A TECHNICAL REPORT ON STUDENT INDUSTRIAL TRAINING WORK EXPERIENCE SCHEME [SIWES]

UNDERTAKEN AT:

THE OFFICE OF THE SURVEYOR GENERAL OF KWARA STATE iis located at: COMMISSIONER'S LODGE WAY,GRA ILORIN,KWARA STATE.

PRESENTED

By

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ND/23/SGI/FT/0039

SUBMITTED TO THE DEPARTMENT OF SURVEYING AND GEO-INFORMATICS FACULTY OF ENVIRONMENTAL STUDIES, KWARA STATE POLYTECHNIC, ILORIN KWARA STATE

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF ORDINARY

NATIONAL DIPLOMA (OND) IN SURVEYING AND GEO- INFORMATICS.

MARCH, 2025

CERTIFICATION

I, **OLAJIDE HANNAH IBUKUNOLUWA** with Matric number **ND/ 23/ SGI/ FT/ 0039** hereby certify that the information contained in this SIWES report were obtained as a result of my experiences during my 4 month SIWES programme at **THE OFFICE OF THE SURVEYOR GENERAL OF KWARA STATE i**in accordance with survey rule and regulations and departmental instructions. I therefore submit the report as a partial fulfillment of the requirements for the student work experience scheme requirements for KWARA STATE POLYTECHNICILORIN,KWARA STATE, student work experience scheme.

_____ _____

DATE

(SIWES SUPERVISOR)

_____ _____

__ DATE

(SIWES COORDINATOR)

_____ _____

___ DATE

(HEAD OF DEPARTMENT)

DEDICATION

This Siwes report is dedicated to my lovely parent

MR AND MRS OLAJIDE

ACKNOWLEDGEMENT

Praises and thanks to the Almighty GOD for his showers of blessing throughout my Industrial Training period and for a successful completion. I would like to express my deepest and sincere gratitude to my training supervisor and management of **THE OFFICE OF THE SURVEYOR GENERAL OF KWARA STATE**

Nevertheless, my profound acknowledgement will extend to my Head of Department of Surveying and Geo- informatics, KWARA STATE POLYTECHNIC ILORIN and all other departmental lecturers for the advice, support and correction made to me while in the classroom, during practical and every time I need their assistance. I pray you all continuous to leave in good health and more promotion on your field sir and ma.

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CHAPTER ONE

1.0 INTRODUCTION

THE OFFICE OF THE SURVEYOR GENERAL OF KWARA STATE is a multi-disciplinary establishment, comprising of professionals and technical staff in surveying, Geo-information, Photogrammetary, Cartography, Printing, Photography, Carpentry and electrical works. It is responsible for the formulation and / or execution of policies and projects of the State on issues relating to Surveying, Mapping, Geo-Spatial information and General Land Administration and Management. It was upgraded and restructured into an Extra- Ministerial Department consisting of four (4) Departments namely; Mapping and Boundaries, Cadastral and Special Surveys, Geo-Spatial Information Systems and Administration and Finance in October 2009. The staff strength of the office is seventy made up of: Registered Professionals 07 Survey Officers 09 Technical Officers 19 Technical Assistants 02 Foremen (Chainmen) 10 Administration and Finance Personnel.

1.1 INCEPTION OF STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME

The Students Industrial Work Experience Scheme (SIWES) is a program that was established in Nigeria to bridge the gap between theoretical knowledge acquired in the classroom and practical skills required in the workplace. SIWES was initiated in Nigeria

in 1973 by the federal government as a response to the need for practical exposure of students in higher institutions to real work environments. Its relevance in the education system cannot be over emphasized as it develops the student to become skilled and experience professionalism in the various disciplines. It enables students to appreciate the basic concept involved in their field of study. SIWES, which involves the university authorities and the industrial sector, runs for 24 weeks for students in the fourth academic

year in the universities. The scheme was organized by the federal Government and jointly coordinated by the Industrial Training Fund (ITF) and the Nigerian Universities Commission (NUC). The importance of the training scheme is justified as it is a research field, which enables students to be totally in- depth in finding the working culture, practice and tools in their various areas of specialization.

