

## Machine Learning Algorithms in Python and R Course Details

Department: ICT and Security Management

Presented by Magna Skills Development Institute

[Registration Link](#)

Date Created: 06-Jun-2025

Training Coordinator: Denis Wunganayi

### EMPOWERING WORKFORCE THROUGH QUALITY TRAINING

- ✓ Expert Facilitators
- ✓ Customized Course Content
- ✓ Practical, Results-Oriented Training
- ✓ Trusted by Governments & Development Partners Across Africa

#### Contact Us:

+27 6300 79022  
[www.magnaskills.com](http://www.magnaskills.com)

REGISTER NOW



## Course Summary

The Machine Learning Algorithms in Python and R course offered by Magna Skills provides participants with comprehensive training in machine learning techniques using two popular programming languages, Python and R. This course covers fundamental concepts, algorithms, and methodologies in machine learning, along with hands-on practical exercises to implement machine learning models using Python's scikit-learn library and R's caret package. Participants will learn how to preprocess data, build predictive models, evaluate model performance, and deploy machine learning solutions in real-world scenarios

## Course Objectives

1. **Understanding Machine Learning Fundamentals:** Gain a solid understanding of machine learning concepts, algorithms, and methodologies, including supervised learning, unsupervised learning, and semi-supervised learning.
2. **Data Preprocessing and Feature Engineering:** Learn techniques for data preprocessing, including data cleaning, normalization, feature scaling, and feature extraction, to prepare data for machine learning model training.
3. **Supervised Learning Algorithms:** Explore popular supervised learning algorithms, such as linear regression, logistic regression, decision trees, random forests, support vector machines (SVM), and k-nearest neighbors (KNN), and understand their applications and limitations.
4. **Unsupervised Learning Algorithms:** Delve into unsupervised learning algorithms, including clustering algorithms (k-means, hierarchical clustering) and dimensionality reduction techniques (principal component analysis, t-distributed stochastic neighbor embedding), for data exploration and pattern discovery.
5. **Model Evaluation and Performance Metrics:** Learn how to evaluate the performance of machine learning models using appropriate metrics, such as accuracy, precision, recall, F1-score, ROC curve, and AUC-ROC, and select the best model for deployment based on evaluation results

## Course Outline

### Module 1: Introduction to Machine Learning

- Overview of machine learning concepts, types of machine learning, and applications
- Introduction to Python and R programming languages for machine learning

### Module 2: Data Preprocessing

- Data cleaning, missing value imputation, and outlier detection

- Feature scaling, normalization, and transformation techniques

### **Module 3: Supervised Learning Algorithms**

- Linear regression and logistic regression for regression and classification tasks
- Decision trees, random forests, and ensemble learning methods for classification and regression

### **Module 4: Support Vector Machines (SVM)**

- Understanding SVM algorithm for binary and multi-class classification
- Kernel functions and hyperparameter tuning for SVM optimization

### **Module 5: K-Nearest Neighbors (KNN)**

- Working principles of KNN algorithm for classification and regression
- Model selection and performance evaluation in KNN

### **Module 6: Unsupervised Learning Algorithms**

- K-means clustering for data segmentation and pattern recognition
- Dimensionality reduction techniques (PCA, t-SNE) for data visualization and feature extraction

### **Module 7: Model Evaluation and Performance Metrics**

- Cross-validation techniques for model evaluation and validation
- Performance metrics (accuracy, precision, recall, F1-score, ROC curve, AUC-ROC) for model assessment

### **Module 8: Model Deployment and Integration**

- Exporting and saving trained machine learning models for deployment
- Integrating machine learning models into applications using Python and R libraries

### **Module 9: Advanced Topics in Machine Learning**

- Introduction to advanced machine learning concepts (deep learning, reinforcement learning)
- Recent trends and developments in the field of machine learning

### **Module 10: Case Studies and Practical Applications**

- Real-world machine learning projects and case studies in Python and R

- Hands-on exercises and projects to implement machine learning algorithms on datasets

The Machine Learning Algorithms in Python and R course equips participants with the knowledge and skills required to build, evaluate, and deploy machine learning models using Python and R programming languages. Through a combination of theoretical learning, hands-on exercises, case studies, and practical applications, participants will gain proficiency in machine learning techniques and be prepared to tackle real-world data science challenges.



**MAGNA SKILLS**  
[www.magnaskills.com](http://www.magnaskills.com)

**AVAILABLE IN-  
PERSON, ONLINE  
& ON-SITE**

**JOIN TODAY**

[WWW.MAGNASKILLS.COM](http://WWW.MAGNASKILLS.COM)  
**+27 6300 79022**



A photograph of four people standing outdoors in front of a brick wall. From left to right: a man in a white polo shirt and dark trousers, a woman in a white polo shirt and green cargo pants holding a certificate, a man in a dark suit, and another man in a white polo shirt and dark trousers holding a certificate. The image is framed by a large blue circular graphic element.

## Company Overview

**Who We Are:** Magna Skills is a premier training and capacity-building organization specializing in professional development for government institutions, NGOs, and the private sector.

**Our Mission:** To provide world-class training solutions that equip professionals with the expertise needed to excel in their careers and contribute meaningfully to their organizations.

**Our Vision:** To be the leading provider of professional training and development across Africa, fostering excellence, innovation, and capacity-building in public and private sectors.

## Core Values

- **Excellence** – Delivering high-quality training tailored to meet the evolving needs of professionals.
- **Integrity** – Upholding the highest ethical standards in all our engagements.
- **Innovation** – Embracing new technologies and methodologies to enhance learning experiences.
- **Customer-Centric Approach** – Ensuring client satisfaction by providing relevant, practical, and impactful training.
- **Collaboration** – Partnering with industry experts and institutions to provide the best learning opportunities.

## Our Training Methodology

We use a blended learning approach that includes instructor-led training, case studies, workshops, and post-training support.

## Why Choose Magna Skills?

- Experienced Trainers
- Customized Training Solutions
- Interactive Learning
- Global Recognition
- Proven Track Record

Request for Training Form

Complete the form and share with Magna Skills Support Team on email info@magnaskills.com or Send Whatsapp on: +27630079022

Approval & Authorization	
Applicant Details	Course Details
First Name:	Course Name:
Last Name:	Training Venue:
Mobile:	Month:
Email:	Training Method: Online[ ____ ] Face to Face [ ____ ]
Company Name:	Duration:
Country:	Number of Staff Members:

By signing this agreement, both parties confirm their commitment to the terms outlined in this proposal.