



MBARARA UNIVERSITY OF SCIENCE AND TECHNOLOGY

9th ANNUAL PhD SYMPOSIUM 2024

THEME: "Embracing Translational
Research for Sustainable and
Transformation Development"

DATE: 14th November, 2024

VENUE : Kihumuro Campus



global health
collaborative
MUST-Uganda



MASSACHUSETTS
GENERAL HOSPITAL



Acknowledgement

As another year passes, we find ourselves at the doorstep of the annual PhD Symposium once more. The past four years have witnessed profound changes, challenging even the way we engage in scientific discourse. It is imperative to extend my heartfelt appreciation to our esteemed Panelists. I wish to express my deepest gratitude to the dedicated Editorial and organizing team, led by Dr. ir. Fred Kaggwa, who has served as the convener since the symposium's inception. This remarkable journey has been guided by the wisdom of Prof. Nixon Kamukama, the Deputy Vice Chancellor of Academic Affairs at Mbarara University of Science and Technology, even during the tumultuous times of the COVID-19 pandemic when we transitioned seamlessly to virtual platforms for our discussions. This experience has been invaluable, pushing us to adapt to new modes of communication that, in many aspects, have proven more efficient and convenient, leaving an indelible mark on our practices. However, it has also underscored the irreplaceable nature of in-person interactions. I extend my deepest appreciation to all those involved in the preparation of this symposium, recognizing the significance of your diverse roles. The symposium has weathered the test of time, and I would like to offer special acknowledgment to Assoc. Prof. Vincent Batwala and Assoc. Prof. Joel Bazira for their unwavering support in ensuring the continuity of this prestigious university event. Fred has, since its inception, been the convener.

I would like to express my gratitude to the University's leadership and management for graciously sponsoring and endorsing the PhD Symposium for the second time this year, even amidst financial challenges.

The establishment of the Directorate of Research and Graduate Training (DRGT) has provided a sustainable home for the PhD symposium. The Directorate plays a pivotal role in coordinating postgraduate programs, including syllabi development, student progress monitoring, admissions, scholarship administration, research grants, examinations, and the overall welfare of postgraduate students. I extend my special appreciation to the Board, Director, and staff of the Directorate for their tireless efforts and unwavering support throughout the preparation of the November 2024 Annual PhD Symposium.

@nov2024 MUST PhD Symposium

Anthems

UGANDA

1. Oh Uganda! may God uphold thee,
We lay our future in thy hand.
United, free,
For liberty

Together we'll always stand.

2. Oh Uganda! the land of freedom.
Our love and labour we give,
And with neighbors all
At our country's call
In peace and friendship we'll live.

3. Oh Uganda! the land that feeds us
By sun and fertile soil grown.
For our own dear land,
We'll always stand

The Pearl of Africa's Crown.

EAST AFRICAN

1. Ee Mungu twaomba ulinde
Jumuiya Afrika Mashariki
Tuwezeshe kuishi kwa amani
Tutimize na malengo yetu.

Chorus
Jumuiya Yetu sote tuilinde
Tuwajibike tuimarike
Umoja wetu ni nguzo yetu
Idumu Jumuiya yetu.

2. Uzalendo pia mshikamano
Viwe msingi wa Umoja wetu
Natulinde Uhuru na Amani
Mila zetu na desturi zetu.

3. Viwandani na hata mashambani
Tufanye kazi sote kwa makini
Tujitoe kwa hali na mali
Tuijenge Jumuiya bora.

MBARARA UNIVERSITY

Mbarara University succeed we MUST
With God's will, we shall make the best of MUST
Let us unite and cooperate, to build the nation in different sectors
Our Pride and ego MUST will shine forever and we'll be victors
My alma mater long live x2 Mbarara University Ultimum viva

1. MUST we shall hail and salute thee
The frontier of true knowledge
For through advancing novelty
Your excellence will ever grow

2. CRADLE of efficient teachers
Doctors, Scientists and future leaders
Hope of the generation unborn
MUST you are our country's pride

3. WITH God's help Mbarara will shine
As the bright star among the others
To light the way for the future generation
To follow the light yonder

Forward from the convener of the MUST Annual PhD Symposium November 2024

As we gather once again for this significant event, I reflect on the journey that brought the Pre-Annual Research Dissemination Conference (ARDC) PhD Symposium to life at Mbarara University of Science and Technology (MUST). It all began in 2016, eight years ago, with an unexpected proposal from Prof. Nixon Kamukama, our Deputy Vice Chancellor of Academic Affairs, who invited me to initiate a PhD symposium here at MUST. Although the idea was unconventional, I was inspired by my own experiences as a PhD student, where similar events proved invaluable. I embraced the opportunity, and today, it is heartening to see how this symposium has evolved and become an integral part of our academic calendar.

The primary aim of this annual gathering is to provide a supportive platform for all PhD students at MUST to present, share, and discuss their research. In a collegial and friendly environment, students receive guidance from distinguished professors and academic staff, both from MUST and other institutions, who serve as session chairs and mentors. Over the years, this symposium has gained considerable momentum, attracting delegates from various universities, research institutions, and local communities. These participants bring diverse expertise and perspectives, enriching the symposium and providing invaluable feedback to our PhD candidates.

I extend my deepest gratitude to the university management for their unwavering support in making this event possible. Hosting the symposium involves significant logistical planning, including catering, printing, and honoraria for session chairs. While organizing this event requires substantial effort and dedication, the rewards have been profound. Each year, we witness the lasting impact on our candidates' academic journeys, as they gain confidence, refine their research, and benefit from the mentorship provided. It is gratifying to see how this symposium has contributed to the success of so many PhD graduates over the past eight years, affirming its place as a cherished university tradition.

A PhD symposium is a unique forum—neither a formal PhD defense nor a standard conference presentation. It is a space for PhD candidates to openly present their research and engage in constructive dialogue, with the aim of advancing their work. We encourage students to approach this event with a positive, growth-oriented mindset, anticipating constructive feedback that will propel their research forward. Our panelists are here to offer insights, share their experiences, and provide feedback that will support each candidate's academic progress.

In closing, I strongly encourage all PhD candidates to submit abstracts that reflect the full scope of their research and to embrace this opportunity for learning and professional growth. We also urge supervisors to attend alongside their students, facilitating networking and fostering interdisciplinary feedback. Together, let us continue building a vibrant and collaborative research community at MUST.

Remember, "A PhD candidate who does not publicly share his or her work with others will always be a step behind: share, and we shall care." - Fred Kaggwa (PhD).

Fred Kaggwa (PhD),
Senior Lecturer
Department of Computer Science,
Faculty of Computing and Informatics
November 2024 PhD Symposium convener.

Welcome Remarks by Director, DRGT

The Vice Chancellor, Deputy Vice Chancellors, members of Top Management, presenters, participants, colleagues, ladies and gentlemen.

On behalf of DRGT, I have the honor and privilege to welcome you all, most especially our New Vice Chancellor; Prof. Pauline Byakika-Kibwika, to the 9th PhD Symposium November 2024. To all our visitors, we are proud of you and MUST places utmost value in your support and contributions each time we congregate here for this PhD symposium. Allow me to note that we received invaluable support from many people which enabled us to stay on course even during the most difficult times of the Covid-19 pandemic.

Allow me to indulge in the belief that the Doctor of Philosophy (PhD) is the highest endorsement “level of achievement” of recent not limited to academia where a professor is an endpoint. At MUST, our candidates come from all walks of life and find jobs in many knowledge-intensive organizations or return to better prospects at their places of work. Therefore, I encourage all of you to have this dream! Today we are baking that dream for all who will present here.

The PhD is a great privilege whose aura has the intended design to stimulate and arouse intellectual trauma to a student well enough to harness the inner drive of a working etiquette that results in self-styled discovery, innovation, documentation, and a mastery of the art of conceptualization, in-depth analysis and philosophical presentation.

The training consists of self-initiated research ideas that are guided by a team of skilled senior academics, who mentor you on an unknown academic path in pursuit of truth. Top-level academic skills are coached so that you master the art of digging deep into a scholarship to mine the unknown.

Eventually, a contribution to the advancement of universal knowledge is expected. However, you notice that along the way, other academics will use different lenses to view your work and will frequently be divergent. The PhD journey is a genuine learning path, within which you should abstain from any unethical tendency, any misconduct such as ‘plagiarism’ which attracts the highest possible penalties in the field of learning.

Indeed, the journey is by no doubt stressful, requiring a multipronged strategy with a candidate's active involvement to enhance completion. Remember the time allowed on the program is only 3-5 years. In view of this, the University is ready to support you until completion of your respective programs.

Finally, I want to thank all of you for accepting the invitation and taking on the challenge of sharing the research ideas/ results here. To the audience: I wish you a stimulating and inspiring conversation.

