



## Regional Centre for Mapping of Resources for Development

Approved by: .....



# RCMRD TRAINING INFORMATION BOOKLET

ISSUE NO. 1

Mapping for Sustainable Development  
[www.rcmr.org](http://www.rcmr.org)

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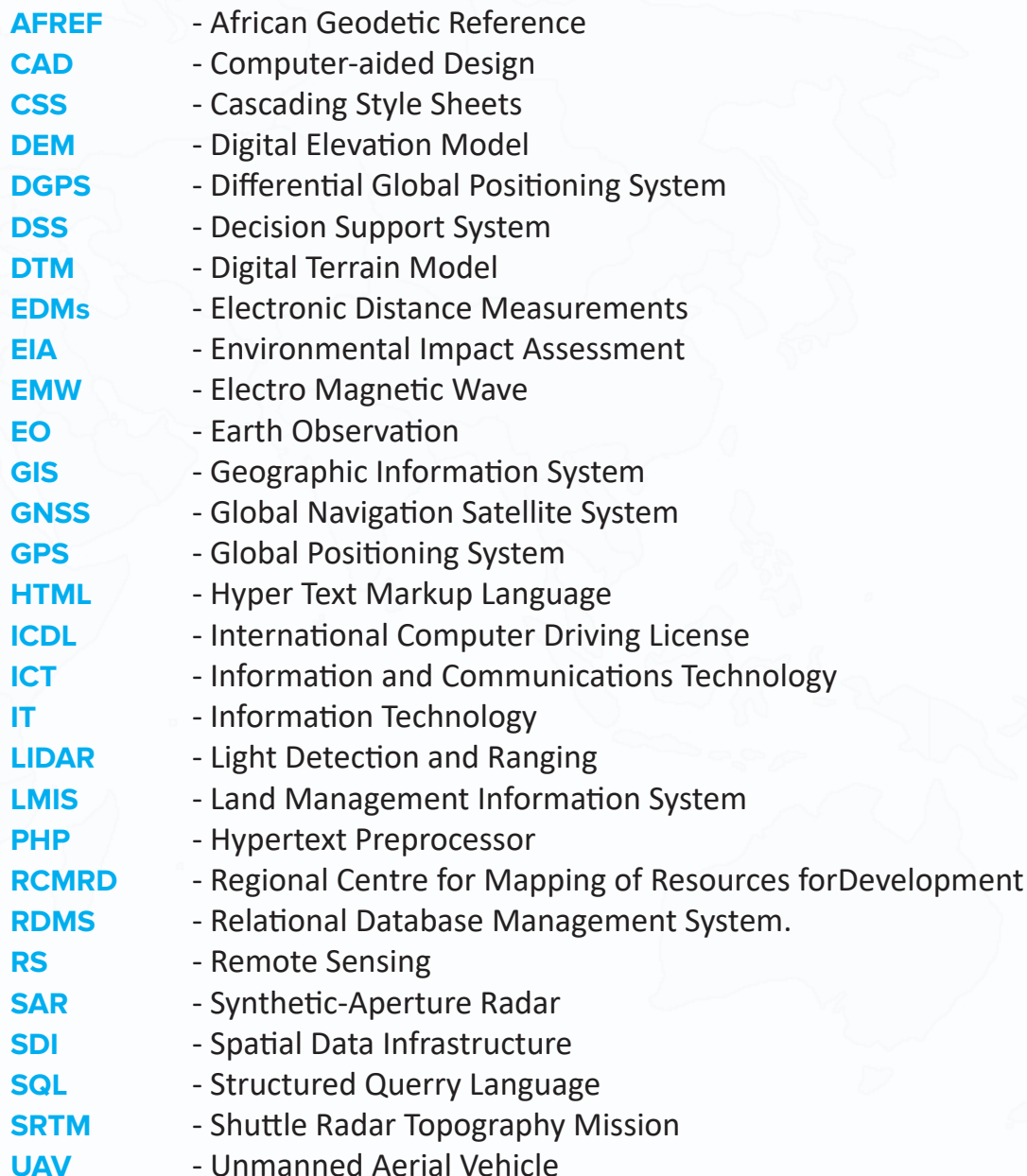


@2019





# ACRONYMS



<b>AFREF</b>	- African Geodetic Reference
<b>CAD</b>	- Computer-aided Design
<b>CSS</b>	- Cascading Style Sheets
<b>DEM</b>	- Digital Elevation Model
<b>DGPS</b>	- Differential Global Positioning System
<b>DSS</b>	- Decision Support System
<b>DTM</b>	- Digital Terrain Model
<b>EDMs</b>	- Electronic Distance Measurements
<b>EIA</b>	- Environmental Impact Assessment
<b>EMW</b>	- Electro Magnetic Wave
<b>EO</b>	- Earth Observation
<b>GIS</b>	- Geographic Information System
<b>GNSS</b>	- Global Navigation Satellite System
<b>GPS</b>	- Global Positioning System
<b>HTML</b>	- Hyper Text Markup Language
<b>ICDL</b>	- International Computer Driving License
<b>ICT</b>	- Information and Communications Technology
<b>IT</b>	- Information Technology
<b>LIDAR</b>	- Light Detection and Ranging
<b>LMIS</b>	- Land Management Information System
<b>PHP</b>	- Hypertext Preprocessor
<b>RCMRD</b>	- Regional Centre for Mapping of Resources for Development
<b>RDMS</b>	- Relational Database Management System.
<b>RS</b>	- Remote Sensing
<b>SAR</b>	- Synthetic-Aperture Radar
<b>SDI</b>	- Spatial Data Infrastructure
<b>SQL</b>	- Structured Query Language
<b>SRTM</b>	- Shuttle Radar Topography Mission
<b>UAV</b>	- Unmanned Aerial Vehicle

## ABOUT US

The Regional Centre for Mapping of Resources for Development (RCMRD) was established in Nairobi – Kenya in 1975 under the auspices of the United Nations Economic Commission for Africa (UNECA) and the then Organization of African Unity (OAU), today African Union (AU). RCMRD is an inter-governmental organization and currently has 20 Contracting member States in the Eastern and Southern Africa Regions; Botswana, Burundi, Comoros, Eswatini, Ethiopia, Kenya, Lesotho, Malawi, Mauritius, Namibia, Rwanda, Seychelles, Somali, South Africa, South Sudan, Sudan, Tanzania, Uganda, Zambia and Zimbabwe.

## OUR MISSION

To strengthen the Member States and our Stakeholders' Capacity through Generation, Application and Dissemination of Geo-Information and Allied Technologies for Sustainable Development.

## OUR VISION

To be a Premier Centre of Excellence in the Provision of Geo-Information and allied technologies for Sustainable Development in the member States and other stakeholders.



- Contracting Member States
- Non-Contracting Member States

## OUR APPROACH

RCMRD programmes are oriented towards problem solving applications in natural resource development and environmental management.



## RCMRD RESOURCES

RCMRD has invested heavily in human resources and IT equipment in order to achieve its mission and objectives.

RCMRD uses high-end technology facilities (physical infrastructure, servers, hardware, software, instruments and equipment). More specifically, RCMRD has three modern Remote Sensing/GIS training labs each with over 40 high-end modern computers, modern GIS and Remote Sensing project labs.

For printing, RCMRD has A0 scanners and plotters, high precision GPS, handheld GPS and Total Stations. RCMRD possesses multi-licenses for various key Remote Sensing, GIS, GPS and Digital Photogrammetry software, and a huge database of satellite imagery, hard and soft copy topographic maps, and other digital thematic vector layers.

In terms of human resources, RCMRD has 140 staff from the technical and common services departments, who discharge duties at various capacities.



ENGINEERING LAB

## RCMRD SERVICES

RCMRD offers competitive project services in the fields of its expertise that include;

- Database Development for Decision Support System
- Web-Mapping Services
- Use of GIS in the Management of Urban areas and Utilities
- Data automation through digitizing, scanning and conversion
- Needs Assessment in Geo-information Technologies
- GIS application in the management of resources and businesses
- Natural Resources Assessment and management of EIA
- Design and development of GIS in small, medium and large enterprises
- Mapping for urban planning and development Cadastral surveys using modern techniques such as GPS
- Mapping (vegetation, soil, minerals, and land use/cover)
- Natural hazards mapping and forecasting
- Engineering surveys (roads, pipelines, dams etc.)
- Structure deformation surveys including dams and building monitoring
- Digital photogrammetric mapping
- Information Technology solutions
- Library information Services
- Land Management Information Systems
- Mobile GIS
- Calibration & Repair of surveying and mapping equipment
- All these complemented by Tailor-made courses in IT, RS, GPS/GNSS and GIS





# SURVEY AND LAND INFORMATION MANAGEMENT SYSTEM

## **COURSES OFFERED**

- Global Positioning System (GPS) I
- Global Positioning system (GPS) II
- GNSS Data Processing using CORs for Precise Survey
- Land Management Information System (LMIS)
- Service, Repair & Adjustment of Opti-Mechanical Surveying Instruments

**MODE OF STUDY** :Full time

## **CONTACT PERSON**

Principal Geomatic Officer

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# GLOBAL POSITIONING SYSTEM (GPS) I

## DURATION - 1 Week

### PREAMBLE

Positioning and navigation are crucial to everyday activities of people. Yet the process and methods of positioning have always been difficult. The Global Positioning System (GPS) has simplified the determination of positions and made the technology accessible to virtually everyone. GPS is a satellite based world wide radio-navigation system that provides reliable positioning and navigation services to users anywhere in the world.

Many organizations and individuals are embracing the GPS technology to perform their work more efficiently , safely, economically, and accurately using the free and open GPS signals. Although the GPS is a complex technology, understanding and using it can be quite easy. This course is designed to give participants a good basic understanding of the principles of GPS positioning methods without too much technical detail.

### TARGET GROUP

All professionals and researchers including Valuation Surveyors, Earth Scientists, GIS Consultants , Enumerators, Statisticians, Economists, Biologists, Medics, Demographers, Cartographers, Foresters, Adjudication Surveyors, Planners among others.

