



National Vocational Certificate Level 5 in Urban Area Planning and Management

(Urban Area Manager)



Competency Standards

**National Vocational and Technical Training Commission (NAVTTC),
Government of Pakistan**



National Competency Standards
For
National Vocational Certificate Level 5 in Urban
Area Planning and Management
(Urban Area Manager)

NVQF Level 5

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INTRODUCTION

Urban area planning and management is an art of shaping and guiding the physical growth of the town creating buildings and environments to meet the various needs such as social, cultural, economic and recreational etc. and to provide healthy conditions for both rich and poor to live, to work and to play or relax, thus bringing about the social and economic well-being for the majority of mankind.

Keeping in view of the above the competency based national vocational qualifications have been developed by NAVTTC to train the unskilled human resource on the technical and entrepreneurial skills to be employed / self-employed and inevitably set sustainable impact on their lives by increase in their livelihood income.

Training Course is based on competency standards which are defined by the industry and the traditional role of a trainer changes and shifts towards the facilitation of training. A trainer encourages and assists trainees to learn for themselves. Trainees are likely to work in groups (pairs) and all doing something different. Some are doing practical tasks in the workshop, some writing, some not even in the classroom or workshop but in another part of the building using specialist equipment, working on computers doing research on the Internet or the library. As trainees learn at different pace they might well be at different stages in their learning, thus learning must be tailored to suit individual needs.

PURPOSE OF THE QUALIFICATION

The purpose of the training is to provide skilled manpower to improve the new and existing urban area management. This will improve the quality in town planning sector and the availability of skilled professionals will bring socio-economic benefits to all stakeholders. The specific objectives of developing these qualifications are as under:

- Improve the professional competence of managing urban area
- Capacitate the local community and trainers in modern CBT training, methodologies and processes as envisaged under NVQF



- Provide flexible pathways and progressions in the town planning and management sector
- Enable the trainees to perform their duties in efficient manner
- Establish a standardized and sustainable system of training for urban area management in Pakistan

DATE OF VALIDATION

This national vocational qualification (NVQ) has been validated by the Qualifications Development Committee (QDC) in 7th March to 11th March 2022 and will remain in currency until 1st March 2032

*Shall be reviewed after 3 years

CODE OF QUALIFICATION

Qualification Title	Code
National Vocational Certificate Level 5 in Urban Area Planning and Management “Urban Area Manager”	719UPM05

ENTRY REQUIREMENTS

- For National Vocational Certificate Level-5 in “Urban Area Manager”, the entry requirement is award of National Vocational Certificate Level-4 in “Urban Area Supervisor”. The entry in informal sector is not prescribed.



QUALIFICATIONS DEVELOPMENT COMMITTEE

The following members participated in the qualification development of these qualifications:

Sr. No.	Name	Designation	Organization
1.	Muhammad Abdul Moeez	DACUM Facilitator/ Structural Engineer	RMCE Lahore
2.	Mr. Shahzad Ahmad	Coordinator	Deputy Director NAVTTTC, Islamabad
3.	Engr. Azhar Iqbal Shad	Retired Principal	GCT , Raiwand road Lahore
4.	Malik Liaqat Ali	Town Planning officer	MC Sahiwal
5.	Mr. Sikandar Hayat	Instructor	GCT , Raiwand road Lahore
6.	Mr. Hijaz Ali Shah	Field Worker in Civil	Peshawar
7.	Mr. Muhammad Usman Khan	Building Inspector	Local Body Board, Kasur
8.	Syed Ali Raza	Civil Engineer	Nespak Islamanad
9.	Engr. Ahmad Ali	Site Supervisor	Urban Unit, Lahore
10.	Mr. Tahir Mahmood	Senior Instructor	GTTI Mughalpura, Lahore
11.	Engr. Abdul Basit Mansoor	AEE	PWD Sialkot
12.	Mr. Osama Ahmed Sheikh	AM, Repair and Maintenance	Orange Line Lahore



QUALIFICATIONS VALIDATION COMMITTEE

The following members participated in the qualification validation of these qualifications:

