

TVET CERTIFICATE IV in INTERIOR DESIGN

INDSA401

SITE ANALYSIS

PERFORM SITE ANALYSIS

Competence

REQF Level: 4

Credits: 3
hours: 30

Sector: Construction
Sub-sector: Interior Design



Learning

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Purpose

statement

This core module, which describes the performance outcomes, skills and knowledge required to perform site analysis. At the end of this module the learner will be able to collect site information, analyze the research data and also document all the findings.

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Learning Unit 1 – Conduct Site Inventory

LO 1.1 – Identify physical attributes according to the site analysis requirements

- Topic 1: Identification of physical attributes according to the site analysis requirements and Factors that affect users in a given space.

✓ Definitions of key terms

✚ **Site analysis** is a preliminary phase of architectural and urban design processes dedicated to the study of the climatic, geographical, historical, legal, and infrastructural context of a specific site.

✚ **A site inventory** is simply a list of elements that currently exist on the property. Elements that exist on adjacent properties should also be considered if they impact the future design. The location of inventoried elements can be recorded on a base map or simple plot plan.

✓ Physical Attributes that affect a given space

Physical Attributes are the physical characteristics of the space itself.

Physical attributes that affect a given space:

✚ SIZE AND SHAPE OF THE SPACE

Shape is the appearance, the figure or what form it has. Is it a triangle (3 sides), a square (4 equal sides), a rectangle (4 sides), etc... Size is the measurement (or the dimensions). Size and shape can help in site analysis and inventory for more information.

✚ TOPOGRAPHY

Topography is the description or the study of the shape and features of land surfaces. The topography of an area could refer to the surface shapes and features themselves. Topographic maps exist to represent the land surface and are tools used in geologic studies because they show the configuration of the earth's surface.

✚ GEOLOGY

Geology is the study of the earth, energy, water, and mineral resources; the environment; climate change; and natural hazards like landslides, volcanoes, earthquakes, and floods.


HYDROLOGY


Hydrology is the scientific study of the movement, distribution and management of water on Earth and other planets, including the water cycle, water resources and environmental watershed sustainability.


CLIMATE


Defined as the composite or generally prevailing weather conditions of a region, as temperature, air pressure, humidity, precipitation, cloudiness, and winds, throughout the year, averaged over a series of years.


✓ Factors that affect users in a given space.

 **Aeration:** is the process by which air is circulated through, mixed with or dissolved in a liquid or substance.

 **Lighting:** illumination is the deliberate use of light to achieve practical or aesthetic effects. Lighting includes the use of both artificial light sources like lamps and light fixtures, as well as natural illumination by capturing daylight

 **Space management:** is defined as the management, control and supervision of the physical spaces a business occupies. This could refer to a single floor, multiple floors or multiple floors in multiple buildings.

 **Movement:** Is defined as change in position and other related circulation.

 **Ergonomics:** Is the science of designing the workplace, keeping in mind the capabilities and limitations of the worker. A systematic ergonomics improvement process removes risk factors that lead to musculoskeletal injuries and allows for improved human performance and productivity.

LO 1.2–Identify environmental attributes according to the site analysis requirements

- Topic 1: Discussing the environmental attributes according to the site analysis requirements and environmental laws

✓ **Environmental attributes that affect a space:**

Environmental Attributes means any and all claims, credits, benefits, emissions reductions, offsets, and allowances, howsoever entitled, resulting from the avoidance of the emission of any gas, chemical, or other substance to the air, soil or water.

✚ **Topography:** is the description or the study of the shape and features of land surfaces. The topography of an area could refer to the surface shapes and features themselves. Topographic maps exist to represent the land surface and are tools used in geologic studies because they show the configuration of the earth's surface.

✚ **Natural features:** Are part of the land, and many were in a place before people lived there. Plants, rocks, sand, soil, sea and streams are all natural. They are not made by people.

✚ **Sun Orientation:** refers to the alignment of a building or structure with respect to the transit of the Sun across the sky. The orientation determines which walls or windows receive light during the day. This is an important factor in passive solar building design.

✚ **Wind Direction:** refers to the alignment of a building or structure with respect to the transit of the wind across the sky. The orientation determines which walls or windows receive the winds. Wind direction is reported by the direction of winds from which it originates.