### COURSE OBJECTIVES

Upon completion of this course, the participants should be able to:

- Appreciate conventional positioning techniques and equipment.
- Describe the concepts and applications of GPS technology.
- Understand coordinate systems and datum.
- Collect GPS data using handheld GPS receivers.
- Navigate to specific locations using handheld GPS receivers.
- Calculate direction and distance between points.
- Transfer GPS data into resource mapping and GIS digital maps.

### COURSE CONTENT

- Global Navigation Satellite Systems.
- DGPS and Augmentation system.
- Coordinate systems and datums.
- Collection of positions and related attribute data.
- Navigation with GPS.
- Calculation of directions and distances.
- Data entry, processing & transfer.

### ENTRY REQUIREMENTS

Relevant knowledge



# GLOBAL POSITIONING SYSTEM (GPS) II

**DURATION - 1 Week**

## **PREAMBLE**

Precise positioning is important in surveying, mapping, engineering, natural assessment and environmental monitoring. Although the process and methods of positioning have been difficult and time consuming in the past, it has been simplified by the Global Positioning System (GPS) technology. GPS is a satellite based worldwide radio-navigation system that provides reliable positioning and navigation services to users anywhere in the world. Many organizations are embracing the GPS technology to perform their work more efficiently, safely, economically, and accurately using the free and open GPS signals.

## **TARGET GROUP**

People with knowledge in Land Administration

## **COURSE OBJECTIVES**

Upon completion of this course, the participants should be able to:

- Appreciate conventional positioning techniques and equipments
- Describe concepts and applications of GPS technology

- Describe coordinate systems, datum and datum transformations
- Carry out and process differential GPS survey project

## **COURSE CONTENT**

- Conventional positioning techniques and equipment Global Navigation Satellite System (GNSS)
- GPS System description
- GPS signal characteristics and measurements
- Positioning concept & techniques
- GPS error and Applications
- IGS data & products
- References systems, datum and Co-ordinate systems
- Coordinate transformations
- A practical differential GPS Surveying using geodetic GPS receivers
- GPS data post processing for precise coordinates and baseline solutions

## **ENTRY REQUIREMENTS**

Knowledge and experience in GPS 1

# GNSS DATA PROCESSING USING CORS FOR PRECISE SURVEY

**DURATION - 1 Week**

## PREAMBLE

GNSS/GPS data users have greatly increased in the last few years. However, in Africa there is lack of GNSS base stations that could enhance the application and use of GNSS data. Furthermore in Africa, there is no uniform geodetic reference system making maps not compatible and sharing of map information difficult. To overcome these difficulties the AFREF project was initiated by the United Nations for Economic Commission for Africa (UNECA) in 2005. When fully implemented, AFREF will consist of a network of continuous, permanent GNSS/GPS stations such that a user anywhere in Africa would have free access to the GNSS generated data.

## TARGET GROUP

The qualifying participants shall be Land Surveyors, Geodesist, Engineers, Researchers, Cartographers and Earth Scientist e.t.c

## COURSE OBJECTIVES

The purpose of the course is to provide technical skills in base stations installation, data handling and dissemination, and precise analysis using advanced GNSS processing software.

## COURSE CONTENT

- Introduction to global navigation satellite system (GNSS).
- Reference systems, datum and coordinate systems IGS data and products.
- AFREF concepts and progress.
- Establishment of Continuously Operating Reference GNSS Stations.
- Theory of GPS data processing.
- Training with advanced software processing.

## ENTRY REQUIREMENTS

Relevant knowledge in use and application of GPS.





# LAND INFORMATION MANAGEMENT SYSTEM (LIMS)

**DURATION - 1 Week**

## PREAMBLE

Close to 80% of any development activity is land related. Information about the location, condition and type of land is crucial to interested people. Information over land is needed for proper planning, sound policy formulation and for timely and equitable services delivery to citizens. However, much of the information is lacking and where available it is in hard copies making processing and analysis difficult. This information should therefore be structured and stored in digital databases and digital maps which are linked together for easier storage, retrieval manipulation and analysis. It is for this reason that RCMRD has started a training course in Land Information management System to develop capacity in Land Information Management System for its member countries and Africa at large.

## TARGET GROUP

Professionals, Surveyors, Engineers, Planners, Land valuers, Land administrators, Geographers, Agriculturists among others interested in the use, development, and management of Land Information Management System (LIMS).

## COURSE OBJECTIVES

- To enhance the capability of participants in the development and use of LIMS concept and technology,
- To provide the working knowledge required in the acquisition, preparation and management of LIMS database,
- To develop a core of trained LIMS personnel who can provide support for LIMS projects.

## COURSE CONTENT

- Basic concepts of LIMS.
- Fundamental elements of LIMS.
- Types of cadastral records and land tenure.
- LIMS legal issues and stake holders.
- Building a LIMS using Open Source Tools (QGIS & PostgreSQL/Post GIS Database, STDM).
- Spatial and non spatial data entry.
- LIMS database management (Querying, Updating and Deleting).
- Land transaction procedures.

## ENTRY REQUIREMENTS

Relevant knowledge in land administration

# SERVICE, REPAIR & ADJUSTMENT OF OPTI-MECHANICAL SURVEYING INSTRUMENTS

## DURATION - 1 Week

### PREAMBLE

This course is designed to provide participants with skills in the care, service and maintenance of surveying instruments. Participants will also be introduced to the procedures in carrying out adjustments of instruments.

### TARGET GROUP

Professionals, Technicians and College students in any of the fields of surveying, mapping, mining, civil or agricultural, engineering with good knowledge of technical drawing.

### COURSE OBJECTIVES

- Handle and maintain of surveying instruments
- Beware of stringent conditions required of surveying instruments;
- Testing and minor adjustments of levels, theodolite, accessories and EDM alignment

### COURSE CONTENT

Introduction of different types of surveying and instruments and accessories such as;

- Principles of levels
- Principles of theodolites
- Principles of EDMs
- Alignment of EDMs with theodolite
- Dismantling of theodolite (practical)
- Dismantling of levels(practical)
- Field test – level
- Field test – theodolite
- Recording procedure and storing
- Store conditions/ requirements (discussion)
- Procedures/ways of handling survey instruments

### ENTRY REQUIREMENTS

Knowledge of technical drawing





# REMOTE SENSING, GIS & DIGITAL IMAGE PROCESSING

## COURSES OFFERED

- Introduction to Earth Observation (RS) - p14
- Introduction to Geographic Information Systems (GIS) - p15
- Introduction to Digital Cartography & GIS Mapping - p16
- RADAR & LIDAR Remote Sensing - p17
- Image Processing & Transformation - p18
- Digital Photogrammetry - p19
- GIS, Spatial Database Development & Web Mapping - p20
- GIS Modeling & Multi-Variant Analysis - p21
- Mobile GIS - p22
- Specialized Remote Sensing & GIS - p23

**MODE OF STUDY** :Full time

## CONTACT PERSON

Director Technical Services  
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# INTRODUCTION TO EARTH OBSERVATION

**DURATION - 3 weeks**

## PREAMBLE

Earth Observation (Remote Sensing) has become one of the most efficient tools and techniques that are used in mapping, management and monitoring of natural resources and environmental studies. The basic course on principles of Earth Observation (EO) deals with basic image processing and interpretations that will enable the candidates to acquire the skills in image rectification and enhancement. It also provides the necessary background for advanced courses in image processing and applications.

## TARGET GROUP

Professionals working in the areas of resources mapping, management and monitoring, disaster management, forecasting and early warning; Technicians dealing with map production, photo interpretation and University students working on remote sensing applications among others.

## COURSE OBJECTIVES

- To provide the necessary knowledge and skills to professionals who are introduced to earth observation science for first time.
- To develop skill in satellite data selection for different applications based on scale of mapping requirements.
- To develop skill in the use of different digital image processing software; and to introduce to the professionals the principle of digital image processing and interpretation.

## COURSE CONTENT

- Definition of Earth observation
- EMW & Interactions between EMW and matter
- Remote Sensing Systems
- Platforms and sensors
- Spectral response curve
- Digital image structure
- Data specifications
- Preliminary image processing using Georeferencing
- Enhancement & classifications
- Principles of image interpretation
- Land use/land cover mapping/ classifications
- Image map production.

## ENTRY REQUIREMENTS

Knowledge in relevant field



# INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEM (GIS)

**DURATION - 3 weeks**

## PREAMBLE

GIS has become a very important tool in decision making, planning and management of multi-layered spatial database. The techniques of data processing in GIS are multidisciplinary and hence its application is of a wide spectrum

## TARGET GROUP

Professionals, Technicians, University studentss, Project managers, Decision makers, Planners among others.

## COURSE OBJECTIVES

- To provide clear information on the GIS concepts, technical issues, and applications
- To teach about where GIS fits in the world of information systems and maps, how it is unique and why it is important
- To let the participants know the issues involved in choosing a GIS package, obtaining and evaluating data, and implementing and managing a GIS works
- To acquire practical experience in using GIS software.

## COURSE CONTENT

- Definitions of GIS; GIS data types and format; Data input techniques to a GIS; Display and query; Thematic and event map creation; Editing spatial elements and

attribute tables of a digital map; Structured spatial database development

- Preliminary GIS operations; intersection, union, merging and splitting and buffering; ARCGIS, etc; Output preparation, cartographic designing and map making.
- Introduction GIS: Definition and data types
- Table Queries: Data base selection by location . Attribute and by graphics
- Mapping concepts and layer symbology
- Data editing and digitization
- Basics of Geo processing: buffer, clipping, and merging
- Working with Google earth
- Basic analysis: Data interpolation, creating contours
- Geo referencing scanned maps, and Vector layers

## ENTRY REQUIREMENTS

Individual with basic computer skills and basic knowledge of map reading and Geography.

# INTRODUCTION TO DIGITAL CARTOGRAPHY AND GIS MAPPING

**DURATION - 2 weeks**

## PREAMBLE

Cartography is the knowledge associated with the art, science, and technology of maps and seeks to portray spatial relationships among selected phenomena. Maps are increasingly used for analysis and synthesis.