Sr. No.	Name	Designation	Organization
1.	Muhammad Abdul Moez	DACUM Facilitator/ Structural Engineer	RMCE Lahore
2.	Mr. Shahzad Ahmad	Coordinator	Deputy Director NAVTTC, Islamabad
3.	Engr. Azhar Iqbal Shad	Retired Principal	GCT , Raiwand road Lahore
4.	Mr. Nadeem Zaigham	Sr. Instructor	GCT , Raiwand road Lahore
5.	Mr. Sikandar Hayat	Instructor	GCT , Raiwand road Lahore
6.	Mr. Hijaz Ali Shah	Field Worker in Civil	Peshawar
7.	Ms. Sadia Saleem	Quality Checker	Interloop, Faisalabad
8.	Mr. Tahir Mahmood	Senior Instructor	GTTI Mughalpura, Lahore
9.	Engr. Abdul Basit Mansoor	AEE	PWD Sialkot
10.	Mr. Usama Ahmed Sheikh	Track and Infrastructure Engineer	Orange Line Lahore
11.	Mr. Waqar Khan	Lab Engineer	NUML Rawalpindi
12.	Mr. Muhammad Adnan	Secretary	PBTE Lahore
13.	Engr. Muhammad Ibrar	Manager site	DHA Bahawalpur
14.	Muhammad Maroof	Representative of STEVTA	Hyderabad
15.	Syed Zafar Ayub Hussain Shah	Project Coordinator ZKB	Peshawar
16.	Mr. Abdul Samad	Civil Contractor	FSB



SUMMARY OF COMPETENCY STANDARDS

Code	Competency Standards	Level	Theory		Practical		Total	
			C	Hr.	C	Hr.	C	Hr.
1.	Perform Sampling of Construction Materials	5	4.2	42	5.7	57	9.9	99
2.	Perform Material testing	5	5.9	59	8.7	87	14.6	146
3.	Perform Inventory management	5	4.9	49	2.4	24	7.3	73
4.	Manage and Supervise the Job Activities	5	4.7	47	3.0	30	7.7	77
5.	Develop 3D Model using REVIT	5	3.0	30	9.0	90	12.0	120
6.	Prepare Topographic Map by GPS	5	3.9	39	10.2	102	13.9	141
7.	Apply ArcGIS and Google Earth in Urban Area Management	5	2.0	20	8.4	84	10.4	104
8.	Plan a Project in Primavera P6	5	4.7	47	9.3	93	14	140
9.	Develop Entrepreneurial Skills	5	3.6	36	2.4	24	6.0	60
10.	Practice Professionalism	5	9.0	90	15.0	150	24	240
Total			45.9	459	74.1	741	120	1200



719UPM05A - Competency Standard: Perform Sampling of Construction Materials

Overview: This competency standard covers the skills and knowledge required to perform sampling of material. You will be able to collect construction materials samples, preserve, document, handle, store and transport the samples. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Carry Out Initial Preparatory Activities	<i>You must be able to:</i> P1. Select the sampling location P2. Identify hazards associated with the sample preparation P3. Select sampling equipment and tools P4. Prepare all solutions ready for field use. P5. Identify faulty or unsafe components and equipment and report to concern person P6. De-contaminate the sample container and sampling tools
CU2. Collect Aggregates Samples	<i>You must be able to:</i> P1. Select required tools and equipment P2. Collect required quantity of aggregates samples P3. Perform sample preparations P4. Take photos of sampling sites and samples P5. Record sample appearance and environmental conditions
CU3. Extract soil samples	<i>You must be able to:</i> P1. Select required tools and equipment P2. Decontaminate the sample container and sampling tools P3. Perform soil sample extraction P4. Take photos/snaps of sampling sites and samples. P5. Record the results of field tests in the sampling document P6. Record sample appearance and environmental conditions



CU4. Prepare fresh concrete samples at site	You must be able to: P1. Select required tools and equipment P2. Collect samples of fresh concrete from batch P3. Cast concrete cubes/cylinders in required quantity P4. Label the concrete cubes/cylinders and engrave identification mark on it. P5. Store concrete cubes/cylinders in curing tank P6. Record the results of field tests in the sampling document
CU5. Extract asphalt concrete test samples at site	You must be able to: P1. Select required tools and equipment P2. Collect the required numbers of asphalt concrete layer cores by core cutter P3. Record the results of tests in the sampling document P4. Re-instate all disturbed surfaces
CU6. Extract hardened concrete test samples at site	You must be able to: P1. Select required tools and equipment P2. Collect the required numbers of cement concrete slab cores by core cutter P3. Record the results of tests in the sampling document P4. Re-instate all disturbed surfaces
CU7. Preserve and Document the Sampling	You must be able to: P1. Prepare sub-samples and back-up samples P2. Seal and label the sample & sub-samples in the presence of witnesses P3. Complete the sampling document