✚ **Climate:** Defined as the composite or generally prevailing weather conditions of a region, as temperature, air pressure, humidity, precipitation, cloudiness, and winds, throughout the year, averaged over a series of years.

✓ **Environmental Laws that relate to different spaces**

Also known as environmental and natural resources law, is a collective address environmental pollution. A related but distinct set of regulatory regimes, now strongly influenced by environmental legal principles, focus on the management of specific natural resources, such as forests, minerals, or fisheries. Other areas, such as environmental impact assessment, may not fit neatly into either category, but are nonetheless important components of environmental law.







Or

Environmental law is the collection of laws, regulations, agreements and common law that governs how humans interact with their environment. ... Laws may regulate pollution, the use of natural resources, forest protection, mineral harvesting and animal and fish populations.

Environmental Law is a developing field of law and practice. As increasing pressures are placed on the environment at a local level, communities need additional tools to ensure progress while upholding values of environmental preservation and conservation.

- **The major environmental laws**

The following is a summary of the major federal environmental laws.

-  The Clean Air Act.
-  The Clean Water Act.
-  The Comprehensive Environmental Response, Compensation and Liability Act
-  The Endangered Species Act
-  The Pollution Prevention Act
-  The Resource Conservation and Recovery Act


- **The purpose of environmental law**

The purpose of environmental law is to protect and preserve the environment. There are two main subjects of environmental laws, control of pollution, and the conservation and management of land. Both sections of environmental law protect land, air, water, and soil.

LO 1.3-Identify cultural attributes according to the site analysis requirements

- **Topic 1: Description of Cultural Attributes that affect a space**

- ✓ Land Use and Tenure

-  Land use involves the management and modification of natural environment or wilderness into built environment such as settlements and Land by respecting rules and regulations of public or government.

✚ Land Tenure: Defined as the terms and conditions on which land is held, used and transacted. Rules of tenure define how property rights to land are to be allocated within societies.

✓ Property value

Property valuation or land valuation is the process of developing an opinion of value, for real property. Real estate transactions often require appraisals because they occur infrequently and every property is unique.

✓ Public Infrastructure

Public infrastructure is infrastructure owned or available for use by the public. It is distinguishable from generic or private infrastructure in terms of policy, financing, purpose and control by competent leaders.

Or

Public infrastructures are facilities, structures, equipment, services and institutions to the economy and quality of life of a nation, region or city

Examples of public infrastructures

- Transport infrastructures: bridges, road, sidewalks and rail services.....
- Wet infrastructures: water supply, water treatment plant,,,,,
- Information infrastructures: network services....
- Institutions: schools, markets.....
- Public spaces: parks.....

✓ Historic Resources

Historic resource is documented with photographs, maps, and a written description on a form. Historic resources are districts, sites, buildings, structures and objects that are significant in American history, architecture, archeology, engineering and culture.

✓ Land use regulation

Regulate land use in two ways:

- ✚ The owner may become liable for certain activities carried out on the real estate that affect others beyond the real estate.
- ✚ The owner may be liable to persons who, upon entering the real estate, are injured.

Land use regulation falls into three broad categories:

- ✚ Restriction on the use of land through tort law,
- ✚ Private regulation by agreement, and
- ✚ Public ownership or regulation through the powers of eminent domain and zoning.

Learning Unit 2 – Analyze research data

LO 2.1–Study space requirements according to their function and present attributes

- Topic 1: Discussion of space requirements according to their function and present attributes





✓ Spaces and their functions:

Public

- **Hotels:** function of a hotel is to provide lodging accommodations. A hotel is comprised of several business or revenue centers. Hotels exist to provide service and to generate a profit for the owners.
- **Banks:** functions of a commercial bank are accepting deposits and also lending funds. Deposits are savings, current, or time deposits. Also, a commercial bank lends funds to its customers in the form of loans and advances, cash credit, overdraft and discounting of bills, etc.
- **Malls:** Are used for entertainment, community, and ecology. Through this strengthening, MALL intends to create shopping malls that are not only the most competitive in their respective regions, but that are considered a hub of the local community
- **Restaurants:** is a business that prepares, provide and serves food and drinks to customers
- **Offices:** The basic functions are essential to the existence of the office. These include collecting, processing, recording, storing and furnishing information. The administrative functions are organization of office activities, control of stationery, purchase of equipment, safe guarding of assets, management of personnel etc
- **Museums:** is to collect objects and materials of cultural, religious and historical importance, preserve them, research into them and present them to the public for the purpose of education and enjoyment.