Although cartography has undergone a radical transformation through the introduction of digital technology, fundamental principles remain the same and unchanged. Computer or digital cartography requires a broad understanding of Cartographic language and map-making literacy.

This course provides an introduction and its practices to the digital cartography principles, concepts, software and hardware necessary to produce good maps, especially in the context Geographic Information Systems (GIS).

## TARGET GROUP

Cartographic professionals, Cartographic Technicians, GIS mapping specialists, GIS mapping Project managers and Digital map database specialists among others.

## COURSE OBJECTIVES

- To understand the various purposes, roles and representations of cartography presentation.
- To gain and practice the use of cartographic language in the creative design of digital maps.
- To gain skills in digital cartographic design, representation and production in a GIS environment.
- To gain an understanding of digital cartographic software and its uses.

## COURSE CONTENT

- Introduction to digital cartography.
- Fundamentals and applications of digital cartography.
- Practical digital cartography and gis mapping functionality.

## ENTRY REQUIREMENTS

Applicants with basic cartographic design knowledge and mapping experience.

# SAR/LIDAR REMOTE SENSING

**DURATION - 2 weeks**

## PREAMBLE

This course introduces the fundamentals of radar remote sensing from the points of view of basic image capture theory and applications. It will begin with a discussion of hardware related aspects of radar including antenna analysis and design, geometry of radar configuration and energy reaching the sensor. The trainees will acquire skills in identification of features and enhancement of radar data.

This course will also introduce the basic techniques used in remote sensing and it covers the underlying principles of the measurement techniques and the interaction of LIDAR signals with natural surfaces and the atmosphere.

## TARGET GROUP

Professionals, Technicians, University students and Project managers.

## COURSE OBJECTIVES

- To provide basic skills in RADAR System operation and data collection techniques
- To create knowledge in RADAR and LIDAR images processing and interpretation
- To develop skills in different basic applications of RADAR and LIDAR Remote Sensing.

## COURSE CONTENT

- Definitions of RADAR and LIDAR
- Different RADAR systems
- Sensor configuration and parameters
- Image reconstitution
- Radio waves
- Backscattering and physical properties of objects on the ground.
- Radar and Lidar image processing
- Correction and enhancement
- Radar image interpretation
- Advance radar image processing
- Filtering
- Interferometry
- DEM generation
- Pseudo color combination
- Integrating RADAR images with optical images, application of radar image in soil moisture mapping
- Geologic mapping
- Geological hazards monitoring
- Vegetation mapping.

## ENTRY REQUIREMENTS

Knowledge in Remote Sensing.



# IMAGE PROCESSING & TRANSFORMATIONS

**DURATION - 2 weeks**

## PREAMBLE

This course is a continuation of the basic course on principles of Earth Observation. It deals with advanced image processing and interpretation techniques that enable extraction of quantitative information from images.

After successful completion of the course, the trainees will be able to define and set processing steps and algorithms required for specific target application.

## TARGET GROUP

Professionals, Technicians and Researchers among others.

## COURSE OBJECTIVES

- To develop skill in advanced image processing;
- To develop Knowledge in enhancing images to bring out subtle features

- To develop capacity in indirect interpretation and quantitative image analysis.

## COURSE CONTENT

- Advance image processing techniques
- Calculation of indices
- Principal component analysis
- Directional and non-directional filtering
- Color transformations
- Supervised classification,
- Classification accuracy assessment
- Source and multi-temporal data analysis.

## ENTRY REQUIREMENTS

Knowledge of principles of remote sensing, strong background in physics and image interpretation.



# DIGITAL PHOTOGRAMMETRY

**DURATION - 2 weeks**

## PREAMBLE

Photogrammetry remains the most potent data collection tool for precise large scale mapping projects. Ideal for exploration, exploitation and management of natural resources; Inventorying and measuring physical changes in the environment; road design and layout amongst others. A multitude of professionals working with earth related projects will find photogrammetry a handy data collection tool. Automation of its processes herein referred to as digital photogrammetry means reduced work load, but more and better data products which because of their digital nature are easier to analyse and integrate with other data products.

## TARGET GROUP

Photogrammetrists, Geoinformation professionals and scientists with an eye in elevation extraction and other quantitative measurements of the earth's physical features.

## COURSE OBJECTIVES

- To develop skills in handling different image formats and ingesting them in a Digital Photogrammetric environment
- To develop skills in performing aerial and space borne triangulation and extract elevation information such as DTM/DEMs and contours.

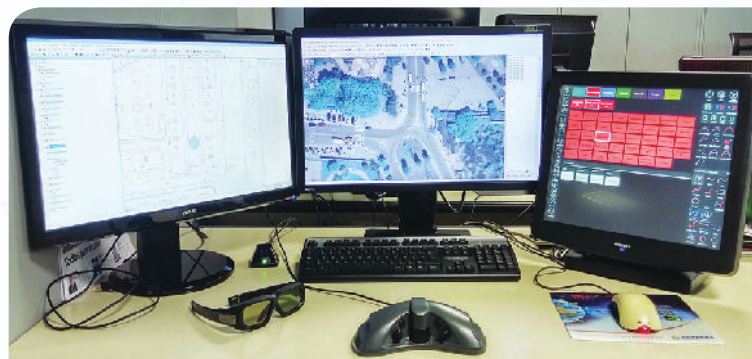
- To develop skills in image orthorectification and mosaicking techniques, and to integrate the resulting products to a GIS data base.

## COURSE CONTENT

- Introduction to Digital Photogrammetry
- Hard ware and software requirements.
- Images characteristics (analogue versus digital).
- Data preparation and processing
- Creating projects.
- Orientations
- Aerial triangulation
- DTM generation and Ortho-rectification and mosaicking
- Features extraction.

## ENTRY REQUIREMENTS

Knowledge in relevant field



# SPATIAL DATABASE AND WEB MAPPING

**DURATION - 2 weeks**

## PREAMBLE

GIS has a unique ability to assimilate and manage data from widely divergent sources, to analyze trends over time and to spatially evaluate impacts caused by different factors.

In this course, advanced processing and analysis of data from different sources and their integration will be treated. Issues related to data sharing, database structure, web-mapping, mobile GIS and Serial digital interface (SDI) will be covered.

## TARGET GROUP

Professionals working in the field of spatial database management: GIS technicians dealing with advanced data integration and analysis and researchers in the fields of resources management, environmental modeling among others.

## COURSE OBJECTIVES

- To develop skills in integrated analysis of multi-source data
- To develop knowledge in handling large spatial database and conducting multi-variant analysis of factors
- To let the candidates acquire skills for data sharing and Standardizationn.

## COURSE CONTENT

- Relational database
- Linking, Standardization
- Multi-source data, Multi-variant
- Rating of factors, trend analysis, impact assessments.

## ENTRY REQUIREMENTS

Basic knowledge in relevant field





# SPATIAL ANALYSIS

## DURATION - 2 weeks

### PREAMBLE

This course will deal with advanced GIS operations and spatial modeling; the operation knowledge of GIS, Mathematics and Statistics. It will include integrated analysis using geo-statistics, network analysis, proximity analysis and multi-criteria evaluation. At the end of the training course, the candidate will acquire knowledge that enables one to undertake advanced GIS analysis and build models for Decision Support System (DSS) and situation analysis

### TARGET GROUP

Professionals, Technicians and Researchers among others

### COURSE OBJECTIVES

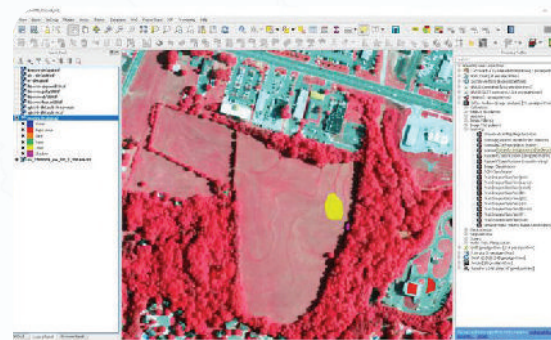
- To develop skills in spatial modelling
- To develop knowledge in multi-variant analysis of factors
- To develop skills in situation analysis

### COURSE CONTENT

- Proximity analysis
- Geostatistical analysis
- Network analysis
- Modeling and model building concepts in GIS
- Pair-wise analysis
- Multi-criteria evaluation & DSS
- Situation analysis using multi-temporal data

### ENTRY REQUIREMENTS

Basic knowledge in GIS



# MOBILE GIS

**DURATION - 1 week**

## PREAMBLE

Mobile GIS is the combination of Geographic Information System (GIS) software, Global Positioning Systems (GPS), and mobile computing devices.

A mobile GIS allows you to visualize information in a digital map, collect information where you observe it, and interact directly with the world around you, while improving productivity and data accuracy.

It improves processes which include asset inventory, asset maintenance, incident reporting, and emergency response among others

## TARGET GROUP

Field geo-data practitioners.

