>
6 to 8	<p>Setting out of levels – Reading of leveling staff and taking reading – booking in field note book. Practice in simple leveling, differential leveling, and establishing bench mark, reading of inverted staff practice in booking and reduction checking level reduce in height of collimation and rise and fall systems.</p>	<p>Leveling –</p> <p>Leveling – the level parts- types of levels – (Dumpy and auto level) – diaphragm,- types of leveling staff their description and use – important technical terms used in leveling .</p>

SYLLABUS FOR ENGINEERING SURVEYOR

THEORY

WEEK NO	PRACTICAL	THEORY
9 to 16	<p>Establishing of alignment and grade for roads and drains. Method of entering in the field book. Carrying out route survey longitudinal and cross section of a road project – Its plotting and calculating earth work.</p> <p>Road project – reconnaissance, preliminary and final location survey including preparation of route map to scale, taking profile and section with level plotting marking formation level- Calculation of earth work and other materials for laying road including estimation of earth work .</p>	<p>Methods of observation, booking and reduction of levels forms of levels, forms of levels, forms of field books for leveling and methods of entry- Checking – working out problems on field books reduction reciprocal leveling.</p> <p>Types of survey for the location of a road, points to be considered during reconnaissance, and final location surveys, alignment of roads – relative importance of length of road height of culling – road gradients – sub grades and road formations, drainage camber.</p>
17 & 18	<p>Practice in setting up a compass and checking its accuracy - taking bearings and calculating angles.</p> <p>Contouring by spot level method including interpolation</p>	<p>Technical terms used in compass survey,- Practice in setting up compass difference between angles and bearings - magnetic meridian and true meridian - local attraction and</p>

WEEK NO	PRACTICAL	THEORY
19	Practice in handling with the TOTAL STATION 1. General handling precaution 2. Display to safe 3. Safety cautions 4. User 5. Exception from responsibility 6. Contents 7. Standard set composition	elimination . Topographic survey and principle – instruments and accessories used in topographic survey contours and their characteristics.
		Functioning of total station

SYLLABUS FOR ENGINEERING SURVEYOR

Period of Training : 1 Year

WEEK NO	PRACTICAL	THEORY
	practical studies about the 1. Nomenclature and functions 2. Measuring angles 3. Distance measuring 4. Co-ordinate measurement mode	1. Nomenclature and Functions
20 & 21	I. Preparation for measurement Power connection, setting instrument up for measurement, power switch key on, battery power remaining display vertical and horizontal angle tilt correction and How to enter alphanumeric character	Study about the Preparation for measurement and angle measurement
22 & 23	Distance measurement Setting of the atmospheric correction and prism constant, distance measurement and single measurement fine mode, tracking mode, stake out, off set measurement, out patting the measurement. Data, angle offset, distance offset, plane offset, etc.	Study about the Distance measurement and co-ordinate measurement

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Period of Training : 1 Year

WEEK NO	PRACTICAL	THEORY
	<p>Co-ordinate measurement</p> <p>Setting co-ordinate values, of occupied point, height of instrument, height of target and execution of co-ordinate measuring.</p>	
24	<p>Application measurement</p> <p>Remote elevation measurement missing line measurement, setting 2 co-ordinate of occupied point, calculation from known point</p> <p>Setting Grid factor</p> <p>measuring data, area calculation, point to line measurement.</p> <p>Data, collection mode layout, point to line and missing line measurement and area calculation.</p> <p>Setting illumination of display and erase hairs</p> <p>Setting for illumination of display and reticule.</p> <p>Setting mode</p> <p>Setting minimum reading, auto power off, vertical and horizontal angle systematic error of instrument correction, selecting battery type, heater on/off and setting for R.S.232C communication</p>	<p>Special mode</p> <p>Explaining about area calculation.</p> <p>Remote elevation measurement and Missing line measurements</p>

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Period of Training : 1 Year

WEEK NO	PRACTICAL	THEORY
	<p>Setting Contrast or display Setting level for contrast of display</p> <p>Road Road, menu operation, input start point, input road data, search data, edit data, set OCC and B.S. set out road etc.</p>	
25 to 35	<p>1. Preparation</p> <ol style="list-style-type: none"> 1. Selecting a file for data collection 2. Selecting a co-ordinate file for data collection 3. Occupied point and pack sight point. <p>2. Operational procedure of data collect</p> <ol style="list-style-type: none"> 1. Searching the recorded data (Data collect mode, you can search the recorded data) 3. Data collect offset measurement mode <ol style="list-style-type: none"> 1. Angle offset measurement 2. Distance off set measurement 	<p>Data collection Explaining about the main objects for Data collection.</p> <ol style="list-style-type: none"> 1. Preparation 2. Operational procedure of data collects. 3. Data collect offset measurement mode 4. NEZ auto calculation 5. Point to line measurement

SYLLABUS FOR ENGINEERING SURVEYOR	PRACTICAL	THEORY
WEEK NO		
	<p>3. Plane offset measurement</p> <p>4. Column offset measurement</p> <p>4. NEZ Auto calculation</p> <p>5. Point to line measurement</p> <p>1. To change to the point to line measurement.</p> <p>2. Executing a point to line measurement.</p> <p>6. Editing PCODE library</p> <p>7. Setting parameter of data collect</p>	<p>6. Editing PCODE library</p> <p>7. Setting parameter of data collect</p>
36	<p>1. Display internal memory status</p> <p>This made is used to choose the internal memory status.</p> <p>2. Searching data</p> <p>It contains—1. Measured data searching, 2. Co-ordinate data searching, 3. PCODE library searching.</p> <p>3. File maintenance</p> <p>1. Rename a file</p>	<p>Study about the memory mode and the following data.</p> <p>This subject includes the following object.</p> <p>1. Display internal memory status</p> <p>2. Searching data</p> <p>3. File maintenance</p>

