# TECHNICAL REPORT

# ON

# STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (S.I.W.E.S)

## HELD AT

**PITIS GEO SOLUTION LIMITED**

**WRITTEN BY**

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**MATRIC NO: ND/23/SGI/PT/0009**

**SUBMITTED TO:**

**DEPARTMENT OF SURVEYINHG AND GEO INFORMATICS**

**INSTITUTE OF ENVIRONMENTAL STUDIES KWARA STATE POLYTECHNIC, ILORIN.**

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## DEDICATION

I dedicate this report first and foremost to Almighty God who made it possible for me to go through this SIWES program safely and soundly and who has been there from the beginning to this very point also for the opportunity given to me to be in Estate Management Department of this citadel of learning and to complete my 4month SIWES.

## ACKNOWLEDGEMENT

My deeper appreciation goes to Supreme God for granting me life, health, favor, wisdom knowledge and understanding all through the period of my SIWES program.

With a deep sense of appreciation, respect and gratitude, I want to say a big thank you to my parents, Mr and Mrs Oluwamotito, brothers, sisters and other relatives and non-relatives friends, for their caring attitude and support from the beginning of my ND program

I will like to express my gratitude to my honourable (H.O.D) , my SIWES supervisor, and also the entire staff of the Department of surveying and geo informatics kwara state Polytechnic Ilorin, I say more grace to your elbow all.

My sincere appreciation also goes to everyone that has been by me all this while. THANKS TO ALL

## CHAPTER ONE

**INTRODUCTION**

This program, student industrial work experience scheme (S.I.W.E.S) is part of the requirement for the award of Ordinary National Diploma (O.N.D.), when I was about to start this program I was worry myself how this program will look like but to my surprise I seen that the program is very important to the estate management student because of the experience that student will be exposed to from it. The program (S.I.W.E.S) give me the opportunity both in practical aspect and theoretical. During the practical work at Mustapha & company I had the opportunity to participate in the valuation of Gimbiya Furniture Limited and others.

Therefore, student industrial work experience is so important because acquisition of the theoretical knowledge which is the major task or activity in the classroom will not be complete until when the knowledge acquired is properly applied to real life situation.

**AIM AND OBJECTIVES OF S.I.W.E.S**

The objectives of S.I.W.E.S. specifically are to

1. Prepare student for the situation they likely to meet after graduation.
2. Provide an avenue for student in the higher institution to acquire industrial experience in their field of study.
3. To make transition from the institution so as to make work easier & thus student contact for later job place.
4. Enlist and strengthen enrollment and involvement in the entire Education for preparing the higher institution graduate employment in industry.

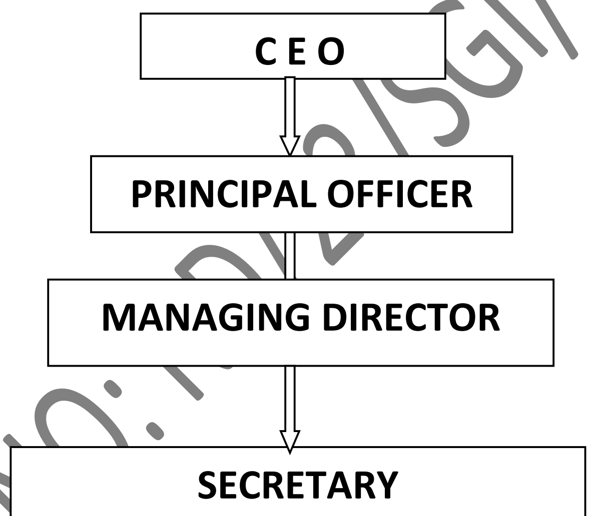
5. Provide student with an opportunity to apply their theoretical knowledge work situation thereby bringing between institution and practice.

