



Model Curriculum

QP Name: AMIN SURVEYOR ASSISTANT

QP Code: STC -CON/NSQF -2022 /0804

QP Version: 2.0

NSQF Level: 2.5

Model Curriculum Version: 2.0

West Bengal State Council of Technical & Vocational Education and Skill Development, Karigari Bhavan, (5th Floor), Plot-B/7, Action Area-III, New Town, Kolkata-700160



Table of Contents

Training Parameters	3
Program Overview	4
Training Outcomes	4
Compulsory Modules	4
Module Details	8
Module 1: Apply Safe Working Practices	8
Module 2: Describe the objective of the trade with concept of drawing	9
Module 3: Recognize and handle type of chain based upon its lengths able to describe various units of length, area and volume	10
Module 4: Identify the principle of compass surveying and perform site survey	12
Module 5: Recognize and handle different types of levelling instruments	13
Module 6: Assist in performing the site survey using plane table	14
Module 7: Assist in performing theodolite survey	15
Module 8: Understand the concept of building drawing and layout the plan	16
Module 9: Assist in planning and preparing setting of hand held of GPS techniques in various fields.	17
Module10: Work in real job situation with special emphasis on basic safety and hazards in this domin	18
Module1 1: Employability skills	19
Detail Syllabus	21
Tools & Equipment List	26
Annexure	30
Trainer Requirements	30
Assessor Requirements	31
Assessment Strategy	32
Glossary	34
Acronyms and Abbreviations	34



Training Parameters

Sector	Construction
Sub-Sector	Real-estate
Occupation	Amin Surveyor Assistant
Country	India
NSQF Level	2.5
Aligned to NCO/ISCO/ISIC Code	
Minimum Educational Qualification and Experience	1. Class 9 Pass OR 2. Class 8 pass and pursuing continuous regular schooling, OR 3. Class 8 Pass with 1 year experience, OR 4. Class 8 Pass + NTC/NAC is Surveyor Trade OR 5. Previous relevant qualification of NSQF Level 2 with 1 yr experience
Pre-Requisite License or Training	
Minimum Job Entry Age	18 years
Last Reviewed On	05.01.2023
Next Review Date	04.01.2026
Version	2.0
NSQC Approval Date	05.01.2023
Model Curriculum Creation Date	05.01.2023
Model Curriculum Valid Upto Date	04.01.2026
Model Curriculum Version	2.0
Minimum Duration of the Course	600 hours
Maximum Duration of the Course	600 hours



Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the participants will be able to:

- Apply Safe Working Practices
- Describe the objective of the trade with concept of drawing.
- Recognize and handle type of chain based upon its lengths able to describe various units of length, area and volume.
- Identify the principle of compass surveying and perform site survey
- Recognize and handle different types of leveling instruments.
- Assist in performing the site survey using plane table.
- Assist in performing theodolite survey
- Understand the concept of building drawing and layout the plan.
- Assist in planning and preparing setting of hand held of GPS techniques in various fields.
- Work in real job situation with special emphasis on basic safety and hazards in this domain.
- Employability Skills

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
CON/0804/OC1 Apply Safe Working Practices NOS Version No.: 2.0 NSQF Level: 2.5	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours
Module1: Apply Safe Working Practices	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours
CON/0804/OC2 Describe the objective of the trade with concept of drawing. NOS Version No. :2.0 NSQF Level: 2.5	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours



Module2: Describe the objective of the trade with concept of drawing.	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours
CON/0804/OC3 Recognize and handle type of chain based upon its lengths able to describe various units of length, area and volume. NOS Version No.:2.0 NSQF Level: 2.5	20:00 Hours	40:00 Hours	00:00Hours	00:00Hours	60:00 Hours
Module3: Recognize and handle type of chain based upon its lengths able to describe various units of length, area and volume.	20:00 Hours	40:00 Hours	00:00Hours	00:00Hours	60:00 Hours
CON/0804/OC4 Identify the principle of compass surveying and perform site survey NOS Version No.:2.0 NSQF Level: 2.5	05:00 Hours	25:00 Hours	00:00Hours	00:00Hours	30:00 Hours
Module 4: Identify the principle of compass surveying and perform site survey	05:00 Hours	25:00 Hours	00:00Hours	00:00Hours	30:00 Hours
CON/0804/OC5 Recognize and handle different types of levelling instruments. NOS Version No.:2.0 NSQF Level: 2.5	05:00 Hours	25:00 Hours	00:00Hours	00:00Hours	30:00 Hours
Module 5: Recognize and handle different types of levelling instruments.	05:00 Hours	25:00 Hours	00:00Hours	00:00Hours	30:00 Hours
CON/0804/OC6 Assist in performing the site survey using plane table NOS Version No.: 2.0 NSQF Level: 2.5	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours



Module 6: Assist in performing the site survey using plane table	10:00 Hours	20:00 Hours	00:00Hours	00:00Hours	30:00 Hours
CON/0804/OC7 Assist in performing theodolite survey NOS Version No.:2.0 NSQF Level: 2.5	20:00 Hours	40:00 Hours	00:00Hours	00:00Hours	60:00 Hours
Module 7: Assist in performing theodolite survey	20:00 Hours	40:00 Hours	00:00Hours	00:00Hours	60:00 Hours
CON/0804/OC8 Understand the concept of building drawing and layout the plan. NOS Version No.: 2.0 NSQF Level: 2.5	15:00 Hours	45:00 Hours	00:00Hours	00:00Hours	60:00 Hours
Module 8: Understand the concept of building drawing and layout the plan.	15:00 Hours	45:00 Hours	00:00Hours	00:00Hours	60:00 Hours
CON/0804/OC9 Assist in planning and preparing setting of hand held of GPS techniques in various fields. NOS Version No.: 2.0 NSQF Level: 2.5	20:00 Hours	40:00 Hours	00:00Hours	00:00Hours	60:00 Hours
Module 9: Assist in planning and preparing setting of hand held of GPS techniques in various fields.	20:00 Hours	40:00 Hours	00:00Hours	00:00Hours	60:00 Hours
CON/0804/OC10 Work in real job situation with special emphasis on basic safety and hazards in this domain. NOS Version No.: 2.0 NSQF Level: 2.5	00:00 Hours	00:00 Hours	150:00Hours	00:00Hours	150:00 Hours



Module 10: Work in real job situation with special emphasis on basic safety and hazards in this domain.	00:00 Hours	00.00 Hours	150:00Hours	00:00Hours	150:00 Hours
DGT/VSQ/N0102 Employability Skills NOS Version No.: 1.0 NSQF Level: 2.5	24:00 Hours	36:00 Hours	00:00Hours	00:00Hours	60:00 Hours
Module 11: Employability Skills	24:00 Hours	36:00 Hours	00:00Hours	00:00Hours	60:00 Hours
Total Duration	124:00 Hours	326:00 Hours	150:00Hours	00:00Hours	600:00 Hours



Module Details

Module1: Apply Safe Working Practices

Mapped to CON/0804/OC1

Terminal Outcomes:

- Apply and maintain Safe Working Practices
- Recognize any unsafe situations according to site policy.
- Identify fire and safety and fire hazards
- Identify different fire extinguishers and use them as per requirements.

Duration: 10:00	Duration: 20:00
Theory–Key Learning Outcomes	Practical–Key Learning Outcomes
<ul style="list-style-type: none">● Maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements according to site policy.● Recognize any unsafe situations according to site policy, and assess his report accordingly.● Identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures.	<ul style="list-style-type: none">● Recognize any unsafe situations according to site policy, and assess his report accordingly.● Demonstrate Personal Protective Equipment (PPE) like: safety helmet, safety glove, safety shoe, use the same as per related working environment.● Demonstrate basic first aid & CPR and use them under different circumstances.● Identify different fire extinguishers and use the same as per requirement in a mock drill.
Classroom Aids: Computer, Projection Equipment, Power Point Presentation and software, Facilitator’s Guide, Participant’s Handbook.	
Tools, Equipment and Other Requirements: First Aid box, Different types of fire extinguishers, PPE kits, Safety charts.	



Module2: Describe the objective of the trade with concept of drawing.

Mapped to CON/0804/OC2

Terminal Outcomes:

- Identify the objective of surveying
- Select the various units.
- Draw different types of scales.
- Find out R.F. on the scale, calculate the length of the scale on drawing.

Duration: 10:00	Duration: 20:00
Theory–Key Learning Outcomes	Practical–Key Learning Outcomes
<ul style="list-style-type: none">● Definition and objective of surveying.● Introduction of various units used for measuring length, area, volume in C.G.S, F.P.S & M.K.S, method and their internal conversation.● Concept of use of Scale in drawing.	<p>The students will be able to do the following:</p> <ul style="list-style-type: none">● Identify the objective of surveying● Select and apply the various units● Draw different types of scales and apply for surveying.
Classroom Aids:	
Computer, Projection Equipment, Power Point Presentation and software, Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	
Engineering Instrument Box, Protractor, Card board/ plastic metric scale set- A to H, Diagonal scale, Celluloid set square 45° & 60°, T - square / mini drafter, Architect’s & builder’s template French curve, Chalk board/White board, Drawing Board with Table & Stool	



Module 3: Recognize and handle type of chain based upon its lengths able to describe various units of length, area and volume.

Mapped to CON/0804/OC3

Terminal Outcomes:

- Practice folding and unfolding the chain.
- Measure the distance between given points and their booking.
- Practice in chaining and taking offset.
- Select of base line and station points.
- Conduct chain survey on small plots, built up plots.
- Chain Survey of an extensive area, locating detail, plotting & finishing the same in ink or colour paint.