Assoc. Prof. Batwala Vincent
DIRECTOR
Directorate of Research & Graduate Training
Mbarara University of Science and Technology

SUCCEED WE MUST

MBARARA UNIVERISTY OF SCIENCE AND TECHNOLOGY (MUST) Kihumuro Campus

9th ANNUAL PhD SYMPOSIUM

14th November 2024

Master of Ceremonies, Nakato Angella

Time	Activity
07:45am-08:20am	Arrival and Registration
08:20am-08:30am	Anthems (Uganda, East African, MUST) Angella Nakato
	Prayer
8:30 – 10:10 Breakaway session 1 (Room 1) Science and Technology Session chairs: Prof. Jerome Kabakyenga, Dr. Simon Kawuma, Dr. Asiimwe Stephen, Assoc Prof. Julius B Leju (Chair), Prof. Grace Kagoro, Dr. Priscilla Muheki Rapporteur- Ruth Nammara ICT- Martin Kijumi	Presentations – - Agronomic Status of Finger Millet Production Amidst Climate Variability and its Yield Response to Different Soil Fertility Treatments in south-western Uganda - Modelling of Ion Acoustic Solitary Waves in Magnetized Three Component Electron-Positron-Ion Plasma. - The Impact of Classroom Environment on Implementation of Learner-centered Instruction in Selected Secondary Schools in Juba City South Sudan - Carbapenem Resistance Genes in Enterobacteriaceae Isolated from Urinary Tract Infection Outpatients in South Western Uganda
8:30 – 10:10 Breakaway session 1 (Room 2) Humanities, Social & Management Sciences Session Chairs: Prof. Roberts Muriisa Kabeba, Assoc. Prof. Henry Mutebi, Assoc. Prof Godfrey Barigye (Chair), Rev. Fr. Dr. Karemiri Mark Deus, Dr. Wilbrod Aryatwijuka, Dr. Kijjambu Fredrick Rapporteur- Kate Imanirampa ICT – Peter Bambanza	Presentations - - Equitable Governance as Conservation Trade-off for The Management of Lake Mburo National Park and Bwindi Impenetrable National Park Uganda - Socioeconomic and Environmental Impacts of Biomass Briquettes and Solar Cooking Technologies Adoption by Households in Southwestern Uganda - Examining Institutional Support on Skills Development for Youth Self-Employment in Mbarara City: A Study of Influences and Outcomes - Community Based Tourism Enterprises' appraisal and community conservation outcomes amidst changing demographics around Bwindi Impenetrable National Park

8:30 – 10:10 Breakaway session 1 (Room 3) Cross Cutting/Multi-Disciplinary Research Session Chairs: Dr. Kansime Noel Kiiza, Dr. Cuthbert Tukundane, Dr. Violah Mpangwire, Dr. Specioza Twinamasiko, Dr. Wangalwa Raphael Rapporteur- Winfred Twikiriize ICT – Oyo Jude	Presentations- - Mathematical Model of Malaria Transmission Dynamics and Control with Vaccination and Treatment - Quality of life, associated factors and use of mHealth interventions among cancer patients receiving palliative care in Western Uganda - Mathematical Models for the Dynamics of Tuberculosis and Hepatitis C Co-infection - Baseline Comparison of Attitude and Academic Competences in Kiswahili Language among Government-Aided Secondary School Students in Mbarara City: Priori North and South Divisions
10:10am – 10:30am	HEALTH BREAK
10:40am – 11:50am Opening Plenary (10 mins @)	Welcome remarks- Assoc. Prof. Vincent Batwala-Director DRGT Former PhD Symposium Attendee/Graduate Opening remarks – Prof. Nixon Kamukama - DVC-Academic Affairs – MUST Keynote address – Prof. Pauline Byakika Kibwika – VC- MUST
11:50am – 12:00pm	Nov2024 PhD SYMPOSIUM GROUP PHOTO-All attendees
12:00 – 14:35 Breakaway session 2 (Room 1) Science and Technology Session chairs: Prof. Jerome Kabakyenga, Dr. Simon Kawuma, Dr. Asiimwe Stephen(Chair), Assoc Prof. Julius B Leju, Prof. Grace Kagoro, Dr. Priscilla Muheki Rapporteur- Ruth Nammara ICT- Martin Kijumi	Presentations – - Assessment of Transfusion Safety and Efficacy among Cancer Patients in Uganda and Caregivers' Perception on Blood Use - Smallholder farmers' perceptions of climate variability and Its influence on crop selection in South-western Uganda - Predicting the Quality of Biomass Briquettes from Agricultural and Municipal Organic Solid Waste Using a Machine Learning Approach - Molecular Characterization of Angiotensin Converting Enzyme Gene Polymorphisms Among Type 2 Diabetes Mellitus Nephropathy in Southwestern Uganda - Lymphedema: Causative Agents, Patient and Caretaker Knowledge, Self-Reported Healthcare Needs and Preventive Strategies in Kamwenge District - A Convolutional Neural Network Model for Processing DICOM Files

12:00 – 14:35 Breakaway session 2 (Room 2) Humanities, Social & Management Sciences Session Chairs: Prof. Roberts Muriisa Kabeba, Assoc. Prof. Henry Mutebi, Assoc. Prof Godfrey Barigye (Chair), Rev. Fr. Dr. Karemire Mark Deus, Dr. Wilbroad Aryatwijuka, Dr. Kijjambu Fredrick Rapporteur- Kate Imanirampa ICT – Peter Bambanza	Presentations- - Navigating Gender and Power: A Qualitative Analysis of Fertility Decision-Making in Rubirizi District, Southwestern Uganda.
12:00 – 14:35 Breakaway session 2 (Room 3) Cross Cutting/Multi- Disciplinary Research Session Chairs: Dr. Kansiime Noel Kiiza, Dr. Cuthbert Tukundane, Dr. Violah Mpangwire, Dr. Specioza Twinamasiko, Dr. Wangalwa Raphael Rapporteur- Winfred Twikirizi ICT – Oyo Jude	Presentations- - Peer Assessment Framework to Support Group-Based Assessment in E-Learning Environment for Higher Institutions of Learning - Motivational practices training and Teachers effectiveness in Universal Primary Education schools of Greater Bushenyi districts. - School Inspection and Provision of Quality Education in Secondary Schools in Uganda : A Case Study of Kasese District - A Comparative Study of Attitudinal Shifts, Learning Experiences, and Understanding of Transformation Geometry among Secondary School Learners through Technology-Enhanced and Conventional Van Hiele Phased Instruction - Science Laboratory Operationalization and Secondary School Students' Academic Attitude, Motivation, and Performance in Mbarara City, Uganda - A Survey on Machine Learning in Microstructural Classification of Metallic Biomaterials
14:35 – 15:00	Lunch
15:00 – 15:15 Director DRGT – Assoc. Prof Batwala V	Discussion and wrap up
15:15 – 15:30 Closing Remarks and Way forward	Prof. Nixon Kamukama –DVC-AA-MUST
Departure	

Details for Symposium Presentations

Break Away Room1 Presentations, 14th November 2024

Room 1	SCIENCE AND TECHNOLOGY
Room1 Chair(s)	Prof. Jerome Kabakyenga, Dr. Simon Kawuma, Dr. Asiimwe Stephen, Assoc Prof. Julius B Leju(Chair), Prof. Grace Kagoro, Dr. Priscilla Muheki
8:30-8:55	Agronomic Status of Finger Millet Production Amidst Climate Variability and its Yield Response to Different Soil Fertility Treatments in south-western Uganda Immaculate Nakazibwe
8:55-09:20	Modelling of Ion Acoustic Solitary Waves in Magnetized Three Component Electron-Positron-Ion Plasma. Lukiya Nazziwa
09:20-09:45	The Impact of Classroom Environment on Implementation of Learner-centered Instruction in Selected Secondary Schools in Juba City South Sudan Rose Hezekiah Jonathan Kilonga
09:45-10:10	Carbapenem Resistance Genes in Enterobacteriaceae Isolated from Urinary Tract Infection Outpatients in South Western Uganda Tuhamize Barbra
10:10 – 10:30	HEALTH BREAK
10:40 – 11:50	OPENING PLENARY SESSION IN ROOM1
11:50 – 12:00	November 2024 PhD SYMPOSIUM GROUP PHOTO-All attendees
Room1 Chair(s)	Prof. Jerome Kabakyenga, Dr. Simon Kawuma, Dr. Asiimwe Stephen(Chair), Assoc Prof. Julius B Leju, Prof. Grace Kagoro, Dr. Priscilla Muheki
12:00-12:25	Assessment of Transfusion Safety and Efficacy among Cancer Patients in Uganda and Caregivers' Perception on Blood Use Taremwa Ivan Mugisha
12:25-12:55	Smallholder farmers' perceptions of climate variability and Its influence on crop selection in South-western Uganda Dina Nabasumba

12:55-13:20	Predicting the Quality of Biomass Briquettes from Agricultural and Municipal Organic Solid Waste Using a Machine Learning Approach Nakato Constance Nakimuli
13:20-13:45	Molecular Characterization of Angiotensin Converting Enzyme Gene Polymorphisms Among Type 2 Diabetes Mellitus Nephropathy in Southwestern Uganda Kiconco Ritah
13:45-14:10	Lymphedema : Causative Agents, Patient and Caretaker Knowledge, Self-Reported Healthcare Needs and Preventive Strategies in Kamwenge District Vicent Mwesigye
14:10-14:35	A Convolutional Neural Network Model for Processing DICOM Files Mabirizi Vicent
14:35 – 15:00	LUNCH
15:00 – 15:30	Director DRGT – Assoc. Prof Batwala V Master of Ceremonies –Angella Nakato Discussion, wrap up and closing remarks

Break Away Room2 Presentations, 14th November 2024

Room 2	HUMANITIES, SOCIAL & MANAGEMENT SCIENCES
Room2 Chair(s)	Prof. Roberts Muriisa Kabeba, Assoc. Prof. Henry Mutebi, Assoc. Prof Godfrey Barigye (Chair), Rev. Fr. Dr. Karemire Mark Deus, Dr. Wilbroad Aryatwijuka, Dr. Kijjambu Fredrick
8:30-8:55	Equitable Governance as Conservation Trade-off for The Management of Lake Mburo National Park and Bwindi Impenetrable National Park Uganda Ainomujuni Junior
8:55-09:20	Socioeconomic and Environmental Impacts of Biomass Briquettes and Solar Cooking Technologies Adoption by Households in Southwestern Uganda Justus Asasira
09:20-09:45	Examining Institutional Support on Skills Development for Youth Self-Employment in Mbarara City: A Study of Influences and Outcomes Gumisiriza Asaph Blair