## COURSE OBJECTIVES

To develop skills in project implementation and application of mobile GIS

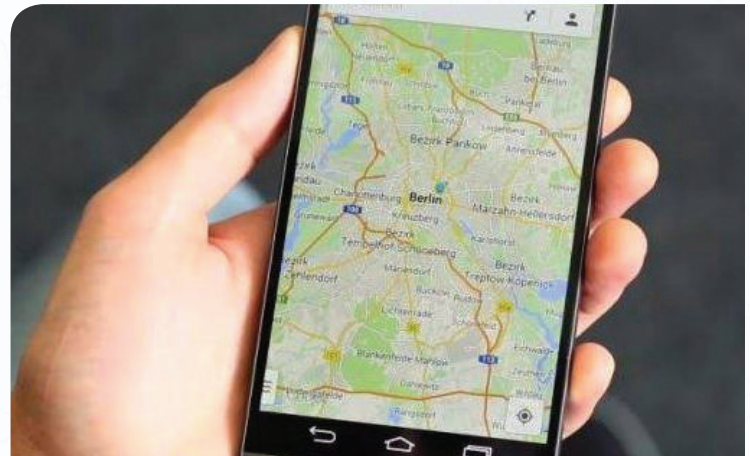
## COURSE CONTENT

- GPS fundamentals
- GIS fundamentals
- Steps of a successful project

- Using Windows CE and Windows Mobile features
- Create simple data input forms
- Designing a GPS-enabled geo-database
- Connect GPS and display position
- Navigate to known features
- Capture point, line and polygon data with and without GPS input
- Create photo layers
- Data editing
- Verify and maintain existing data

## ENTRY REQUIREMENTS

Basic knowledge of GIS and GPS use



# TAILOR MADE TRAINING IN GEO-INFORMATION

## DURATION - 2 weeks

### PREAMBLE

The following applied courses and additional tailor-made courses will also be offered by the Department based on discussions and joint agreement with the clients on the syllabus and the duration. The courses will be customized based on the needs of the clients and hence will be offered based on demand. Most of the courses are generally comprehensive and they may take between three to four weeks.

### RS & GIS in Land use/land cover mapping and change detections

Encompasses comprehensive image processing, classification, accuracy assessment, spatial database development, cartographic designing and map production. The course is designed for Agricultural scientists, Foresters, Range Land managers, wetland and water management groups and Urban planners.

### RS & GIS in Geological and hydro-geological prospecting and mapping

This applied course mainly deals with passive and active satellite remote sensing data processing tailored to lithological mapping, mineralization zones identification, structural mapping and analysis. It also handles integration of geophysical, geochemical, hydro-geo- logical and isotope analysis data and DEM. The course is mainly addressed to Geologists, Geo-physists, Hydrologists and Mining engineers.

### RS & GIS in Forest and wetland mapping and information management

The course deals with forest information development from multi-temporal satellite data, inventory of forests, change detection, and vegetation mapping. It also deals with information development on forest economic, social and cultural values.

**RS & GIS in Urban Mapping and efficient planning High resolution satellite data such as** WorldView1, QuickBird, GeoEye1, Ikonos and Kompsat rectification and processing, WorldView1, QuickBird, GeoEye1, Ikonos and Kompsat rectification, processing, and interpretation will be taught as base for urban data sources. The main candidates are Urban planners, Database managers, Decision makers and Urban developers.

### RS & GIS in Population Census and Election Spatial database preparation

This is a specialized course dealing with preparation of population census maps and image maps, accessibility maps and production information helping electoral processes. It will also cover integration census data with spatial maps, polling station with voters list and identification, and other relevant information. It presents basic cartographic principles, quality assessment and map production.



The course is designed for Urban Planners, Electoral bodies, Environmentalists among others

### **RS & GIS in Crop acreage estimation and yield forecasting**

This course deals with different techniques of remote sensing and statistics that are being used to estimate crop yield. It focuses on cereal crops and major tree crops that could be mapped from medium to high resolution satellite images. Processing, enhancement and interpretation of satellite data acquired during the full growing period of crops will be made. Crop acreage calculation and yield estimation based on agricultural inputs will be taught.

### **RS & GIS in water quality mapping and lake level monitoring**

This course deals with techniques of measuring water level using radar altimetry, and analysis of water quality using hyper-spectral bands. Techniques of identification of yellow matter, mapping of water hyacinth, siltation and sedimentation problems, analysis of environmental and climatic factors on water quality and level will be taught

### **RS & GIS in early warning of natural disasters and epidemic disease outbreaks**

The early warning and decision support systems course will cover the GIS and RS data processing and modeling techniques for prediction of natural disasters and hazards.

It will include rapid mapping techniques of affected areas and development of geo-database for humanitarian interventions and assessment of damage & planning for rehabilitation and reconstruction.

### **RS & GIS in soil erosion and land degradation mapping**

Soil erosion modeling, impact of erosion on productivity, siltation and on water quality, land degradation assessment and quantification and rehabilitation of degraded area are the main topics to be addressed in this course.

### **Environmental status reporting and impact**

Assessment relating to use of Remote sensing in environmental status assessment, identification ,indicators and multi-temporal analysis on indicators characteristics, impact of environmental change on soil, water, vegetation and population will be made and developed. Also monitoring of changes and tracing the direction of change.

### **Software (ERDAS, ARCGIS, IDRIS ENVI. etc)**

This is a software training for technicians and interested individuals on installation , using main geo-information software and their extensions. The training will be done on real data and professional software both PC and server-based.

# REGIONAL CENTRE TRAINING INSTITUTE (RCTI)

## COURSES OFFERED

### 1. CERTIFICATE & DIPLOMA - [Day and Evening]

- Land Surveying
- Photogrammetry & Remote Sensing
- Cartography & GIS
- Information Technology (IT)

### 2. GEO-IT COURSES - [Part time]

### 3. ICDL [ INTERNATIONAL COMPUTER DRIVING LICENSE] - [Part time]

### 4. ICT SHORT COURSES - [Part time]

CONTACT PERSON

RCTI Coordinator

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## Regional Centre Training Institute (RCTI)

RCTI is a training institute under RCMRD that conducts professional short courses and technical academic programmes in Geo Spatial Technologies and ICT.

Our courses are examined by Kenya National Examination Council, and

are designed to emphasize on hands on practical sessions, field work and projects. While training, we use the current technologies and encourage innovation to prepare our students for today's challenges and job market.



# CERTIFICATE/DIPLOMA IN LAND SURVEYING

Mode of study - Day and Evening

## PREAMBLE

The training is conducted using current technologies ie GIS, AutoCAD, GPS and Remote Sensing. Our Diploma/certificate course is intended to provide the learner with a wide range of skills required in various sectors such as oil and gas, mining, infrastructure, building & construction, military and security Intelligence, land surveying and civil engineering.

## COURSE OBJECTIVES

- Train KNEC Curriculum using current technologies (ie GIS, GPS and Remote Sensing) and equipment while emphasizing on hands on practicals and field work.
- Use primary tools for surveying and making maps such as field equipment, mapping and GIS (geographic information systems) software.
- Understand and apply fundamental

principles and techniques of levelling, traversing and co-ordinate calculations, and errors distribution among others.

## MINIMUM QUALIFICATIONS

Diploma: KCSE grade C- and D+ in any two subjects (Maths, Physics/Physical Science, Geography or Art & Design), English & Chemistry or Certificate in Land Surveying from a recognized institution or its equivalent

## DURATION

2Years 6Months

## MINIMUM QUALIFICATIONS

Certificate: KCSE Mean Grade D and D- in any two subjects ie Maths, Physics, Geography or Art and Design English & Chemistry or its equivalent

## DURATION

1 Year and 6 Months





# DIPLOMA IN CARTOGRAPHY AND GIS

## PREAMBLE

This course offers the fundamental training in map drafting, compilation, symbolization, scales, projections, and map reproduction. It emphasizes on the conceptual planning and designing of maps and graphs as a medium for communication and analysis. GIS is a system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data

## COURSE OBJECTIVES

- Train KNEC Curriculum using current technologies (ie GIS, GPS and Remote Sensing) and equipment while emphasizing on hands on practice and field work.
- To enable the trainee process mapping data and translate it into graphical format.

- Apply design and map construction skills in map making
- To equip the trainee with data collection, interpretation and analysis skills to produce meaningful maps
- Equip students with cartographic skills using GIS
- Understand photographic and satellite image mapping in a GIS system

## MINIMUM QUALIFICATIONS

KCSE grade C- and above and atleast D+ in any two subjects(Maths, Physics/Physical Science, Geography or Art & Design, English and Chemistry Or a certificate from a relevant field from a recognized institution or its equivalent

## DURATION

2 Years and 6 Months



# DIPLOMA IN PHOTOGRAMMETRY AND REMOTE SENSING

## PREAMBLE

This course involves the use of a 3-dimensional coordinate measuring technique that uses photographs as the fundamental medium for metrology (or measurement). The fundamental principle used by Photogrammetry is triangulation or Aerial Triangulation.

## COURSE OBJECTIVES

- Train KNEC Curriculum using current technologies (ie GIS, ERDAS and Remote Sensing) and equipment while emphasizing on hands on practicals and field work.
- Equip the trainee with competencies on collecting, pre-processing, processing, presenting, storing and archiving photogrammetric and remote sensing.
- Equip trainee with an understanding on satellite imagery processing and analysis

## MINIMUM QUALIFICATIONS

KCSE grade C- and D+ in any two subjects (Maths, Physics/Physical Science, Geography or Art & Design, English and Chemistry)  
Or a certificate from a relevant field from a recognized institution or its equivalent

## DURATION

2 Years and 6 Months



# CERTIFICATE IN INFORMATION TECHNOLOGY (IT)

## PREAMBLE

This course provides students with a wide range of technical and technological skills required by the industry at the Certificate level. The course is designed to have modules with KNEC Exams after each module.

## COURSE OBJECTIVES

- Train KNEC Curriculum using current technologies
- Gain ability to use industry standard computer software and hardware.
- Equip learners with problem solving skills and can adapt in a fast changing technological world.
- Assist in system administration and networking in an organization.

## ENTRY REQUIREMENTS

KCSE Certificate mean grade D

## DURATION

Module 1 - 1Year

Module 2 - 6 Months

# DIPLOMA IN INFORMATION TECHNOLOGY (IT)

## PREAMBLE

The Diploma in Information Technology programme shall provide an interdisciplinary approach for training Information Technology professionals who need working competency in all sectors of the economy. The program will therefore impact the Information Technology graduates with a real world technological experience that will prepare them into the fields of Business innovation and Information Technology for the economic growth and prosperity of the region and world at large.