- **Hospitals:** The main function of a hospital is to provide the population with complete health care; it also functions as the center for the training of health workers. A hospital is generally a vital part of a social and medical organization

Private

- **Residential houses:** Functions of residential House as environment for family living, fulfills various functions like effective use of resources, protection, social and emotional bonding among family members, cultural influence in way of living, religious mindset and social status.
 - **Private lounges:** is the private place which has comfortable seating and is mainly used for relaxation.
- ✓ Different space requirement:
-  **Acoustic panels for sound insulation:** Acoustic panels are sound absorbing panels placed on walls or ceilings to control and reduce noise, eliminate slap echo and control comb filtering in a room. The objective is to enhance the properties of sound by improving sound quality with sound absorbing panels.
 -  **Air conditioning:** Air conditioning (often referred to as AC, A/C, or air con) is the process of removing heat and moisture from the interior of an occupied space to improve the comfort of occupants. Air conditioning can be used in both domestic and commercial environments.
 -  **Lighting:** Equipment in a room, building, or street for producing light.
 -  **Wheel chair ramps:** A wheelchair ramp is an inclined plane installed in addition to or instead of stairs. Ramps permit wheelchair users, as well as people pushing strollers, carts, or other wheeled objects, to more easily access a building, or navigate between areas of different height.

LO 2.2—Categorize attributes according to the site analysis objectives







Topic 1: Categorization of attributes according to the site analysis objectives

- ✓ Identify site analysis objectives

Main goal of site analysis is used to develop an understanding of the site and its context, and the resulting constraints and opportunities for development the site.

When you are starting your project, it may seem obvious where and how the building should be situated. However, after taking some time to research local regulations, and document the natural properties of your site and adjacent

Properties, you might be surprised by your findings. Your objectives in doing a site analysis are:

-  Decide which piece of property to purchase (if applicable).
 -  Decide where to build, and where not to build on the property.
 -  Determine building footprint, orientation, desirable views, parking location, and other site amenities.
 -  Determine access to the site.
 -  Determine the character you want.
 -  Determine how large of a building the site will support (expansion possibilities
- ✓ Relationship between site analysis attributes and how they interact.

Physical attributes on a site can have abroad impact on how a site is developed. Potential data sources include aerial photographs, subsurface borings, and a wide variety of reference maps. Although not always possible due to budgetary constraints, visiting a site at different times of the year can yield a much more comprehensive understanding of local site conditions, especially drainage patterns, wind patterns, and microclimate.

Protecting existing native vegetation and wildlife is not only good for the environment, but it also contributes to the site's unique sense of place. Mapping a site's key biological attributes is an important part of the site inventory. Identifying these resources helps to protect the ecological integrity of the site during and after the plan's implementation. Which attributes to map and evaluate depends, as with physical and cultural attributes, on the future uses of the site.

Cultural context includes the physical infrastructure of streets, utilities, and buildings. Depending on the site planning program, any of these attributes can have a significant influence on how the land is ultimately designed and developed.

Physical Attributes	Biological Attributes	Cultural Attributes
<ul style="list-style-type: none"> * Topography (elevation, slope, aspect) * Hydrology (drainage patterns, wetlands, aquifer recharge areas) * Soils (stability, erodibility, bearing capacity) * Geology (landforms, seismic hazards, depth to bedrock) * Microclimate (solar access, winds, fog, precipitation, frost) 	<ul style="list-style-type: none"> * Ecological Communities (‘green’ infrastructure, habitats, patches & corridors) * Vegetation (specimen trees, exotic invasive species, endangered or threatened species) * Wildlife (exotic invasive species habitat, endangered or threatened species) 	<ul style="list-style-type: none"> * Land Use (districts, sites, buildings) * Open space (parks, greenways) * Regulations (easements, zoning, design guidelines) * Property (ownership, value) * Sensory Perception (visibility, visual quality, noise, odors) * Infrastructure (transportation, utilities)

Fig. Existing site and contextual conditions

- ✓ Tips on how to match site analysis attributes to their respective objectives

Site analysis should demonstrate a thorough understanding of the characteristics and attributes of your development site, the adjacent properties and the street it is located on. The scale, complexity, and sensitivity of the development site should inform the level of detail you need to provide.