09:45-10:10	Community Based Tourism Enterprises' appraisal and community conservation outcomes amidst changing demographics around Bwindi Impenetrable National Park Kyarikunda Monica
10:10 – 10:30	HEALTH BREAK
10:40 – 11:50	OPENING PLENARY SESSION IN ROOM1
11:50 – 12:00	November 2024 PhD SYMPOSIUM GROUP PHOTO-All attendees
Room2 Chair(s)	Prof. Roberts Muriisa Kabeba, Assoc. Prof. Henry Mutebi, Assoc. Prof Godfrey Barigye (Chair), Rev. Fr. Dr. Karemire Mark Deus, Dr. Wilbroad Aryatwijuka, Dr. Kijjambu Fredrick
12:00-12:25	Navigating Gender and Power: A Qualitative Analysis of Fertility Decision-Making in Rubirizi District, Southwestern Uganda. Catherine Atahigwa
14:35 – 15:00	LUNCH
15:00 – 15:30	Director DRGT – Assoc. Prof Batwala V Master of Ceremonies –Angella Nakato Discussion, wrap up and closing remarks

Break Away Room3 Presentations, 14th November 2024

Room 3	CROSS-CUTTING/MULTI-DISCIPLINARY RESEARCH
Room3 Chair(s)	Dr. Kansiime Noel Kiiza(Chair), Dr. Cuthbert Tukundane, Dr. Violah Mpangwire, Dr. Specioza Twinamasiko, Dr. Wangalwa Raphael
8:30-8:55	Mathematical Model of Malaria Transmission Dynamics and Control with Vaccination and Treatment Tuhimbise Dominic
8:55-09:20	Quality of life, associated factors and use of mHealth interventions among cancer patients receiving palliative care in Western Uganda Ndinawe John Bosco
09:20-09:45	Mathematical Models for the Dynamics of Tuberculosis and Hepatitis C Co-infection Kizito Mohammed:
09:45-10:10	Baseline Comparison of Attitude and Academic Competences in Kiswahili Language among Government-Aided Secondary School Students in Mbarara City: Priori North and South Divisions Emilly Arishaba
10:10 – 10:30	HEALTH BREAK
10:40 – 11:50	OPENING PLENARY SESSION IN ROOM1
11:50 – 12:00	November 2024 PhD SYMPOSIUM GROUP PHOTO-All attendees
Room3 Chair(s)	Dr. Kansiime Noel Kiiza, Dr. Cuthbert Tukundane, Dr. Violah Mpangwire, Dr. Specioza Twinamasiko, Dr. Wangalwa Raphael(Chair)
12:00-12:25	Peer Assessment Framework to Support Group-Based Assessment in E-Learning Environment for Higher Institutions of Learning Job Kalema
12:25-12:55	Motivational practices training and Teachers effectiveness in Universal Primary Education schools of Greater Bushenyi districts. Yonah Rutafa Karugaba
12:55-13:20	School Inspection and Provision of Quality Education in Secondary Schools in Uganda: A Case Study of Kasese District Wilson Mathembele

13:20-13:45	A Comparative Study of Attitudinal Shifts, Learning Experiences, and Understanding of Transformation Geometry among Secondary School Learners through Technology-Enhanced and Conventional Van Hiele Phased Instruction Issa Ndungo
13:45-14:10	Science Laboratory Operationalization and Secondary School Students' Academic Attitude, Motivation, and Performance in Mbarara City, Uganda Preeti Kumari
14:10-14:35	A Survey on Machine Learning in Microstructural Classification of Metallic Biomaterials Bwengye Innocent
14:35 – 15:00	LUNCH
15:00 – 15:30	Director DRGT – Assoc. Prof Batwala V Master of Ceremonies –Angella Nakato Discussion, wrap up and closing remarks

Abstracts

SCIENCE AND TECHNOLOGY

Immaculate Nakazibwe: Agronomic Status of Finger Millet Production Amidst Climate Variability and its Yield Response to Different Soil Fertility Treatments in south-western Uganda

Abstract

Finger millet is native to East Africa and is entwined in the local culture and traditions. Apart from having a long shelf life and a wide range of food values, it is a source of livelihood for several thousands of small-holder farmers in East Africa. Currently, there is an increasing demand for finger millet. However, the soils of southwestern Uganda are reported to be experiencing pressures of overutilization to meet the food needs of the growing human population. As a result, this renders the soils inadequate to meet the nutrient needs for finger millet production to satisfy the demand for this crop as a source of food, animal feed, and raw material for industrial use. This study aims to establish the agronomic status of finger millet production amidst climate variability and its yield response to differing soil fertility treatments in Southwestern Uganda. A cross-sectional social survey will be conducted to gather data on finger millet production in the face of climate variability. Furthermore, an ecological survey will provide information on the soil's physicochemical parameters. All the physicochemical parameters will be assessed using standard procedures before the inception of the experiments. Experimental plots will be set up on the arable land provided by volunteer farmers. Each farmer's field will act as a replicate for the experiment. Data on the growth and yield parameters of finger millet grown in the different experimental plots will be collected using standard procedures. Furthermore, samples of straw, husks, and grains from the various treatment plots will be taken to the laboratory to evaluate their nutrient uptake following standard procedures. Consequently, a land suitability map for finger millet production in southwestern Uganda will be generated using remote sensing techniques. Nvivo software will be used to analyze qualitative data. R software will be used to create descriptive statistics of the agronomic practices of finger millet production, and the data will be presented in the form of charts, tables, and graphs. Logistic The data on the measured physico-chemical parameters of the soil will be analyzed using analysis of variance (ANOVA) in R studio, and the data will be presented in tables. Measured data on the growth and yield parameters will be analyzed using ANOVA, while counts will be analyzed using Chi-square in R software, and the data will be presented in tables. Nutrient supply will be correlated to soil parameters using standard linear regression to calibrate the Quantitative Evaluation of the Fertility of Tropical Soils (QUEFTS) model. Then, its validation will be established using statistical tests such as Root mean square error (RMSE), Coefficient of determination (R²), Index

of agreement, and Percent bias (PBIAS) in R programming language. The environmental factors such as rainfall, humidity, temperature, topography, and soil characteristics will be weighted based on their level of influence using multi-criteria evaluation with the help of ArcGIS software version 9 to produce a finger millet production suitability map. All statistical analysis will be performed at a 5 % level of significance.

Key words: Agronomic status, climate variability, finger millet, growth, soil fertility, and yield.

Lukiya Nazziwa: Modelling of Ion Acoustic Solitary Waves in Magnetized Three Component Electron-Positron-Ion Plasma.

Abstract

This study focused on nonlinear ion-acoustic solitary structures (IASS) in a magnetized plasma system that is kappa distributed comprising electrons, positrons, and ions (e-p-i) using a fluid theory approach. A novel nonlinear inverse dispersion relation peculiar to this complex plasma environment was derived. The dispersive properties of ion-acoustic waves in magnetized e-p-i plasma environment were investigated considering the influence of various superthermal of electrons and positrons (κ_e and κ_p), unperturbed positron to ion density ratio, p , electron to ion density ratio, δ , ion to electron temperature ratio, σ . By numerically analyzing the impact of plasma properties, particularly the nonlinear dispersion characteristics in a magnetized e-p-i plasma. The influence of the external magnetic field (obliqueness) angle θ , which alters the frequency value of ω_2 . It was found that the values of δ , the frequency ω_2 of IASS waves decreases with increasing δ . This result has significant implications for understanding the dynamics of various astrophysical settings, such as the solar wind. However, when $\delta > 0$, the curves become more nonlinear, indicating that the waves become more dispersive. Further, it is discovered that as the value of θ for $+\omega_2$ solution increases, the shape of the dispersion curve does not significantly change. In contrast, it is observed from the ω_2 solution that for all values of angle θ , frequency decreases with increasing angle θ . This is because the ion-acoustic mode is strong at the propagation angle at $\theta = 00$ and weakens as the propagation angle increases, eventually disappearing at $\theta = 900$. Thus, these findings provide an appreciable understanding of the dispersion characteristics of obliquely propagating IASS modes in a magnetized e-p-i plasma. In conclusion, our results provide important and new information on the interaction of plasma parameters in complex astronomical (natural) and laboratory (artificial) settings. The Sagdeev potential technique has also been used to investigate the large amplitude ion acoustic solitary structures (IASS), propagating in a magnetized regime. The model consists of inertial cold ion fluid with electrons and positrons which also follow kappa distribution. The effect of different nonlinear large amplitude properties in

magnetized e-p-i plasmas is analyzed both analytically and numerically. These parameters include the direction cosine (k_x), spectral indices (κ_p & κ_e), unperturbed positron to ion density ratio, (p), electron to ion density ratio, (δ) and ion to electron temperature ratio $+$ (σ). It was found that when the excess of superthermal electrons increases (stronger superthermality, lower kappa value), the existence domain for solitons narrows throughout the range of IASS wave speed. Further it was found that ion-electron temperature ratio, σ does not have any significant effect on the electrostatic potential amplitudes of IASS. Interestingly, the present system supports only the negative potential of IASS, implying the existence of one polarity. Therefore, the current study is able to aid our understanding of properties of nonlinear structures observed in the astrophysical environments, especially in pulsar wind and interstellar media which consist of excess superthermal particles. Finally, the study provides a basis to explain observations in laboratory produced magnetized e-p-i plasma.