## COURSE OBJECTIVES

- Develop the ability to use industry standard computer software and hardware.
- Train KNEC Curriculum using current technologies and emphasizing on hands on practicals
- Provide graduates with practical real world examples of equipment and services found in modern world

## ENTRY REQUIREMENTS

KCSE or equivalent Certificate minimum of C  
– Or certificate course in IT from a recognized institution

## DURATION

Module 1 - 1Year

Module 2 - 6 Months

Module 3 - 6 Months



# GEO-IT COURSES OFFERED

OFFERED ON PART TIME PROGRAMME

- Certificate in Remote Sensing and GIS
- Certificate in Drone Technology
- Certificate in AutoCAD, Civil 3D
- Certificate in Crime Mapping & Advanced Crime Mapping
- Certificate in GIS Data Collection and Mapping Using Mobile Phones
- Certificate in Web Mapping
- Certificate in Principles & Fundamentals of GIS
- Certificate in Civil Design

CONTACT PERSON  
RCTI Coordinator  
[rcti@rcmrd.org](mailto:rcti@rcmrd.org)



# CERTIFICATE IN REMOTE SENSING AND GIS

## PREAMBLE

This course is competence based and is designed to enable a learner use Geographical Information Systems with technical proficiency in a variety of professional fields. The Remote Sensing and GIS certificate includes both classroom lectures as well as hands-on experiments using professional software such as MapInfo and ArcGIS

## COURSE OBJECTIVES

- Understand where GIS fits in the world of Information Systems and maps, how it is unique and why it is important
- To let the participants know the issues involved in choosing a GIS package, obtaining and evaluating data, and implementing and managing a GIS works

- To acquire practical experience in using GIS software
- Instill skills on image analysis, RTK and Digital Photogrammetry

## TARGET PARTICIPANTS

Professionals, Technicians, University students, Project managers, Decision Makers and Planners

## ENTRY REQUIREMENTS

Basic computer knowledge

## DURATION

4 Weeks



# CERTIFICATE IN GIS & REMOTE SENSING FOR WATER RESOURCE MANAGEMENT

## PREAMBLE

This course offers an application of GIS in water resource management undertakings. The learners not only learn the basics including: working with and integrating spatial and non-spatial data; geographic scale and spatial precision; decoding; visualization; thematic mapping; and understanding spatial relationships, but also the specific skills and tools applied in relation to assessing a range of water resource management issues.

The course will offer a mixture of lectures, demonstrations and hands-on exercises in applying GIS software and remote sensing in water resource management.

## TARGET PARTICIPANTS

- Water resource managers
- Hydrologists
- Ecologists
- Agriculturalist
- Civil and hydro-engineers
- Irrigation engineers,

## COURSE OBJECTIVES

- Understand how geospatial technology can be utilized in Water Resource management.
- Demonstrate proficiency in the basic

functions of geospatial software and hardware useful in Water Resource management.

- Creation, acquisition and management of spatial data including an awareness of the use of map projections, coordinate systems and data quality to Water Resource management.
- Creating different types of maps using map elements and design principles.

## COURSE CONTENT

- Introduction to GIS and remote sensing in relation to Water Resource management.
- Introduction to hydrology and water resources.
- GIS and Remote Sensing in watershed management.
- Water quality assessment and mapping using GIS.
- Water Quality Index computation.

## ENTRY REQUIREMENTS

Basic computer knowledge.

## DURATION

2 Weeks

# UAV TECHNOLOGY

## PREAMBLE

The use of UAVs, popularly known as drones, has exploded over the past years since they have proven to make operations easier in industries like mining, farming, construction, real estate, energy, facility inspection, land surveying, mapping etc

Major industries are now relying on aerial data from drones creating a need for drone mapping experts to meet the demands of this new market.

## COURSE OBJECTIVES

- To acquire practical knowledge about different drones and how they work.
- To learn the basics in UAV data collection and images
- To post-process, analyse and assess accuracy of generated images.
- Master end to end drone surveying processes and techniques
- To appreciate various application areas for UAV mapping
- Use image processing software to generate, analyze and visualize aerial survey outputs - orthomosaics, DSMs, 3D models and contours
- Understand the basics of land surveying and how you can transform this sector with drones

## COURSE CONTENT

- Flight planning and image processing steps
- End to end drone surveying processes and techniques.
- Safety and regulations for drone operations
- Practical aspects of flight execution - marking boundary points, choosing best take off points, adjusting flight parameters, image quality and coverage check, continuing flights mid-way in a mission
- Plan nadir and oblique automated flights.
- Using KML/SHP files and GPS tagging apps to plan your flights

## TARGET PARTICIPANTS

Staff from government agencies, parastatals, NGOs, academia, private sector etc.

## DURATION

4 Weeks



# AutoCAD / Civil 3D

## AutoCAD / Civil 3D

### PREAMBLE

This is a practical training course designed for professionals who desire to apply the AutoCAD Civil 3D's dynamic design functionalities.

### COURSE OBJECTIVES

- Equips the learner with the basic AutoCAD functionalities.
- Equip the learner with fundamental skills of the Civil3D design platform.
- Organization of project data, analysis, planning and production workflows

### COURSE CONTENT

- AutoCAD user interface
- AutoCAD basics ie  
Layers,properties,Data Upload,Layout
- Printing and production
- Creating and analyzing surfaces
- Creating layouts and production

### ENTRY REQUIREMENTS

Basic understanding of the computer and ITworking environment.

### DURATION

3 Weeks 2Hrs/Day

## Crime Mapping Analysis

### PREAMBLE

This course is designed for Security and Intelligence professionals, students in the security field, and any other interested participants.

### COURSE OBJECTIVES

- Demonstrate a better understanding of geospatial technology
- Collect and geocode crime data using geospatial technology
- Analyze crime data using geospatial technology
- Develop different types of crime maps

### COURSE CONTENT

- Using GIS technology
- Collect and geocode crime data
- Essential crime analysis
- Techniques using GIS
- Making crime related maps

### ENTRY REQUIREMENTS

Basic understanding of the computer and ITworking environment.

### DURATION

3 Weeks 2Hrs/Day



# ADVANCED CRIME MAPPING AND ANALYSIS

## PREAMBLE

We offer this course to participants who have pursued a certificate in basic crime mapping with an interest for deeper understanding.

## COURSE OBJECTIVES

- Collect crime data digitally using mobile phones
- Create crime web maps that show analyzed crime
- Create interactive web maps with customized pop-ups
- Develop operational dashboards that show real-time crime data
- Create comparative web apps that compare different crime web maps

## COURSE CONTENT

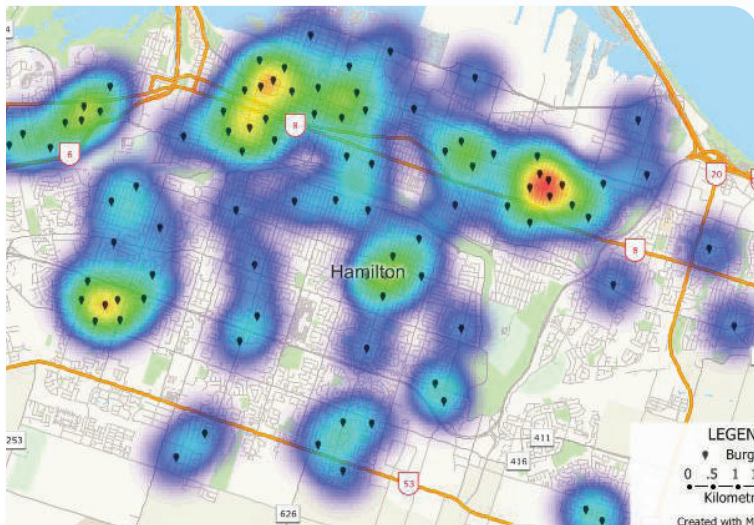
- Real-time digital techniques for recording crime cases.
- Web-based analysis of crime data.
- Developing interactive crime web maps
- Web applications essential for evaluation of crime trends.

## ENTRY REQUIREMENTS

Basic Certificate in Crime Mapping Analysis

## DURATION

3 Weeks



# GIS DATA COLLECTION AND MAPPING USING MOBILE PHONES

## PREAMBLE

The course is taught to professionals doing research, students at colleges and Universities to equip them with skills of collection of spatial data using mobile phones and generate digital questionnaires and set up cloud servers.

## COURSE OBJECTIVES

- Equip learners with knowledge on data using mobile phones
- To train essential tools of collecting real-time data
- To empower learners with the skills of validating data from the field
- To equip skills of monitoring and evaluating data collection process

## COURSE CONTENT

- Collect data without using internet.
- Upload data to a cloud server.
- Visualize and analyze data online.
- Download data for analysis.
- Develop maps from survey data.

## DURATION

3 Weeks





# WEB MAPPING

## PREAMBLE

This course targets Civil servants ,private sector (corporates) NGOs ,University and college students.

## COURSE OBJECTIVES

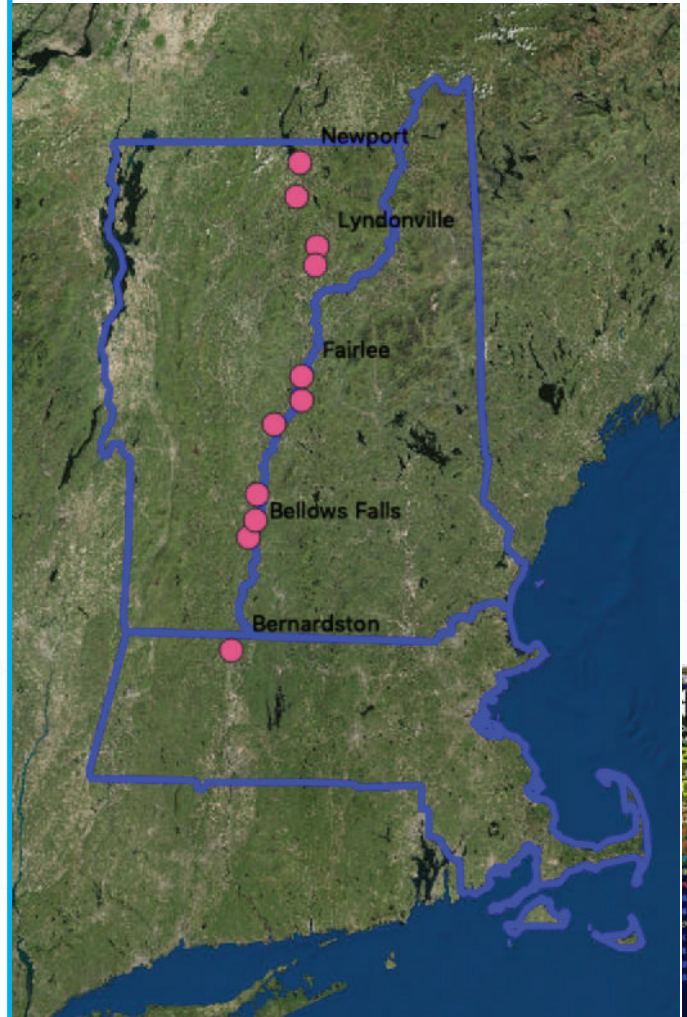
- To gain the concepts of GIS and Web Mapping
- Acquire skills on packaging data for web mapping
- Attain web map creation skills
- Train learners on styling web maps
- To Customize pop-up text and embed images in the pop-up
- To gain Web App creation and designing skills
- To share the Web Maps and Web Application with a group or the public.