LO 2.3–Review information received from the client according to the site analysis objectives

- Topic 1: Discussing on the review of information received from the client according to the site analysis objectives

- ✓ Tips on how to conduct Client/user analysis

Step 1 – Review the notes, transcripts, and data for any relevant phrases, statements, and concepts that align to the research goals and questions.

Step 2 – Tag and code any remaining data that represents key activities, actions, concepts, statements, ideas and needs or desires from the customers who participated in the research.

Step 3 – Review those tags and codes to find relationships between them. A useful tip for this is to pay close attention to tags that have notes with multiple other tags. This often indicates a relationship between themes.

- ✓ Fundamental precepts of responsive site analysis

Sustainable, context-responsive site planning has three fundamental precepts:

- ✚ **Design with nature:** Design-with-nature concept is a precursor of the multifunctional landscapes design paradigm. McHarg focuses on the natural, social, and cultural processes and sees design as an iterative process that is largely shaped by the interactions between humans and ecosystems.
- ✚ **Design with culture:** A design culture is a set of expectations, norms, habits, principles and philosophies that influence the work of a design organization or team. As with all culture, a design culture can't be dictated from above but emerges with the shared experiences of the people involved.
- ✚ **Design places for people:** Sustainable places should enable people to pursue a healthy lifestyle and pattern of movement, should be accessible for everyone, safe and convenient, and should encourage good stewardship of the spaces between buildings.















These general precepts give rise to a more explicit set of principles for physical planning at the site scale.








- ✓ Information that may be received from the client:

- ✚ **Intended use of the site:** Intended use is all about what we say this site is to be used for, and indications for use is under what circumstances or under what conditions you would use that particular site.”
- ✚ **Preferences in color, shapes, styles and patterns**
 - **Color:** The property possessed by an object of producing different sensations on the eye as a result of the way it reflects or emits light.
 - **Shapes:** a geometric figure such as a square, triangle, or rectangle.
 - **Style:** a distinctive appearance, typically determined by the principles according to which something is designed.
 - **Patterns:** The form or figures used in decoration
- ✚ **Target market/users:** A target market refers to a group of customers to whom a company wants to sell its products and services, and to whom it directs its marketing efforts. Consumers who make up a target market share similar characteristics including geography, buying power, demographics, and incomes.













Learning Unit 3 – Organize data into a written program

LO 3.1– Select the format of the site analysis according to the project data

- Topic 1: Selection of the format of the site analysis according to the project data
- ✓ Site analysis formats that can be used to achieve the task
 -  slides
 -  layouts
 -  essay
- ✓ Format to use to best present the project data
 -  PDF (Preferred for most **files**) PDF (short for Portable **D**ocument **F**ormat) is a **file format** developed by Adobe as a means of distributing compact, platform-independent documents. ...
 -  EPS: Encapsulated PostScript (Preferred for large signs and banners) ...
 -  JPG: Joint Photographic Expert Group (Preferred for images) ...
 -  TIFF: Tag Image File Format (Preferred for high resolution images)
 -  GIF: The Graphics Interchange Format and PNG (Portable Network Graphics)
GIF (short for Graphics Interchange Format) is a file format for storing graphical images up to 256 colors. It uses a lossless compression method which makes for higher quality output. PNG (short for Portable Network Graphics) was created as a more powerful alternative to the GIF file format.
 -  ZIP is a file format used for data archiving and compression.
 -  PPT: presentation software Parts-per notation
 -  3D Data Visualization Tools
- ✓ Tips on how to use different format to ensure that no project data is lost or misinterpreted.
 -  Practice good working habits.
 -  Use an anti-virus software and keep it updated.
 -  Protect against power surges with an UPS.

-  Keep your machine dry in a dry, shaded, dust-free and well-ventilated area.
-  Do not over-tweak your system.
-  Avoid moving your computer or notebook when it is in operation.
-  Safeguard your computer.
-  Practice disk maintenance
-  Pre-empt failure
-  Do not listen to tell-tale technique

LO 3.2– Select the computer program according to site analysis format







- Topic 1: Selection of computer program according to site analysis format
- ✓ Different computer programs that are compatible with the selected site analysis format
 -  Microsoft Word 2013 or earlier
 -  Microsoft Publisher 2013 or earlier
 -  Microsoft Excel 2013 or earlier
 -  Microsoft Power Point 2013 or earlier
 -  Adobe in Design CC 2015 or earlier
 -  Adobe Illustrator CC 2015 or earlier
 -  Adobe Photoshop CC 2015 or earlier
 -  Adobe Acrobat 11
 -  AutoCAD® files in dwg and dxf formats.
 -  Chief architect
 -  ArchiCAD
 -  Etc

Guidelines on how to navigate and operate the different computer programs

In Windows, to run a program, double-click the executable file or double-click the shortcut icon pointing to the executable file. If you have a hard time double-clicking an icon, you can click the icon once to highlight it and then press the Enter key on the keyboard.