Keywords: Plasmas, Dispersion relation, Numerical methods, Waves Sagdeev potential technique, Magnetized e-p-i plasma, Ion acoustic solitary structures, and kappa distribution

Rose Hezekiah Jonathan Kilonga: The Impact of Classroom Environment on Implementation of Learner-centered Instruction in Selected Secondary Schools in Juba City South Sudan

Abstract

This research intends to examine the impact of classroom environment on implementation of learner- centered instruction in selected secondary schools in Juba city through mixed method concurrent approach which involve collection of both quantitative and qualitative data all at the same time. The objective of the study is to examine the instructional strategies applied in secondary schools, learner-centered instructional strategies employed, learner-centered modes of assessment applied, and lastly barriers hindering the implementation of learner centered instruction. The population under study comprise of secondary school teachers, head teachers, students and officials from the Ministry of general Education and instruction in the department of curriculum, inspection and national examination counsel. The study participants were selected through simple random sampling and purposive sampling technique. Quantitative data was collected using questionnaires, while qualitative data through interviews, focus group discussions and structured classroom observations. Quantitative data was analyzed with SPSS inform of frequencies and percentages while qualitative data from interviews and focus group discussions was analyzed by content analysis. Data from structured classroom observations was transformed into frequencies and percentages. The findings of the study reflected the use of lecturing, demonstration, brainstorming and interactive teaching as

instructional strategies applicable. The result of the classroom observations indicates that question and answer, activities, exercises solving problems, brainstorming, learners formulating questions and case studies were the most frequent learner-centered teaching strategies applied. Assessment in form of performance, practical task, exams with multiple choice questions is frequently applied. The barriers hindering implementation of learner-centered instruction exist in terms of large class size, lack of materials and technological facilities for implementing learner-centered instruction, time allocated per period is not enough, the physical conditions of the classrooms are not flexible for group work then difficulty of application of learner-centered with some subjects like math and science.

Tuhamize Barbra: Carbapenem Resistance Genes in Enterobacteriaceae Isolated from Urinary Tract Infection Outpatients in South Western Uganda

Abstract

Background: Urinary tract infections (UTIs) are among the most common bacterial infections worldwide, primarily caused by Enterobacteriaceae. Theriseofcarbapenem-resistantEnterobacteriaceae(CRE),complicates treatment of UTIs, yet the distribution of CRE and carbapenemase genes in Uganda's hospitals are not sufficiently explored. We aimed at studying the carbapenem resistance in Enterobacteriaceae isolated from urinary tract infections in outpatients in southwestern Uganda. Methods: A cross-sectional hospital-based study was conducted in southwestern Uganda, involving 111 participants who tested positive for carbapenemase genes. These participants were selected from a total of 2,371 patients presenting with urinary tract infections (UTIs) at Bwizibwera Health Center IV and Rubaya Health Center III. Enterobacteriaceae were identified using a series of biochemical tests, and the presence of carbapenemase resistance genes (blaVIM, blaOXA-48, blaNDM, blaKPC, and blaIMP) was confirmed through polymerase chain reaction (PCR) genotyping. Data were analyzed and presented as frequencies and proportions, displayed in tables and charts. Results: We screened a total of 2371 participants with symptoms of urinary tract infections (UTI) for Enterobacteriaceae,455 (19.2%) tested positive for at least one of the Enterobacteriaceae species. Disk susceptibility testing (DST) for carbapenems (Meropenem and Ertapenem) revealed a phenotypic carbapenem resistance prevalence of 5.7% (26/455), while polymerase chain reaction (PCR) identified a genotypic prevalence of 24.4% (111/455). Klebsiella spp. was the most common carbapenemase gene carrier (60/111, 54.1%), with blaIMP being the most frequent gene detected (32.4%). PCR detected more carbapenemase-producing organisms compared to DST. Notably, 14.4% of the isolates harbored multiple carbapenem resistance genes, with one sample carrying four different genes. Conclusion: Our study revealed a high genotypic prevalence of CRE, especially in Klebsiella spp and Escherichia spp isolates with a low phenotypic expression. This suggests

that relying solely on DST could miss resistant strains, emphasizing the importance of molecular diagnostics like PCR for accurate detection. Carbapenemase inhibitors should be prescribed alongside carbapenem drugs where CREs are suspected, combined with continued surveillance to help manage CRE and reduce their spread in resource-limited settings.

Taremwa Ivan Mugisha: Assessment of Transfusion Safety and Efficacy among Cancer Patients in Uganda and Caregivers' Perception on Blood Use

Abstract

Background: Patients with cancer may present with cytopenias that require management with blood transfusion. This predisposes the recipients to multiple allogeneic transfusions. Also, the risk of transfusion-transmissible bacterial infections remains prevalent in limited resource settings. These transfusion challenges augment transfusion adverse events and compromise its safety and efficacy. More, the patients and caregivers who require blood transfusion are skeptical about it due to the perceived risks, and this ultimately affects their transfusion uptake. Study aims: This study aims to assess the level of bacterial contamination among donor blood indicated for transfusion to cancer patients; determine the burden of anti-red blood cells (RBC) antibody formation and their specificities; investigate the incidence of transfusion reactions among cancer patients; as well as exploring the caregivers' perceptions of blood use. Methods: Study setting: This is a multisite study being conducted from Mbarara Regional Referral Hospital (MRRH) and Uganda Cancer Institute (UCI). The study has three sub-studies; 1). Transfusion safety sub-study is investigating bacterial contamination in the donor blood indicated for transfusion to cancer patients, as well as the burden and specificities of anti-RBC antibody formation among newly diagnosed hematological cancer patients. - For bacterial contamination, we are aseptically aliquoting 11mL of whole blood (WB) or packed red blood cells (PRBCs), and 6mL of platelets from donor units indicated for transfusion to cancer patients at the time of issuance. 10mL (WB and PRBCs) or 6mL of platelets are inoculated into an aerobic Bactec blood culture bottle, and 1mL is used for Gram staining. The cultures are incubated at 37°C, and positives are systematically investigated. - For RBC alloimmunization, we are collecting EDTA anticoagulated blood samples from newly diagnosed hematological cancer patients. We will perform alloantibody screening and identification using a 3 and 11-cell panel, respectively. At the moment, samples are stored at -80°C both at UCI and MUST Clinical and Research Laboratory. We will ship samples to the Department of Immunology and Infectious Diseases at the University of Calgary for alloantibody screening and identification. Also, a data abstraction tool is used to obtain the clinical and transfusion characteristics of the participants. 2). Transfusion efficacy sub-study is investigating a cohort of hematological cancer patients who have received a transfusion during the

study period. The enrolled participants are sampled on days 0, 7, and 14. At each visit, we perform hemoglobin (Hb), direct antiglobulin, and lactate dehydrogenase tests. We will perform an alloantibody screening. Also, we are documenting the occurrence of acute and delayed hemolytic transfusion reactions. We will also determine the occurrence of serological transfusion reactions. 3). Transfusion perceptions sub-study is a qualitative study that is interviewing caregivers/caretakers of cancer patients, and healthcare providers at MRRH and Mbarara Regional Blood Bank. We will transcribe the interviews and thematically analyze the data.

Dina Nabasumba: Smallholder farmers' perceptions of climate variability and Its influence on crop selection in South-western Uganda

Abstract

Smallholder farmers in sub-Saharan Africa (SSA) rely mainly on rain-fed agriculture, which is vulnerable to climate variation. This calls for adaptation of production systems and practices to climatic variations to secure household food, nutrition and income security. Variations in seasonal rainfall in terms of amount, timing, consistency, and seasonal temperature changes, have often caused crop failures, reduced crop productivity or reduced areas suitable for growing certain crops in SSA. Several studies have documented how climate variability has affected crop productivity especially yield in agricultural production systems in SSA. However, there is limited information on how smallholder farmers in SSA select their crops and varieties as a coping mechanism to climate variability. Using south-western Uganda as a case study area, this study investigates whether smallholder farmers' perception of climate variability influences their crop choices. Through probability sampling procedures, a household survey was conducted with 583 smallholder farmers in three districts in south-western Uganda, between January and March, 2024. Data were collected on demographic and socio-economic profiles of households, smallholder farmers' opinions about variations in rainfall and temperature variables in the past the past 10 years. Crop types and varieties selected or abandoned by smallholder farmers and the reasons for adoption or abandonment were explored. In this contribution, we will report on the preliminary results of the analysis of the survey dataset, highlighting how crop choices of smallholder farmers are influenced by their perception of climate variability.

Nakato Constance Nakimuli: Predicting the Quality of Biomass Briquettes from Agricultural and Municipal Organic Solid Waste Using a Machine Learning Approach.

Abstract

Biomass briquettes are a promising source of renewable energy; however, their quality can vary significantly, impacting consumer adoption and sustainability efforts. This research aims to develop and optimize machine learning models to accurately predict key quality characteristics of biomass briquettes produced from agricultural and municipal solid waste. Traditional quality assessment methods often rely on destructive testing which is costly, labor-intensive, and time-consuming hindering production optimization in resource-constrained environments. This study addresses challenges such as high ash content (20%-30%) and instability due to inconsistent mixing ratios and production parameters, which can hinder consumer acceptance. It seeks to enhance the reliability of biomass briquettes as a clean sustainable fuel, alternative while addressing waste management concerns. A comprehensive dataset will be established through a review of literature, controlled laboratory experiments, and assessments of biomass feedstock and briquettes from the laboratory and producers in Mbarara City and Isingiro District, Uganda. Key briquette properties including physical characteristics (durability and density), combustion parameters (heating value, ignition time, and burning duration), and emissions (CO, CO₂, and PM_{2.5}) will be correlated with various input parameters, including ultimate and proximate analyses, biomass type and mixing ratios, and briquetting conditions. Advanced machine learning algorithms, such as Random Forest, Extra Trees, and Artificial Neural Networks, will be employed to develop predictive models capable of assessing briquette quality across multiple parameters. Additionally, biomass briquettes produced based on the best machine-learning model predictions will be empirically tested for compatibility with various biomass cook stoves available on the market. The anticipated outcomes include identifying optimal machine learning approaches for multi-parameter briquette quality prediction and fostering collaborations between academia and industry to advance machine learning solutions, ultimately enhancing the sustainability and efficiency of biomass briquette production.