## COURSE CONTENT

- Types of interactive Web Maps
- Style Web Maps using different colors and sizes.
- Customize pop-up text and embed pictures in the pop-up
- Create and design different types of Interactive Web Applications such as story maps

## DURATION

3 Weeks



# PRINCIPLES & FUNDAMENTALS OF GIS

## PREAMBLE

GIS has become an important tool in decision making. As a result, this course is designed to fulfill planning and management of database issues in organizations. It is designed for Professionals, Technicians, Decisions Makers and University students.

## COURSE OBJECTIVES

- To empower students with the essential spatial analysis techniques.
- Educate students on spatial data presentation techniques.
- Demonstrate basic proficiency visualizing geospatial data and analysis by creating
- Demonstrate the use of basic spatial analysis techniques.

- Display data analysis results using a well-designed map.

## COURSE CONTENT

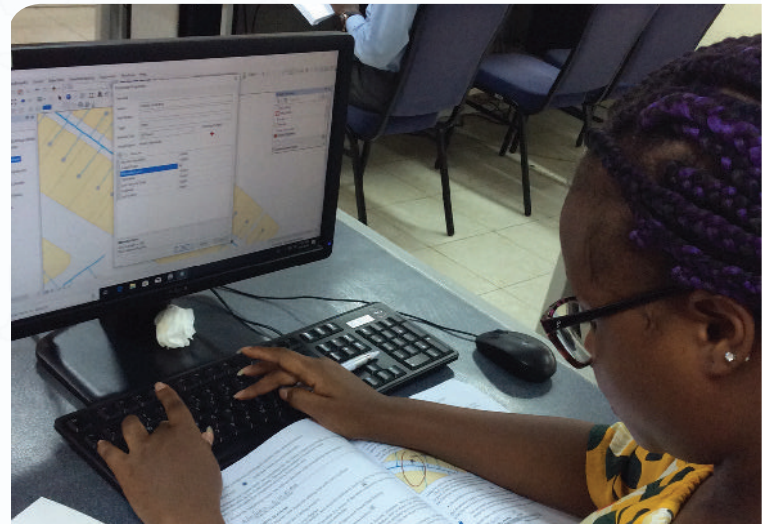
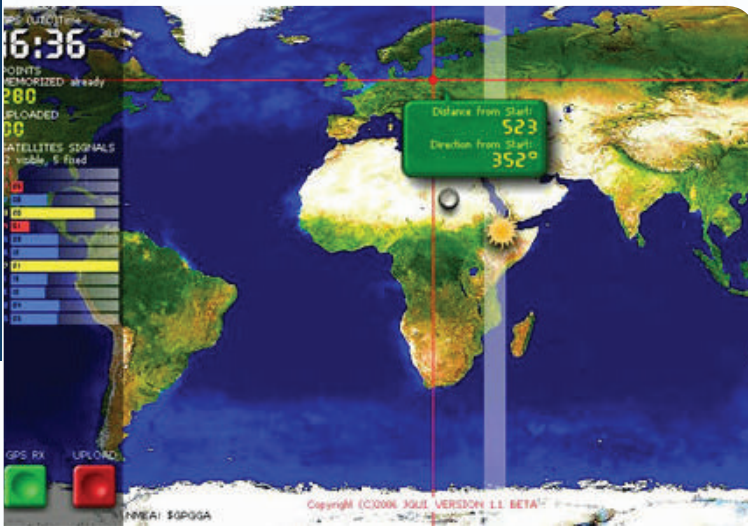
- Introduction to GIS concepts and principles
- Data collection, preparation, analysis and presentation
- Spatial data collection techniques.
- Spatial analysis techniques.

## ENTRY REQUIREMENTS

Basic computer knowledge

## DURATION

3 Weeks





# CIVIL DESIGN

## PREAMBLE

This competence based practical course is aimed at training infrastructural design workflows in an integrated civil engineering and CAD design solutions platform. The Civil Designer software is an integrated civil infrastructure design suite that offers comprehensive design package incorporating a powerful CAD platform with eight configurable modules. It offers compatibility with basic CAD drawings while allowing for integration of 3D CAD drawings with imported aerial images and site survey information

## COURSE OBJECTIVES

- Train users on the Civil Designer workspace, functionality, and project creation workflows.
- Equip the trainee with integrated infrastructural design creation and management functionalities in Civil Designer software.

- Expose the trainee to the Civil Designer modules and demonstrate the dynamic connectivity with linked drawing files.
- Equip the trainee with expertise to create of 3D digital models of existing civil infrastructure for design analysis and construction upgrades.

## COURSE CONTENT

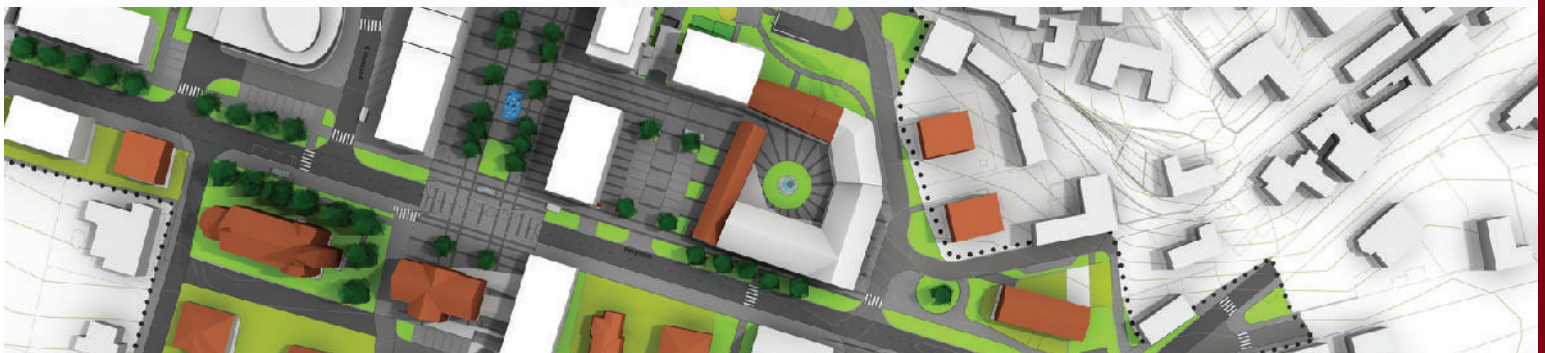
- Design Centre
- Survey & Terrain
- Advanced Roads

## ENTRY REQUIREMENTS

Knowledge in infrastructural design terms (civil, survey, water, and highway professionals) and expertise (certificate, diploma, graduate, etc.)

## DURATION

3 Weeks



# INTERNATIONAL COMPUTER DRIVING LICENSE (ICDL)

## COURSES OFFERED

ICDL Foundation Level

ICDL Advanced Level

CONTACT PERSON

RCTI Coordinator

[rcti@rcmrd.org](mailto:rcti@rcmrd.org)

# ICDL (INTERNATIONAL DRIVING LICENSE)

## ICDL (INTERNATIONAL DRIVING LICENSE) - FOUNDATION LEVEL

### PREAMBLE

ICDL is the gateway to digital competence in today's world for every career and any individual.

### MODULES

Computer Essentials: 2weeks - 2hrs/day  
Online Essentials: 1week - 2hrs/day  
MS Word: 3weeks - 2hrs/day  
IT Security: 1week - 2hrs/day  
MS, Excel: 2weeks - 2hrs/day

Data Base using;  
MS Powerpoint: 1week - 2hrs/day  
Online Collaboration: 1week - 2hrs/day

### COURSE OBJECTIVE

- Instill Digital skills and competencies necessary to handle a computer and apply common computer applications

### MINIMUM QUALIFICATIONS

Basic Computer Knowledge

## ICDL ADVANCED LEVEL

### PREAMBLE

ICDL Advanced Level will provide the skills and competences required to make a foundation for further studies or start a career in digital marketing and project management. These modules are designed for work user who needs to demonstrate an in depth knowledge of these applications in the course of their job role.

### MODULES

- Advanced Excel
- Using database
- Digital Marketing
- Project planning

### COURSE OBJECTIVE

- Master the more advanced functions of spreadsheet applications, enabling you to produce more sophisticated reports, and to perform complex mathematical and statistical calculations
- Learn the skills of Digital Marketing using social media e.t.c
- Learn how to plan and execute a project.

### MINIMUM QUALIFICATIONS

Successfully completed the respective ICDL module.