1.2 OBJECTIVES

The Students' Industrial Work Experience Scheme (SIWES) was created with the goal of fostering and supporting the development of skills in business and industry in order to create a pool of qualified native workers sufficient to meet the demands of the economy. Any industrial organization's most valuable resource depends on the technical proficiency of its workforce to operate and maintain its non- human assets and resources, which is why SIWES is required. According to the program's operational norms and guidelines, students are assigned to a structured environment (private or public), whose operations are related to their course of study. The purpose of this training time is to help students at different levels connect the theory they learn in class to real- world applications. According to the government's education policy,

CHAPTER TWO

2.0 DESCRIPTION OF THE ESTABLISHMENT OF ATTACHMENT

In recognition of the role of surveying to all facets of human endeavors, the Kwara State Governor approved the upgrading and restructuring of the State Surveys Department of the former Ministry of Lands and Housing to an extra Ministerial Department as the Office of the Surveyor General of Kwara State in October 2009 in line with what obtains at the Federal level. The Department had earlier enjoyed Executive support of the State Government with the provision of the following among others; employment of several young graduates to boost the declining manpower situation of the Department; procurement of appropriate state of the art Digital Surveying Equipment and refurbishing of analog ones; establishment of a well furnished and equipped Geo Spatial Information Systems Labortory (GIS) in the Surveys Department; reconstitution of the Land Use and Allocation Committee with the Surveyors General as a member; production of Digital Topographic and other thematic Maps of Kwara State and acquisition of satellite imagery for three towns; fencing of the Premises of Surveys Department' renovation of the Office of the Surveyor General; purchase of a utility vehicle for Survey field operations and revision of State and Local Government Maps. It is hoped that the new status of the Department would enhance its performance, efficiency and service delivery.

Facilities and Equipment

The Office of the Surveyor General of Kwara State has a well-equipped office with state-of-the-art surveying and geospatial equipment, including:

- Total stations
- GPS receivers
- GIS software (ArcGIS, QGIS)
- Surveying software (Autodesk, Carlson)
- Computers and laptops

Services Offered

The company offers a range of services, including:

- Topographic surveys

- Boundary surveys
- GIS mapping
- Geospatial consulting
- Project management

2.1 LOCATION AND BRIEF HISTORY OF ESTABLISHMENT

THE OFFICE OF THE SURVEYOR GENERAL OF KWARA STATE is located at:

COMMISSIONER'S LODGE WAY,GRA ILORIN

Brief History Of Establishment

THE OFFICE OF THE SURVEYOR GENERAL OF KWARA STATE was established in 2021 by
Surv. BABATUNDE KABIR a seasoned surveyor with eleven years of experience in the industry.

The company started as a small surveying firm providing services to local clients but has since grown to become a leading provider of surveying and geospatial services in [Region/State]. Over the years, the company has built a reputation for delivering high-quality services and has worked on numerous high-profile projects in Industry

THE OFFICE OF THE SURVEYOR GENERAL OF KWARA STATE is a public Survey firm. The company was established and legal registered under C.A.C corporate commission in the year 2021, the firm name has been in existences since seven year back. And the firm has fully involved in both government and privates survey job both in the state and outside the Kwara State.

The mandate of the ministry is primarily to formulate and implement the policies, programmes and projects of the Federal Government of Nigeria (FGN) with respect to

road transport, highway construction and rehabilitation; highways planning and design monitoring and maintenance of federal roads and bridges nationwide.

2.2 OBJECTIVES OF ESTABLISHMENT

The primary objective of establishing **THE OFFICE OF THE SURVEYOR GENERAL OF KWARA STATE** is to provide innovative and cutting-edge surveying and geospatial services to clients in various industries, including:

1. Infrastructure Development : To support the development of infrastructure projects, such as roads, bridges, and buildings, by providing accurate and reliable surveying and mapping services.
2. Land Administration: To assist in the management and administration of land resources by providing services such as land surveying, mapping, and GIS analysis.
3. Environmental Monitoring: To support environmental monitoring and management efforts by providing services such as GPS tracking, GIS analysis, and remote sensing.
4. Professional Development To provide training and development opportunities for surveying and geospatial professionals, promoting capacity building and skills development in the industry.

aims to become a leading provider of surveying and geospatial services in the region, known for its excellence, innovation, and commitment to delivering high-quality services.