Kiconco Ritah: Molecular Characterization of Angiotensin Converting Enzyme Gene Polymorphisms Among Type 2 Diabetes Mellitus Nephropathy in Southwestern Uganda.

Abstract

Background: Diabetic nephropathy is recognized as a polygenic and multifactorial condition. The relationship between the routine tests used to investigate the renal-metabolic function and the involvement of an individual's genetic makeup are not well described. We aimed at determining the association between the biomarkers of nephropathy and the ACE insertion/deletion gene polymorphisms among type 2 diabetic patients. **Methods:** Data were collected from 237 adult type 2 diabetes mellitus patients receiving healthcare at the diabetic clinic of Mbarara Regional Referral Hospital. Peripheral blood genomic DNA was amplified using a conventional PCR technique and analyzed for the ACE homozygous forms of the insertion (II), deletion (DD) and heterozygous insertion deletion (ID) genotypes as well as their respective allele counts. Biomarkers of nephropathy were analyzed on a Beckman coulter AU480 chemistry analyzer using system compatible reagents. **Results:** Majority of the participants were older persons (Median = 57, IQR = 49-64) and female 171 (72.2%). Most of them had the Deletion allele 198 (83.5%) and DD genotype 116 (48.9%) see Figures 1-4. At multivariate logistic regression, summarized in Table 1, Insertion allele was associated with increasing glycated hemoglobin (OR = 1.082, $p = 0.019$) and decreasing serum glucose levels (OR = 0.891, $p = 0.001$). Deletion allele was associated with decreasing glycated hemoglobin (OR = 0.924, $p = 0.047$) and increasing serum glucose levels (OR = 1.208, $p = 0.001$). ACE II genotype was associated with decreasing serum glucose levels (OR = 0.873, $p = 0.029$). ACE DD genotype was associated with decreasing glycated hemoglobin (OR = 0.917, $p = 0.010$) and increasing serum glucose levels (OR = 1.132, $p = 0.001$). ACE ID genotype was associated with increasing glycated hemoglobin (OR = 1.077, $p = 0.022$), triglycerides levels (OR = 1.316, $p = 0.031$) and decreasing serum glucose levels (OR = 0.933, $p = 0.038$). There was no association between the ACE I/D alleles or genotypes with microalbuminuria and eGFR. **Conclusion:** The presence or absence of the ACE I/D alleles and genotypes affects the ultimate increase or decrease in the serum glucose, glycated hemoglobin and triglycerides levels. These implicated biomarkers should be included in healthcare guidelines used when attending to type 2 diabetic patients as these might indicate an impending nephropathy among these patients. Overall, genetic testing of the angiotensin converting enzyme insertion /deletion gene polymorphisms should be encouraged among patients to facilitate personalized health care.

Vicent Mwesigye: Lymphedema: Causative Agents, Patient and Caretaker Knowledge, Self-Reported Healthcare Needs and Preventive Strategies in Kamwenge District.

Abstract

Background: Lower limb lymphedema, sometimes referred to as "Elephantiasis," is the outcome of localized fluid retention brought on by a malfunctioning lymphatic system. Many patients suffering from this chronic and severe ailment suffer as a result of its undervaluation in scholarly work, teaching, and clinical practice. The abnormal accumulation of fluid rich in protein in the interstitium is caused by the lymphatic system's mechanical inadequacy, and this leads to a series of unfavorable outcomes like fibrosis and fat deposition. Patients initially experience itchy, skin infections, heaviness in the extremities, and later on, Acanthosis, skin papillomas, dermal fibrosis, and other trophic skin conditions abnormalities. Aim: Given the neglected nature of the condition, especially in Uganda where data are scarce, this study will be help to determine Causative Agents, Patient and Caretaker Knowledge, Self-Reported Healthcare Needs and Preventive Strategies in Kamwenge District. Objectives: To describe the Preventive and management strategies, their effectiveness in patients with Lymphedema based on Scoping review globally, to determine the causative agents of lymphedema among patients with lymphedema in Kamwenge district, South Western Uganda, to explore the lymphedema-related knowledge, lived experiences and healthcare needs of patients and their caretakers and preventive strategies in Kamwenge district, South Western Uganda. Methods: In sub study 1; A scoping review will be used to describe the Preventive and management strategies, their effectiveness in patients with Lymphedema based on Scoping review globally, In sub study 2; We will recruit participants using purposive sampling, mid night blood samples will be taken off for filarial screen using microscopy and Rapid diagnostic test kits for antigen detection, and swabs will be collected from the interdigital space of the toes of the affected foot for fungal and bacterial culture. Soil samples will be collected for testing of silicon, aluminum and iron respectively. A structured questionnaire will be administered to collect demographic characteristics of the participants, in sub study 3; Focus group discussions and key informant interviews will be used to collect data on lymphedema-related knowledge, lived experiences and healthcare needs of patients and their caretakers and preventive strategies in Kamwenge district.

Keywords: Lymphedema, Lymphatic Filariasis, Podoconiosis, Bancroftian Elephantiasis, Uganda.

Mabirizi Vicent: A Convolutional Neural Network Model for Processing DICOM Files.

Abstract

This research proposes a convolutional neural network (CNN)-based model to address the complexities in processing and classifying DICOM (Digital Imaging and Communications in Medicine) files, a standard format integral to medical imaging diagnostics. Existing machine learning models typically require the conversion of DICOM files to standard formats like PNG or JPEG, a step that often results in the loss of crucial metadata and reduces diagnostic accuracy. This study aims to improve the accuracy of DICOM file classification by developing a model that directly processes these files without format conversion, thereby preserving metadata and enhancing classification performance. The study will employ the Design Science Research (DSR) methodology, structured around three specific objectives: (1) to explore the application of deep learning techniques in DICOM file classification, (2) to develop a CNN model optimized for processing DICOM files, and (3) to test and validate the model's classification accuracy. The model will be trained and tested on a dataset of 6,300 DICOM images, including labeled normal and infected images, with evaluation metrics such as accuracy, precision, recall, and F1-score to measure its performance. This research advances the field of medical imaging by addressing the technical challenges of DICOM file processing. Its outcomes could facilitate improved diagnostic support in healthcare, contributing to more accurate and reliable AI-driven medical image classification. This foundational study aims to lay the groundwork for future research, integrating CNNs within real-world diagnostic workflows without compromising data integrity and clinical reliability.

HUMANITIES, SOCIAL & MANAGEMENT SCIENCES

Ainomujuni Junior: Equitable Governance as Conservation Trade-off for The Management of Lake Mburo National Park and Bwindi Impenetrable National Park Uganda

Abstract

Although protected areas are essential for conserving biodiversity and ecosystem services, conservation efforts often negatively impact local communities, particularly indigenous populations. Integrating effective governance practices is recognized as a potential approach to enhance livelihoods alongside conservation policies. Both global and national conservation policies increasingly prioritize governance and equity issues, as highlighted by various international conferences and targets. Equitable governance is crucial for protected area management, contributing to improved conservation outcomes. Key aspects such as recognizing conservation stakeholders, decision-making procedures, and equitable distribution of costs and benefits are vital for sustainable conservation and effective management. This study examines equitable governance as a conservation trade off in the management of Lake Mburo National Park (LMNP) (South-Isingiro) and Bwindi Impenetrable National Park (BINP) (southern Sector-Kisoro) through the lenses of recognitive, procedural, and distributive equity. Adopting a comparative research design, the study employs mixed-methods including multi-stakeholder assessment workshops, key Informant Interviews, GIS mapping and direct observation for data collection. The research is expected to enhance management systems for resource allocation and utilization, aiding in the development of effective Park and governmental policies regarding resource management in protected areas. Additionally, it will propose corresponding trade-offs to address the conservation costs borne by surrounding local communities. Furthermore, other researchers will utilize the recommendations from this study as a basis for conducting additional research

Justus Asasira: Socioeconomic and Environmental Impacts of Biomass Briquettes and Solar Cooking Technologies Adoption by Households in Southwestern Uganda

Abstract

Currently, households in Southwestern Uganda use charcoal for cooking which causes severe health and environment-related issues. This study examined the acceptance of renewable energy technologies for cooking in Southwestern Uganda, particularly on biomass briquettes and solar cooking technologies. The research was guided by four objectives namely, i) stakeholder perceptions, ii) business models and economic feasibility, iii) environmental impacts, and iv) attributes of social acceptance. The overarching framework used in this study was the triangle of social acceptance of renewable energy innovations. The study adopted mixed methods including Q-methodology, techno-economic assessment, life cycle assessment, and discrete choice experiments. Objective 1: This study explored the perceptions and experiences of users, former users, non-users, and producers of biomass briquettes living in Mbarara City. This qualitative study involves 24 participants selected using snowballing and purposively. The duration and type of meals a household prepares influence energy use. None of the households used electricity from the main grid or solar for cooking. Charcoal prices increased in 3 months or less by \$2.7 and \$4.05 per bag of charcoal. The bag of charcoal lasts between 14 and 30 days, with an average of 21 days for a household of 3 to 6 people. Briquettes stay longer than 4 hours on the stove, produce less to no smoke, and are preferred for prolonged food steaming. The abandonment of briquette use was estimated at 33.3%, mainly attributed to low quality and interrupted production. Non-users had limited knowledge about briquettes. Using social networks, physical demonstrations, improving the quality of briquettes, and training more producers could enhance the adoption of briquettes in Mbarara and minimize abandonment. The study has highlighted that a combination of several influences the adoption and abandonment of briquettes at the household level. Objective 3: Solar cookers are considered a good alternative to reduce the use of charcoal. However, the difference in environmental impact has never been assessed before for a solar cooker with thermal energy storage and charcoal cooking in Uganda. This study compared the environmental impacts of the life cycle of a parabolic solar cooker and conventional charcoal for cooking in Mbarara City, Uganda using Ecoinvent version 3.6 database and environmental footprint 2.0. The functional unit was to cook two meals daily over ten years for an average household of 3 to 6 people in both alternatives. Most environmental impacts were between 6 to 9 times lower for a solar cooker compared to charcoal apart from freshwater eutrophication where impacts are 75 times lower. Normalized results identified freshwater eutrophication, human toxicity, and material resources as significant factors. Weighted results indicated that the impact of charcoal was 4.32 and solar cooker 0.38, 11 times

lower when compared. Freshwater eutrophication accounts for 30% of the weighted impacts. This study highlights significant impact categories such as freshwater eutrophication, human toxicity, global warming, and material resources. The major contributors to the environmental impacts were charcoal and cookstoves. The study has provided a benchmark for future studies intending to assess the environmental impacts of different energy sources in Uganda. Complementing the solar cooker with briquettes for days when there is no sun could eliminate the use of charcoal.