# ICT SHORT COURSES

## **COURSES OFFERED**

Certificate In Graphic Design

Certificate In Website Design/ Developement

Certificate In Technical Design Using Application Programs/ Software

Certificate In 3D Animation & Creative Visualisation

Certificate In Computer Repair & Maintanance

Certificate In System Programming

Certificate In IT Security & Cyber Crime

Certificate In Data Analysis: Spss / Stata/Sas

Certificate In Project Management

Relational Database Management Systems

Certificate in Accounting Packages

Certificate In Digital Marketing

Digital Skills For Managers

CONTACT PERSON

RCTI Coordinator

[rcti@rcmrd.org](mailto:rcti@rcmrd.org)



# ICT SHORT COURSES

## CERTIFICATE IN GRAPHICS DESIGN

### PREAMBLE

The course equips the learner with skills to create visual concepts using computer software to communicate ideas that inspire, inform and captivate consumers. By the end of the course, the learner should be able to develop the overall layout and production design for various applications e.g. advertisements, brochures, magazines, corporate reports e.t.c

### A learner has the option of individual software as follows :

- Adobe Photo Shop 3 Weeks
- CorelDraw 3 Weeks
- Illustrator 3 Weeks.
- Adobe Indesign
- Adobe Premier
- Adobe Dreamweaver
- Adobe Fireworks

### COURSE CONTENT

- Understand vector graphics and creative industry terminologies
- Attain effective digital asset management.
- Create vector-illustration and page-layout application to present objects, layers, and pages in an effective and presentable form

### ENTRY REQUIREMENTS

Basic understanding of the computer.

### DURATION

3 weeks

## WEB DESIGN

### PREAMBLE

Cyber presence in this age in time is key to every organization big or small and even individuals. This course equips the learner with hands on skills to develop a website that increases an organization or individual cyber presence tremendously.

### The learners will be trained in:

- HTML
- CSS
- PHP/Python
- SQL
- JAVASCRIPT

### COURSE CONTENT

- Web design and development

### COURSE OBJECTIVE

- Develop websites and web applications

### ENTRY REQUIREMENTS

Basic understanding of the computer

### DURATION

4 weeks

# CERTIFICATE IN TECHNICAL DESIGN USING APPLICATION PROGRAMS/ SOFTWARE

## PREAMBLE

This training shall enable learners to tailor their learning content and delivery to suit their preferences. The learners use computer technology to exchange information and develop technical drawings

## COURSE OBJECTIVES

- To equip learners with knowledge and skills of using latest softwares/ application programs in technical design in the fields of architecture, interior design, engineering, 3D visualisations & rendering artists, animations, graphical & brand design.
- To enhance design proficiency of learners, necessary for effective job performance in any design environment
- To empower learners develop confidence and produce high quality design work when solving any design challenge in the modern tech savvy business environment
- To train learners on standard design principles using design application programs

## COURSE CONTENT

- Generate 3Ds images, renders, animations and other visualizations using latest software in either Lumion, 3Ds Max, Cinema 4D, Autodesk Revit, 3D SketchUp , and Autodesk
- Technical detailed design drawings (architectural, engineering, interior design) using Autodesk Revit, ArchiCAD, AutoCAD, Civil 3D;

## TARGET GROUP

Target Fields – Architecture, Interior Designers, Engineers, 3D Visualizers & Rendering, Animators, Graphical & Brand Designers among others

## ENTRY REQUIREMENTS

Mean grade C- and D+ in any two subjects (Maths, Physics/ Physical Science, Geography or Art & Design, English, Chemistry) or its equivalent

## DURATION

4 Weeks

# CERTIFICATE IN 3D ANIMATION & CREATIVE VISUALISATION

## PREAMBLE

The certificate shall bear the titles of the programs the learner has been successfully enrolled, taught and qualified under the policies of RCTI

## COURSE OBJECTIVES

- To Generate 3Ds images, renders, animations and other visualizations using latest software in Lumion, 3Ds Max, Cinema 4D
- To perform 3D modelling and Graphical representations

## PROGRAMS TO CHOOSE

- Adobe Fireworks

- Adobe Premier
- Lumion,
- 3Ds Max
- Cinema 4D

## TARGET GROUP

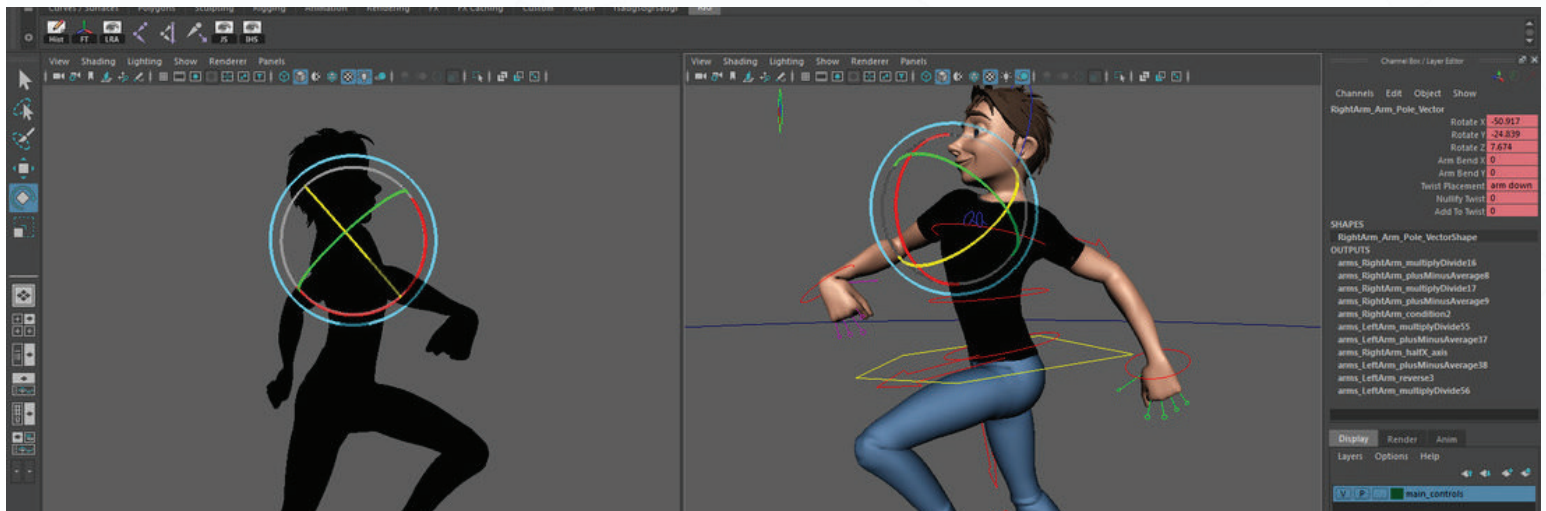
Architectures, Interior Designers, Engineers, 3D Visualizers & Animators, Graphical & Brand Designers

## ENTRY REQUIREMENTS

Basic Computer Knowledge

## DURATION

4 Weeks



# COMPUTER REPAIR AND MAINTENANCE

## PREAMBLE

The course is essential to those interested in acquiring skills in troubleshooting, computer repair, maintenance, and upgrading with the leading systems, applications, software programs and hardware.

## COURSE OBJECTIVES

- Demonstrate a practical understanding of basic PC systems
- Install and commission a working stand-alone PC
- Demonstrate a practical understanding of data storage devices
- Demonstrate a practical understanding of current printers, repair and maintain computers

## ENTRY REQUIREMENTS

Participants should have basic knowledge of how to use a computer.

## DURATION

3 weeks

# CERTIFICATE IN SYSTEMS PROGRAMMING

## PREAMBLE

This is a course for those who want to develop a career in system development (Software Engineering).

**Key software and languages to choose from;**  
C, C++, C#, JAVA, PYTHON, R, RUBY, VB. Net  
COURSE

## OBJECTIVES

- To attain the skills for designing and developing a system which include program specification, coding, testing and documenting.
- Define a program and programming concepts.
- Learn program development requirements and software.
- Learn program development phases.

## ENTRY REQUIREMENTS

Participants should have basic knowledge of how to use a computer.

## DURATION

4 weeks



# CERTIFICATE IN IT SECURITY AND CYBER CRIME

## PREAMBLE

In today's internet world where the number of mobile users, digital applications and data networks increase each day, so do the opportunities and vulnerability for exploitation by cyber criminals increase. This course is designed for professionals in all industries not limited to the IT field and online users who want to understand IT security and Cybercrime and identify best practices to stay abreast in matters IT security.

## COURSE OBJECTIVE

- In this course the learner will appreciate the severity of today's advanced cyber-attacks, how they work, their effects, and what's at

risk, so as to prepare and be able to protect against them.

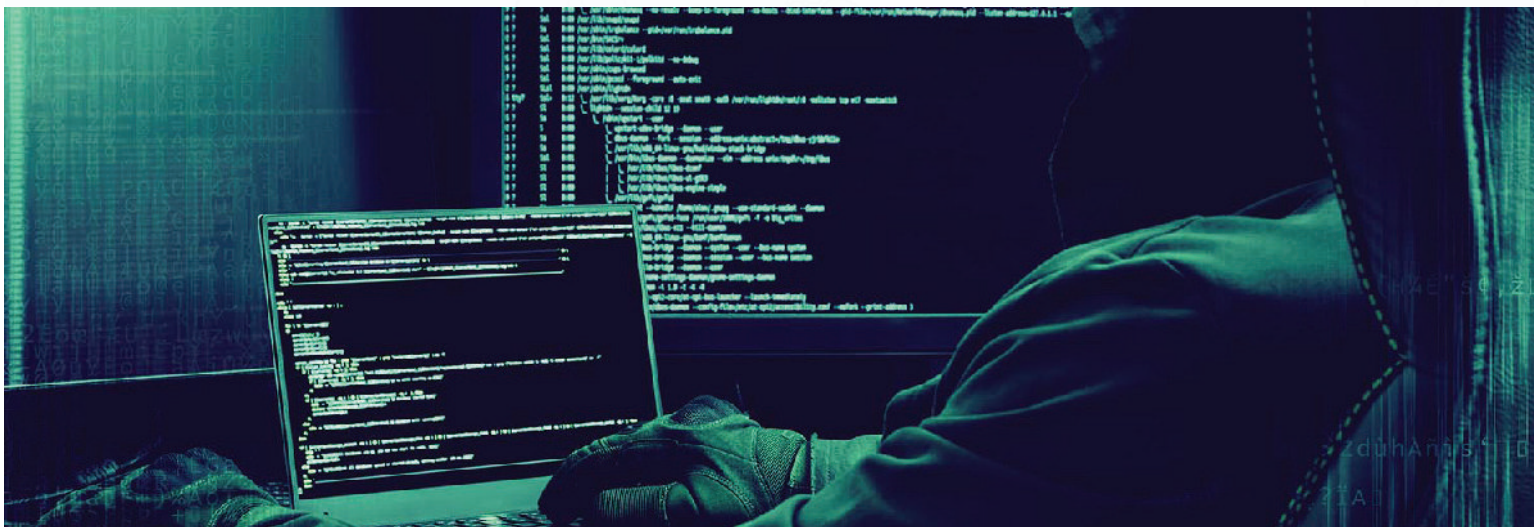
- Produce competent and confident students who can evaluate the opportunities and threats created by interconnecting computers via the Internet
- Develop knowledge in security monitoring
- To know various attack methods

## ENTRY REQUIREMENTS

- Basic knowledge of Computers.
- They should be interested in IT resources safeguarding.