## CHAPTER TWO

### 2.1 HISTORICAL BACKGROUND

Pitis geo solution limited is located at no 54, sokoto road sabo oke GRA Ilorin south local government area

### 2.2 ORGANIZATIONAL CHART OF PLACE OF WORK



# CHAPTER THREE

## 3.1 EXPERIENCED GAINED

### TO CREATE A PRODUCTION PLAN

To create a production plan using AutoCAD in surveying and geoinformation, you'll need to integrate field measurements, data analysis, and drafting skills. First, collect and clean your survey data, then use AutoCAD's drafting and COGO tools to create precise plans, including boundary lines, site plans, and contouring. Finally, customize AutoCAD for your specific surveying tasks and ensure accurate plotting and presentation of your plans.

1. Data Acquisition and Preparation:

- **Field Data Collection:** Collect accurate field measurements using surveying instruments (GPS, total stations, etc.).
- **Data Cleaning and Preprocessing:** Organize and clean the collected data, ensuring accuracy and consistency.
- **Establishing Control Points:** Define and manage survey control points to ensure accurate mapping.

2. AutoCAD Drafting and Editing:

- **Basic Drafting:**

  Use AutoCAD's drawing and editing tools to create geometric shapes, objects, and modify existing ones.

- **Object Snaps and Precision:**

  Utilize object snaps for precise drafting and ensure accuracy in your drawings.

- **Layers and Object Properties:**

  Organize your drawing with layers and manage object properties for clarity and efficiency.

- **Annotation and Dimensioning:**

  Add annotations, dimensions, and text to your drawings to provide essential information.

3. Creating Survey Plans:

- **Drawing Boundaries and Lot Layouts:**

  Create boundary lines, lot layouts, and other site features in your CAD drawing.

- **Incorporating Survey Data:**

  Integrate survey data into site plans to create comprehensive and accurate representations.

- **Generating Contours and Terrain Modeling:**

  Use AutoCAD's COGO tools to generate contour lines and create 3D terrain models.

### 3.2 INTRODUCTION TO SURFER

Surfer is a gridding, contouring, and surface mapping software, particularly useful in surveying and geo-information applications. It allows users to create publication-quality maps and models by interpolating irregularly spaced data into a regularly spaced grid, enabling various map types like contours, images, and 3D surfaces.

Key Features and Applications:

- **Grid-based mapping:**

  Surfer interpolates XYZ data into a grid, which is the foundation for creating various map types.

- **Contouring and surface mapping:**

  It excels in creating contour maps, shaded relief maps, and 3D surface maps, facilitating analysis of spatial data.

- **Multiple map layers and objects:**

  Users can combine various map layers and objects to create complex and informative visualizations.

- **3D modeling:**

  Surfer allows for 3D modeling and visualization, including 2D slice maps, 3D volume renders, and more.

- **Customization:**

Virtually all aspects of maps and models can be customized to achieve the desired presentation.

- **Data analysis and transformation:**

  Grid files can be edited, combined, filtered, and mathematically transformed, providing advanced analysis capabilities.

- **Applications:**

  It's widely used in surveying, geo-information, environmental science, and other fields for creating and analyzing maps, terrain models, and surface visualizations

### 3.3 HOW TO CREATE MARGINE

In surveying and geoinformation, margin refers to the acceptable range of error or uncertainty in measurements and data. It's a statistical measure indicating how much sample results might differ from the true population values. Calculating and understanding margin helps assess the reliability of survey data and its impact on derived information like maps and models.

Here's a more detailed explanation:

- **Purpose:**

  Margin of error helps determine the confidence level in survey results. A smaller margin indicates a higher confidence in the data being representative of the entire population.

- **Calculation:**

  Margin of error is calculated using statistical formulas that consider sample size, population standard deviation, and desired confidence level.

- **Impact on Survey Data:**

  The margin of error provides a range within which the true value is likely to fall, allowing surveyors and geoinformation professionals to understand the uncertainty associated with their measurements.

- **Importance in Geoinformation:**

  In geoinformation, margins of error are crucial for interpreting the reliability of maps, models, and spatial data. They help determine the accuracy and precision of the information, which is essential for decision-making and problem-solving.

