



# THE TECHNICAL UNIVERSITY OF KENYA

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NAME: DR MARY NABANGALA AHUNA

Faculty:	ENGINEERING AND THE BUILT ENVIRONMENT
School:	Electrical & Electronic Engineering
Department:	Telecommunications and Information Engineering
Current Designation:	Lecturer, TELECOMMUNICATIONS AND INFORMATION ENGINEERING (DTIE)
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Consultation Hours:	8AM-5PM MON - FRI



## EDUCATION

LEVEL	QUALIFICATION NAME	INSTITUTION	YEAR
Doctor of Philosophy (PhD)	ELECTRONIC ENGINEERING	UNIVERSITY OF KWAZULU-NATAL(South Africa)	2019
Masters of Science (M.Sc.)	Electronic Engineering (Telecommunications)	University of KwaZulu-Natal(South Africa)	2016
Bachelor of Science (BSc)	Computing and Information Systems	University of London(United Kingdom)	2014
Bachelor of Science (BSc)	BPHIL IN TECHNOLOGY( ELECTRICAL &ELECTRONIC ENGINEERING)	University of Nairobi(Kenya)	2012
Higher Diploma	DIPLOMA IN ELECTRICAL &ELECTRONIC ENG.	KENYA POLYTECHNIC(Kenya)	2004
Diploma	TECHNICAL EDUCATION	KENYA TECHNICAL TEACHERS COLLEGE(Kenya)	2006
Diploma	DIPLOMA IN ELECTRICAL &ELECTRONIC ENG.	KENYA INSTITUTE OF MASS COMMUNICATION(Kenya)	1993
Certificate	INFORMATION TECHNOLOGY	KENYA POLYTECHNIC(Kenya)	1998
O level/Equivalent	KENYA CERTIFICATE OF SECONDARY EDUCATION	NASOKOL GIRLS SEC SCHOOL(Kenya)	1989
KCPE/Equivalent	KENYA CERTIFICATE OF PRIMARY EDUCATION	MAKUTANO PRIMARY SCHOOL(Kenya)	1985

#### WORK EXPERIENCE

PERIOD	INSTITUTION	POSITION
24/7/2014 - TO DATE	kenya polytechnic	TECHNOLOGIST
01/03/1995 - 01/07/2009	kenya polytechnic	SNR TECHNICIAN

#### GENERAL STATEMENT ON RESEARCH AREAS

I am currently focused earth-satellite communication link performance in addition to Wireless Communication, Machine learning and automation

#### CURRENT RESEARCH PROJECTS

TUKSat-1 Mission for Vessel Tracking and Rescue Operations in Lake Victoria Nanosatellite technology

#### SELECTED PUBLICATIONS

TITLE	LINK TO PUBLICATION	YEAR
Specific Rain Attenuation Dependence on Rain Storm Magnitudes and Measured Drop Sizes	<a href="#">View online</a>	2018
Fade Slope Prediction Model for rain storms over Sub-tropical Africa	<a href="#">View online</a>	2019
Fusion Based MR Images Denoising Technique Using Frequency Domain and Non-Local Means Filters	<a href="#">View online</a>	2022
Solar-Powered Shunt Active Power Filter Using an Advanced Inverter Topology ZSI: A Review	<a href="#">View online</a>	2023
Outage Prediction during Intense Rainstorm Events Using Queuing Theory and Markov Chains over Radio Links	<a href="#">View online</a>	2018
Real-time Transformer Vandalism Detection by Application of Tuned Hyper Parameter Deep Learning Model	<a href="#">View online</a>	2022
30-Second and One-Minute Rainfall Rate Modelling and Conversion for Millimetric Wave Propagation in South Africa	<a href="#">View online</a>	2016
Pylon Anti-Vandalism Monitoring System using Machine Learning Approach	<a href="#">View online</a>	2020
Rain Attenuation Prediction Using Artificial Neural Network for Dynamic Rain Fade Mitigation	<a href="#">View online</a>	2019
Rain Attenuation Prediction Using Artificial Neural Network for Dynamic Rain Fade Mitigation	<a href="#">View online</a>	2019
CNN Real-Time Detection of Vandalism Using a Hybrid -LSTM Deep Learning Neural Networks	<a href="#">View online</a>	2021
Effects of Storm Attenuation Over Satellite Links in Sub-Tropical Africa	<a href="#">View online</a>	2018
Rainfall Rate Prediction based on Artificial Neural Networks For Rain Fade Mitigation over Earth Satellite link	<a href="#">View online</a>	2019

#### POSTGRADUATE STUDENTS SUPERVISION

NAME	PROJECT TITLE	PERIOD
Christian Rudahunga	MRI	January 2020-December 2022
T. N.	ML Related	Sept 2021-Dec 2023
T. N.	ML Related	Sept 2021-Dec 2023

#### COURSES TAUGHT

<b>NAME</b>	<b>DESCRIPTION</b>	<b>PERIOD</b>
Robotics & Cybernetics	Geared towards design and implementation of automated control systems	January 2016 - April 2016
Satellite and Mobile Communications	Wireless communication technologies and standards	Sept 2019 - TO-DATE
Digital Filter Design	Digital signals and systems with focus on the the design of digital filters	Sept 2019 - TO-DATE
Microprocessor Systems	Microprocessors and their interfaces to memory and I/O devices	Sept 2019 - TO-DATE
Telecommunication and the Internet	Wireless communication and the internet	Jan 2020 - TO-DATE
Automated Process Control Systems	Includes controllers, online measurement systems, SCADA systems and Robotics	Jan 2020 - TO-DATE
Optical Communication	Transmission of signals using light	Sept 2020 - TO-DATE
Wireless Communication and Networking	Signal transmission via electromagnetic waves	Sept 2020 - TO-DATE
Microprocessor Architecture and Interfacing	Programming, hardware design, Memory and IO interfacing, Interrupts	Jan 2020 - TO-DATE
Comptuter Programming	C++ Programming	Jan 2020 - TO-DATE
Artificial Intelligence and Expert Systems	Exposes students on emerging technologies in AI	January 2021 - TO-DATE
Artificial Neural Networks	A subset of Artificial Intelligence	January 2021 - TO-DATE
Satellite Communication	Involves technologies used to launch satellites in orbits and how satellites communicate with earth stations and also with each other.	September 2021 - December 2021

#### PROFESSIONAL AFFILIATIONS AND SOCIETIES

<b>TITLE</b>	<b>INSTITUTION</b>
Member	IEEE-HKN, UKZN Chapter
Member	South African Institute of Electrical Engineers
Member	IEEE
Member	IEEE Women in Engineering