## DURATION

3 Weeks



# DATA ANALYSIS; SPSS/ STATA/SAS

## PREAMBLE

This course is a first step towards understanding the data analysis process as a whole. It is designed for people in the field of statistics

## COURSE OBJECTIVE

- The learner will learn in details one of the specialized software (SPSS, STATA or SAS) for data analysis.
- To equip the learner with skills of data analysis

## ENTRY REQUIREMENTS

- Basic knowledge of Computers.

## DURATION

- 4 Weeks

# PROJECT MANAGEMENT

## PREAMBLE

This course is designed to impact the skills of project management methodology right from investigation, planning, design, production, monitoring to evaluation.

## COURSE OBJECTIVE

- Development and implementation of all project's procedures.
- Productive guidance, efficient communication and apt supervision of the project's team.

## ENTRY REQUIREMENTS

- Basic knowledge of Computers.

## DURATION

- 3 Weeks



# RELATIONAL DATABASE MANAGEMENT SYSTEMS

## PREAMBLE

The course is designed to impact the learners with the relevant knowledge and skills relating to the use of Structured Query Language (SQL). SQL is the programming language used to manage data in a relational databases like MySQL, SQL Server, MS Access, Oracle, Sybase, Informix, PostgreSQL, and other database systems.

## COURSE OBJECTIVES

- Attain skills for efficient relational database design
- Attain skills for using relational databases in data management, application development, web development, big data, data analytics and much more.
- Attain data backup and recovery skills
- Attain data protection skills

## COURSE CONTENT

- Learn the concept of data independence
- Learn data normalization
- Learn the role of the RDBMS in the application stack.
- Learn how relational databases are structured.
- Learn about the major SQL statements and operations.

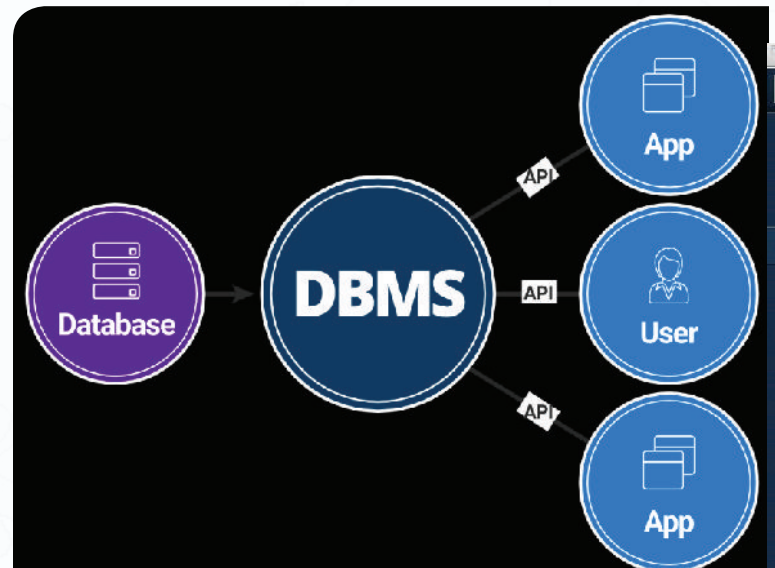
- Learn how to use SQL in some of the most popular relational databases.

## ENTRY REQUIREMENTS

Basic knowledge and skills of how to use a computer.

## DURATION

4 Weeks



# ACCOUNTING PACKAGES

## QUICK BOOKS, SAGE, PASTEL

### PREAMBLE

The course is preferable for accountants but anybody who needs to maintain computerized financial records and accounts of an organization needs this course.

### COURSE OBJECTIVE

- To manage and keep computerized financial records of small and medium sized businesses.

### ENTRY REQUIREMENTS

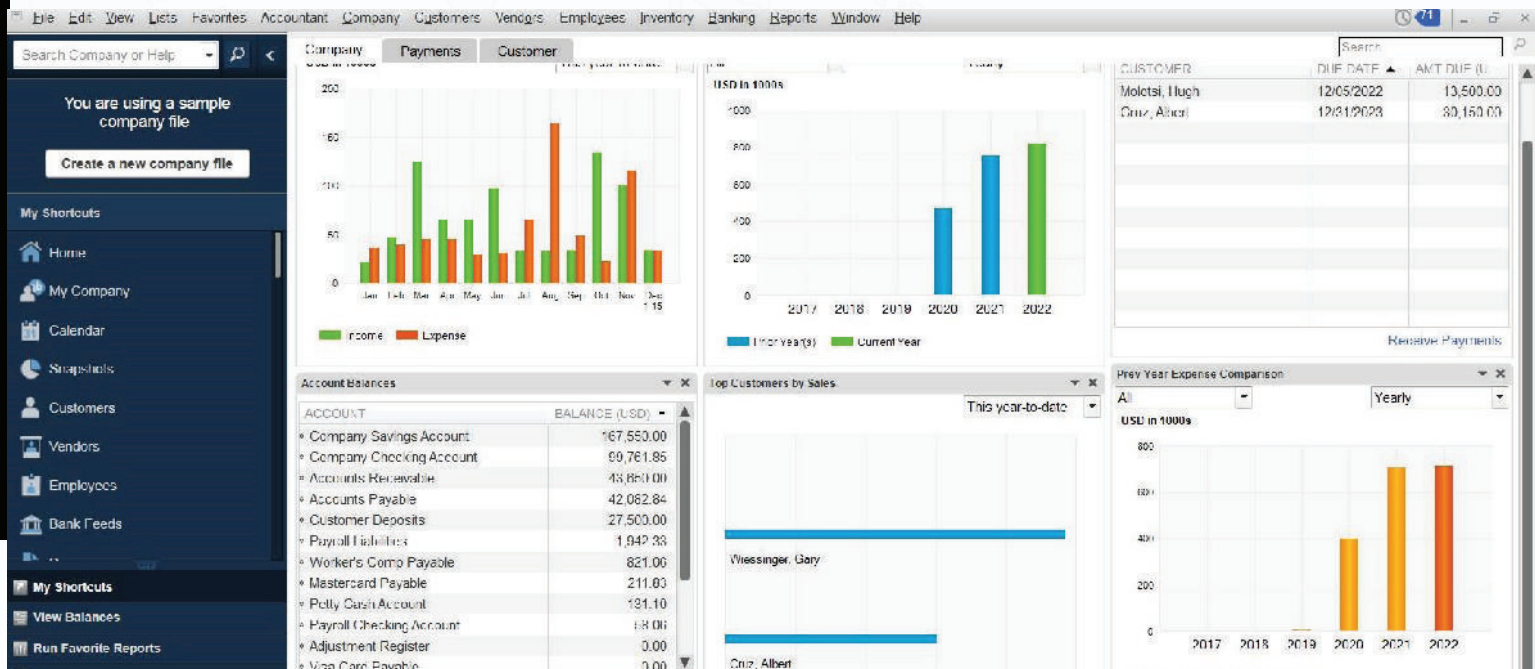
Basic knowledge of Computers.

### Certificate in Computerized Accounting

Duration, 6 Weeks

### Certificate in Quickbooks or Sage Pastel

Duration, 3 Weeks





# DIGITAL MARKETING

## PREAMBLE

This module sets out essential concepts and skills relating to the fundamentals of digital marketing, including creating a web presence, optimising content for search engines, using social media platforms, carrying out online marketing and advertising across a range of services, as well as monitoring and improving campaigns using analytics

## COURSE OBJECTIVE

- Understand various web presence options
- Use analytics services to monitor and improve campaigns.

## ENTRY REQUIREMENTS

Basic knowledge of Computers.

## DURATION

3 Weeks



# DIGITAL SKILLS FOR MANAGERS

## PREAMBLE

Suitable for managers who wish to upgrade their digital knowledge and embrace latest technology so as to appreciate the current convergence of technology. The Certificate in Digital Skills is intended to introduce the fundamental concepts and practices of Information, Communication and Technology as preparation for a rewarding career in information technology or advanced study.

## COURSE OBJECTIVE

- Perform day-to-day tasks using MS Office and the web.

## ENTRY REQUIREMENTS

Basic knowledge of Computers.

## DURATION

12 Weeks



## OUR LIBRARY

Our Library at RCMRD is geared toward providing information to assist both staff and students to gain the required knowledge in their work and study respectively. The main objective of the library facility is 'anticipating to acquire, process, organize and disseminate real time information to its users'. The scope of this library is Geo-information related materials both Print and digital content.

**This includes but not limited to:-** Geographic Information Systems (GIS), Remote Sensing (RS), Global Positioning System (GPS), Photogrammetry, Land Surveying, Conservation of natural resources and environmental related fields of information among others. The Library is used by staff and students from all Member States. Library services are offered by using an Integrated Library System ( LiBRARYSOFT) which assists in all transactions to the users.











# RCMRD

**Regional Centre for Mapping of  
Resources for Development**

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Mapping for Sustainable Development