CU8. Handle, Store & Transport the Samples	You must be able to: P1. Perform sample storage P2. Deliver sample store reception point P3. Report any unwanted situation to concern person
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Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- State Types and uses of sampling tool & equipment
- State Inventory Management
- Sample preparation steps (washing, weighing and sieving)
- State Preventive and corrective measures for tools and equipment
- Methods of collecting test samples based upon the types of tests and materials.
- Sampling rules for various materials such as; no. of samples, witnesses and sealing of samples etc.
- Physical, chemical & mechanical properties of engineering materials.
- Types of concrete
- Ingredients of Cement Concrete
- Ingredients of asphalt concrete
- Factors affecting the workability of concrete.
- Recommended values of slumps for various conditions of placements.
- Different methods of mix design, transportation of fresh concrete it's placing and compaction.
- Portable water
- Contaminated water and its adverse consequences to construction works.
- Scientific terminology regarding water chemistry.
- Physical and chemical properties of water and contaminations.
- Methods of collecting test samples based upon the types of tests and materials.
- Sampling rules for various materials, such as; no. of samples, witnesses and sealing of samples etc.
- Selection of sampling tools and equipment, sample container, quantity of each sample, weighing, measuring, mixing, sieving as per type of sample and tests.
- Sample preservation method, such as ph. control, chemical addition, refrigeration and freezing etc.
- Standard practice of tagging/numbering/labelling the collected samples.
- Standard procedures of packing of test samples for transportation.
- Standard practice for storing and stacking the test samples of various materials as per standards.



- Prepare the sampling documents such as fill in the sample date and time and weight/measure, temperature, pH value, sampler name, sample tag/ ID#, preservative used, sample location and sampling equipment etc
- Sampling tools and equipment, sample container, quantity of each sample, weighing, measuring, sieving as per type of sample and tests.
- Practice of tagging/numbering/labelling the collected samples.
- Procedures of packing of test samples for transportation.
- Practice for storing and stacking the test samples of various materials as per standards.
- Sampling documents

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Collect, document and preserve an aggregate sample
- Collect, document and preserve a soil sample from site
- Collect, document and preserve fresh concrete sample
- Collect, document and preserve hardened concrete sample
- Collect, document and preserve asphalt concrete sample



719UPM05B - Competency Standard: Perform Material Testing

Overview: This competency standard deals with learning the competencies required perform material testing. This includes testing properties of soil, cement, concrete, aggregates, bricks and steel. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Perform preliminary test on soil sample	You must be able to: P1. Select sample P2. Check moisture content of soil P3. Perform test for Atterberg limits P4. Perform test for the bulk and dry density P5. Perform standard and modified compaction test P6. Fill in the test sheet
CU2. Perform Bearing capacity test on soil sample	You must be able to: P1. Conduct site clearance P2. Setup SPT apparatus P3. Apply blow of standard weight P4. Calculate the relative density P5. Fill in the test sheet
CU3. Perform test on cement sample	You must be able to: P1. Select sample P2. Check fineness of cement P3. Prepare cement paste of standard consistence P4. Find out initial and final setting time P5. Perform test for soundness of cement P6. Perform test for compressive and tensile strength of cement P7. Fill in the test sheet
CU4. Perform test on aggregate sample	You must be able to:



	P1. Select Sample P2. Perform test for particle size distribution of fine and coarse aggregate P3. Perform test for bulk density of aggregate P4. Perform test for flakiness index of coarse aggregate P5. Perform test for elongation index of coarse aggregate P6. Perform test for specific gravity of materials P7. Fill in the test sheet
CU5. Perform test on fresh concrete sample	You must be able to: P1. Select Sample P2. Perform test for workability by slump cone P3. Perform test for workability by compacting factor P4. Fill in the test sheet
CU6. Perform test on hardened concrete sample	You must be able to: P1. Select Sample P2. Perform field test by Rebound hammer P3. Perform test for rebar detector P4. Fill in the test sheet
CU7. Perform test on brick sample	You must be able to: P1. Select brick sample P2. Perform test for compressive strength of brick P3. Perform test for water absorption of brick P4. Check dimensional tolerance of brick P5. Perform test for efflorescence of brick P6. Perform hardness test on brick P7. Perform abrasion test on brick P8. Fill in the test sheet
CU8. Perform test on steel sample	You must be able to:



	P1. Select steel sample P2. Perform test for tensile strength of steel P3. Perform test for ductility of steel P4. Fill in the test sheet
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Knowledge & Understanding:

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- Cement and its properties
- Types of cement
- Procedure of testing soundness and fineness of cement
- Initial and final setting time of cement
- Formulas used in cement testing
- Briquette test for cement
- Compressive strength
- Tensile strength
- Procedure of Le-Chatlier apparatus
- Procedure of Briquette apparatus
- Types of materials
- Particle size distribution
- Procedure of Sieve analysis
- Types of densities
- Procedure of Flakiness index
- Procedure of Elongation index
- Specific gravity
- Gradation of aggregate
- Workability
- Test sheet
- Bearing capacity test on soil
- Bearing capacity test procedure
- Concrete and concrete mix
- Types of concrete based on strengths
- Procedure of Slump cone apparatus
- Procedure of Compacting factor apparatus
- Properties of concrete
- Knowledge of Mortar
- Bricks and its types



- Size of brick and its components
- Water absorption capacity
- Procedure of finding dimensional tolerance
- Efflorescence
- Procedure to find efflorescence
- Procedure to perform hardness and abrasion test on brick
- Types of brick laying pattern
- Steel and its types
- Procedure to calculate compressive strength of steel
- Procedure to tensile strength of steel
- Procedure to ductility of steel
- Explain type of metals
- Explain different tests performed on steel
- Types of Soil tests
- Atterberg apparatus
- Bulk and dry density

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Determine fineness of cement
- Determine initial setting time of cement
- Check compressive and tensile strength of cement
- Check flakiness and elongation index of fine and coarse aggregate
- Check bulk density of aggregate
- Find compressive strength, water absorption, dimensional tolerance, efflorescence, hardness and abrasion test on brick
- Find tensile strength and ductility of steel



719UPM05C - Competency Standard: Perform Inventory Management

Overview: This competency standard deals with learning the competencies required to perform inventory management. You will be able to measure raw material and perform storage along with maintaining log register and declaring procurement plan. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Measure Raw material at site	You must be able to: P1. Calculate quantity of materials at site P2. Check with the log register P3. Adjust demands in accordance with the available raw materials P4. Manage production plan accordingly
CU2. Perform the storage of materials and tools	You must be able to: P1. Perform material dumping as per graded sizes P2. Check materials quality and quantity P3. Prepare material consumption report P4. Check tools quality P5. Generate incident report
CU3. Maintain the Log Register	You must be able to: P1. Manage log register P2. Prepare issuance checklist P3. Maintain Material borrow checklist P4. Enter data corresponding to every type of raw material P5. Audit Log register with available materials at site P6. Report to in charge in case of any issues P7. Prepare production record sheet
CU4. Declare Procurement Plan	You must be able to: P1. Maintain supply and demand P2. Maintain zero error relationship P3. Perform future forecast of demand and supply P4. Generate purchase requisition request



Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- Types of materials
- Classification of materials according to nature of size and shape
- Characteristics of materials
- Safety stock inventory
- Importance of gradation of materials
- Principles of safe and efficient storage
- Material characteristics
- Incident report and its component
- Material stolen/lost report
- Procurement plan
- Purchase requisition request
- Checklist for material inventory
- Material locator plan
- Batch tracking
- Material Auditing
- Zero error relationship
- First in First out (FIFO) Last in First out (LIFO)

Critical Evidence(s) Required

The candidates need to produce following Critical Evidence(s) in order to be competent in this competency standard.