Duration:20:00	Duration:40:00
Theory–Key Learning Outcomes	Practical–Key Learning Outcomes
<p>The students will be able to describe the following: Principles of chain surveying</p> <ul style="list-style-type: none"> ● Instrument used in chain surveying with their brief description & sketch ● Definition of Base line, Tie line, Offset, Reconnaissance, ● Upkeep of a field book Overcoming obstacle, ● Error in chain surveying(no deduction, simple numerical problems) ● Methods used (only brief idea for practical works). ● Cad-astral survey with mouza map along with diagonal scale, tape & other 	<p>The student will be able to do the following:</p> <ul style="list-style-type: none"> ● Practice in unfolding & folding chain, alignment of lines, measurement of distance between given points and their booking. ● Practice in chaining & taking offsets, use of optical square and cross staff,Setting out right angle, taking measurements with tape. ● Procedure in conducting chain survey, reconnaissance, preparation of rough sketch. Selection of base line and station points, fixing of station etc. Chain survey of small plots by triangulation , booking & plotting the same.. ● Chain survey of built up plot, locating detail , booking & plotting the same. Taking horizontal measurement on sloping ground, overcoming obstacles between two points one of which is invisible or inaccessible from the other. ● Chain Survey of an extensive area, locating detail, plotting & finishing the same in ink or colour paint.
Classroom Aids:	
Computer,Projection Equipment, Power Point Presentation and software,Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	



Engineering Instrument Box, Protractor, Card board/ plastic metric scale set- A to H, Diagonal scale, Celluloid set square 45° & 60°, T - square / mini drafter, Architect's & builder's template French curve, Chalk board/White board, Drawing Board with Table & Stool

Dumpy level with Metallic Staff height 4m, Auto level with Tripoid Stand & Staff 4.0 m.height, Gunter's chain, Hand press for numbering & lettering, Tracing board with lamp & frame, Metric chain, Magnifying glass



Module 4: Identify the principle of compass surveying and perform site survey

Mapped to CON/0804/OC4

Terminal Outcomes:

- Measure bearing of a line and conduct traverse survey using prismatic other accessories.
- Entry in field book and compute correct bearings.
- Calculate the area of traverse.

Duration: 05:00	Duration: 25:00
Theory–Key Learning Outcomes	Practical–Key Learning Outcomes
<ul style="list-style-type: none"> • Describe Prismatic compass, surveyor’s compass, Bearing of a line, magnetic & true bearing, Dip, Local attraction. • Measurement of internal angle of two line station • Method of plotting compass survey traverse. Adjustment of closing error. Recording of field books. • Practice on simple numerical problems. 	<ul style="list-style-type: none"> • Practice in setting up a compass and checking its accuracy- taking bearings and calculating angles(conversion of W.C.B to R.B). • Determining the bearings of a given line & establishing lines of given bearings- laying out a rectilinear and polygonal plots of ground using a compass and a tape. • Conducting closed traverse of built up field and plotting the same finishing in ink or colour paint
Classroom Aids:	
Computer,Projection Equipment,Power Point Presentation and software,Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	
Prismatic compass ,Planimeter (digital), Plane table with stand , accessories & water proofing cover,Telescopic alidade, Ranging rod, Offset rod, Optical square, Survey plotting scale-8 scales with offset scale in box, Stencil set, Metallic tape, Steel tape, Surveyor’s umbrella	



Module 5: Recognize and handle different types of levelling instruments.

Mapped to CON/0804/OC5

Terminal Outcomes:

- Describe various levelling instruments with its components
- Identify the method used.
- Examine the levelling difficulties.
- Apply levelling instruments for site levelling, red cross section etc.
- Calculate the volume of earthwork.

Duration: 05:00	Duration: 25:00
Theory–Key Learning Outcomes	Practical–Key Learning Outcomes
<ul style="list-style-type: none"> • Brief description of various leveling instruments with its components. Methods used in leveling. Simple numerical problems. • Leveling difficulties • Use of leveling instruments for site leveling, Road cross section, Canal cross section, upkeep of level book. • Calculation of volume of earthwork. 	<ul style="list-style-type: none"> • Practice in setting out a level and performing temporary adjustments, practice in reading staff. • Demonstrate permanent adjustment of level. • Practice in differential leveling, establish in bench mark, reading of staff and booking of reading in level book. • Carry out route survey, longitudinal & cross section of road project, its plotting and calculation of earth work
Classroom Aids:	
Computer, Projection Equipment, Power Point Presentation and software, Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	
Dumpy level with Metallic Staff height 4m, Auto level with Tripod Stand & Staff 4.0 height, Engineering Instrument Box, Protractor, Card board/ plastic metric scale set- A to H, Diagonal scale, Celluloid set square 45° & 60°, T - square / mini drafter, Architect’s & builder’s template French curve, Chalk board/White board, Drawing Board with Table & Stool	



Module 6: Assist in performing the site survey using plane table

Mapped to AUR/0804/OC6

Terminal Outcomes:

- Identify the instruments used in plane table survey.
- Describe the method used in this survey.
- Recognize of centering, levelling and orientation operation.