Topographic Surveying

Geographic Information System

Analysis Digital Mapping and Street

Guide Mapping Drone Mapping and

Analysis Hydrographic Surveying

2.3 Departments and Units in the Firm

The following departments/section were operated and function well, they are:-

ii. Managing Director

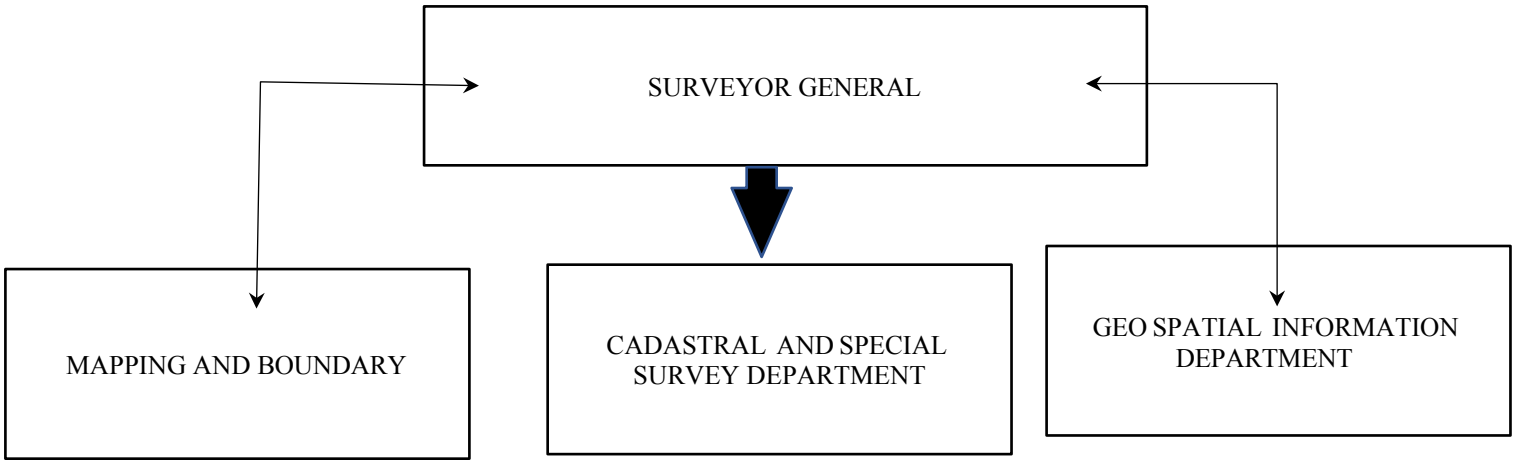
iii. GIS Section

iv. Admin. Section

v. Finance and Accounting Section

vi. SIWES/IT Student Section

ORGANOGRAM OF THE OFFICE OF THE SURVEYOR GENERAL OF KWARA STATE



CHAPTER THREE

Introduction to GPS in Surveying

What is GPS in Surveying?

The Global Positioning System (GPS) is a network of satellites orbiting the Earth that provide location information to GPS receivers on the ground. In surveying, GPS is used to determine the precise location of points on the Earth's surface.

History of GPS in Surveying

The first GPS satellite was launched in 1978, and the system became fully operational in 1995. Since then, GPS has become a widely used tool in surveying, offering high accuracy and efficiency.

Types of GPS in Surveying

1. Differential GPS (DGPS): This type of GPS uses a network of reference stations to provide corrections to GPS signals, improving accuracy to within 1-2 meters.

2. Real-Time Kinematic (RTK) GPS: This type of GPS uses a combination of GPS signals and corrections from a reference station to provide accuracy to within 1-2 centimeters.

3. Post-Processed Kinematic (PPK) GPS: This type of GPS uses a combination of GPS signals and corrections from a reference station to provide accuracy to within 1-2 centimeters after post-processing.

Uses of GPS in Surveying

1. Topographic Surveying: GPS is used to determine the location and elevation of points on the Earth's surface.

2. Geodetic Surveying: GPS is used to determine the precise location and

orientation of points on the Earth's surface.

3. Deformation Monitoring: GPS is used to monitor the movement of structures, such as buildings and bridges.

4. Machine Control: GPS is used to control the movement of machines, such as bulldozers and graders.

5. Aerial Surveying: GPS is used to determine the location and orientation of aerial photographs.

Benefits of GPS in Surveying

1. Improved Accuracy: GPS provides high accuracy and precision in determining the location of points.

2. Increased Efficiency: GPS reduces the time and effort required to conduct surveys.

3. Reduced Costs: GPS reduces the costs associated with surveying, such as labor and equipment costs.

4. Improved Safety: GPS improves safety by reducing the risk of accidents and injuries.

Limitations of GPS in Surveying

1. Signal Interference: GPS signals can be disrupted by satellite geometry, ionospheric and tropospheric delays, and multipath interference.

2. Atmospheric Conditions: GPS signals can be affected by atmospheric conditions, such as ionospheric and tropospheric delays.