A popular Windows shortcut key is Alt + Tab, which allows you to switch between all of your open programs. While continuing to hold down the Alt key, choose the program you want to open by clicking Tab until the correct application is highlighted, then release both keys.

Tips on how to achieve the best results with the computer program

-  Perform disk cleanup regularly. Disk Cleanup is a tool that you have in your Windows operating system.
-  Organize files online. If you are like most people, you see a lot of cool things online every day that you want to save.
-  Learn keyboard shortcuts.
-  Focus on the Fundamentals.
-  Learn to Ask for Help.
-  Put Your Knowledge into Action.

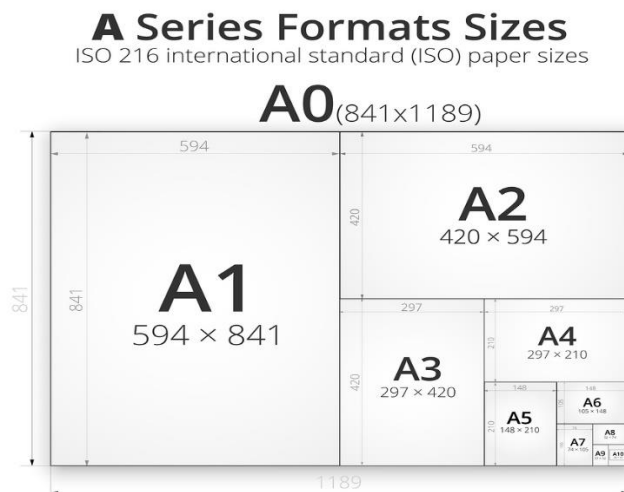
LO 3.3–Prepare the final program document according to the program requirements

- Topic 1: Discussion on how to prepare the final document according to the program requirement
- ✓ Guidelines on how to generate a final program document from the computer program used.
 - Documentation should be from the point of view of the reader
 - Document should be unambiguous
 - There should be no repetition
 - Industry standards should be used
 - Documents should always be updated
 - Any outdated document should be phased out after due recording of the phase out

- ✓ Introduction to the different outputs of the final document in regards to the program requirement

A Series Paper Measurements

A0	841 x 1189 mm
A1	594 x 841 mm
A2	420 x 594 mm
A3	297 x 420 mm
A4	210 x 297 mm
A5	148 x 210 mm
A6	105 x 148 mm
A7	74 x 105 mm
A8	52 x 74 mm
A9	37 x 52 mm
A10	26 x 37 mm



PDF

- ✓ Tips on how to best present the final program document

It may not be a requirement to present your site analysis information, but in many cases it is. Whether you are putting together a couple of plans with your findings, or a full report, here are some tips and ideas to help you get the information across.

- ✚ Give an overview of the site and the information you have found.
- ✚ Show some of the key photographs of the site.
- ✚ Give more detail about the elements of your site analysis that you feel will be important in your design process.
- ✚ Make sure you include images. There are various ways you can do this:
 - Sketches from site
 - Photographs from site
 - Annotated photographs
- ✚ Present any relevant data found (climate, sun paths etc). Keep data clear and concise, don't bore everyone with complicated graphs and tables. Instead, make your own chart or table that picks out the important information.
- ✚ Present your sun paths and angles as some sort of annotated drawing. Sketchup can be a useful way of presenting sun path drawings.
- ✚ Depending on what has been asked of you, sometimes it is useful to present a couple of overlay drawings showing some initial ideas you have worked on. This will demonstrate your understanding of the site.

The most important thing when presenting your site analysis is to ensure that the information is clear, and the reader can understand what you have found.

References

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- White, E. T. (November 1982). *Site Analysis Diagramming Information for Architectural Design*.