Duration: 10:00	Duration: 20:00
Theory–Key Learning Outcomes	Practical–Key Learning Outcomes
<p>The student will be able to describe the following:-</p> <ul style="list-style-type: none"> • Introduction , brief description of instrument used in plane table survey. Method used in plane table survey(only description for practical class). Advantages & disadvantages • Brief description of centring, leveling, orientation operation in plane table survey. 	<p>The students will be able to do the following activities:</p> <ul style="list-style-type: none"> • Setting up the plane table by leveling, centering and orientation. Surveying an area with a plane table of built up areas • Traversing with a plane table of built up areas. • Running & open traverse with plane table and fixing details. Inking, finishing, colouring etc.
Classroom Aids:	
Computer, Projection Equipment, Power Point Presentation and software, Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	
Prismatic compass, Planimeter (digital), Plane table with stand , accessories & water proofing cover, Telescopic alidade, Ranging rod, Offset rod, Optical square, Survey plotting scale-8 scales with offset scale in box Stencil set, Metallic tape, Steel tape, Surveyor’s umbrella	



Module 7: Assist in performing theodolite survey

Mapped to CON/0804/OC7

Terminal Outcomes:

- Identify the different parts of theodolite.
- Describe principle of operations
- Adjust the theodolite for traverse survey
- Identify the errors.

Duration: 20:00	Duration: 40:00
Theory–Key Learning Outcomes	Practical–Key Learning Outcomes
<ul style="list-style-type: none"> • Description of instrument, principles of measuring horizontal & vertical angle. • Temporary adjustment of theodolite Traverse survey of theodolite work Sources of error in theodolite work • Checks in traversing. 	<ul style="list-style-type: none"> • Practice in setting up a theodolite and taking reading • Measurement of horizontal angles by repetition, Reiteration method, Entry of field book . • Practice in measuring in vertical angles, setting out given vertical angle and entering the field book. • Running an closed traverse over a given area , booking calculating the coordinates and plotting the traverse
Classroom Aids:	
Computer, Projection Equipment, Power Point Presentation and software, Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	
Theodolite transit, Digital Theodolite, Computer Desktop, Software	



Module 8: Understand the concept of building drawing and layout the plan.

Mapped to CON/0804/OC8

Terminal Outcomes:

- Identify and select- plan, elevation and section of small buildings.
- Elaborate Simple idea of RCC Structural detail like column, beam, slab, and footing. Give details material calculation
- Layout of a building plan

Duration: 15:00	Duration: 45:00
Theory–Key Learning Outcomes	Practical–Key Learning Outcomes
<ul style="list-style-type: none">• Plan , elevation & section of a small building• Simple idea of RCC Structural detail like column, beam , slab, footing (7.3) Introduction to brief idea for material calculation• Layout of a plan	<ul style="list-style-type: none">• Layout of building from the plan mentioning size of the room
Classroom Aids:	
Computer, Projection Equipment, Power Point Presentation and software, Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	
Engineering Instrument Box, Protractor, Card board/ plastic metric scale set- A to H, Diagonal scale, electroplated Celluloid set square 45° & 60°, T - square / mini drafter, Erasing shield, Architect’s & builder’s template French curve-, Chalk board/White board, Drawing Board with Table & Stool	



- **Module 9: Assist in planning and preparing setting of hand held of GPS techniques in various fields.**

Mapped to CON/0804/OC9

Terminal Outcomes:

- Assist in setting up hand held GPS system and identify its components
- Assist in operating hand held Operate GPS system and Collect field data using hand held GPS
- Assist in processing GPS data for further uses,

Duration: 20:00	Duration: 40:00
Theory–Key Learning Outcomes	Practical–Key Learning Outcomes
<ul style="list-style-type: none">• Introduction to G.P.S and its applications to survey.	<ul style="list-style-type: none">• Practical application of G.P.S• Component of hand held G.P.S• Data processing of G.P.S signal
Classroom Aids:	
Computer, Projection Equipment, Power Point Presentation and software, Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	
Hand GPS-latest version, Computer with printer. Computer table and computer chair, UPS.	



Module 10: Work in real job situation with special emphasis on basic safety and hazards in this domain

Mapped to CON/0804/OC10

Terminal Outcomes:

Assessor will check report prepared for this component of training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for 150 Hours.)