SYLLABUS FOR ENGINEERING SURVEYOR		Period of Training : 1 Year
WEEK NO	PRACTICAL	THEORY
	<p>2. Searching data in a file</p> <p>3. Deleting a file</p> <p>4. Co-ordinate data direct key in-put</p> <p>1. Co-ordinate data input</p> <p>2. Point to line data input</p> <p>5. Delete a co-ordinate data from a file</p> <p>Co-ordinate data in a file can be erased.</p> <p>6. Editing PCODE library</p> <p>1. PCODE data can be entered into PCODE library in this mode.</p> <p>2. PCODE can be also edited in data collect menu.</p> <p>7 Data communication</p> <p>Sending data, loading data setting parameter of data communication</p> <p>8. Initialization Setting mode</p> <p>This mode is used to initialize the internal memory.</p>	<p>4. Co-ordinate data direct key in-put</p> <p>5. Delete a co-ordinate data from a file</p> <p>6. Editing PCODE library</p> <p>7. Data communication</p> <p>8. Initialization</p>

THEORY

PRACTICAL

SYLLABUS FOR ENGINEERING SURVEYOR

WEEK NO	PRACTICAL	THEORY
37	<p>The light acceptance execute level for the EDM (signal) the atmospheric correction value (ppm) and correction value of prism constant (psm) are displayed in this mode.</p> <p>The prism constant value of tope on is set to zero, when using prism other than tope in, it is necessary to set the prism constant value of that specific prism.</p> <p>This includes calculation of atmospheric correction and setting of atmospheric correction value.</p> <p>This is a distance calculation formula.</p> <p>This contains on board battery B.T.</p> <p>This instrument is easily detached a attached to the tribrach locking level loosened by a lightened for this purpose</p> <p>It includes, items of the selecting mode and how to set selecting mode</p>	<p>1. Study about the following Audio Mode</p> <p>2. Setting the prism constant value</p> <p>3. Setting atmospheric correction</p> <p>4. Correction for refraction and earth curvature</p> <p>5. Power source and charging</p> <p>6. Detach/attach of tribrach</p> <p>7. Selecting mode</p>

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WEEK NO	PRACTICAL	Period of Training : 1 Year
	<p>Check and adjustment</p> <ol style="list-style-type: none"> 1. Checking and adjusting of instrument constant 2. Checking the optical axis 3. Checking / adjusting the theodolite function 4. How to set the instrument constant value 5. Adjustment of compensation systematic error of instrument 6. Reference frequency check mode 	<p>THEORY</p> <p>8. Check and adjustment</p>
38		<ol style="list-style-type: none"> 1. Study about for using the TOTAL STATION 2. Special Accessories for TOTAL STATION 3. Battery system/Prism System/Error Displays/

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WEEK NO	PRACTICAL	THEORY
39 to 44	Working practice on Auto-Cad.	General terms used in computer - MS-Word and their uses - Window command and their uses - AutoCAD Commands and use of different Menus of Auto Cad Elementary (Windows operating system)- Knowledge of Editor – How to install –AutoCAD- Elementary command of Auto CAD – Knowledge of windows software.
45 & 48	Auto Plotter has the facility to communicate with modern survey instrument/data collector for downloading and uploading of data. Once the data for contours is properly imported, you can proceed further to define the contours. Contours can be defined primarily three methods all of which are explained below:	<p>Using Survey Software Auto Plotter:</p> <ol style="list-style-type: none"> 1. Downloading Survey Data. 2. Contour Definition 3. Export to Grid or Spot level

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WEEK NO	PRACTICAL	THEORY
49 & 51	<p>1. Contour by Groups. 2. Contour by Range. 3. Individual Contour Definition.</p> <p>You can convert the random spot levels collected from site into a grid data. The grid point RL will be calculated from the TIN generated based on the random data and scanning radius.</p> <p>Longitudinal Sections can be plotted provided the section of route data is present. There are 2 ways to plot the longitudinal section.</p> <p>A. Quick Longitudinal Section. Custom Longitudinal Section</p>	4. Longitudinal Section
52	<p>Cross Sections can be plotted provided the section of route data is present. There are 2 ways to plot the Cross section.</p> <p>A. Quick Cross Section B. Custom Cross Section</p> <p>SCVT Examination</p>	5. Cross Section

THE FOLLOWING EQUIPMENTS ARE RECOMMENDED BY TRADE COMMITTEE

Name of the Trade

: Engineering Surveyor

Space Required

Workshop/Lab

: 300 Sqft

Class Room

:200 Sqft

List Of Tools and Equipments

Sl No	Name Of The Item	No Required
1	Chain 20m	1 No
2	Cross Staff	1No
3	Ranging Rod	2No
4	Compass Instrument with stand	1No
5	Levelling Instrument with stand	1No
6	Levelling Staff	1No
7	Total Station with stand	1No
8	Prism with pole	2No
9	Server(for Lan)	1No
10	Computer intel Pentium IV	4No
11	Scanner HP	1No
12	3KVA Online UPS	1No
13	Chair and Table for Instructor	1Set
14	Operator Chair	20
15	Printer with Table	1No
16	Latest Software	As Required

MEMBERS OF THIS SYLLABUS COMMITTEE

Committee	Name	Designation	Signature
Chairman	R.Prabhakaran B.E	DD / Principal Ambattur ITI	
Member	C.Sivasankaran DCE (Draughtsman Civil)	TO	
Member	C.Amarnath B.E (Draughtsman Civil)	ATO	
Member	A.Shanmugam ITI (Surveyor)	ATO	
Member	S.Sampath (Surveyor) Sangeetha Industrial School		