Gumisiriza Asaph Blair: Examining Institutional Support on Skills Development for Youth Self-Employment in Mbarara City: A Study of Influences and Outcomes

Abstract

The study, Examining Institutional Support on Skills Development for Youth Self-Employment in Mbarara City: A Study of Influences and Outcomes, investigates how institutional interventions are shaping skills development and fostering self-employment among the youth. With youth unemployment remaining a critical challenge in Uganda, despite numerous policy initiatives, institutions such as government agencies, NGOs, and private organizations are playing a crucial role in addressing this issue. Existing literature, including works by Cohen (2019) and Nyamukuru & Kato (2021), points to gaps in institutional support, including limited access to resources, mentorship, and market linkages, which hinder successful youth transitions into self-employment. Youth unemployment in Mbarara City remains high at 23% despite various institutional interventions like the "Youth Livelihood Program and the mega Presidential Initiative on Youth Skilling" programs. Mismatched skills, limited access to capital, and poor infrastructure persist, reducing the impact of these initiatives. This study further examines the role of institutions in enhancing skills for youth self-employment in Mbarara City. The study is undertaken on a Pragmatic philosophy that emphasizes real-world application and dealing with specific outcomes by mixing qualitative and quantitative approaches to deliver holistic perspectives. The study employs a mixed-methods approach, integrating both qualitative and quantitative data. A sample of 90 youths who have participated in skills development programs will be surveyed, while in-depth interviews will be conducted with 43 key institutional stakeholders and policymakers. The sampling strategy is based on purposive and random sampling to capture a diverse range of experiences and insights from both beneficiaries and implementers of the programs. Methodologically, quantitative data will be analysed using statistical tools to identify trends and relationships, while qualitative data will be coded and thematically analysed to capture deeper insights into the institutional dynamics at play. The anticipated outcomes of the study include a clearer understanding of the effectiveness of institutional support in promoting youth self-employment in Mbarara City. It is expected that the

study will reveal significant challenges in access to training, funding, and mentorship, while also offering policy recommendations aimed at improving the alignment of institutional programs with the needs of the youth. If fully completed, the research could inform better-targeted interventions to enhance youth self-employment, reducing the unemployment rate and contributing to sustainable economic development in the region.

Kyarikunda Monica: Community Based Tourism Enterprises' appraisal and community conservation outcomes amidst changing demographics around Bwindi Impenetrable National Park

Abstract

This research analyses and reviews Community-Based Tourism Enterprises (CBTEs) and their influence on community conservation outcomes in the context of changing demographics around Bwindi Impenetrable National Park (BINP), Uganda. BINP, a critical habitat for the endangered mountain gorilla, has seen a rise in tourism as a vital economic activity for the surrounding communities. This study evaluates the performance of CBTEs in fostering sustainable tourism, economic development, and conservation efforts. Through a combination of field surveys, GIS mapping, interviews with key stakeholders and Focus Group Discussions, the research identifies significant economic benefits from CBTEs, such as increased local incomes and improved community infrastructure funded by tourism revenues. Conservation outcomes have also improved, with enhanced community engagement leading to reduced poaching and better wildlife protection. The study also explores the impact of demographic changes, noting the increasing involvement of youth and women in tourism-related activities and shifts in demand patterns, driven by marketing and economic opportunities. Challenges such as balancing economic growth with conservation, managing conflicts between tourism and traditional land use, poor connectivity, inaccessibility and ensuring equitable distribution of benefits are highlighted. The preliminary findings suggest that while CBTEs have positively impacted economic and conservation outcomes, continuous efforts are needed to adapt to demographic changes and promote sustainable, inclusive growth while embracing technology. The performance of CBTEs is constrained by inaccessibility, poor connectivity and low technology adoption among others.

Catherine Atahigwa: Navigating Gender and Power: A Qualitative Analysis of Fertility Decision-Making in Rubirizi District, Southwestern Uganda.

Abstract

This study examines the complex interplay of gender and power relations in shaping reproductive decision-making in Uganda. Utilizing qualitative research methods, including in-depth interviews, focus group discussions, and key informant interviews, the research investigates the experiences of men (aged 18-54) and women (aged 18-49). Data were audio-recorded, transcribed, and analyzed through inductive thematic analysis. The findings reveal that reproductive choices are heavily influenced by gendered power asymmetries, where men typically hold more authority in decision-making. These imbalances are deeply entrenched in the patriarchal social, cultural, and economic structures that govern everyday life, marginalizing women's agency over fertility decisions. The study highlights the enduring influence of traditional gender norms and power dynamics on fertility outcomes, emphasizing the critical need for interventions that empower women and promote joint decision-making in reproductive matters. Sustainable efforts to reduce high fertility rates must address the underlying gender inequalities and foster a shift in societal norms toward gender equity.

CROSS-CUTTING/MULTI-DISCIPLINARY RESEARCH

Tuhimbise Dominic: Mathematical Model of Malaria Transmission Dynamics and Control with Vaccination and Treatment

Abstract

Despite enormous efforts that have been made to manage malaria and considerable progress achieved through the use of indoor residual spraying (IRS), insecticide treated nets (ITNs) and clinical treatment worldwide, morbidity and mortality rates due to malaria disease remain high in sub-Saharan Africa. According to the World Health Malaria Report 2024, there were an estimated 249 million cases and 608,000 malaria deaths worldwide in 2022. Africa continues to have the highest share of the global malaria burden with 94% of cases and 95% of deaths. Children under 5 years accounted for about 80% of all malaria deaths in the Region. Clinical treatment is confirmed as the best intervention in reducing the spread and mortality of malaria disease. However, drug resistance has been witnessed in some areas where the disease is endemic. In 2020, WHO recommended the RTS, S/AS01 malaria vaccine to be used for the prevention of *Plasmodium falciparum* malaria in children living in sub-Saharan Africa and regions with moderate to high transmission. By 2nd October 2023, both the RTS, S/AS01 and R21/Matrix-M vaccines were already recommended by WHO to prevent malaria in children. In this study, a deterministic mathematical model that considers both human and mosquito populations has been formulated. This is being used to examine the effect of a combination of the vaccination for children only and treatment on disease transmission and control. In addition, the effect of presence of the protected humans (vulnerable immigrants/travelers and pregnant mothers) and population mobility will also be investigated on malaria transmission. The results from this study will guide the National Malaria planning units who are soliciting for malaria vaccines to make informed decisions amidst implementation of familiar control strategies. Furthermore, the mathematical analysis for this study includes model, stability of equilibria and sensitivity analysis on the reproduction number. Numerical simulations will be carried out with the help of MATLAB to illustrate the theoretical results.

Ndinawe John Bosco: Quality of life, associated factors and use of mHealth interventions among cancer patients receiving palliative care in Western Uganda

Abstract

Introduction: Recently, the global cancer disease burden has increased exponentially; with an approximate mortality of 10 million and incidence of 19-20 million cases annually. Most of the cases are diagnosed in advanced stages of disease, when there is a high limitation in terms of management modalities. Here, palliative care (PC) is one of the few feasible and cost – effective interventions available for this segment of patients who suffer from a myriad of distressing symptoms emanating from the disease itself, treatment and co-morbidities. According to the World Health Organization (WHO), the main focus of PC is to improve quality of life (QOL) of patients suffering from life-limiting illness such as cancer and their families. More than 80% of patients in need of PC live in the developing world, including Sub Saharan Africa (SSA), where coverage and accessibility of the service remains extremely low. Less than 5 %, actually access the service due to a number of factors. Ameliorating access to and improving quality of PC delivered should be a key healthcare priority in this region. Furthermore, previous studies done among patients receiving palliative care in Uganda, have documented low levels of QOL of such patients. Utilization of mHealth interventions has been put forward as one of the key approaches to scale up and improve PC by means of establishing and enriching linkages to clinical and social networks. They have been highlighted as a fundamental health system strengthening tool. The feasibility of the use of these interventions and their contextualized effect on QOL of cancer patients under palliative care in Western Uganda is not well known. There is therefore a critical need to conduct a study to establish the level of QOL, associated factors and use of mHealth interventions, the findings of which will inform further development of Pc and ultimately enhance QOL of cancer patients in the region. Methods: This will be a three-phased study that will comprise of; (1) Scoping review which will be vital in identifying and mapping key mHealth interventions applied in PC in SSA. It will define their form/ nature and use as well as factors influencing their use. The findings will inform the most appropriate mHealth intervention to apply in PC in Western Uganda, (2) Cross-sectional study which is key in carrying a situational analysis about QOL cancer patients under PC and the associated factors in Western Uganda, (3) Interventional component, that will be quasi-experimental in nature. It will comprise of designing and pilot-testing the effect of a reminder-text-message based intervention on QOL of cancer patients receiving PC in Western Uganda. Conclusion: This study will assess QOL of cancer patients under PC in Western Uganda. It will also involve mapping the existing key mHealth approaches in a PC setting as well as assess the effect of one of them on QOL of cancer patients under PC. The findings will be foundational to further development of the service in the region.