Duration: 00:00	Duration: 150:00
Theory–Key Learning Outcomes	Practical–Key Learning Outcomes
	<ul style="list-style-type: none">• Assessor will check report prepared for this component of training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for 150 Hours.)
Classroom Aids:	
Tools, Equipment and Other Requirements	



Module11: Employability skills

Mapped to DGT/VSQ/N0102, v 1.0

Terminal Outcomes:

- Describe the traits of individual at workplace
- Demonstrate apply employability and entrepreneurship skills at workplace

Duration: 24:00	Duration: 36:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the importance of Employability Skills in meeting the job requirements. • Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen. • Discuss 21st century skills. • Display positive attitude, self - motivation, problem solving, time management skills and continuous learning mindset in different situations. • Discuss the significance of reporting sexual harassment issues in time • Discuss the significance of using financial products and services safely and securely. • Explain the significance of approaching the concerned authorities in time for any exploitation as per legal rights and laws • Explain the importance of managing expenses, income, and savings. • Discuss the significance of using internet for browsing, accessing social media platforms, safely and securely 	<ul style="list-style-type: none"> • Show how to practice different environmentally sustainable practices • Use appropriate basic English sentences/phrases while speaking • Demonstrate how to communicate in a well -mannered way with others • Demonstrate working with others in a team • Show how to conduct oneself appropriately with all genders and PwD • Show how to operate digital devices and use the associated applications and features, safely and securely • Create a biodata • Use various sources to search and apply for jobs



<ul style="list-style-type: none">• Discuss the need for identifying opportunities for potential business, sources for arranging money and potential legal and financial challenges• Differentiate between types of customers• Explain the significance of identifying customer needs and addressing them• Discuss the significance of maintaining hygiene and dressing appropriately• Discuss the significance of dressing up neatly and maintaining hygiene for an interview• Discuss how to search and register for apprenticeship opportunities	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Computer/laptop.	



Details Syllabus Content

Detail of Theory Syllabus:

SL NO	CONTENT	DETAILS
1	Introduction on Survey, An Overview	(1.1) Definition and objective of surveying. (1.2) Introduction of various units used for measuring length, area, volume in C.G.S, F.P.S & M.K.S, method and their internal conversation. (1.3) Concept of use of Scale in drawing.
2	Chain Surveying	(2.1) Principles of chain surveying (2.2) Instrument used in chain surveying with their brief description & sketch (2.3) Definition of 2 Base line 3 Tie line 4 Offset 5 Reconnaissance 6 Well conditioned triangle (2.4) Upkeep of a field book (2.5) Overcoming obstacle, ranging a line (2.6) Error in chain surveying(no deduction, simple numerical problems) (2.7) Methods used (only brief idea for practical works). (2.8) Cad-astral survey with mouza map along with diagonal scale, tape & other accessories.
3	Compass surveying	(3.1) Introduction (3.2) Brief description of Prismatic compass, surveyor's compass, Bearing of a line, magnetic & true bearing, Dip, Local attraction (3.3) Measurement of internal angle of two line station (3.4) Method of plotting compass survey traverse. Adjustment of closing error. Recording of field books.
4	Levelling	(4.1) Brief description of various leveling instruments with its components. (4.2) Methods used in leveling. Simple numerical problems. (4.3) Leveling difficulties (4.4) Use of leveling instruments for site leveling, Road cross section, Canal cross section, upkeep of level book.
5	Plane table Survey	(5.1) Introduction , brief description of instrument used in plane table survey. (5.2) Method used in plane table survey(only description for practical class). Advantages & disadvantages (5.3) Brief description of centring, leveling, orientation operation in plane table survey.



6	Theodolite Survey	(6.1) Description of instrument, principles of measuring horizontal & vertical angle. (6.2) Temporary adjustment of theodolite (6.3) Traverse survey of theodolite work (6.4) Sources of error in theodolite work (6.5) Checks in traversing.
7	Reading of Building Drawing	(7.1) Plan , elevation & section of a small building (7.2) Simple idea of RCC Structural detail like column, beam , slab, footing (7.3) Introduction to brief idea for material calculation (7.4) Layout of a plan
8	GPS Awareness	(8.1) Introduction to GPS

Detail of Practical Syllabus:

SL NO	CONTENT	DETAILS
1	Chain Survey	(1.1) Practice in unfolding & folding chain, alignment of lines, measurement of distance between given points and their booking. (1.2) Practice in chaining & taking offsets, use of optical square and cross staff, Setting out right angle, taking measurements with tape. (1.3) Procedure in conducting chain survey, reconnaissance, preparation of rough sketch. Selection of base line and station points, fixing of station etc. (1.4) Chain survey of small plots by triangulation , booking & plotting the same.. (1.5) Chain survey of built up plot, locating detail , booking & plotting the same. (1.6) Taking horizontal measurement on sloping ground, overcoming obstacles between two points one of which is invisible or inaccessible from the other. (1.7) Chain Survey of an extensive area, locating detail, plotting & finishing the same in ink or colour paint.
2	Compass Survey	(2.1) Practice in setting up a compass and checking its accuracy- taking bearings and calculating angles (conversion of W.C.B to R.B). (2.2) Determining the bearings of a given line & establishing lines of given bearings- laying out a rectilinear and polygonal plots of ground using a compass and a tape. (2.3) Conducting closed traverse of built up field and plotting the same finishing in ink or colour paint
3	Plane table survey	(3.1) Setting up the plane table by leveling, centering and orientation. (3.2) Surveying an area with a plane table of built up areas (3.3) Traversing with a plane table of built up areas. (3.4) Running & open traverse with plane table and fixing details. Inking, finishing, colouring etc.