- **Example:**

  If a survey estimate for the number of people in a specific area is 361, with a margin of error of 158, the true number is likely to fall between 203 and 519.

- **Factors Affecting Margin of Error:**

  Sample size, population variability, and desired confidence level all influence the margin of error.

- **Applications:**

  Margins of error are used in various surveying and geoinformation applications, including:

- **Sampling surveys:** Estimating population parameters like demographics, preferences, or resource quantities.
- **Remote sensing and satellite imagery:** Assessing the accuracy of land cover maps, elevation models, and other derived data.
- **GIS mapping and spatial analysis:** Understanding the uncertainty in spatial data and its impact on analysis results.

**3.4 SCALING**

Scaling in surveying and geoinformation refers to the ratio between a map or plan's dimensions and the corresponding real-world distances. It determines the level of detail and area coverage of a map. Essentially, it's about how much a real-world object is reduced to fit on a map.

Here's a more detailed look:

Understanding Map Scale:

- **Ratio:**

  A map scale represents the ratio between a distance on the map and the actual distance on the ground. For example, a 1:10,000 scale means 1 unit on the map represents 10,000 units in the real world.

- **Large Scale vs. Small Scale:**
- **Large Scale:** Shows smaller areas with more detail (e.g., a city map).
- **Small Scale:** Shows larger areas with less detail (e.g., a country map).
- **Importance:**

  The chosen scale directly influences the level of detail a map can portray and the area it covers. For example, a large-scale map would be suitable for detailed road planning in an area, while a small-scale map might be used for regional planning.

- **Digital Mapping:**

  In digital mapping, zooming in on a small-scale map won't increase accuracy or detail, says a document from the Geospatial Innovation Facility. The scale of the data source (e.g., satellite image or aerial photo) determines the detail, according to the document from the Geospatial Innovation Facility.

  Scaling in Surveying:

- **Purpose:**

  In surveying, scaling is used to represent real-world distances and shapes on drawings or plans. This is essential for precise planning and construction.

- **Types of Scales:**
- **Architect's Scale:** Used for architectural drawings, often with multiple scales on a single ruler, according to a SlideShare presentation.
- **Engineer's Scale:** Used for engineering drawings, also with multiple scales on a single ruler.
- **Vernier Scale:** A precision measuring instrument for linear measurements.
- **Accuracy:**

Draughtspersons can achieve high accuracy when plotting lengths using various scales, according to Testbook.

- **Methods:**

  Scaling can be done manually using measuring tools or digitally using CAD software.

  Key Considerations:

- **Matching Scale to Purpose:**

  The appropriate scale should be chosen based on the level of detail needed for a project.

- **Data Source:**

  The scale of the data source (e.g., aerial photo) influences the detail that can be captured in a map.

- **Precision:**

  For surveying, accuracy in scaling is crucial for accurate planning and construction.

### 3.5 INTRODUCTION TO GOOGLE EARTH

In surveying, Google Earth is used as a tool to visualize and analyze geographic data, especially when combined with DGPS (Differential Global Positioning System) data. This allows for better project planning, infrastructure management, and environmental conservation by providing a holistic view of geospatial information.

Here's a more detailed look at how Google Earth is used in surveying:

1. Visualization and Communication:

- **3D Views:**

  Google Earth's 3D capabilities allow surveyors to visualize the terrain, buildings, and other features in a 3D environment, making it easier to understand the spatial context of a project.

- **Communication Tool:**

  Google Earth files (KML/KMZ) can be shared with team members, sub-consultants, and clients to provide a real-time visual representation of the project.

  2. Data Analysis:

- **Measuring and Calculation:**

Google Earth can be used to measure distances, calculate areas, and analyze terrain features.

- **Spatial Queries:**

  Users can perform spatial queries on the data, allowing them to identify specific features or analyze patterns.

  3. Project Planning and Infrastructure Management:

- **Infrastructure Design:**

  Integrating DGPS data with Google Earth Pro helps in planning, designing, and managing infrastructure projects like roads, utilities, and buildings.