Kizito Mohammed: Mathematical Models for the Dynamics of Tuberculosis and Hepatitis C Co-infection

Abstract

This study employs a deterministic model that describes the combined dynamics of TB and HCV under medication aimed at determining the impact of medication in the management of TB-HCV co-infection. The analytical and numerical analysis indicate that if the TB-HCV co-infection reproduction number, $R_{TH} = \max \{R_{TB}, R_{HCV}\} < 1$, the simultaneous absence of TB and HCV infections represents a stable equilibrium state. Additionally, the stability analysis reveals that when $R_{TH} > 1$ for both TB and HCV, the endemic equilibria become stable attractors, thus, a long-term co-existence of both infections. An increase in the rate of human-to-human contact between the TB (or HCV) infected individuals and the susceptible population ξ_1 or ξ_2 and the likelihood of a contact resulting in TB (or HCV) transmission q_1 or q_2 results in a higher endemicity of the infection, as revealed by the sensitivity analysis. Numerical simulations indicate that increasing the rate at which humans with co-infections are treated decreases the widespread presence of TB and HCV in the population. We therefore recommend that health facilities be stocked with antibiotics for TB and antiviral medications for HCV for easy access by individuals who test positive to the respective infections.

Keywords: Tuberculosis, Hepatitis C, Co-infection, Basic reproduction number, Deterministic model.

Emilly Arishaba: Baseline Comparison of Attitude and Academic Competences in Kiswahili Language among Government-Aided Secondary School Students in Mbarara City: Priori North and South Divisions

Abstract

Background: The study investigates the baseline differences in learners' attitudes and academic competencies in the Kiswahili language across secondary schools in Mbarara City. Government-aided schools in both the North and South Divisions were selected to assess how regional disparities might influence the learning of Kiswahili, Uganda's national language. Purpose: This research aims to establish a foundational comparison of the attitudes toward Kiswahili and the associated academic competencies between students from two distinct divisions of Mbarara City: North and South. The findings will inform the role of regional factors in language acquisition and offer insights for pedagogical improvements in Kiswahili language education. Methods: A quasi-experimental design was employed, with baseline data collected using questionnaires and standardized tests. The participants comprised senior three Kiswahili language learners in government-aided secondary schools in both divisions. Descriptive statistics and inferential analyses were used to compare attitudes

and academic competencies. Findings: Preliminary findings indicate that students in the South Division display a more favorable attitude towards Kiswahili than their counterparts in the North Division. However, academic competence in Kiswahili did not differ significantly between the two groups at baseline, suggesting that while attitude may vary, instructional approaches and support mechanisms play a more critical role in language competency outcomes. Conclusions: The study underscores the importance of regional context in shaping student attitudes toward Kiswahili but highlights the need for uniform pedagogical interventions to bridge competence gaps. These findings suggest that tailored educational strategies could enhance both attitude and proficiency in Kiswahili across diverse school settings.

Keywords: Kiswahili language, secondary schools, Mbarara City, attitudes, academic competencies, quasi-experimental study

Job Kalema: Peer Assessment Framework to Support Group-Based Assessment in E-Learning Environment for Higher Institutions of Learning

Abstract

Assessment remains a fundamental part of the learning experience for students and the way to gauge the extent and quality of students in higher institutions of learning but has moved from assessment processes designed and solely implemented by the teacher to those designed for student engagement and empowerment inflexible assessment and there is increasing interest in the implementation of peer assessment also known in the literature as peer review or feedback assessment. Peer assessment is a promising approach to engage learners in the assessment process and easily integrate into the learning activities. In higher education, peer assessment involves students applying criteria and standards to evaluate the work of their peers. In higher education, online learning environments present unique challenges for promoting meaningful interactions among students in universities specifically group based, these include co-locating students and participation of each group member in the group assessment (Mayende et al., 2015). Most students are non-participants in the group assessment, and their names are attached to the activity. Also, there are high failure rates at the end of the final summative assessment say exam since many students do not engage with the course materials to do the group assessment, and measuring individual contributions may be difficult and time-consuming for lecturers. This study is to build the peer assessment framework for group-based assessment that improves interactions in the online learning environment for Universities. The research approach employed by the researcher in this research is case study design and human-centered design approaches because it's a quantitative and qualitative research design, entailing of participants (Academic teaching staff, and students) who helped determine the current Group based

assessment state in the universities that is Kabale and Bishop Stuart University. The researcher also carried out a literature review on different components, and analyze them to determine what best fits into the design of the Framework. With the help of the DeLone-McLean model designed questionnaire format to which will be used in evaluating the Framework on expert evaluators (systems Administrators, e-learning and ICT staff). Out of the distributed questionnaires, 151 responses were received, representing a response rate of approximately 98%. The data reveals a significant disparity in the use of online platforms for collaborative methods, with 72.8% of participants indicating that they do not utilize such platforms, while only 27.2% reported using them.

Yonah Rutafa Karuhanga: Motivational practices training and Teachers effectiveness in Universal Primary Education schools of Greater Bushenyi districts.

Abstract

The success of any educational institution is solely dependent on the effectiveness of its teachers. Teachers are the ones on the steering wheel of directing the institution in line with achievement of school educational goals. This study seeks to investigate the effect of motivational practices, training and teachers' effectiveness in Universal Primary Education schools of Greater Bushenyi districts. This study will be guided by four objectives:- To investigate the relationship between recognition and teachers' effectiveness in Universal Primary Education schools of Greater Bushenyi district, To establish the relationship between fringe benefits and teachers' effectiveness in Universal Primary Education Schools of Greater Bushenyi district, To investigate the effect of training on teachers' effectiveness in Universal Primary Education Schools of Greater Bushenyi district and To establish the moderating effect of training on the relationship between motivational practices and teachers' effectiveness in Universal Primary Education Schools of Greater Bushenyi district. Convergent parallel mixed methods design and mixed methods strategy will be used to collect data. The sampling Unit will include Teachers, head teachers, District Education Officers and District Inspectors of schools. A sample 340 participants will participate in the study and these will be composed of 300 Teachers, 30 Head teachers, 5 District inspectors of Schools and 5 District Education officers. Data will be collected from 30 schools by picking five from each district. Simple random sampling and purposive sampling will be employed in selection of respondents, Questionnaire survey and interviews will be the methods of collecting data while self-administered questionnaires and interview guides are the tools that will help me correct both quantitative and qualitative data respectively. Data will be analysed both quantitatively and qualitatively using descriptive statistics and inferential analysis. Descriptive statistics will include calculating mean and percentages while inferential

statistics will include linear regression and Pearson correlation co-efficiency using SPSS 20.0. Pearson correlation co-efficiency will be used to establish the relationship between the independent and dependent variables while linear regression will be used to ascertain how independent variable influence the dependent variable. Qualitative data will be analyzed using content and narrative analysis.

Wilson Mathembele: School Inspection and Provision of Quality Education in Secondary Schools in Uganda: A Case Study of Kasese District

Abstract

This study will examine the effectiveness of school inspection in ensuring the provision of quality education in secondary schools in Uganda, using Kasese District as a case study. The demand for quality education at all levels of education is a concern for all governments, organizations and individuals. Despite the Government of Uganda's efforts to improve the quality of education, and the Directorate of Education Standards (DES) mandate to ensure continual improvement in the quality of education provided and training in schools and institutions through regular inspections, most Uganda's secondary schools continue to operate below the minimum standards. School inspection is a central mechanism for ensuring quality provision, but its effectiveness in Uganda, specifically Kasese District has not been studied in the recent past. The study will investigate the effectiveness of school inspection, the contribution of school inspection to learners' achievement, and the influence of school inspection on school improvement, and will employ a mixed-method approach, using a convergent parallel research design, and a sample of 376 participants will be involved in the study. Data will be collected from both government and private secondary schools using self-administered questionnaires that will be administered to the teachers, head teachers, directors of studies, and deputy head teachers, and interview guide will be conducted on head teachers, inspectorate officials, and the District Education Officer. An observation checklist will be utilized to collect data about some of the relevant aspects of the study. SPSS version 27 will be used to effectively analyze and interpret data, and Pearson Correlation Coefficient and a Regression analysis will be performed respectively to establish linkages between the IV and DV. It is hoped that the study findings may help teachers, inspectors, administrators, the District Education Officer, and policymakers to acquire knowledge about the effectiveness of school inspection, its contribution to learners' achievements, and the extent to which school inspection influences school improvement. This could form a basis for consideration of policy review especially restructuring the inspection process. The government and other investors in the education sector, both local and international may be provoked to increase their investment levels in the Ministry of Education and Sports, especially the inspectorate department for the provision of quality

education. Strategies for improving the inspection process for the provision of quality education may be proposed.