4	Levelling	(4.1) Practice in setting out a level and performing temporary adjustments, practice in reading staff. (4.2) Demonstration of permanent adjustment of level. (4.3) Practice in differential leveling, establish in bench mark, reading of staff and booking of reading in level book. (4.4) Carry out route survey, longitudinal & cross section of road project, its plotting.
5	Theodolite survey	(5.1) Practice in setting up a theodolite and taking reading (5.2) Measurement of horizontal angles by repetition, Reiteration method, Entry of field book . (5.3) Practice in measuring in vertical angles, setting out given vertical angle and entering the field book. (5.4) Running an closed traverse over a given area , booking calculating the coordinates and plotting the traverse
6	Plan reading	(6.1) Layout of building from the plan mentioning size of the room
7.	GPS awareness	(7.1). Practical application of hand held G.P.S (7.2) Component of G.P.S data processing (7.3) G.P.S signal
<p><u>APPRENTICESHIP COMPONENT:</u></p> <p>Trainees need to spend 150 Hours in an actual working environment with a Farm/any other organization engaged in the related field for first hand exposure to topics covered under the course. A report related to jobs done on this need to be prepared and placed before the Assessor for assessment.</p>		



Detail of Employability Skills Syllabus:

Employability Skills (60 hours)

Model Curriculum

Module Summary:

S. No	Module Name	Duration (hours)	Assessment Marks
1.	Introduction to Employability Skills	1.5	2
2.	Constitutional values - Citizenship	1.5	2
3.	Becoming a Professional in the 21st Century	2.5	6
4.	Basic English Skills	10	6
5.	Career Development & Goal Setting	2	3
6.	Communication Skills	5	4
7.	Diversity & Inclusion	2.5	2
8.	Financial and Legal Literacy	5	5
9.	Essential Digital Skills	10	8
10.	Entrepreneurship	7	4
11.	Customer Service	5	3
12.	Getting Ready for Apprenticeship & Jobs	8	5
	Total	60	50

Key Learning Outcomes

Introduction to Employability Skills **Duration: 1.5 Hours**

After completing this programme, participants will be able to:

1. Discuss the Employability Skills required for jobs in various industries
2. List different learning and employability related GOI and private portals and their usage

Constitutional values - Citizenship **Duration: 1.5 Hours**

3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
4. Show how to practice different environmentally sustainable practices.

Becoming a Professional in the 21st Century **Duration: 2.5 Hours**

5. Discuss importance of relevant 21st century skills.
6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
7. Describe the benefits of continuous learning.

Basic English Skills **Duration: 10 Hours**

8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
9. Read and interpret text written in basic English
10. Write a short note/paragraph / letter/e -mail using basic English



Career Development & Goal Setting **Duration: 2 Hours**

11. Create a career development plan with well-defined short- and long-term goals

Communication Skills **Duration: 5 Hours**

12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

Diversity & Inclusion **Duration: 2.5 Hours**

15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
16. Discuss the significance of escalating sexual harassment issues as per POSH act.

Financial and Legal Literacy **Duration: 5 Hours**

17. Outline the importance of selecting the right financial institution, product, and service
18. Demonstrate how to carry out offline and online financial transactions, safely and securely
19. List the common components of salary and compute income, expenditure, taxes, investments etc.
20. Discuss the legal rights, laws, and aids

Essential Digital Skills **Duration: 10 Hours**

21. Describe the role of digital technology in today's life
22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
24. Create sample word documents, excel sheets and presentations using basic features
25. utilize virtual collaboration tools to work effectively

Entrepreneurship **Duration: 7 Hours**

26. Explain the types of entrepreneurship and enterprises
27. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
29. Create a sample business plan, for the selected business opportunity

Customer Service **Duration: 5 Hours**

30. Describe the significance of analyzing different types and needs of customers
31. Explain the significance of identifying customer needs and responding to them in a professional manner.
32. Discuss the significance of maintaining hygiene and dressing appropriately

Getting Ready for apprenticeship & Jobs **Duration: 8 Hours**

33. Create a professional Curriculum Vitae (CV)
34. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
35. Discuss the significance of maintaining hygiene and confidence during an interview
36. Perform a mock interview
37. List the steps for searching and registering for apprenticeship opportunities

Assessment Strategy

The trainee will be tested for the acquired skill, knowledge and attitude through formative/summative assessment at the end of the course and as this NOS and MC is adopted across sectors and qualifications, the respective AB can conduct the assessments as per their requirements.