3. Satellite Geometry: The position of the satellites in the sky can affect the accuracy of GPS signals.

4. Receiver Quality: The quality of the GPS receiver can affect the accuracy of the location information.

Future of GPS in Surveying

1. Increased Accuracy: Advances in GPS technology are expected to improve accuracy and precision.

2. Improved Reliability: Advances in GPS technology are expected to improve reliability and reduce signal interference.

3. Integration with Other Technologies: GPS is expected to be integrated with other technologies, such as unmanned aerial vehicles (UAVs) and real-time kinematic (RTK) systems.

4. Increased Adoption: GPS is expected to become more widely adopted in surveying, particularly in developing countries.

GPS Surveying Methods

1. Static Surveying: This method involves placing a GPS receiver at a fixed location for an extended period to determine its precise location.

2. Kinematic Surveying: This method involves moving a GPS receiver over an area to determine the location of points along a trajectory.

3. Real-Time Kinematic (RTK) Surveying: This method involves using a GPS receiver and a reference station to provide real-time corrections and determine precise locations.

GPS Surveying Equipment

1. GPS Receivers: These devices receive GPS signals and calculate precise locations.

2. Antennas: These devices amplify GPS signals and improve reception.

3. Reference Stations: These devices provide corrections to GPS signals and improve accuracy.

4. Data Collectors These devices store and manage GPS data for post-processing.

GPS Surveying Software

1. Data Processing Software: This software processes GPS data to determine precise locations and correct errors.

2. Mapping Software: This software creates maps and visualizations from GPS data.

3. Surveying Software: This software manages and analyzes GPS data for surveying applications.

Applications of GPS in Surveying

1. Land Surveying: GPS is used to determine property boundaries and ownership.

2. Engineering Surveying: GPS is used to determine the location and orientation of infrastructure, such as roads and bridges.

3. Geodetic Surveying: GPS is used to determine the precise location and orientation of points on the Earth's surface.

4. Environmental Monitoring: GPS is used to monitor environmental changes, such as deforestation and climate change.

Advantages of GPS in Surveying

1. Improved Accuracy: GPS provides high accuracy and precision in determining locations.

2. Increased Efficiency: GPS reduces the time and effort required to conduct surveys.

3. Reduced Costs: GPS reduces the costs associated with surveying, such as labor and equipment costs.

4. Improved Safety: GPS improves safety by reducing the risk of accidents and injuries.

Limitations of GPS in Surveying

1. Signal Interference: GPS signals can be disrupted by satellite geometry, ionospheric and tropospheric delays, and multipath interference.

2. Atmospheric Conditions: GPS signals can be affected by atmospheric conditions, such as ionospheric and tropospheric delays.

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4. Receiver Quality: The quality of the GPS receiver can affect the accuracy of the location information.

Future Developments in GPS Surveying

1. Increased Accuracy: Advances in GPS technology are expected to improve accuracy and precision.

2. Improved Reliability: Advances in GPS technology are expected to improve reliability and reduce signal interference.

3. Integration with Other Technologies: GPS is expected to be integrated with other technologies, such as unmanned aerial vehicles (UAVs) and real-time kinematic (RTK) systems.

4. Increased Adoption: GPS is expected to become more widely adopted in surveying, particularly in developing countries.

CHAPTER FOUR

INTRODUCTION TO AUTOCAD

What is AutoCAD?

AutoCAD is a computer-aided design (CAD) software used to create, edit, and view 2D and 3D models. In surveying, AutoCAD is used to create maps, plans, and drawings from survey data.

History of AutoCAD

AutoCAD was first released in 1982 by Autodesk, Inc. Since then, it has become one of the most widely used CAD software in various industries, including surveying.

Types of AutoCAD

1. AutoCAD: The standard version of AutoCAD used for 2D and 3D drafting and design.
2. AutoCAD Civil 3D: A specialized version of AutoCAD used for civil engineering and surveying applications.
3. AutoCAD Map 3D: A specialized version of AutoCAD used for mapping and geographic information systems (GIS) applications.

Uses of AutoCAD in Surveying

1. **Map Creation**: AutoCAD is used to create maps from survey data, including topographic maps, cadastral maps, and thematic maps.
2. **Plan Creation**: AutoCAD is used to create plans from survey data, including site plans, floor plans, and elevation plans.
3. **Drawing Creation**: AutoCAD is used to create drawings from survey data, including cross-sections, profiles, and details.
4. **Data Analysis**: AutoCAD is used to analyze survey data, including coordinate geometry, trigonometry, and spatial analysis.