Issa Ndungu. A Comparative Study of Attitudinal Shifts, Learning Experiences, and Understanding of Transformation Geometry among Secondary School Learners through Technology-Enhanced and Conventional Van Hiele Phased Instruction

Abstract

This study explores the comparative effect of Technology-Enhanced Van Hiele Phased Instruction (TVHPI) and Conventional Van Hiele Phased Instruction (VHPI) on secondary school learners' attitudes, experiences, and understanding of transformation geometry. Utilizing quantitative and qualitative methods, the study analyzed data from 483 learners through a Difference-in-Differences (DiD) approach and conducted in-depth interviews with 48 students from six secondary schools in mid-western Uganda. Quantitative findings revealed a significant improvement in attitudes towards geometry in the TVHPI group, as evidenced by higher post-test attitude scores ($M = 3.62$, $SD = 0.496$) compared to the VHPI group ($M = 3.49$, $SD = 0.506$). The TVHPI method, integrating GeoGebra, demonstrated a greater positive attitudinal shift ($Z = -13.008$, $p < .05$) than the VHPI method ($Z = -12.474$, $p < 0.05$). Sensitivity analysis confirmed the robustness of these results, with VHPI showing more resilience to dropout than TVHPI which was more sensitive to dropout. Findings from qualitative analysis highlight that, while both instructional strategies improved students' knowledge of transformation geometry, TVHPI was more effective in overcoming conceptual difficulties and fostering deeper understanding. Learners in the VHPI group struggled more with geometric concepts and required additional instructional support. The study recommends the adoption of TVHPI in secondary education to support positive attitudinal shifts and better conceptual understanding, enhancement of technological infrastructure in rural schools, provision of support for high-dropout settings through mentoring and teacher guidance, and conducting further research on the long-term effect of TVHPI and VHPI on attitudes and achievement.

Key Words: Transformation Geometry, learners' experiences, GeoGebra, Van Hiele Phased Instruction, Technology-Enhanced Instruction, Attitudinal shifts, Engagement, and Confidence in Geometry

Preeti Kumari: Science Laboratory Operationalization and Secondary School Students' Academic Attitude, Motivation, and Performance in Mbarara City, Uganda.

Abstract

Science, as defined by The Oxford Advanced Learner Dictionary (2006), is knowledge about the structure and behavior of the natural world based on facts that can be proven through experimentation. Effective teaching and learning of science heavily rely on science laboratories. These laboratories are not just spaces for conducting experiments but also the birthplace of a comprehensive and practical understanding of science. The saying 'practice makes perfect' (Hager, 1974, as cited in Pareek, 2019) also holds true in science education. The study aims to assess how science laboratories are used in secondary schools in Mbarara City, Uganda. The objectives of laboratory activities are to promote accurate observation and description, make scientific phenomena more understandable, maintain interest, and encourage a scientific thinking approach. Uganda's science and technology plan seeks to integrate different aspects of the economy to achieve development goals. This study aligns directly with this plan, examining how secondary school science laboratories are utilized and whether they fulfill their intended purpose. The study will also explore how science lab activities affect students' attitudes, motivation, and performance in science subjects, providing insights to enhance science education. It will use a comprehensive mixed-method research approach to gather data from various sources, ensuring the validity and reliability of the findings. It is informed by instructional theories of learning interactions, focusing on improving teaching methods to achieve educational goals. The present study is supported by Dewey's philosophy of learning by doing. Its findings will be valuable to educators, policymakers, and stakeholders and aim to bridge the gap between ideal and actual scenarios in science education, contributing to Uganda's goals in science and technology.

Bwengye Innocent: A Survey on Machine Learning in Microstructural Classification of Metallic Biomaterials

Abstract

The classification of the microstructure is essential in understanding the properties and performance of metallic biomaterials used in biomedical applications. However, the techniques that apply to microstructure classification perform very poorly for such highly variable and complex materials. However, traditional techniques often struggle with complex and heterogeneous microstructures, necessitating the integration of advanced machine learning (ML) methods. We explore how these techniques are applied to classify microstructures from various imaging modalities, including scanning electron microscopy (SEM) and transmission electron

microscopy (TEM). The review discusses the common difficulties of working with limited or imbalanced data. The paper also reviews the state-of-the-art approaches that show how ML allows for more accurate and efficient classifications than those obtained using traditional techniques. Finally, current challenges are discussed, such as the complexity and interpretability of the models and the absence of standardized benchmarks. The paper also discusses the need for the integration of ML into smart manufacturing and bio-inspired approaches

Keywords: Metallic Biomaterials, Microstructural Classification, Machine Learning, Smart Manufacturing.

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ADMISSION REQUIREMENTS FOR ACADEMIC YEAR 2025/2026

POSTGRADUATE PROGRAMMES

MINIMUM ENTRY REQUIREMENTS

The minimum requirements for admission to any Postgraduate degree are:

- a) Uganda Certificate of Education (UCE) or its equivalent with at least 5 passes
- b) Uganda Advanced Certificate of Education (UACE) or its equivalent with at least 2 principal passes.
- c) An Honors degree from an accredited degree awarding institution
- d) Candidates who have a Pass degree should have at least a Postgraduate Diploma with at least a credit from an accredited degree awarding institution.

Additionally, applicants to any Master of Medicine programme MUST meet the following minimum entry requirements:

- i. Applicants whose first language or medium of instruction is not English, must provide evidence from a recognized English language training institution that they have sufficient command of English language.
- ii. Have a documentary evidence of Internship Training indicating disciplines and dates.
- iii. International applicants should have their documents verified by NCHE.
- iv. International applicants, should have their degree certificate and transcript translated and converted into an equivalent of Ugandan Universities' CGPA
- v. Be registered or eligible for registration with Uganda Medical and Dental Practitioners Council.
- vi. A current certificate of good standing with the Medical Practitioners' Council of the country of origin.

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The University offers PhD in the fields of Biomedical Engineering, Computing, Development Studies, Education, Management, Medicine and Science. Program duration is 3 years.

Minimum Requirements

- a) Uganda Certificate of Education (UCE) or its equivalent with at least 5 passes
- b) Uganda Advanced Certificate of Education (UACE) or its equivalent with at least 2 principal passes.
- c) An Honors degree from an accredited degree awarding institution
- d) A Masters' degree from an accredited and chartered degree awarding institution
- e) A Concept paper
- f) Curriculum Vitae of proposed supervisor(s).

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FACULTY OF BUSINESS AND MANAGEMENT SCIENCES		
NO.	PROGRAMME CODE	PROGRAMME DESCRIPTION
1	MBA	MASTER OF BUSINESS ADMINISTRATION
FACULTY OF COMPUTING AND INFORMATICS		
	PROGRAMME CODE	PROGRAMME DESCRIPTION
2	MHIT	MASTER OF SCIENCE IN HEALTH INFORMATION TECHNOLOGY
3	MSIS	MASTER OF SCIENCE IN INFORMATION SYSTEMS
4	PGDHIT	POSTGRADUATE DIPLOMA IN HEALTH INFORMATION TECHNOLOGY
5	PGDIS	POSTGRADUATE DIPLOMA IN INFORMATION SYSTEMS

FACULTY OF INTERDISCIPLINARY STUDIES		
	PROGRAMME CODE	PROGRAMME DESCRIPTION
6	MACI	MASTER OF ARTS IN CONFLICT AND INCLUSIVE DEVELOPMENT
7	PDCR	POSTGRADUATE DIPLOMA IN CRIMINOLOGY
FACULTY OF MEDICINE		
	PROGRAMME CODE	PROGRAMME DESCRIPTION
8	MMA	MASTER OF MEDICINE IN ANAESTHESIA
9	MMD	MASTER OF MEDICINE IN DERMATOLOGY
10	MME	MASTER OF MEDICINE IN EAR NOSE AND THROAT
11	MMEM	MASTER OF MEDICINE IN EMERGENCY MEDICINE
12	MMFM	MASTER OF MEDICINE IN COMMUNITY PRACTICE/ FAMILY MEDICINE
13	MMGS	MASTER OF MEDICINE IN GENERAL SURGERY
14	MMIM	MASTER OF MEDICINE IN INTERNAL MEDICINE
15	MMLS	MASTER OF MEDICAL LABORATORY SCIENCE
16	MMO	MASTER OF MEDICINE IN OPHTHALMOLOGY
17	MMOG	MASTER OF MEDICINE IN OBSTETRICS/ GYNAECOLOGY
18	MMP	MASTER OF MEDICINE IN PATHOLOGY
19	MMPC	MASTER OF MEDICINE IN PAEDIATRICS & CHILD HEALTH
20	MMPR	MASTER OF MEDICINE IN PLASTIC AND RECONSTRUCTIVE SURGERY
21	MMPY	MASTER OF MEDICINE IN PSYCHIATRY
22	MPH	MASTERS OF PUBLIC HEALTH
23	MSAN	MASTER OF SCIENCE IN ANATOMY
24	MSBC	MASTER OF SCIENCE IN BIOCHEMISTRY
25	MSMB	MASTER OF SCIENCE IN MICROBIOLOGY
26	MSPM	MASTER OF SCIENCE IN PHARMACOLOGY
27	MSPS	MASTER OF SCIENCE IN PHYSIOLOGY

28	PNMS	MASTERS OF SCIENCE IN PHARMACOGNOSY AND NATURAL MEDICINE SCIENCE
FACULTY OF SCIENCE		
	PROGRAMME CODE	PROGRAMME DESCRIPTION
29	MEAM	MASTER OF EDUCATION IN EDUCATIONAL ADMINISTRATION AND PLANNING
30	MECMS	MASTER OF EDUCATION IN CURRICULUM INSTRUCTION AND MEDIA STUDIES
31	MEEP	MASTER OF EDUCATION IN EDUCATIONAL PSYCHOLOGY
32	MSCB	MASTER OF SCIENCE IN BIOLOGY
33	MSCC	MASTER OF SCIENCE IN CHEMISTRY
34	MSCM	MASTER OF SCIENCE IN MATHEMATICS
35	MSCP	MASTER OF SCIENCE IN PHYSICS
DOCTOR OF PHILOSOPHY		
36	PHD	MEDICINE AND SCIENCE
37	PHD	COMPUTING, MANAGEMENT AND EDUCATION
38	PHD	DEVELOPMENT STUDIES

Dr. Martha Kyoshaba Twinamasiko (PhD)
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