- Maintain Log book including quantity, quality, types of stored raw material and quantity of finished aggregate
- Generate an incident report as per instructions



719UPM05D -Competency Standard: Manage and Supervise the Job Activities

Overview: This competency standard covers the skills and knowledge required to manage and supervise the job activities. You will be able to plan and supervise on-site operations / activities and doing the on - site inspection and prepare a report. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Plan for on-site operations	You must be able to: P1. Consult with the client to obtain required information P2. Prepare SOPs in accordance with the identified requirements. P3. Prepare the process flow diagram in order to achieve Quality outcome. P4. Break down work of activities into small achievable components and efficient sequences P5. Recognize site hazards and the personal protective equipment (PPE) and safety procedures specified for job P6. Organize site induction for support personnel as required P7. Plan housekeeping activities prior to and post completion of work
CU2. Supervise work activities to achieve desired results	You must be able to: P1. List and arrange required resources prior to commencement of work P2. Recognize the areas of work which could result in a delay of work, wastage of material or damage to tools. P3. Allocate responsibility to required team members to avoid conflicts P4. Review work plan in response to new information, urgent requests, changed situations or instructions from concern personnel P5. Cooperate with team members to achieve common goals



CU3. Perform on- site inspection	You must be able to: P1. Conduct inspection of processes & materials according to inspection plan P2. Identify defects and deficiencies in product & processes P3. Record defects and deficiencies with evidence in product & processes P4. Perform test as per standard procedure for determining the physical properties of materials and product. P5. Collect the samples of materials & products for lab testing as per standards P6. Complete the sampling document as per requirement P7. Check the actions taken for rectification of snag list P8. Record the non-compliance and expected breaches of contract as per SOPs.
CU4. Prepare the inspection report.	You must be able to: P1. Collect and review the information relevant to inspection activities for recoding inspection results P2. Verify the integrity of information supplied by other party as a part of the inspection process P3. Record inspection observations and findings P4. Recommend the necessary corrective actions for tackling the identified problems

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Principles of planning and project management
- Roles and responsibilities for different levels of site supervision.
- Information relevant to inspection activities and work document preparation for recoding inspection results.



- Documentation and record system of the inspection body
- Different types of deficiencies in inspection activities
- Site problems and recommended corrective actions
- Awareness of environmental sustainability issues as they relate to the work task.

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Design effectively the supervision and inspection program in accordance with specifications
- Handle inspection items and samples by appropriate methods to meet the traceability requirements.
- Collaborate with the team members for allied works at field.



719UPM05E - Competency Standard: Develop 3D Model using REVIT

Overview: This competency standard covers the skills and knowledge required to develop 3d modeling using REVIT. This software application allows you to design a building, structure and various related components in 3D, annotate the model with drafting elements. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Setup Interface	<i>You must be able to:</i> P1. Create custom user interface as per requirement of specific trade. P2. Create and apply Families for given specifications and requirements.
CU2. Create building layout	<i>You must be able to:</i> P1. Create/import drawings to make layout according to the given requirements. P2. Modify drawings and objects to meet given criteria. P3. Create 3D prototype model of the drawing according to given measurements.
CU3. Create construction document	<i>You must be able to:</i> P1. Create specification/detail for various parts according to given requirements. P2. Apply specified detail to objects according to given requirements. P3. Annotate the drawings using set parameters as per given details.
CU4. Render Model	<i>You must be able to:</i> P1. Add scene of 3D model according to specification P2. Add lights for illumination to get the requisite scene of 3D model. P3. Assign cameras to execute different views of 3D Model. P4. Render the 3D model according to required image size or resolution & orientation.



	P5. Generate material sheet
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Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Different layouts of software for specific field.
- Commands and tools.
- Vocabulary and terminologies.
- Annotation and detailing.
- Massing and site.
- Import/Export.
- Principles of lighting and rendering.
- Modeling techniques.
- Materials, textures and colors.
- Material sheet in REVIT
- Cameras and navigation of 3D environment.

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Construction documents.
- Rendered 3D prototype Model.