Steps to Plot on AutoCAD

1. **Create a New Drawing**: Open AutoCAD and create a new drawing.
2. Set the Units: Set the units of measurement for the drawing.
3. **Create a New Layer:** Create a new layer for the survey data.
4. **Import the Survey Data**: Import the survey data into AutoCAD.

5. Create a New Block: Create a new block for the survey data.
6. Insert the Block: Insert the block into the drawing.
7. Scale and Rotate: Scale and rotate the block as necessary.
8. Add Text and Dimensions: Add text and dimensions to the drawing as necessary.
9. Plot the Drawing: Plot the drawing to a printer or plotter.

AutoCAD Tools and Commands

1. **Line Command**: Used to create lines in the drawing.
2. **Circle Command**: Used to create circles in the drawing.
3. **Arc Command**: Used to create arcs in the drawing.
4. **Polyline Command**: Used to create polylines in the drawing.
5. **Zoom Command**: Used to zoom in and out of the drawing.
6. **Pan Command**: Used to pan the drawing.
7. **Snap Command**: Used to snap to objects in the drawing.

AutoCAD Shortcuts

1. Ctrl+S: Save the drawing.
2. Ctrl+O: Open a new drawing.
3. Ctrl+N: Create a new drawing.
4. Ctrl+P: Plot the drawing.
5. Ctrl+Z: Undo an action.
6. Ctrl+Y: Redo an action.

Advantages of AutoCAD in Surveying

1. Improved Accuracy: AutoCAD improves the accuracy of survey drawings and maps.
2. Increased Efficiency: AutoCAD increases the efficiency of survey drafting and design.
3. Reduced Costs: AutoCAD reduces the costs associated with survey drafting and design.
4. Improved Collaboration: AutoCAD improves collaboration among surveyors, engineers, and architects.

Limitations of AutoCAD in Surveying

1. Steep Learning Curve: AutoCAD has a steep learning curve, requiring significant training and practice.
2. Software Costs: AutoCAD software can be expensive, especially for small surveying firms.
3. Hardware Requirements: AutoCAD requires powerful hardware, including high-performance computers and graphics cards.
4. File Compatibility: AutoCAD files may not be compatible with other CAD software.

AutoCAD Plotting Commands

1. PLOT: Plots the current drawing.
2. PLOTSTYLES: Manages plot styles.
3. PLOTTERMANAGER: Manages plotters and printers.
4. PLOTSCALE: Sets the plot scale.
5. PLOTPAPER: Sets the paper size.

AutoCAD Plotting Shortcuts

1. Ctrl+P: Plots the current drawing.
2. Ctrl+Shift+P: Opens the Plot dialog box.
3. Ctrl+Shift+S: Saves the plot as a PDF.

CHAPTER FIVE

5.0 Summary of attachment activities

5.1 Problem Encounter during the program

The Student Industrial Work Experience Scheme (SIWES) is undoubtedly a crucial program for bridging the gap between classroom learning and practical experience. However, despite its many benefits, SIWES is not without its challenges. These challenges can significantly impact the overall effectiveness of the program and the experiences of the students involved.

Placement Issues

One of the most significant challenges of SIWES is securing relevant placements for all

students. This issue is particularly pronounced in regions with limited industrial activities or specific industries.
Students often struggle to find organizations that are willing to take them on for their industrial training. This can be a source of immense frustration and anxiety, especially for students who are eager to gain experience in their specific field of study.

Financial Constraints

Financial constraints pose another significant challenge for many students. The cost of transportation, accommodation, and other expenses during the industrial attachment can be burdensome. While some institutions or companies provide stipends, these are often insufficient to cover all expenses, leaving students to bear the additional costs.

5.2. Suggestions for the improvement of the scheme

Based on my experience during the SIWES program, I propose the following suggestions to improve the scheme:

Better Supervision and Mentoring
- Assign experienced supervisors/mentors to guide students throughout the program.
- Regular meetings and feedback sessions to ensure students are meeting program objectives.

Enhanced Orientation Program
- Conduct a comprehensive orientation program for students before the commencement of the SIWES program.

5.3 Recommendation

There is no doubt that some students during their Industrial Training do not have the opportunity of being exposed or intentional do not attend SIWES PROGRAMED.Those external supervisors should be sent to the various industrial training attachment areas and centers to find out if the Industrial Training is suitable and functional.