- **Urban Planning:**

  Urban planners can use Google Earth to assess urban sprawl, analyze transportation networks, plan green spaces, and visualize proposed developments.

  4. Surveying with DGPS Data:

- **Control Point Pinpointing:**

  By importing DGPS data into Google Earth, surveyors can pinpoint control areas and boundary lines efficiently.

- **Flight Path Planning:**

  UAV pilots can use Google Earth and KML files to set flight paths for accurate aerial imagery.

  5. Other Uses:

- **Finding Existing Survey Monuments:**

  Google Maps Street View can be used to locate existing survey monuments like intersection markers.

- **Monitoring Changes:**

  Google Earth Engine can be used to track changes in the Earth's surface, such as changes in vegetation or water levels.

- **Georeferencing:**

  Google Earth can be used to georeference imagery and other geospatial data, ensuring they are accurately placed on the globe.

In essence, Google Earth provides a powerful tool for visualizing, analyzing, and communicating survey data, making it a valuable asset for surveyors in various applications.


### 3.6 HOW TO VISUALIZE POINT ON GOOGLE EARTH BOTH ARTIFICAIL AND MAN MADE FEATURE

To visualize points representing both artificial and man-made features in Google Earth, you can create and manage placemarks, add layers, import data, and utilize drawing tools. You can also use Google Earth Engine for more advanced visualization techniques with geospatial data.

**methods:**

1. Creating and Managing Placemarks:

- **Add Placemark:** Navigate to the location in Google Earth and click "Add Placemark".
- **Name and Icon:** Enter a name for the placemark and choose a different icon.
- **Edit Properties:** Customize the placemark's appearance, description, and other properties in the "Placemark" window.

2. Adding Layers:

- **Add Layer in My Maps:**

In Google My Maps, you can add layers to organize and visually separate different types of features.

- **Layer Styles:**

  Apply styles (colors, icons, etc.) to your layers to distinguish them visually.

  3. Importing Data:

- **GPS Data:**

  Import GPS data (waypoints, tracks, routes) to visualize locations on the map.

- **KML/KMZ Files:**

  Import data in KML or KMZ format to add layers with points, lines, polygons, and other geospatial information.

  4. Drawing Tools:

  - **Draw Points, Lines, Polygons:** Use the drawing tools in Google Earth My Maps to create and draw shapes on the map, such as points, lines, and polygons.
  - **Style Drawing Tools:** Customize the appearance of your drawn features (colors, width, fill).

  5. Advanced Visualization with Google Earth Engine:

- **Feature Collections:**

  Use Google Earth Engine to visualize feature collections directly on the map, including points.

- **Drawing Tools in Engine:**

  Google Earth Engine provides tools to draw points, lines, and polygons and interact with them.

- **Image Visualization:**

  Google Earth Engine allows you to visualize images and other data, potentially representing features through color or other visual cues.

# CHAPTER FOUR

## 4.1 INTRODUCTION TO GPS RECIEVER

In both surveying and geoinformatics, GPS receivers play a crucial role, but their application differs. Surveying uses GPS receivers for highly precise location determination, often employing dual-frequency receivers and sophisticated techniques like DGPS or GNSS to achieve centimeter-level accuracy. In geoinformatics, GPS receivers are used more broadly for data collection, mapping, and spatial analysis, often integrated with GIS software for processing and analysis.

Surveying:

- **Precision Focus:**

  Surveying relies on GPS receivers for highly accurate location determination, essential for tasks like land surveying, infrastructure planning, and geospatial data collection.

- **Advanced Receivers:**

  Survey-grade GPS receivers, often dual-frequency receivers or GNSS receivers, are used to achieve centimeter-level accuracy, often incorporating techniques like DGPS or post-processing.

- **Data Collection:**

  Surveying GPS receivers collect data points, often with the aid of surveying software, to map features and delineate boundaries.

- **Baseline Measurement:**

  GPS surveying often involves establishing a baseline by using two survey-grade receivers at each end of the line, allowing for precise distance measurement.