LIST OF TOOLS & EQUIPMENT FOR EMPLOYABILITY SKILLS		
S No.	Name of the Equipment	Quantity
1.	Computer (PC) with latest configurations – and Internet connection with standard operating system and standard word processor and worksheet software (Licensed) (all software should either be latest version or one/two version below)	As required
2.	UPS	As required
3.	Scanner cum Printer	As required
4.	Computer Tables	As required
5.	Computer Chairs	As required
6.	LCD Projector	As required
7.	White Board 1200mm x 900mm	As required

Note: Above Tools & Equipment not required, if Computer LAB is available in the institute.

Projected Tools and Equipment cost for AMIN SURVEY Trade under NOR

Sl. No.	Item	Specification	No of Unit for a batch of 30 trainees
1	Engineering Instrument Box		1
2	Protractor	15 cm full circular	1
3	Card board/ plastic metric scale set- A to H		1
4	Diagonal scale, electroplated		1
5	Celluloid set square 45° & 60°		1
6	T - square / minidrafter	850 mm	1
7	Erasing shield	small size	1
8	Architect's & builder's template	different shape in set	5
9	Chisel- steel	80 mm blade	1
10	French curve-	set of 12	1
11	Chalk board/White board	24" X 36" Alluminium Frame	1
12	Drawing Board with Table & Stool	Wooden	30



13	Dumpy level with Metallic Staff height 4m	Dumpy Level 7" Centre Focusing : Size - 750mmx550mm, Telescope - Erect,, Magnification - 24X, Length - 175 mm. Shortest Focusing Distance - 1.5 mtr. Longest Focusing Distance - 200/300 mtr. Objective Aperture - 40 mm. Addition constant - 0, Bubble sensivity - 20"/2mm. Normal Accuracy - 2-3 mm/km.	1
14	Auto level with Tripoid Stand & Staff 4.0 m.height	Leveling Accuracy: ± 0.7 mm; Telescope Magnification: 32x; Minimum focus distance: 0.2m from end of telescope, 0.3m from instrument center IPX6 (IEC 60529:2001) dust tight and water tight protection Precise, Reliable Automatic Compensator Horizontal Angle Measurement, Quick collimation with two horizontal motion knobs, Superior telescope with two-speed focus knob	5
15	Gunter's chain	66 ftt	2
16	Hand press for numbering & lettering		2
17	Tracing board with lamp & frame	Wooden made	2
18	Metric chain-	30m, 20m	5
19	Magnifying glass	Lens 4" heavy handle C.P.	2
20	Prismatic compass	Size - dia. 100mm/125mm./15mm. Made of Aluminum/Brass. Complete in case with Telescopic/Rigid/Wooden Tripod. Aluminum circle consist of a needle graduated to 30min(0.5) graduations painted with water proof paints	5
21	Planimeter (digital)		2
22	Plane table with stand , accessories & water proofing cover	Including Alidade, Sprit Level, Plumbing fork,with Plimb bob, Trough Compass	8
23	Telescopic alidade		8
24	Ranging rod	Metal 2m.	40
25	Offset rod	2m height	5



26	Optical square	1m height	5
27	Survey plotting scale-8 scales with offset scale in box	2,3,4,5,6,8 & 10mm height in set	21
28	Stencil set	2mm, 3mm, 4mm, 5mm, 6mm, 8mm	5
29	Metallic tape	30m	10
30	Steel tape	30m, 9.5mm	10
31	Surveyor's umbrella		6
32	Theodolite transit		5
33	Digital Theodolite	Telescope Magnification: 30X, Display Resolution (selectable) H & V: 1"/5", 0.2/1mg, 0.005/0.02mil, Accuracy (ISO 12857-2 1997): 2", Display: LCD, 8 digits x 2 lines w/backlight, Display location: On both faces, Compensator: Dual-axis compensator, working range $\pm 3''$ (± 55 mgon), Dust and water protection: IP66 (IEC60529), Weight with handle and battery: 4.7kg (10.3lb.), Battery: LR14/C batteries x2, Continuous use with alkaline batteries: Approx. 75 hours	2
34	Computer	Intel I5 processor, 4GB RAM, 1 TB HDD, 20" LED Monitor,	5
35	software	AutoCAD Latest version 1 year licence version 5 user	1
		Land Development Software/ E- Survey software	1
36	Hand GPS-latest version	Accurate positioning 1-3 m accuracy SBAS support 50 channels Full connectivity Quad-band GSM/GPRS Bluetooth® and WiFi Micro SD Card Fully featured 5MB camera	2