719UPM05F - Competency Standard: Prepare Topographic Map by GPS

Overview: This competency standard covers the skills and knowledge required prepare topographic map by GPS. This includes setting out coordinates by GPS, illustrate administrative index, locate the specific/required area in sheet and legends of topographic sheet. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Set out co-ordinates by GPS	<i>You must be able to:</i> P1. Set out GPS P2. Open Google map P3. Find your co-ordinates P4. Record coordinate location
CU2. Set coordinates by GPS	<i>You must be able to:</i> P1. Set out GPS P2. Use various modes P3. View profile by Google map P4. Use Processing options P5. Take 3-D, topography P6. Generate Data
CU3. Set out Civil Engineering Projects by GPS	<i>You must be able to:</i> P1. Set GPS at station point P2. Select “RTK” Network Approach P3. Apply (R.T) Real Time Positioning by GPS P4. Use GPS Derived “COORDINATES” P5. Use Laser Pointing System P6. Evaluate “RTK” Accuracy Results



CU4. Utilize Grid Reference and GPS usage	You must be able to: P1. Identify the longitude and latitude of given location P2. Locate the given site by GPS P3. Find direction by Brunton compass. P4. Identify the number of topographic sheets P5. Scale topographic sheet P6. Identify the values of longitude and latitude of given site P7. Measure distance between two specific points on topographic sheet
CU5. Illustrate Administrative Index	You must be able to: P1. Identify manmade and natural features on topographic sheets P2. Identify geographical boundaries of different administrative zones on topographic sheet
CU6. Locate Specific Area in Sheet	You must be able to: P1. Calculate area of project site on topographic map P2. Calculate excavation area of required location
CU7. Set out Legends of Topographic Sheet	You must be able to: P1. Identify the natural and man-made features on topographic sheet P2. Identify water bodies, vegetation cover, agricultural land, mountainous and plain area P3. Identify man-made structures P4. Identify the landforms by reading contours

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and calculations to carry out tasks covered in this competency standard. This includes the knowledge of:

- Basic geological concept
- Importance of topographic sheet
- Describe topographic sheet
- Administrative index



- Usage of grid reference and GPS
- Legends of topographic sheet
- GPS and its parts
- Different functions and modes of GPS
- Working process of GPS
- Knowledge of different parameters of GPS performing surveying and levelling and REFLEXW

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Prepare topographic map of an existing area using GPS



719UPM05G - Apply ArcGIS and Google Earth in Urban Area Management

Overview: This competency standard covers the skills and knowledge required to apply GIS (Geographical Information System) in Urban Area Management. This includes use of Google earth and ArcGIS and perform analysis on ArcGIS. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Use of Google Earth	<i>You must be able to:</i> P1. Setup Google earth as per job requirements P2. Access the location of the given area P3. Manipulate the coordinates as required P4. Calculate the area of the given site P5. Calculate the distance between different points
CU2. Apply Geo referencing in ArcGIS	<i>You must be able to:</i> P1. Upload map sheet as required P2. Assign coordinate system to uploaded sheet P3. Apply different commands in GIS as per requirement
CU3. Perform analysis In ArcGIS	<i>You must be able to:</i> P1. Select area for analysis P2. Outline the position of selected area P3. Insert layer template P4. Add data of urban features P5. Add labels to urban features P6. Export layout

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:



- Installation of Google Earth Application
- Installation of Arc GIS software
- Uploading of map sheet
- Basic commands of Arc GIS
- GIS analysis

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Perform analysis in GIS



719UPM05H - Competency Standard: Plan a Project in Primavera P6

Overview: This competency standard deal with learning the competencies needed to plan a project in Primavera P6. You can perform basic operation, project activities scheduling and resources costing and planning Primavera P6. You will manage project in Primavera P6. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Perform Basic operation in Primavera P6	<i>You must be able to:</i> P1. Load & unload primavera P6 Software. P2. Prepare interface of software P3. Customize P6 Screen Layout P4. Create WBS of project in Primavera.
CU2. Perform Project Activities Scheduling in Primavera P6	<i>You must be able to:</i> P1. Add Project in Primavera P2. Create Activities of project in Primavera. P3. Create Relationships between activities of project in Primavera. P4. Create Schedule of activities of project in Primavera. P5. Display Gantt Chart
CU3. Perform Project Resources Costing & Planning in Primavera P6	<i>You must be able to:</i> P1. Add constraints of activities of project in Primavera. P2. Create Calendar for activities of project in Primavera. P3. Assign Calendars to activities of project in Primavera. P4. Add Resources to activities of project in Primavera. P5. Assign Resources of activities of project in Primavera. P6. Add Cost of activities of project in Primavera. P7. Analyze Resources of activities of project in Primavera. P8. Perform Baseline process for Project.
CU4. Manage Project in Primavera P6	<i>You must be able to:</i> P1. Status the Project P2. Mitigate the schedule



Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Physical performance to Customized screen layout
- Activity Constraints
- WBS
- Work calendar, work/non-work days, working hours
- Roles and Hourly Rates
- Baselines and describe their use in evaluating project performance
- Stages of project execution
- Project monitoring and control

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Managed Project - project progress, planned baseline, Resource leveling and describe its purpose, comparison graphically, project progress for a specified time period



719UPM05I - Competency Standard: Develop Entrepreneurial Skills

Overview: This Competency Standard identifies the competencies required to develop entrepreneurial skills, in accordance with the organization's approved guidelines and procedures. You will be expected to develop a business plan, collect information regarding funding sources, develop a marketing plan and develop basic business communication skills. Your underpinning knowledge regarding entrepreneurial skills will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Develop a business plan	You must be able to: P1. Conduct market survey to collect information P2. Select the best option in terms of cost, service, quality, sales, profit margin, overall expenses P3. Compile the information collected through the market survey, in the business plan format
CU2. Collect information regarding funding sources	You must be able to: P1. Identify the available funding sources based on their terms and conditions, maximum loan limit, payback time, interest rate P2. Choose the best available option according to investment requirement P3. Prepare documents according to the loan agreement requirement P4. Include the information of funding sources in the business plan
CU3. Develop a marketing plan	You must be able to: P1. Collect information required to devise marketing plan P2. Prepare marketing plan for new business
CU4. Develop basic business communication skills	You must be able to: P1. Communicate with internal customers and external customers P2. Use different modes of communication to communicate internally and externally P3. Use specific business terms used in the market



Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- 7ps of marketing including product, price, placement, promotion, people, packaging and positioning
- 7Cs of business communication
- Different modes of communication and their application in the industry
- Business terms used in the industry
- Funding sources
- How to get loan to start a new business
- Market survey and its tools e.g.: questionnaire, interview, observation etc
- Market trends for specific product offering
- Elements of business plan
- How to fill the business plan format

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Conduct market survey and formulate business plans in terms of feasibility, investment potential, risk, and completeness.
- Effectively present business ideas and profile



719UPM05J - Competency Standard: Practice Professionalism

Overview: This competency standard deal with learning the competencies needed to develop portfolio for industry. You can perform internship. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Develop Portfolio for industry	<i>You must be able to:</i> P1. Select previous assignments for portfolio P2. Work on previous selected assignments for portfolio P3. Compile variety of assignments for portfolio P4. Make Professional Portfolio for industry P5. Develop Digital Portfolio for industry
CU2. Perform Internship	<i>You must be able to:</i> P1. Prepare for internship • Personal Presentation • Portfolio Presentation P2. Interview preparation P3. Demonstrate Ethics for Internship P4. Identify Industry for internship P5. Perform Internship in Industry • Fill the Performa of Internship • Report the performance of internship

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- Importance of portfolio
- Ethics for Internship



Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Professional
- Portfolio



COMPLETE LIST OF TOOLS AND EQUIPMENT

Sr. #	Description
1.	Primavera P6 software
2.	Ball peen Hammer
3.	Board of Safety instructions
4.	Computers
5.	Digital Balance
6.	Face mask
7.	Fire Buckets
8.	Fire Extinguishers
9.	First aid Kit
10.	Grip pliers
11.	Safety gloves
12.	Hand hacksaw with blade
13.	Briquette apparatus
14.	Le-Chatlier apparatus
15.	Sieve set
16.	Flakiness apparatus
17.	Elongation apparatus
18.	Cone for slump test



Sr. #	Description
19.	UTM (Universal Testing Machine)
20.	Log Book
21.	Jack Hammer
22.	Nose Pliers
23.	Steel rule
24.	Tweezers
25.	Aggregate impact value test machine
26.	Metallic tray
27.	Ellen Key
28.	Fire extinguishers
29.	PPEs
30.	Digital Balance
31.	Chisel
32.	Topographic sheet
33.	Plain table
34.	Hand-held GPS
35.	D/GPS
36.	ArcGIS software



Sr. #	Description
37.	Brunton Compass
38.	Google Earth
39.	Sampling Containers
40.	Ziplock bags
41.	Alcohol wipes
42.	Internet
43.	REVIT software
44.	Plate bearing test equipment
45.	Rebound Hammer