Geoinformatics:

- **Broader Applications:**

  Geoinformatics uses GPS receivers for a wide range of applications, including data collection for GIS, mapping, and spatial analysis.

- **Integration with GIS:**

GPS data is often integrated with GIS software for analysis, creating maps, and managing spatial information.

- **Data Collection:**

GPS receivers are used to collect location data, which can be combined with other geospatial data in GIS.


## 4.2 INTRODUCTION TO THEODOLITE

Theodolite surveying is a method using a specialized instrument, the theodolite, to measure horizontal and vertical angles with high precision. This technique is crucial in various fields like civil engineering, construction, and land surveying for tasks such as establishing boundaries, positioning points, and creating maps. Theodolites are essentially electronic instruments with a telescope that can be rotated horizontally and vertically to measure angles accurately.

**Key aspects of theodolite surveying:**

- **Precision:**

  Theodolites offer high accuracy in angle measurement, ranging from 5 minutes to 0.1 seconds, making them suitable for detailed surveying tasks.

- **Components:**

  A typical theodolite consists of a telescope, leveling mechanisms, crosshairs for alignment, and scales for reading angle measurements.

- **Applications:**

  These instruments are used in various applications, including:

- **Civil engineering:** Road building, tunnel alignment, and other infrastructure projects.
- **Construction:** Establishing building layouts and ensuring accurate structures.
- **Land surveying:** Defining property lines, measuring distances, and creating maps.
- **Modern Theodolites:**

  Modern theodolites are often electronic, offering digital angle reading and data storage capabilities.



### 4.3 LEVELLING AND SETTING OUT

**Definition:**

Levelling is the process of determining the difference in elevation or height between points on the Earth's surface.

- **Purpose:**

  It's used to establish a reference point (benchmark) and measure vertical distances relative to that point.

- **Applications:**

  Widely used in civil engineering, geodesy, and cartography for projects like construction, roadwork, and drainage systems.

- **Tools:**

  Optical levels and levelling staffs are used to measure vertical distances.

- **Methods:**

  Different types of levelling include differential, fly, profile, precise, and more.

  Setting Out in Surveying:

## CHAPTER FIVE

### 2.1 SUMMARY AND CONCLUSION

**SUMMARY:** This report estimate the nature of the S.I.W.E.S program carried out in the organization (Mustapha and company) the program shows the relevance of the scheme as well as the factors limiting the actualization of the S.I.W.E.S. objectives. However the following were made from the program.

**CONCLUTION:** from the revolution so far there seems to exists a wide war waging in the reality and actualization of the objectives of the S.I.W.E.S. it is unfortunate the failed actualization of the objectives of the SIWES, this however implies that for the student to be fully equipped with skills and knowledge required for efficiency in the place of work all hands must be on deck. The Federal Government through the industrial training fund ITF and other agencies involved in the S.I.W.E.S program should address the situation.

**PROBLEM ENCOUNTERED:** below are some of the problems encountered during the program.

I. Inadequate power supply and lack of auxiliary power supply.

ii. Inadequate funds by the I.T.F

**RECOMMENDATION**

The following recommendations were based on the program and as solution to the identified problems.

1. The various bodies involved in the management of the SIWES program should work in hand with the various industries ahead of turn so as to minimize or reduce the high level of refusal of to accept student for their industrial training participation.

2. Issuing Of Logbooks/It Letter On Time: The logbook used by the student during the Industrial period and it letter should be issued to the student at the end of 1st semester exam against the end of 2nd semester examination as these will afford the student enough time to search for place that are relevant to their field of study.
3. Proper supervision of the exercise by the various bodies involved in the co-ordination of the SIWES exercise i.e. Federal Government, I.T.F. N.U.C. N.B.T.E and N.C.C.E. should come together to provide a smooth operation of S.I.W.E.S. exercise. The bodies should make efforts to ensure the student attached to organization are properly supervised and funded to ensure that what they are doing is in line with the objectives of S.I.W.E.S. exercise.
4. Employment of expert: the various institution should endeavor to employ experts in the area of student carrier development to manage the student industrial placement centers.