		Full numeric keyboard Excellent sunlight readability	
37	A3 size Printer-colour		1
38	UPS	600 VA	5



Trainer Requirements

Annexure

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
CTS/ATS	Surveyor trade	5	-	-	-	-
Diploma	Diploma in Civil engineering or Survey engineering or Mine surveying or GIS and GPS	3	-	-	-	-
B. Tech/BE	Civil engineering or Construction engineering	2	-	-	-	-
ITI	SURVEYOR	3	-	-	-	-

Trainer Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Amin Surveyor" mapped to QP: "STC -CON/NSQF -2017 /801". OR STC/CON/NSQF-2022/0804 Minimum accepted score is 80%.	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack:"MEP/Q2601".Minimum accepted score as per MEPSC guidelines is 80%.



Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
CTS/ATS	Surveyor trade	5	-	-	-	-
Diploma	Diploma in Civil engineering or Survey engineering or Mine surveying or GIS and GPS	5	-	-	-	-
B. Tech/BE	Civil engineering or Construction engineering	2	-	-	-	-
ITI	SURVEYOR	8	-	-	-	-

Assessor Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Amin Surveyor" mapped to QP: "STC -CON/NSQF -2017 /801". OR STC/CON/NSQF-2022/0804 Minimum accepted score is 80%.	Recommended that the Assessor is certified for the Job Role: "Assessor", mapped to the Qualification Pack: "MEP/Q2701". Minimum accepted score as per MEPSC guide lines is 80%.



Assessment Strategy

Assessment will be based on the concept of Independent Assessors empaneled with West Bengal State Council of Technical & Vocational Education & Skill Development (WBSCT&VE&SD), identified, selected, trained and certified on Assessment techniques. These Assessors would be aligned to assess as per the laid down criteria.

WBSCT&VE&SD would conduct assessment only at the training centers or designated testing centers authorized by WBSCT&VE&SD.

Ideally, the assessment will be a continuous process comprising of two distinct steps:

- A. Continuous assessment by Trainers
- B. Term end /Final Assessment by WBSCT&VE&SD

Each National Occupational Standard (NOS) in the respective QPs will be assigned weightage. Each Performance Criteria in the NOS will be assigned marks for theory and/or practical based on relative importance and criticality of function.

This will facilitate preparation of question bank / paper sets for each of the QPs. Each of these papers sets/question banks created by subject matter experts through WBSCT&VE&SD, especially with regard to the practical test and the defined tolerances, finish, accuracy etc.

The following tools are proposed to be used for final assessment:

- i. Written Test: This will comprise of (i) True/False Statements and/or (ii) Multiple Choice Questions and/or (iii) Matching Type Questions. Online system for this will be preferred.
- ii. Practical Test: This will comprise a test job to be prepared as per project briefing following appropriate working steps, using necessary tools, equipment and instruments. Through observation it will be possible to ascertain candidate's aptitude, attention to details, quality consciousness etc.
- iii. Structured Viva-voce: This tool will be used to assess the conceptual understanding and the behavioral aspects as regards the job role and the specific task at hand.



Marks distribution as per outcome

Course Name	Sr No	Outcome No.	Outcome Name	Th Hrs	Pr Hrs	Total marks Th	Total marks Pr
Amin Surveyor	1	CON/ 0804/ OC1	Apply Safe Working Practices	10	20	20	36
	2	CON/0804/ OC2	Describe the objective of the trade with concept of drawing.	10	20	15	36
	3	CON/ 0804/ OC3	Recognize and handle type of chain based upon its lengths able to describe various units of length , area and volume.	20	40	30	72
	4	CON/ 0804/ OC4	Identify the principle of compass surveying and perform site survey	5	25	10	45
	5	CON/ 0804/ OC5	Recognize and handle different types of levelling instruments.	5	25	10	45
	6	CON/ 0804/ OC6	Assist in performing the site survey using plane table	10	20	16	36
	7	CON/ 0804/ OC7	Assist in performing theodolite survey	20	40	30	72
	8	CON/ 0804/ OC8	Understand the concept of building drawing and layout the plan.	15	45	24	81
	9	CON/0804/OC9	Assist in planning and preparing setting of hand held of GPS techniques in various fields.	20	40	30	72
	10	CON/ 0804/ OC10	Work in real job situation with special emphasis on basic safety and hazards in this domain.	0	150	0	270
	11	DGT/VSQ/N0102	Employability Skills- 60 hrs.	24	36	15	35
TOTAL Theory 124 Hrs, Practical 476 Hrs (Including Employability Skill 60 Hrs)						200	800



Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training Outcome is specified in terms of knowledge, understanding(theory)and skills (practical application).
OJT(M)	On-the-job training(Mandatory);trainees are mandated to complete specified hours of training on site
OJT(R)	On-the-job training(Recommended);trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psycho motor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards