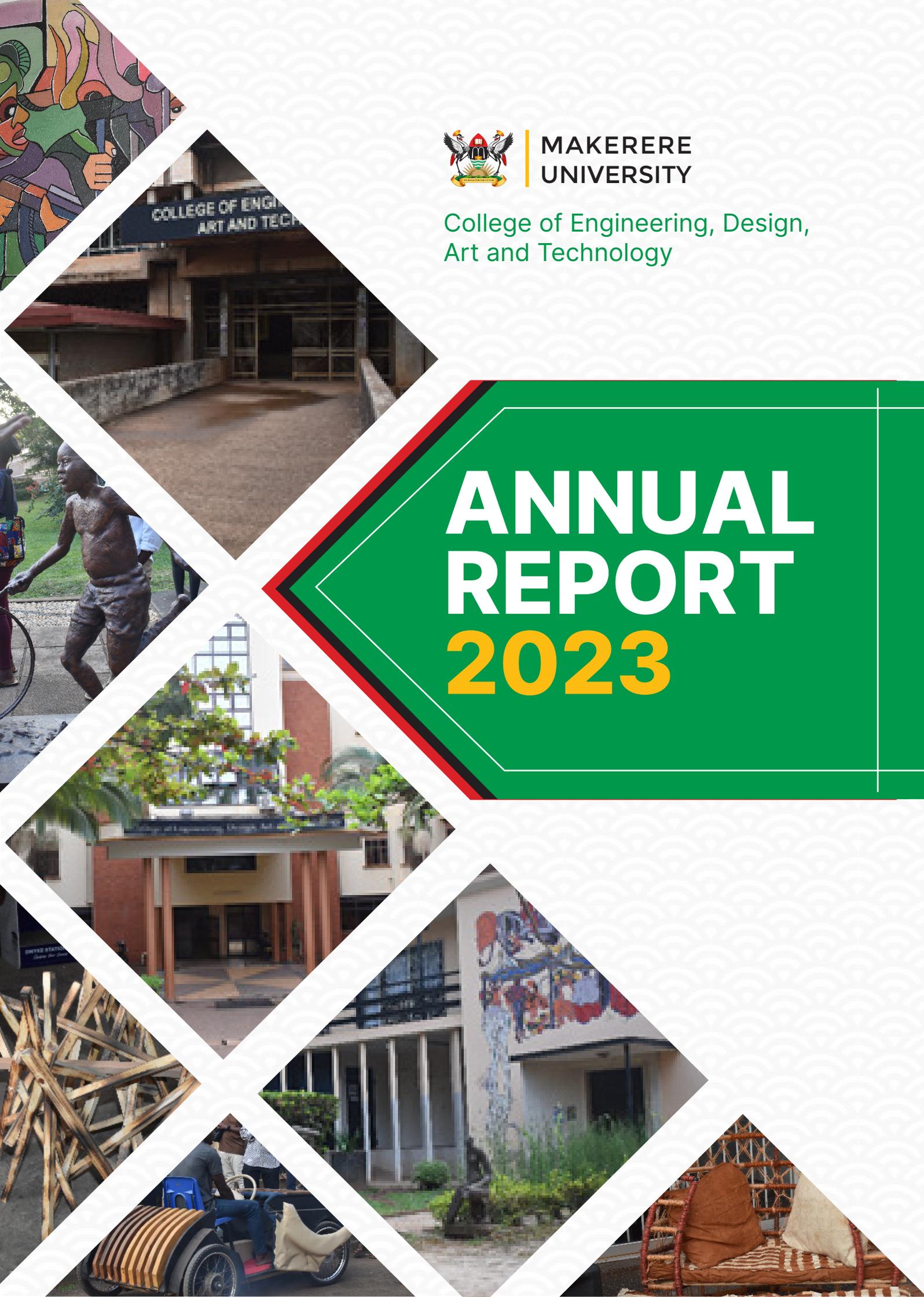




MAKERERE
UNIVERSITY

College of Engineering, Design,
Art and Technology

ANNUAL REPORT 2023



ACRONYMS

CCCC	-	China Communications Construction Company Limited
CEDAT	-	College of Engineering, Design, Art and Technology
CREEC	-	Centre for Research in Energy and Energy Conservation
IHCR	-	Institute of Heritage Conservation and Restoration
IUCEA	-	Inter-University Council for East Africa
MakCHS	-	College of Health Sciences, Makerere University
MAPRONANO	-	Materials, Product Development and Nanotechnology
MTSIFA	-	Margaret School of Industrial and Fine Art
PI	-	Principal Investigator.
RCMRD	-	Regional Centre for Mapping Resources for Development
UIRI	-	Uganda Industrial Research Institute
USAMRIID	-	United States Military Research Institute on infectious Diseases



THE COLLEGE **LEADERSHIP**

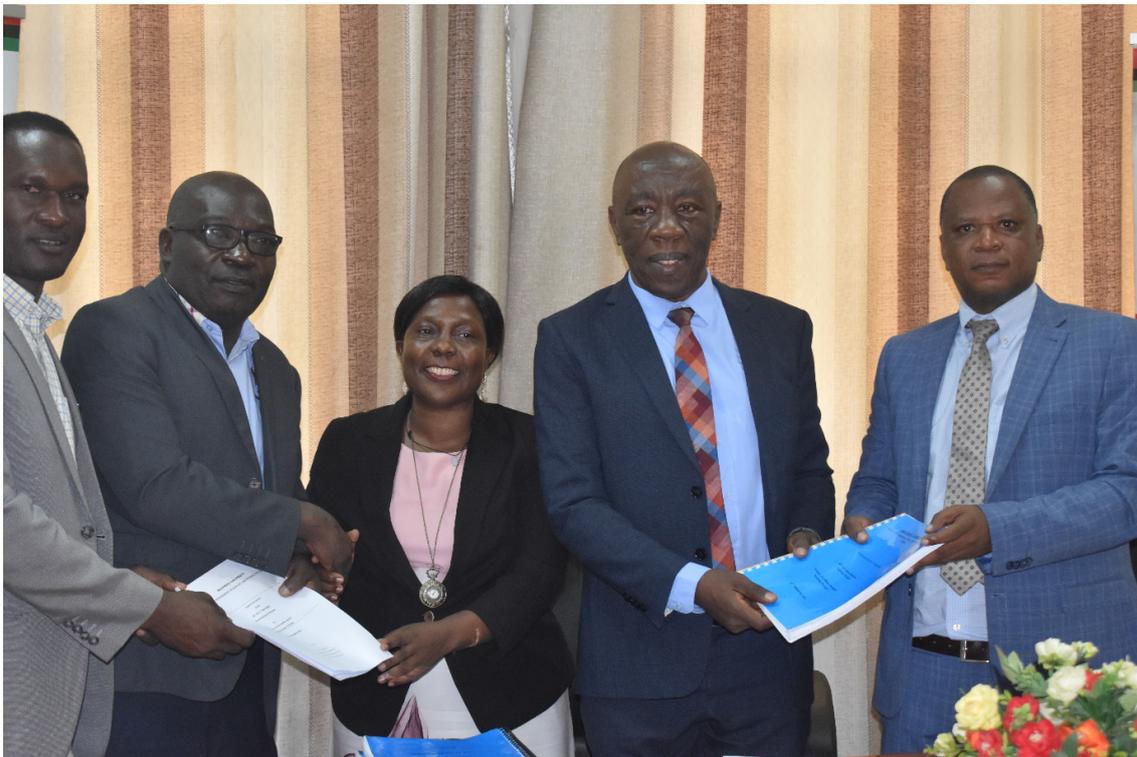


Figure 1 (R-L) Incoming Principla, Prof. Moses Musinguzi receives a handover report from Prof. Henry Alinaitwe, while Dr. Venny Nakazibwe (C) hands over to incoming Deputy Principal, Assoc. Prof. Kizito Maria Kasule, witnessed by Auditor

During the course of the year on the 2nd of October 2023, there was change in the College Leadership. After a productive tenure of two terms, the outgoing Principal Prof. Henry Alinaitwe handed over the mantle to the now substantive Principal Assoc. Prof. Moses Musinguzi. In the same vein, the outgoing Deputy Principal Dr. Venny Nakazibwe handed over office to Assoc. Prof. Kizito Maria Kasule.



CONTENTS

Acronyms	i
Leadership	ii
Message from the Principal	iii
College Academic Leaders	v
Deans of Schools	v
Heads of Departments	vi
College Administrative Leaders	vii
Introduction	1
Student Enrollment	4
Human Resources	6
Teaching And Learning Achievements	10
Research And Innovation Achievements	23
Knowledge Transfer Partnerships	30
Budget And Busget Perfomance	43
Publications	44

LIST OF TABLES

Table 1: CEDAT Institute and Centers.....	3
Table 2: Graduate Students enrolled in 2023/2024.....	4
Table 3: Undergraduate Students enrolled in 2023/2024.....	5
Table 4: The filled positions at the Department of Architecture and Physical Planning as in December 2023.....	6
Table 6: The filled positions at the Department of Geomatics and Land Management.....	6
Table 7: Filled positions at the Department of Civil and Environmental Engineering.....	7
Table 8: Filled positions at the Department of Mechanical Engineering.....	7
Table 9: Filled positions at the Department of Electrical and Computer Engineering.....	7
Table 10: Filled positions at the Department of Fine Art.....	8
Table 11: Filled positions at the Department of Industrial Art and Applied Design.....	8
Table 12: Filled positions at the Department of Visual Communication, Design and Multimedia.....	8
Table 13: Total filled positions at CEDAT.....	9
Table 14: Programs offered at CEDAT.....	10

LIST OF FIGURES

Figure 3: The E-JUST delegation meeting the Vice Chancellor.....	36
Figure 4: (R-L) Prof. Dr. Angela Franckie of the University of Kessel, Germany with CEDAT staff..	38
Figure 5: Participants of the Fundis training held at the CEDAT on the 13th and 14th of April 2023.....	39
Figure 6: Exhibition by manufacturers of building materials at the Fundis training.....	40



MESSAGE FROM THE PRINCIPAL



It is my pleasure to present to you the CEDAT annual report for the year 2023. This report highlights the major achievements and the challenges faced during the period under review. The report further provides an overview of the colleges' performance regarding the implementation of the Strategic Plan 2019/2020-2029/2030.

As you might be aware, I took over the mantle of College Principal on the 2nd of October 2023, together with the Deputy Principal Assoc. Prof. Kizito Maria Kasule. This was during the third quarter of the implementation of the planned activities for the year under review. It is based on this fact that I wish to extend my sincere appreciation to our predecessors, Prof. Henry Alinaitwe and Dr. Venny Nakazibwe, the Principal and Deputy Principal respectively, for the leadership of the College until the end of their tenure. Much of what is reported therefore is greatly attributed to their effort. That notwithstanding, I take this honor to appreciate the appointing authority for giving me this opportunity to serve and to the CEDAT community for the warm reception and cordial working relations enjoyed so far.

We have a task before us as per our mandate of teaching and learning, research and innovation, as well as knowledge transfer and partnerships. This is no mean task and it calls for concerted effort by all the stakeholders including the students, the academia, and the industry. During my reconnaissance to bring myself up-to-date with the college and the state of affairs as a new leader, I interacted with key administrative units of the college including the centers, the three Schools, namely the School of Engineering, School of the Built Environment, and the Margaret Trowel School of Industrial and Fine Art. Several issues came up, both positive and negative and these need appropriate action if we are to maintain CEDAT as a Home of Innovations. I am optimistic that with the team spirit exhibited at CEDAT, a lot will be realized as we play our specified roles.

I extend my sincere gratitude to all our stakeholders including but not limited to all CEDAT staff, students, alumni, partners, funders, and service providers for your unwavering commitment to serving humanity. I entreat you to keep the spirit alive as we journey together toward realizing the vision and mission of Makerere University.

We are looking forward to an even more successful period ahead of us, and together definitely we shall achieve all we set out to do.

Assoc. Prof. Moses Musinguzi
Principal, College of Engineering, Design, Art and Technology



THE COLLEGE ACADEMIC LEADERS



**Assoc. Prof. Moses Musinguzi
Nakanjako**
(Principal CEDAT)



**Assoc. Prof. Kizito Maria
Kasule**
(Deputy Principal CEDAT)

DEANS OF **SCHOOLS**



Dr. Dorothy Okello
(Dean, School of Engineering)



Assoc. Prof. Anthony Gidudu
Dean, School of Built Environment



Assoc. Prof. Amanda Tumusiime
Dean, Margaret Trowell School of
Industrial and Fine Art (MTSIFA)

Heads of Departments/ Centres



Prof. John Baptist Kirabira
(Chair Dept of Mechanical Engineering & Director, The African Centre for Materials, Product Development and Nano Technology (MAPRONANO))



Dr. Nathan Kibwani
Chair Construction, Economics and Management Department



Dr. Robinah N. Kulabako
(Chair Dept. of Civil and Environmental Engineering)



Dr. Lydia Mazzi Kayondo
Chair Dept. of Geomatics and Land Management and Director Centre for Geographical Information Systems (GIS)



Dr. Amin Tamale Kiggundu
(Chair Dept of Architecture and Physical Planning)



Dr. Abubaker Matovu Waswa
Head Department of Electrical and Computer Engineering



Ass. Prof. George Kyeyune
(Director the Institute of Heritage Conservation and Restoration)



Mr. Joseph Sematimba,
(Head Department of Visual Communications)



Mrs. Rita Nabuyonga Edopu
(Head Department of Fine Art)



Mr. Ronald Mpindi Kigudde
(Head Department of Industrial Art and Applied Design)



Dr. Hilary Kasedde
(Centre for Research in Transportation Technologies)



Dr. Michael Lubwama
(Centre for Technology Development and Transfer)



Ms Suzan Abbo - External Staff
(Centre for Research in Energy and Energy Conservation)



Dr. Mackay Okure
(The East African Centre of Excellence in Renewable Energy and Energy Efficiency (EACREE))

THE COLLEGE ADMINISTRATIVE LEADERS



Ms. Josephine Apolot Opolot
(College Human Resource)



Ms. Hellen Ssali Kalema
(College Registrar)



Mr. Ssambwa Ronald
(College Bursar)



Ms. Harriet Musinguzi
(College Principal
Communication Officer)



Shivon Atwiine
(Procurement)



Kyomugisha Esther
(Assistant Registrar)



Ms. Lillian Tukahirwa
(Administrative Assistant)



Mr. Hadadi Kigozi
(System Administrator)



Oliver Mutinyi
(Administrative Secretary to the
Principal)





INTRODUCTION

1

1.1 Introduction

The College of Engineering, Design, Art and Technology (CEDAT) is a Constituent College of Makerere University as provided in Section 29 Of the Universities and Other Tertiary Institutions Act as amended in 2006. It comprises former Faculties of Technology and the Margaret Trowel School of Industrial and Fine Arts (MTSIFA) and has been operational for 12 years.

1.2 CEDAT Mandate

This falls within the overall mandate of Makerere University namely;

- a. Provision of higher education through teaching and learning, research and knowledge transfer partnerships in Engineering, Design, Art and Technology;
- b. Dissemination of knowledge and giving opportunity of acquiring higher education to all persons regardless of sex, race, color or whether one has disability or not.
- c. Provision of accessible physical facilities to the users of the Public University

1.2 Mission Statement

To provide transformative innovative teaching, learning, research and outreach services responsive to dynamic national, regional and global needs in Engineering, Design, Art and Technology.

1.3 Strategic Objectives

Below are the strategic objectives.

- To integrate gender and ICT in teaching and learning
- To integrate Ethics and Entrepreneurship courses in all programs
- To promote collaboration with Stakeholder Institutions in the design of academic programs
- To strengthen Industrial Training and Internship attachments
- To increase visibility of research centers
- To strengthen the research coordination system
- To promote use and application of indigenous, conventional and emerging technologies
- To increase the visibility of CEDAT in knowledge transfer partnerships and community engagement
- To improve staff performance management system in the college

1.4 CORE VALUES

The College is guided by the core values as stated in the University strategic plan namely;

Accountability	Professionalism	Inclusivity	Integrity	Respect
				

1.5 Structure and Administration in 2023

The College Board is the policy making organ of CEDAT. This is comprised of the Academic members of the College and the College Registrar serves as secretariat. The principal is the executive head of the Board and Assoc. Prof. Moses Musinguzi is the current Principal, deputized by Assoc. Prof. Kizito Maria Kasule. The two assumed office recently on Friday 2nd October 2023.

The College Board works closely with other administrative bodies that include the Administrative Board that coordinates the day-to-day administration function of the College. Students are represented on all the boards as a way of addressing their concerns. There are a number of other committees whose function feed into the operations of the boards and these include the contracts committee, the internship committee, and the finance committee among others.

1.6 Schools, Departments and administrative offices

The College is made up of three (3) schools headed by Deans. They are charged with taking leadership in areas of programming, coordination and management of the respective units that are lined up according to the disciplines.

1.6.1 The School of Engineering

The School of Engineering is comprised of the traditional engineering namely Mechanical Engineering headed by Prof. John Baptist Kirabira, Electrical engineering headed by Assoc. Prof. Dorothy Kabagaju Okello as well as Civil and Environmental Engineering headed by Dr. Robinah Nakawunde Kulabako.

1.6.2 The School of the Built Environment

Prof. Anthony Gidudu is the sitting Dean of the School that is comprised of three departments. Architecture and Physical Planning headed by Dr. Amin Tamale Kiggundu, Geomatics and Land Management headed by Dr. Lydia Florence Mazzi Kayondo-Ndandiko, and Construction Economics and Management headed by Dr. Nathan Kibwami in acting capacity.

1.6.3 Margaret Trowel School of Industrial and Fine Art

Associate Prof. Amanda Tumusiime is the Dean of MTSIFA. She superintends the departments of Visual Communications headed by Mr. Joseph Ssematimba, The Department of Industrial Art and Applied Design headed by Mr. Ronald Mpindi Kigudde and the Department of Fine Art headed by Ms. Rita Nabuyonga Edopu.

1.7 Institute and Centers

CEDAT has one (1) Institute and six (6) Centers. Four of these are on the establishment while two are externally funded.

Table 1: CEDAT Institute and Centers

Name of Institute/ Centre	Area of focus	Target Group	Partners	Principal Investigator /Head
The Institute of Heritage Conservation and Restoration	Research in Art	Researchers Students	GoU, US Embassy in Uganda, GIZ	Assoc. Prof. George Kyeyune
Centre for Research in Energy and Energy Conservation	Rural electrification. Energy for productive use/ household use Renewable energy technologies	Students General population	GoU	Ms. Susan Abbo (External staff)
Centre for Research in Transportation Technologies	Green Transport Technologies	Students Business Community	GoU	Dr. Hilary Kasedde
Centre for Technology Development and Transfer	Solar Technology	The community Industry Students		Dr. Michael Lubwama.
Centre for Geographical Information Systems (GIS)	GIS research Community Outreach Short courses	Community GIS users/ Specialists Researchers		Dr. Lydia M. Kayondo-Ndandiko.
The East African Centre of Excellence in Renewable Energy and Energy Efficiency (EACREEE)	Renewable energy	East African Community member states	UNIDO, ADA and supported by the East African Community.	Dr. Mackay Okure
The Africa Centre of Excellence for Materials, Product Development and Nano Technology (MAPRONANO)	Nano Technology Materials development Nano medicine	Students Policy makers Industry	World Bank IUCEA MakCHS USAMRIID	Prof. J B M Kirabira

2.0 STUDENT ENROLMENT

The table below shows the number of students that were enrolled in the academic year 2023/2024.

2.1 Graduate Students enrolled.

Table 2: Graduate Students enrolled in 2023/2024

PROGRAMME	MALE	FEMALE	TOTAL
Doctor of Philosophy	6	1	7
Master of Architecture	6	1	7
Master of Arts in Fine Art	8	6	14
Master of Science in Civil Engineering	45	8	53
Master of Science in Construction Management	56	25	81
Master of Science in Geo-Information Science and Technology	29	12	41
Master of Science in Land Management	68	23	91
Master of Science in Mechanical Engineering	31	2	33
Master of Science in Power Systems Engineering	41	6	47
Master of Science in Renewable Energy	31	7	38
Master of Science in Technology Innovation and Industrial Development	21	6	27
Master of Science in Telecommunication Engineering	4	1	5
Master of Science in Urban Planning and Design	18	6	24
Postgraduate Diploma in Construction and Project Management	27	4	31
Postgraduate Diploma in Urban Planning and Design	5	5	10
Total Graduate	396	113	509

2.2. Undergraduate Students enrolled

Table 3: Undergraduate Students enrolled in 2023/2024

	PROGRAMME	Total Male	Total Female	Total
	Bachelor of Architecture	95	47	142
	Bachelor of Fine Art	48	29	77
	Bachelor of Industrial and Applied Design	52	36	88
	Bachelor of Industrial and Fine Arts	104	72	176
	Bachelor of Science in Civil Engineering	299	105	404
	Bachelor of Science in Computer Engineering	42	16	58
	Bachelor of Science in Construction Management	2	2	4
	Bachelor of Science in Electrical Engineering	229	103	332
	Bachelor of Science in Land Economics	94	80	174
	Bachelor of Science in Land Surveying and Geomatics	107	52	159
	Bachelor of Science in Mechanical Engineering	185	81	266
	Bachelor of Science in Quantity Surveying	104	76	180
	Bachelor of Science in Telecommunication Engineering	39	16	55
	Bachelor of Urban and Regional Planning	57	61	118
	Bachelor of Visual Communication, Design and Multimedia	37	36	73
	Total Undergraduate	1,494	812	2,306

HUMAN RESOURCES

3

Human resources is a very important part of knowledge transfer, one of the main reasons why the college exists. The table below shows the staff establishment of the respective units alongside the filled and existing gaps in personnel as of December 2023.

3.1 SCHOOL OF THE BUILT ENVIRONMENT

3.1.1 Department of Architecture and Physical Planning (DAPP)

Table 4: The filled positions at the Department of Architecture and Physical Planning as in December 2023

Rank	Established Positions	Filled	Vacant	% Filled
Professor	4	1	3	25.0
Associate Professor	4	1	3	25.0
Senior Lecturer	6	5	1	66.7
Lecturer	8	6	2	75.0
Assistant Lecturer	6	11	0	100
Total	28	23	5	82.1

3.1.2 Department of Construction Economics and Management (DCEM)

Table 6: The filled positions at the Department of Geomatics and Land Management

Rank	Established Positions	Filled	Vacant	% Filled
Professor	2	0	2	0
Associate Professor	2	2	0	100.0
Senior Lecturer	4	2	2	50
Lecturer	8	3	5	37.5
Assistant Lecturer	4	4	0	100.0
Total	20	11	9	55.0

Out of the filled positions (55.0%), the Department does not have a member at the rank of Professor

3.2 SCHOOL OF ENGINEERING

3.2.1 Department of Civil and Environmental Engineering (DCEE)

Table 7: Filled positions at the Department of Civil and Environmental Engineering

Rank	Established Positions	Filled	Vacant	% Filled
Professor	4	0	4	0
Associate Professor	4	2	2	50.0
Senior Lecturer	9	1	8	11.1
Lecturer	12	6	6	50.0
Assistant Lecturer	15	8	7	53.3
Total	44	27	17	61.4

Out of the filled positions (61.4%), the Department does not have a member at the rank of Professor.

3.2.2 Department of Mechanical Engineering (DME)

Table 8: Filled positions at the Department of Mechanical Engineering

Rank	Established Positions	Filled	Vacant	% Filled
Professor	4	1	3	25.0
Associate Professor	4	1	3	25.0
Senior Lecturer	8	2	6	25.0
Lecturer	9	4	5	44.4
Assistant Lecturer	12	7	5	58.3
Total	37	15	22	40.5

The Department of Mechanical Engineering is understaffed. The filled positions as of December 2023 are only 40.5%.

3.2.3 Department of Electrical and Computer Engineering (DECE)

Table 9: Filled positions at the Department of Electrical and Computer Engineering

Rank	Established Positions	Filled	Vacant	% Filled
Professor	6	0	6	0
Associate Professor	4	2	2	25.0
Senior Lecturer	10	0	10	10.0
Lecturer	15	10	5	80.0
Assistant Lecturer	16	17	0	100.0
Total	51	29	22	56.9

Out of the filled positions (56.0%) the Department does not have a member at the rank of Professor

3.3 MARGARET TROWEL SCHOOL OF INDUSTRIAL AND FINE ART (MTSIFA)

3.3.1 Department of Fine Art (DFA)

Table 10: Filled positions at the Department of Fine Art

Rank	Established Positions	Filled	Vacant	% Filled
Professor	4	0	4	0
Associate Professor	4	3	1	50.0
Senior Lecturer	6	1	5	33.3
Lecturer	6	1	5	33.3
Assistant Lecturer	5	5	0	100.0
Total	25	10	15	40.0

The Department of Fine Art is understaffed. Out of the 40.0% positions filled, there is no member at the level of Professor.

3.3.2 Department of Industrial Art and Applied Design (DIAD)

Table 11: Filled positions at the Department of Industrial Art and Applied Design

Rank	Established Positions	Filled	Vacant	% Filled
Professor	4	0	4	
Associate Professor	4	2	2	50.0
Senior Lecturer	6	1	5	16.7
Lecturer	6	4	2	66.7
Assistant Lecturer	4	6	0	100
Total	24	13	11	65.0

Out of the filled positions (65.0%), the Department does not have a member at the rank of Professor.

3.3.3 Department of Visual Communication, Design and Multimedia (DVCM)

Table 12: Filled positions at the Department of Visual Communication, Design and Multimedia

Rank	Established Positions	Filled	Vacant	% Filled
Professor	4	0	4	0
Associate Professor	4	1	3	0
Senior Lecturer	6	0	6	0
Lecturer	6	3	3	66.7
Assistant Lecturer	4	6	0	100.0
Total	24	10	14	41.7

The Department of Visual Communication, Design, and Multimedia (DVCM) is understaffed. The total filled positions as of December 2023 is only 41.7%.

3.4 OVERALL, COLLEGE ESTABLISHMENT

Table 13: Total filled positions at CEDAT

Rank	Established Positions	Filled	Vacant	% Filled
Professor	35	2	33	5.7
Associate Professor	33	14	19	42.4
Senior Lecturer	61	12	49	19/7
Lecturer	83	51	32	61.4
Assistant Lecturer	84	85	0	100
Total	296	164	132	55.4

Out of the total established positions of 296, only 164 positions are filled, giving to percentage filled at 55



TEACHING AND LEARNING ACHIEVEMENTS

4

Teaching and learning are the core mandate of the College. The College runs a number of programs spread out in the three Schools. In addition, there are other forums through which include community outreaches, public lectures, exhibitions and demonstrations.

4.1 Programs Offered at CEDAT

The college offers 12 undergraduate programs and a number of post graduate programs. The post graduate programs include 12 at Masters Level, 7 at PhD level and 2 Post Graduate Diploma (PGD) programs.

Table 14: Programs offered at CEDAT

	Undergraduate	Graduate	
Department		Masters	Ph.D.
School of the Built Environment			
Department of Architecture and Urban Planning	Bachelor of Architecture	Master of Architecture	PhD
	Bachelor of Urban and Regional Planning	MSc. Urban Planning and Design Post Graduate Diploma in Urban Planning and Design	
Department of Construction Economics and Management	BSc Construction Management	MSc Construction Management	PhD
	BSc Land Economics	Post Graduate Diploma in Construction Project Management	
	BSc Quantity Surveying		
Department of Geomatics and Land Management	BSc Land Surveying and Geomatics	MSc Geo- Information Science and Technology	PhD
		MSc in Land Management	
School of Engineering			
Department of Civil and Environmental Engineering	BSc Civil Engineering	MSc Civil Engineering	PhD

Department of Electrical and Computer Engineering	BSc Electrical Engineering BSc Computer Engineering BSc Telecommunication Engineering	MSc Power Systems Engineering MSc Telecommunications Engineering MSc Renewable Energy	PhD
Department of Mechanical Engineering	BSc Mechanical Engineering	MSc Mechanical Engineering MSc Technological Innovation and Industrial Development	PhD
Margaret Trowel School of Industrial and Fine Art (MTSIFA)			
	Bachelor of Industrial and Fine Art	Master of Arts in Fine Art	PhD

4.2 Teaching Infrastructure

The College has in place infrastructure relevant for the teaching and learning as well as practical exposures to the students both graduate and under graduate. These include the Research laboratories, computer laboratories and lecture rooms in addition to the research centers. At MTSIFA for instance, the College hosts the Institute of Heritage Conservation and Restoration which is renowned for research in Art.

4.3 Occupational Safety, Health and Environment Centers of Excellence launched at Makerere, Kyambogo, and Busitema Universities



Figure 2: Busitema, Makerere and Kyambogo Universities staff at the launch of the Occupational Safety, Health, and Environment (OSHE) Centers of Excellence at CEDAT

Occupational Safety, Health, and Environment (OSHE) Centers of Excellence at Makerere, Kyambogo, and Busitema Universities were on 4th May 2023 inaugurated. This was during a stakeholder engagement convened at the College of Engineering Design, Art, and Technology at Makerere University.

The discourse on the Advancement of Occupational Safety, Health, and Environment (OSHE) knowledge and Skills in Uganda's Higher Educational Institutions and the Industrial sector brought together stakeholders from the Academia, Industry, and student community.

The two-year second phase of the project activities is supported by the Royal Academy of Engineering with Dr. Abubaker Wasswa Matovu, the Head of, the Department of Electrical and Computer Engineering, Makerere University as the Principal Investigator.

According to Dr. Abubaker Wasswa Matovu, the key goals of the project are to fill the existing OSHE awareness and enforcement gaps amongst Higher Education Institutions and Industrial stakeholders for sustained social-economic transformation.

It is anticipated that by the end of the two years, OSHE will be mainstreamed in engineering students' training and Industrial activities and that engineering graduates will be able to formulate OSHE policy frameworks aimed at reducing the number of accidents and fatalities within various industrial settings

The project, he said, will also enhance the local capacity of OSHE professionals within the established centers of excellence to develop customized industrial solutions through research and development.

'We started with six but now we have over 50 champions. We need to be intentional in terms of OSHE at home, on the way, and in the workplace and the ambassadors need to ensure there is a multiplier effect, he said while urging the stakeholders to create awareness and make good use of the OSHE centers of excellence to realize a multiplier effect.

The Principal College of Engineering, Design, Art and Technology (CEDAT) who is also the Deputy Vice-Chancellor in charge of Finance and Administration Prof. Henry Alinaitwe while welcoming the participants to CEDAT commended the funders, the Royal Academy of Engineering that have supported the college for over twelve years through staff and industry exchanges, where staff at the College of Engineering would go to Industry and the staff from Industry would come to support the teaching of students.

He commended the stakeholders from the industry for absorbing the engineering graduates whom he said, were the main output of the College. If the industry was not absorbing them by giving them jobs, the College would be rendered useless.

'I want you to challenge us where you think there is need for improvement, please inform us. I also know we engage you in curriculum review please do not get tired, keep giving us feedback because this review is done every three to four years to enable us remain relevant to the needs of the industry', he said.

Prof. Alinaitwe also extended appreciation to the industry for supporting the research agenda of the college when they engage both staff and students by providing data as well as the use of equipment in industry settings. He also made mention of several engagements in the knowledge transfer partnerships that the college has with several industries and called for increased relations with small to medium and large companies to enable a trickledown effect on students.

While addressing himself on the topic of Occupational Safety, Health and Environmental (OSHE) issues, he said all these were aimed at protecting the well-being of the people. He said safety concerned the immediate consequences like a plumber falling and breaking a limb. In health, he cited the example of people handling and inhaling cement which would eventually harm their lungs.

The environment he explained, was on a larger scale where polluting affects the wellbeing of the wider community including third parties that may not be directly involved in the construction.

Prof. Alinaitwe regretted noting that during his training as an engineer, he did not encounter issues of OSHE but pledged to ensure that they gradually get taken on in the course of improving the curriculum.

He further regretted to note that there were incidents of poor quality of work as depicted in the falling buildings. 'We cannot put the cost of losing people to anything. We should not relax but put measures to mitigate the cost of losing people, he emphasized. He attributed this to the use of poor quality or adulterated materials, poor designs, construction procedures, absence of construction supervision, neglect of the design approval procedures, with a lot of influence peddling by municipal authorities that handle the approvals and the desire to minimize the construction costs, coupled with a tendency to compromise on the costs of OSHE.

The Dean School of Engineering, Assoc. Prof. Dorothy Okello appreciated the participation of the wide range of Government entities and companies that were represented who, she said, were aligned to the three departments that make up the School of Engineering namely, Electrical and Computer Engineering, Civil and Environmental Engineering, and Mechanical Engineering.

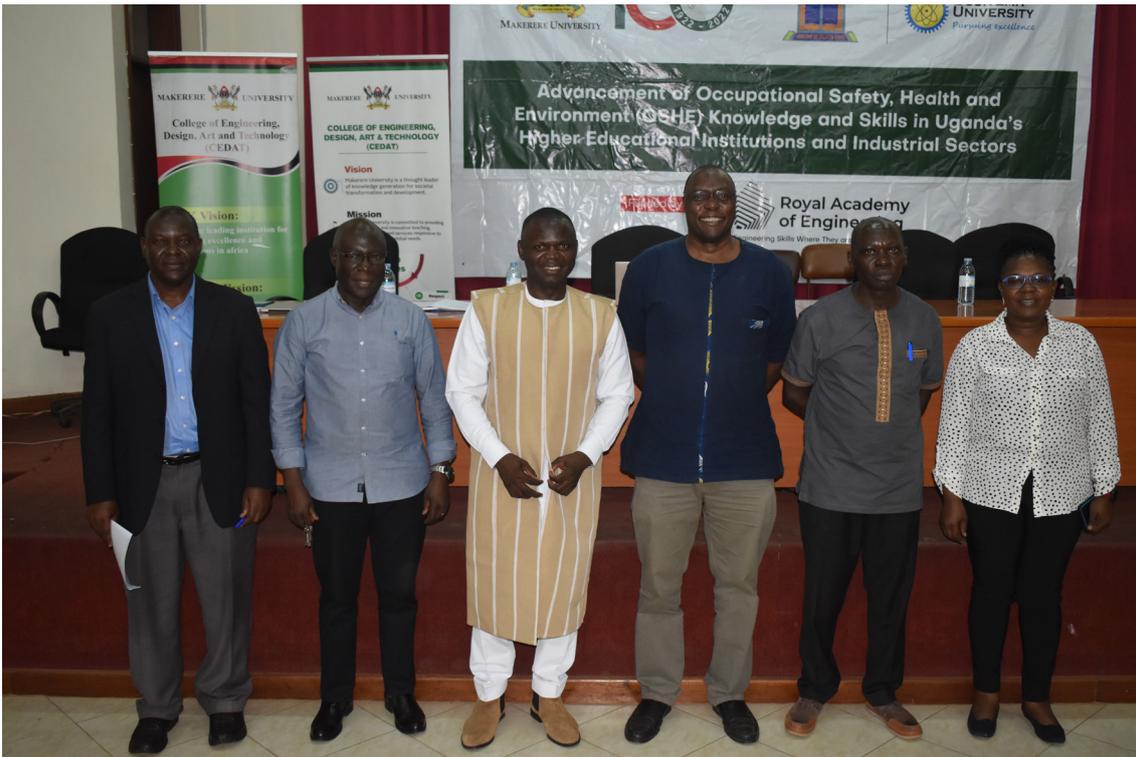
She expressed the need for the College and other stakeholders to develop a culture of safety and noted that the OSHE project would be helpful for not only the academia but also the other stakeholders. The role of academia she said, was key in research, community engagements, and ensuring that as the graduates leave, they have inculcated within themselves this culture becoming the change agents at the respective places of work in ensuring OSHE adoption.

Prof. Okello called upon the industry stakeholders to notify the college of the available internship opportunities for engineering students. She said engagement with the community was key for the grooming of our students. 'We can come out as academia with all our theories but the stories would be completed with the industry.' she observed.

The Dean congratulated Dr. Abubaker Wasswa Matovu and his team for the great work that resulted in this second phase of the OSHE project. 'We are looking forward to having such close engagements with the industry stakeholders, we are open for collaboration in all other areas, she stressed.

During the deliberations, it was agreed that OSHE concerns were pertinent to all stakeholders much as the industry was driven by the need to make profits. It was agreed that the Centers of Excellence at Makerere, Kyambogo, and Busitema Universities were important as starting points for engineering students to get training and certification in OSHE.

It was also noted that several professionals out in the field were not trained and certified and that these were also welcome for training at the centers at affordable costs.



Some of the participants pose of a picture after the launch

The discussion also delved into strategies to adopt to ensure increased OSHE recognition and uptake at places of work such as establishing OSHE desks, creating increased awareness about the importance of OSHE, the academia to emphasize OSHE mainstreaming in the curriculum, trade unions to raise noise on this as well as strengthening enforcement by the regulators and the Ministry responsible, the Ministry of Gender, Labor and Social Development.

The stakeholders that took part in the discussion included Kiira Motors Corporation, Uganda Institute of Professional Engineers (UIPE), Mulago Hospital, Uganda Police, Ministry of Gender, Labor and Social Development, Uganda Electricity Transmission Company, and the Engineers Registration Board among others

4.4 E- Learning and Teaching at CEDAT

Staff at the College of Engineering, Design, Art and Technology (CEDAT) were introduced to the Master Card Scholars eLearning initiative, during the onboarding activity conducted on Monday 9th January 2023 at the College, drawing the participation of a number of staff from respective Schools and Departments.

According to Samuel Siminyu, Faculty member, Department of Open and Distance Learning, College of Education and External Studies, and Managing Editor, Makerere University Press said the program that has thirty-two (32) champions spread out through the Colleges was to support the development of high quality and inclusive academic online content, develop learner support online content and enhance access to and utilization of online content in the University.



Participants at the training on E –Learning

'Most world Universities have blended programs and in the face of a crisis like it was with COVID-19, they switch to online learning,' he observed. He said Master card was giving that opportunity cognizant of the fact that there was some change in the student population with a good proportion of them working, while a big number were upgrading from diplomas. He said as a university that is moving towards becoming research led, there was need to consider the needs of the clientele, the students many of whom are working adults. He said there were a number of people in the world of work that were registered and taking online programs internationally and that it was time that Makerere University filled that gap by fully embracing online teaching and learning.

Prof. Henry Alinaitwe, the Ag. Deputy Vice Chancellor and Principal CEDAT in his remarks said CEDAT was one of the first colleges to benefit from the onboarding exposure opportunity and affirmed the commitment of the college towards meeting the expectations of the eLearning onboarding team. He said CEDAT was well known in regard to taking on the best students in the country as well as in the delivery of the expected mandates.

Prof. Alinaitwe commended Master Card Foundation, where he is the Chairperson of the Steering Committee, for the continued support in the form of scholarships, trainings, as well as computers that were provided to departments in the University. 'Now we are getting empowered to be able to write and conduct online programs. Many of us do not have a background in teaching and we rely on our personal experiences as students,' he observed while emphasizing the need for the teaching staff to get some training in teaching and learning in order to improve their skills set in knowledge transfer. 'We embrace online teaching and learning but let us ensure that we fully embrace it and get good content for the betterment of the University,' he emphasized.

The MasterCard Scholars program was designed to support the University recover from the effects of COVID-19 which greatly constrained access and continuity of teaching, learning, Research and

community engagement activities. Although MasterCard provided support for their scholars for continued learning, it was realized that they belonged to the wider university community, hence the extension of the support. It is expected that by December 2023, the time when the project comes to an end, the university will have a number of online programs up and running. The project was expected to transform Two Thousand, Five Hundred Sixty Courses (2,560) into well instructionally formed e-courses and have them uploaded onto MUELE.

4.5 The first Ph.D. colloquium conducted at CEDAT



Deputy Principal, Assoc. Prof. Kizito Maria Kasule (R) Dean, SBE Assoc. Prof. Anthony Gidudu

There is need for change in the way graduate students are handled if the University is to realize its Research- led agenda. This was said by The Deputy CEDAT, Assoc. Prof. Kizito Maria Kasule who also called increased attention given to graduate students through whom the university will realize its objectives, mission and vision.

While speaking during a colloquium organized by the School of the Built Environment for Ph.D. students' orientation held on October 25th 2023 in the CEDAT conference Hall, Assoc. Prof. Kizito Maria Kasule noted that the students were not getting the due attention they deserve and called for a change of approach and mindset from those that administer the programs.

'We have to admit that sometimes we have not been there for our students. At times there has not been any follow up about the students we are supervising', said the Deputy Principal who is also in charge of the administration of the academic programs in the college.



Some of the PHD. Students at the Colloquium

While making reference to a university where he went for his postgraduate program, Assoc. Prof. Maria Kizito said the day he stepped in the lecture room is the same day he was told when he would sit for his final examinations, the day for his graduation and exit from the university premises.

He said at Makerere University, there was need to address in-house problems as managers and supervisors. He noted that there were a number of university staff taking on Ph.D. programs because it was now mandatory for them as lectures and therefore were faced with a number of challenges that are both financial and occupational. He pledged the support of his office as Deputy Principal in helping students with issues that may hinder their progress.

He also encouraged the students to make use of the office of the Director Counselling and guidance. 'You may think that you do not have problems but as you get along you realize you have baskets of challenges. Do not keep them to yourselves, rather seek support,' he emphasized.

The Dean, School of the Built Environment Assoc. Prof. Anthony Gidudu while welcoming the students to the first ever Ph.D. colloquium said that CEDAT prides itself in the fact that it is the home of innovation. 'As PhD students, you are integral to the University vision of being research led and that the objective behind the colloquium was to change the narrative from ad hoc to a more streamlined approach in the management of graduate studies.

We want to create a platform to enable sharing of knowledge, skills, and resources and to make your PhD journey vibrant, productive and fruitful' said Assoc. Prof. Gidudu.

He said the meeting was an opportunity for the students to interact with various offices that are instrumental in their academic journey irrespective of whether one was starting, or at the level of completion and are about to graduate. The relevant offices included the Directorate of research and Graduate Training (DRGT), the College Registrar and Bursar among others.

Ms. Hellen Ssali Kalema the College Registrar commended the School of the Built Environment for giving the Ph.D. students the opportunity to get to know the processes and procedures they need to follow while pursuing their studies. She said there was a tendency of thinking that graduate students know it all and focus put on guiding the undergraduate students. 'We think that you are problem free and you decided to take up your studies at the time of your choice and that you are prepared, and therefore we overlook the challenges you face,' said the Registrar.



Ms. Hellen Ssali Kalema, The College Registrar addressing Ph.D. students at the colloquium.

We have challenges with the Ph.D. students she observed, because they come in at any time and individually. Even ourselves as the administrative team, we need to re-orient ourselves from the undergraduate students whose work is easier since they do everything as a group at the same time.

She noted that a number of the Ph.D. students were not registered and therefore the office of the registrar did not have adequate information concerning their numbers and reminded them of the need to register twice every year and to utilize her office whenever need arose. She noted that although they belong to the Directorate of Research and Graduate Training, the College was directly responsible to ensure they have a smooth stay and serve as a link whenever faced with challenges.

She referred them to the graduate training handbook to get acquainted with the provisions for Ph.D. students. As registrars, we are here to ensure that the University policies are implemented, she stressed, and further advised them to formalize withdrawals from the program by writing to the Deputy Principal whenever necessary.

Other speakers included the College Bursar represented by Mr. Joram Tugumisirize who encouraged the students enroll as guided by the Registrar to enable the system derive the monies expected of them.



The Director of Makerere University Counselling and Guidance Centre, Mr. Henry Nsubuga

The Director of Makerere University Counselling and Guidance Centre, Mr. Henry Nsubuga, in his address emphasized the need for mental health services. He said quite a number of students need the services and given the Ph.D. journey, many issues were bound to come up along the way, affecting the progress pointing out issues of finances, work related stress factors, family and many more. 'Mental health issues affect us more than even the physical issues. So much happens to us and takes toll on our mental health' he observed while stressing the need for mental health first aid.

4.6 The 7th Advances in Geomatics Conference successfully convened at Makerere University.



Some of the participants pose for a picture at the front of Yusuf Lule CTF II

The 7th Advances in Geomatics Conference hosted by the Department of Geomatics and Land Management, College of Engineering, Design, Art and Technology was completed on Friday 18th August 2023.

The 2-day conference was conducted under the Theme; **‘Geomatics Excellence for a Modern Society-Sustainable Fit for Purpose Solutions for the 21st Century,’** and it drew the participation of researchers, scholars, and distinguished guests from a cross-section of areas of Geomatics.



(R-L) Dr. Lydia Mazzi Ndandiko, HoD, Geomatics and Land Management, Prof. Robert Wamala (DRGT), Dr. Venny Nakazibwe, Deputy Principal CEDAT, Assoc. Prof. Anthony Gidudu, Dean School of the Built Environment, CEDAT.

In his remarks at the opening ceremony, the Vice Chancellor of Makerere University, Prof. Barnabas Nawangwe noted that the gathering hosted at the CTF II was a testament to the relentless pursuit of knowledge and innovation in the field of geomatics, where cutting-edge advancements continue to reshape our perception and interaction with our world.

In a statement read for him by Prof. Robert Wamala for the Directorate of Research and Graduate Training (DRGT), The Vice Chancellor noted that Geomatics, with its diverse array of disciplines encompassing remote sensing, GIS, cartography, surveying, land management, and more, has played a pivotal role in addressing some of our planet's most pressing challenges. From environmental monitoring and urban planning to disaster management and resource allocation, the impact of geomatics on our global society cannot be overstated, he observed.

He said the 7th of the biennial conferences covering diverse areas of technology, science, and exploration, serves as a platform for the exchange of ideas, the dissemination of groundbreaking research, and the fostering of collaborations that have the potential to shape our future.

'It is a forum where experts from around the world converge to share insights, discuss emerging trends, and explore novel methodologies. It is a space where we celebrate the successes of the past while laying the foundation for a future that is technologically advanced, environmentally sustainable, and socially equitable,' he said.



Dr. Venny Nakazibwe, Deputy Principal represented the Principal CEDAT, Prof. Henry Alinaitwe

Dr. Venny Nakazibwe, the Deputy Principal CEDAT on behalf of Prof. Henry Alinaitwe extended her appreciation to the Department of Geomatics and Land Management for sustaining the conference initiated in 2011. She said through the conference, the staff, the alumni, and continuing students have a forum to showcase their knowledge through training and research dissemination for their career growth.

The conference attracted several dignified Scholars as keynote speakers and they included; Dr. Moreblessings Shoko from the University of Cape Town, Dr. Moses Musinguzi from CEDAT, Ms. Vineet Chaturvedi a Research Scientist from the Technical University of Munich, and Ms. Viola Otieno, an Earth Observation Scientist.



Staff and facilitators take off time for a photo moment

In the preparations for the conference, a call was sent out to researchers to submit abstracts on topics related to Geomatics research which were reviewed and evaluated by the organizing committee based on their relevance to the conference theme, originality, and scientific quality and included; GIS Science & GIS Applications; Remote Sensing Applications; Photogrammetry & LiDAR Applications; Cartography; Spatial Information Management; GPS/GNSS Applications; Cadastre & Land Management; Geomatics Professional Standards & Practices; Engineering & Mining Surveying; History of Surveying & Measurement Geomatics Education; Hydrographic Surveying; Positioning & Measurement; Location-based Services and Integrated Spatial Planning.



HoD Geomatics and Land Management, Dr. Lydia Mazzi Kayondo-Ndandiko, addressing the participants

According to the Head of Department, of Geomatics and Land Management, Dr. Lydia Mazzi Kayondo – Ndandiko, the conference, the 7th of its kind was aimed at highlighting, promoting and encouraging scholarship in various Geomatics disciplines that are locally and internationally recognized as listed above. ‘The conference has created a forum where academia, researchers and practitioners in the field of geomatics within and outside Uganda have discussed and peer reviewed their work thus advancing geomatics scholarship in the nation’, she said.



Dean SBE @ and HoD, Geomatics and Land Management hand over a certificate of appreciation to Dr. Moses Musinguzi, one of the Key note Speakers.

Prior to the conference, a number of activities were conducted including trainings in Mapping using unmanned Aerial Vehicle (UAV) and Wetland Vulnerability Analysis, both of which were held at the College of Engineering, Design, Art and Technology (CEDAT) from the 14th to 16th of August 2023.



Some of the panelists at the public lecture held on the 16th of August 2023

One of the pre- conference activities was a Public Lecture on the subject of the progress of the implementation of the Land Policy- 10 years after it was launched held on the 16th of August 2023. The panelists included Ms. Naome Kabanda, Ag. Director Land Management, Ministry of lands, Housing and Urban Development, Ms. Frances Birungi Odong from the Civil Society, Dr. Moses Musinguzi from CEDAT, and Mr. Simon Peter Mwesigye from Un Habitat.

RESEARCH AND INNOVATION ACHIEVEMENTS

5

CEDAT is well known as the home of innovations. Students and staff continue to contribute to the body of knowledge through their work and in this way contribute towards the realization of the University's vision of becoming research led University.

The table below shows some of the funded ongoing projects supporting the innovative efforts of the staff.

Table 15: Research and Innovation achievements of CEDAT

Project Title	PI	Funder	Total Grant
Mobility for Innovative Renewable Energy Technologies (MIRET)	Jonathan Serugunda	European Union	Euros 1,397,875
MASTET (Mobility of African Scholars for Transformative Engineering Training)	Dr. Venny Nakazibwe	European Commission	Euros 278,650
Collaboration for Active Mobility in Africa, CAMA	Eng. Dr. Jotham. I. Sempewo	Federal Ministry of Education and Research Germany (DAAD) and the German Academic Exchange Service (BMBF)	Euros 111,544
Integrating RESilience and SUsustainability in the planning for infrasTructure projects 2	Assoc. Prof. Dorothy Okello	The Royal Academy of Engineering	Pounds 100,000
Voice of the Crowd: Training Luganda Text To Speech (TTS) with Common Voice	Dr. Andrew Katumba	Google Ireland Limited	USD 20,000
A Robust Cost-Effective Machine Learning-Based Diagnostics Tool for Bean Plants Diseases	Dr. Andrew Katumba	Data Science Africa	USD 5,000

Datasets marking Personal Identifiable Information (PII) and Gender Bias for Sub-Saharan Africa Languages	Dr. Andrew Katumba	Google Ireland Limited	USD 59,806
Transfer of delft-based MSc/GPDP/ OLC/OCC program on non-sewered sanitation	Swaib Semiyaga	Bill & Melinda Gates Foundation through UNESCO-IHE, the Netherlands	USD 330,000
The future of data driven agriculture in Uganda: A design-led approach to building climate resilient futures with marginalized smallholder farmers	Dr. Anthony Gidudu	Science Foundation Ireland	Euros 29,900
Promotion of Hybrid Renewable Energy Systems Towards Electricity Access in Uganda	Dr. Hillary Kasedde	Austrian Development Corporation	Euros 269,020
Inclusive Markets for Energy Efficiency in Uganda	Prof. J.B Kirabira	Swedish Embassy	SEK 12,240,000
LEAP-RE (Long-term Joint EU-AU Research and Innovation Partnership on Renewable Energy)	Prof. J.B Kirabira	European commission	Euros 31,500
Optimization of Recirculating Water Treatment Process for a Smart Communal Hand Washing System	Peter W. Olupot	Volkswagen Foundation	Euros 96,800
Renewable Energies for Africa: Effective Valorization of Agrifood wastes	Peter W. Olupot	European Commission-H2020	Euros 145,305
Iron oxide-based nanocomposite bio-adsorbents for water treatment	Peter W. Olupot	École Polytechnique fédérale de Lausanne (EPFL)/ Excellence for Africa (ExAf),	Swiss Francs 64,600
Collaborative research between KCCA and Makerere University, College of Engineering, Design, Art and Technology (CEDAT) for enhancing Citywide inclusive sanitation (CWIS) services	Dr. Robinah Nakawunde Kulabako	Kampala City Council-City Wide Inclusive Sanitation Project (Funded by Bill and Melinda Gates Foundation)	USD 150,000
Beyond the networked city: Building innovative delivery systems for water, sanitation and energy in urban Africa	Robinah Nakawunde Kulabako	The Global Challenges Research Fund (GCRF)	UK Pounds 307,397

Centre for Sustainable Energies and Entrepreneurship in the Global South (TUMSEED)	Betty Nabuuma	DAAD	Euros 144,456
Community-based Land Registration and Land Use Planning on Customary Land in South Western Uganda	Prof. Moses Musinguzi	Unhabitat/GLTN	USD 390,000
The Short Century -- Filling the Gap in Understanding and Appreciation of East African Modernism	George Kyeyune (Assoc. Prof.)	British Council	USD 89,980
Urban Expansion Planning for Rapidly Growing Secondary Cities in the Horn of Africa	Dr. Amin Tamale	Cities Alliance	USD 250,000
UNESCO-China Funds-in-Trust (CFIT) PROJECT: Higher Technical Education in Africa Activity Plan (UNESCO)	Assoc. Prof Dorothy Okello	UNESCO- China	USD 224,000
KTH Project	Dr. Lubwama Michael	Hogskolan BR I Nellvagen, Sweden	SEK 720,00
GCRF Africa Catalyst	Dr. Matovu Abubaker		UK Pounds 50,000
Wabes - Integrate	Prof. Niwagaba Charles	EAWAG	USD 187,930
Sculpting Shs. 50, Critiquing the Economy: Uganda's Legal Tender as a Resource for Art-making and Meaning-making." "Identity and Nationalism: Two Decades of Contemporary Art in South Sudan (2001-2023)." "The Art of Recycling: A studio Development of Art about the Girl Child Education in Western Uganda Using Found Materials."	Prof. George Kyeyune		
"The Use of Selected Ganda Traditional Pottery Artifacts as a source of Inspiration for Contemporary Creative Pottery Forms: A Case Study of Nsuwa Nsumbi and Ntamu" "Contribution of Woven Mudfish Basket to the Development of Weaving in Uganda: A Case Study of Fishing on The Shores of River Mayanja"	Dr. Robert Mpindi Kibudde		

<p>The Use of Selected Ganda Traditional Pottery Artifacts as a Source of Inspiration for Contemporary Creative Pottery Forms: A Case Study of Nsuwa Nsumbi and Ntamu”</p> <p>“Identity and Nationalism: Two Decades of Contemporary Art in South Sudan (2001-2023).”</p> <p>“The Art of Recycling: A Studio Development of Art about the Girl Child Education in Western Uganda Using Found Materials.”</p>	<p>Assoc. Prof. Kizito Maria Kasule</p>		
<p>Unveiling Mental Health Among the Ugandan Adolescents Through Multimedia Art; Animating beyond William Kentridge.”</p> <p>“Sculpting Shs. 50, Critiquing the Economy: Uganda’s Legal Tender as a Resource for Art-making and Meaning-making.”</p> <p>“Reclaiming Women’s Voices: Fashion Design Inspired by Princess Elizabeth Bagaaya’s Biography as Shaman in Sheena Queen of the Jungle.”</p> <p>“Fashioning the Lived Experiences of the Kadama”</p> <p>“Making Kinetic Art Inspired by Ankole Cultural Dance: An Interplay of Art and Physics”</p>	<p>Assoc. Prof. Angelo Kakande</p>		
<p>“Repurposing Sex Appeal Advertising Style Attributes for Creative Development of Awareness Campaign on Behavioral Change”</p> <p>“Enhancing Obstetric Fistula Information Visibility and Absorption among Peri-Urban and Rural Women in Uganda”</p> <p>“Designing Sonko: An Interactive Game Application Exploring Visual Communication Through User Experience/User Interface Design Based on Child Labour.”</p>	<p>Mr. Jodeph Sematimba</p>		
<p>Coding Narratives Associated with Mnemonic Objects: Embedding Photographs with Technologies for Contemporary Photography Space.”</p>	<p>Ms. Annette Nakimbugwe Sebba</p>		

<p>“Enhancing Obstetric Fistula Information Visibility and Absorption among Peri-Urban and Rural Women in Uganda”</p> <p>A Visual Mixed Media Documentation of Production and Processing Activities Along the Shea Value Chain in Otuke District”</p>	Assoc. Prof. Francis Xavier Ifee		
<p>“Enhancing Obstetric Fistula Information Visibility and Absorption among Peri-Urban and Rural Women in Uganda”</p> <p>“Designing Apparel Inspired by Bakiga Proverbs for the Global Stage</p>	Dr. Richard Kabiito		
<p>“A Comparative Study of Chinese Opera Masks and African Ritual Masks in Soft Sculpture from a Cross-Culture Perspective.”</p>	Dr. Lilian Nabulime		
<p>“A Visual Mixed Media Documentation of Production and Processing Activities Along the Shea Value Chain in Otuke District”</p>	Dr. Ritah Edopu		
<p>Digital painting 2-day Workshop at the Margaret Trowell School of industrial and Fine Art.</p>	Mr. Spencer Muhiire		
<p>“Reclaiming Women’s Voices: Fashion Design Inspired by Princess Elizabeth Bagaaya’s Biography as Shaman in Sheena Queen of the Jungle.”</p> <p>“Designing Apparel inspired by Bakiga proverbs for the global stage to depict Women’s social Status”</p> <p>“Fashioning the Lived Experiences of the Kadama”</p> <p>“Making Kinetic Art Inspired by Ankole Cultural Dance: An Interplay of Art and Physics”</p> <p>“Designing Sonko: An Interactive Game Application Exploring Visual Communication Through User Experience/User Interface Design Based on Child Labour.”</p> <p>“Unveiling Mental Health Among the Ugandan Adolescents Through Multimedia Art; Animating beyond William Kentridge.”</p> <p>Nation guidelines and roll-out plan for implementation of Mental Health and Psychosocial support in Education Institutions in Uganda.</p>	Assoc. Prof. Amanda Tumusiime		

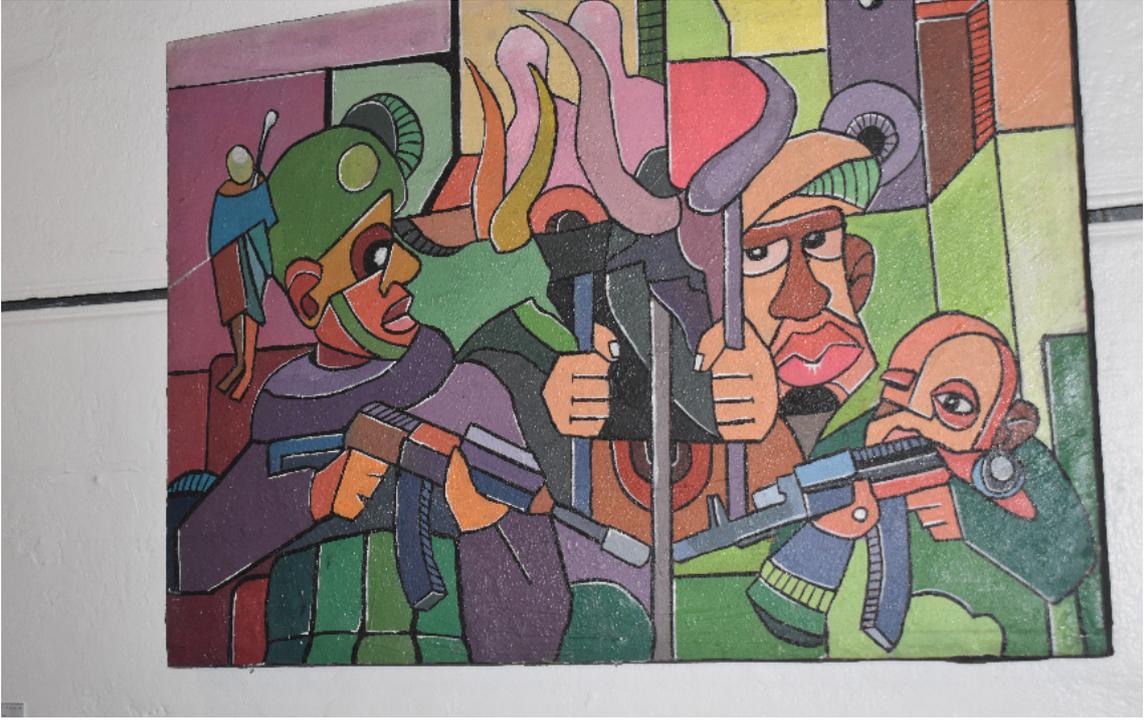
5.1 Exhibitions organized at the Makerere Institute of Heritage Conservation and Restoration in 2023.

1. Njabala Holding Space- 8th March 2023
2. Different but One-15th April 2023
3. Recycling and Environmental Sustainability- 19th May 2023
4. The Best Of Me – 28th July 2023
5. 2023 Winners Exhibition (UPPA)- 20th October 2023
6. Pictures of Ageing and History of HIV Exhibition- 14th November 2023
7. Talking Glass- 8th December 2023

5.2 Final Year Art Students Exhibition pictorial.

The Margaret Trowel School of Industrial and Fine Art held an art exhibition that show cased work by finalist students. Below is a snapshot of the various innovations by the students that were opened up for the public.





SCULPTURE





KNOWLEDGE TRANSFER PARTNERSHIPS

6

CEDAT continues to get into partnerships with a number of stakeholders as can be evidenced from information shared above in regard to ongoing projects. This is in addition to the professional Associations that not only help nurture the career growth of the students but also offer support in terms of practice to the teaching staff. These include the Engineering Association of Uganda among others.

6.1 China Funds -In -Trust (CFIT)

The School of Engineering has been implementing the Higher Education in Africa for a Technical and Innovative Workforce project supported by UNESCO and the Peoples republic of china. The initiative aims at helping the college produce better trained, skilled, knowledgeable and highly employable engineering graduates that fit into the needs of the industry.



The team from China Funds -In -Trust (CFIT) at CEDAT after a monitoring visit

6.2 Apac District gains from CEDAT's Research on Piloting a Rural Broadband Connectivity Model and Efficacious patient management system

The School of Engineering at the College of Engineering, Design, Art and Technology (CEDAT) shared findings of research that was conducted in Apac Districts through two projects namely Piloting a Rural Broadband Connectivity Model (RCBM) and Efficacious patient management system (EPMS).

The findings of the research sponsored by the Government of Uganda through the Makerere University research and Innovation Fund (MakRIF) were disseminated during a dissemination seminar held in the College on Friday 24th November 2023, where it was revealed that Apac the host District greatly benefited from the services that not only led to the increased uptake of internet services but also gained through other socio-economic areas.

The projects undertaken by research teams in the Electrical Department included Piloting a Rural Broadband Connectivity Model (RCDM) whose main objective was to pilot a model for rural broadband connectivity in support of a knowledge-based economy focusing on the education and agricultural sectors, with Apac as the host District.



At the research dissemination Seminar

It specifically targeted applications addressing service delivery, agricultural groups, women and youth groups and the potential deployment areas were based on the presence of an active partner in the community already addressing a given socio economic issue.

The second project, Efficacious Patient Management System (EPMS) aimed at developing a machine learning aided application (MakCOV) for noninvasive screening for COVID 19. It was specifically aimed at developing a machine learning Model for COVID 19 screening utilizing patient's retrospective data and to integrate the machine learning models with the hardware platform.

In his remarks at the dissemination seminar, the Head of Department, Electrical and Computer Engineering, College of Engineering, Design, Art and Technology Dr. Abubaker Matovu Waswa said piloting a Rural Broadband Connectivity Model (RCBM) was aimed at ensuring that the rural areas specifically Apac District gets internet connectivity that is not only reliable but also with appropriate data speed. He said the one-year rural broadband connectivity project was made possible because of the support by the Government of Uganda through the Research and Innovations Fund at Makerere University. According to Dr. Abubaker Matovu Wasswa, the project that cost approximately 240 million Uganda Shillings enabled the deployment of a network in Apac, thereby enabling the population gain more internet access. He commended the research teams for the great work done and whose impact has been realized by the target communities.

Dr. Edwin Mugume, the Co P.I while explaining the achievements of the project noted that it realized the expansion and deployment of the RCBN, covering twelve sites including primary and secondary schools, a technical institute, a hospital, the District Headquarters, a women's group office, and a farmer's group, which he described as an interconnectivity of a range of services in Agriculture, Health and other socio-economic activities. He pointed out that there was increased internet engagement and demand from the targeted rural communities and in the same vein a demand for enhanced multi-disciplinary capacity for research and teaching in rural connectivity solutions. 'This project is unique in a way that it is not only providing a network but is moving a step further to analyze the issues or the gaps impacting the communities in the catchment area of Apac'. He said it not only provided internet connectivity but will also help address the gaps that were seen in the overview and in this way influence the way of life of the people in Apac.

6.3 Innovations using low cost locally available materials for point of use water treatment system unveiled

The College of Engineering, Design, Art and Technology (CEDAT) conducted a Research Dissemination of two studies aimed at the Development of Materials for point of use water treatment systems.

The investigations were conducted by a team of researchers comprised of P. W. Olupot, H. M. Kalibbala, E. Menya, G.M. Wangi, J. Jjagwe, J. Wakatuntu, M. Turyasingura, R. Walozi, C. Kanyesigye and R. N. Kulabako.

The dissemination event held on Wednesday 29th November 2023 followed the successful completion of two MakRIF-supported Research projects namely; Development of rice husk based granular activated carbon for point-of-use water treatment systems and Development of zeolite-based nanocomposite filters for drinking water treatment.



Demonstrating the use of the prototype

The findings therefrom make a contribution towards provision of safe water at points of use. This is premised on the fact that surface and ground water from lakes, swamps, ponds and boreholes, the main water sources in Uganda get contaminated with microbes, nutrients, heavy metals, organic chemicals, oil and sediments that come from human activities such as agriculture, municipal waste, pharmaceuticals and industrialization. These pollutants cause various water borne diseases. Most of the public conventional water treatment systems are not equipped to remove some of the pollutants such as heavy metals.

The research team set out to develop Point of Use (POU) water filtration systems tailored to a wide range of source water quality to empower households to effectively treat water at home using Granular activated carbon (GAC), especially from renewable biomass sources and nanomaterials which are the two common materials championed for POU systems.



Prof. Moses Musinguzi, the Principal CEDAT noted that treating the water at the point where it is going to be used is very important, he emphasized. He said by undertaking the study, the team was making a big contribution towards the ranking of the University citing the Times Higher Education ranking, which has teaching as the first parameter, followed by research or research influence, income generated through research, and research productivity. Citation, how many

other researchers are making use of your publication, he said, is also considered and further stressed the need for increased and improved research given that with a score of 60%, drawing 30% for research and 30% for citation, places a university at a very competitive edge in the rankings. As a college we encourage all our members of staff to undertake research and work with the industry, he said.

Dr. Kalibbala Herbert Mpagi a member of research team while giving the background to the study said that the world was changing mentioning the example of climate change, the chemicals used, the degradation of water resources, and the various pollutants. He said the existing treatment systems have not been spared and have to find a way to fit into what is prevailing like the introduction of new materials to be used in water treatment. He said through the transmission and distribution systems, the water was prone to contamination and this, he said, explains the choice of the end user point for treatment in the investigations.

As a result of emerging pollutants, Dr. Kalibbala said the team opted to use absorbents and so the study was undertaken on activated carbon from rice husks and the Nano zeolite composites for use at the point of use. Dr. Robinah Kulabako one of the Principal Investigators in her presentation on the Development of zeolite based Nano composite filters for drinking water treatment in Uganda said the study was offering proposals or options that could be looked at as alternatives to drinking water treatment in Uganda. 'We need water when it is safe but in real life, we find that there are many contaminants that are not visible to the eye but are a public health risk if the water is ingested. What we are looking at here are those parameters in the water that are health hazards, she explained.

Dr. Kulabako noted that in the recent past there has been a deterioration of the water resources attributing this to increasing population growth, climate change and the increasing pressure on the fresh water resources both on the surface and underground. She said there were industrial effluence which are inadequately or not treated, agricultural run offs, pesticides, fertilizers all of which end up in the fresh water sources, leading to deteriorating quality of the water in terms of nutrients as well as heavy metals that are potentially associated with cancer and other disease-causing organisms. While talking about the existing water treatment centers, she explained that these were centralized, are costly to install and maintain and mainly in urban centers. She said the contribution through the studies undertaken was in the area of access to safe water nearer to the user, with affordable solutions by the use of natural Zeolites that are prevalent in Eastern Uganda.

Dr. Peter. W. Olupot from the Mechanical Engineering Department made a presentation about Activated carbon for use at the point of use. He said that there were a lot of rice husks that could be used to produce activated carbon that can be used in the treatment of water. Point of use water treatment systems on the market are not affordable to the ordinary citizen, he observed, and hence the need for a cheaper and user-friendly option as proposed in the study.

He explained that the study on using renewable bio-based materials for generating activated carbon for use in point of use systems was in response to the situation where many people were taking contaminated water with pollutants of emerging concern. The study recommended that the public water treatment systems should adopt the use of these materials in addition to their protocols and encouraged people that can afford to buy the point of use water treatment system that are on the market.



Dr. Zahara Nampewo who represented Prof. Masagazi Makerere University Research and Innovations Fund (MakRIF) said the main objective of the fund is to increase the local generation of research that can be translated and scaled up into innovations that address gaps that service Uganda's Development Agenda especially those underfunded priorities. she said the studies that were disseminated were supported by RIF because they support the development agenda. She said access to clean water is key and is part of the National Development agenda number 3, but not only water but also the environment, retaining and preserving the natural resources and climate change.

6.4 The Egypt-Japan University of Science and Technology (E-JUST)



Figure 3: The E-JUST delegation meeting the Vice Chancellor.

CEDAT is set to enter into a partnership with Egypt –Japan University of Science and Technology (E-JUST). The collaboration between the two universities to be formalized with the signing of a memorandum of understanding in the near future will see the two universities working together in a number of respects including staff and student exchanges, joint research and student supervision among others.

The decision comes after a visit to Makerere University by a delegation from the Egypt-Japan University of Science and Technology (E-JUST) on Thursday 23rd November 2023, led by the First Vice President for Education and Academic Affairs Prof. Sameh Nadah. The team comprised of the Deputy Vice President for Regional and International Affairs Dr. Muntaz Abdeluahaz, Ms. Tomomi Kawazoe the Project Coordinator for JICA E-JUST project and Mr. Racan Yosef, the Section head of International Affairs.

The visiting team led by the Head of the Electrical Department, College of engineering, Design, Art and Technology (CEDAT) Dr. Abubaker Matovu Waswa paid a courtesy call on the Ag. Vice Chancellor Prof. Umar Kakumba.

Prof. Sameh Nadah who explained the reason for their visit to Makerere University said their main objective was to seek for collaboration with the best University in the country and the region. Further he said that their visit was prompted by the quality of Makerere University students enrolled at E-JUST as beneficiaries of the scholarships, whose performance he described as outstanding.

Prof. Sameh Nadah gave a background of the Egypt-Japan University of Science and Technology that was established as a result of a bilateral agreement between the governments of Egypt and Japan with Egypt responsible for the land and physical infrastructure for the University while Japan was responsible for the labs and the technology and equipment therein. For each Department in E-Just, he said, there is a sister Department in a Japanese University. He further illustrated the various programs offered in the four schools. He informed the hosts that for all supervision of both Maters and Ph.D. programs, the teams must include both Egyptian and Japanese professors and that students get opportunity to spend some time in Japan to do some of their study in the Japanese laboratories.

He explained that E-Just as the case is with Makerere University is faculty based and that under Engineering, there were four schools including Electronics, Communications and Computer science engineering, School of energy and Chemical engineering as well as the School of Industrial and innovative design, Mechanical engineering, Basic and Applied science, with four programs in each school offering both undergraduate and postgraduate courses.

He informed the Vice chancellor that in the last three years, Egypt and Japan offered One Hundred Fifty fully funded scholarships for the African Students to do a Master's Degree in Egypt in natural science and engineering programs. He said the university had over thirty-two students from Uganda, six of whom are from Makerere University and doing very well. He said his team was in at Makerere University to mobilize more students that will benefit from the next set of 150 Scholarships for Ph.D. and Masters students over the next three years.

In his welcome remarks, Prof. Umar Kakumba, the Deputy Vice Chancellor in charge of Academic Affairs who is also Acting Vice Chancellor said it was a great opportunity to receive the delegation from E-JUST, which he described as a great Institution in the area of Science and Technology.

'We still have a very big gap in those areas across Africa especially with the emerging technologies and their applications where we need to build a strong technical and professional capacity', he said recognizing that the concentration of E- JUST was in the area of Science and Technology.

6.5 University of Kessel, Germany collaboration with CEDAT in the area of Sustainable Mobility.



Figure 4: (R-L) Prof. Dr. Angela Franckie of the University of Kessel, Germany with CEDAT staff

The College of Engineering, Design, Art and Technology hosted staff from University of Kessel Germany that were at the college for purposes of seeking out possible partnerships.

During a meeting held in the College Boardroom on Friday October 13th, 2023, the team comprised of Prof. Dr. Angela Francke, Head of Department for Cycling and Sustainable Mobility and Azeb Tesfaye Legese interacted with a cross section of members of the academia. During the meeting, it was indicated that the visit was aimed at finding possible collaboration in sustainable mobility through student and staff exchanges and many more feasible options available.



Some of the participants at the meeting

While giving a background about her University, Prof. Dr. Angela Francke said the University of Kassel was relatively young having been established in 1971 with a focus on sustainable mobility. 'We need many partners especially on sustainable mobility. There is a huge potential for

collaboration since this is a virgin area that requires a lot of capacity building' she said. She proposed that the collaboration could start on some short courses on active mobility or by offering African countries opportunities for PhD student's joint workshops and conferences on active mobility and that this could eventually be expanded to regional level in order to share knowledge.

It was agreed that the areas of collaboration between Makerere University and University of Kessel with regard to active mobility would include staff joint publications, joint proposal development under the Erasmus+ call, as well as exchange of lecturers.

For students at Bachelors and Masters Levels, it was proposed that student exchanges could be undertaken for one semester at the respective Universities. The next steps therefore were to nominate two students to be involved in the exchange in the coming semester.

6.6 Local Fundis and Masons



Figure 5: Participants of the Fundis training held at the CEDAT on the 13th and 14th of April 2023.

The Department of Architecture and Physical Planning, College of Engineering, Design, Art and Technology successfully pulled off the second edition of the Fundis training during a two-day event held at the College on the 13th and 14th of April 2023.

It was during this event that the University was called upon to establish a new Department or administrative unit to coordinate and promote community outreach programs as a strategy to solve existing community problems.

The Fundis training is part of CEDAT's community outreach program that is intended to share accumulated scientific knowledge and skills in building design and construction technologies. Of the 200 participants trained, six (6) were female Fundis from Nakawa Division. The Fundis' event and exhibition for manufacturers of building materials is an annual event held in partnership with various stakeholders.

The sponsors of the event included the National Building Review Board (NBRB), Steel & Tube, Kenya Commercial Bank (KCB), Hima Cement, Habitat for Humanity Uganda, Crestanks Ltd and Uganda Clays.



Figure 6: Exhibition by manufacturers of building materials at the Fundis training

Alongside the training was an exhibition by a number of manufacturers of building materials that showcased some of the building materials on the market and also explained to the fundis the best ways to use them.

The Vice Chancellor of Makerere University, Prof Barnabas Nawangwe, was Chief guest at the event represented by the Deputy Vice Chancellor in charge of Finance and Administration and also Principal CEDAT, Prof. Henry Alinaitwe. He gave remarks at the opening ceremony of the two-day training event where he cautioned local builders across the country to stop stealing building materials if they are to win their clients' trust.

“Some of you go an extra mile of doubling the required materials for example if 1000 bags of cement are needed, you ask for 2000 and later when the client realizes the truth, they stop dealing with you and that’s how you are losing it,” he said.

Prof Nawangwe also cautioned the builders to desist from using substandard materials which have resulted in erecting weak buildings which fall even before construction is complete.

“Whether it is sand, cement or steel, there are standards and all standards can be tested in the labs. If you are building and you are in doubt about the standard, go to labs and test. Even when you are constructing at intervals, test materials you are using regularly to ascertain their strength,” he said.

Speaking at the event, Dr. Venny Nakazibwe, the Deputy Principal of CEDAT said that they want to assess and understand the levels at which the local site fixers (Fundis) are operating in terms of skills, knowledge and innovation in building construction.

6.7 Tembo Steel (U)Uganda Ltd.

Engineering students at the College of Engineering, Design, Art and Technology (CEDAT) benefited from a career guidance and mentorship session co-organized by the college and Tembo Steel (U) Ltd, during which an offer of ten Internship placement opportunities was announced.

The session held on 10th May 2023 in the CEDAT Conference Hall was a follow up of a visit by mechanical Engineering students to the Tembo Steel (U) Ltd plant at Lugazi

Mr. Sanjay Awasthi, the Chairman Tembo Steels (U)Ltd in the company of Mr. Manish Kalla, the company's General Manager engaged the students in a discourse aimed at generating their interest in the steel industry.

'I would like to encourage you to work hard in class and further your education but also use the opportunities we offer to have practical skills, said the General Manager of the Company.

He said career planning helps one identify one's strengths and growth areas. Learning about your strengths can be a great help in choosing which career options are most suitable for you. When career planning, you're looking at which skills you can flex and which areas there may be more learning to do.

He said Tembo steel (U) Ltd started their production in the year 2000 in a small way and urged the students to have a positive stance towards life irrespective of the circumstances. 'You may meet various challenges in life but that should not stop you from aiming high. We are open and available for whoever is determined to gain skills and add efforts to the development of this country and the region, said Awasthi.

He said the steel they produce was 100% made in Uganda with the raw material, iron ore extracted from the ground and converted into iron and steel. He told the students that all these processes had opportunities for skills development, technology and employment.

Tembo Steels, he noted is the most diversified and integrated steel plant in Africa with the largest product portfolio through integrated route covering all four verticals of steel, and that their company continuously strives to foster and develop talents across the country. He said the management recognizes the importance of training and giving opportunities to students, which is a noble contribution to the country.

Dr. Peter Olupot, Lecturer Mechanical Engineering extended the colleges appreciation for the opportunity rendered by the company, that not only included a tour of the plant but also a career advice session with a bigger number of students at the college. He also appreciated the offer of internship placements for the students willing to take them on.

Prof. Kirabira, the Head Department of Mechanical Engineering applauded Tembo Steel (U) Ltd for taking keen interest in training students which was very relevant to their learning at all levels in areas like mechanics of materials, properties of materials, control systems and instrumentation as well as production engineering.

He informed the team that there were other opportunities beneficial to the two parties citing the example of research on steel that the college has undertaken, in addition to energy efficiency and related subjects.

BUDGET AND BUDGET PERFORMANCE

The College of Engineering, Design, Art and Technology had a total Budget of Uganda Shillings Two Billion, Eight Hundred Fifty-two Million, Five Hundred Eighty-Four Thousand and Sixty-Seven only **(2,852,584,067)**. The various budget areas are indicated in the table below.

BUDGET LINE	ACTUAL EXPENDITURE
Information and Communication Technology Supplies.	2,500,000
Printing, Stationery, Photocopying and Binding	1,941,829
Membership dues and Subscription fees.	2,553,645
Information and Communication Technology Services	5,000,000
Property Management Expenses	4,999,951
Educational Materials and Services	31,644,360
Research Expenses	20,000,000
Travel inland	4,863,420
Allowances	404,904,800
Incapacity benefits (Employees)	2,700,000
Advertising and Public Relations	3,000,000
Staff Training	16,400,000
Books, Periodicals & Newspapers	2,586,000
Information and Communication Technology Supplies.	33,254,000
Welfare and Entertainment	119,433,670
Printing, Stationery, Photocopying and Binding	48,967,972
Membership dues and Subscription fees.	2,800,000
Information and Communication Technology Services	29,146,000
Postage and Courier	2,394,360
Property Management Expenses	42,937,333
Medical Supplies and Services	25,017,000

Educational Materials and Services	1,800,818,085
Research Expenses	12,870,000
Insurances	2,000,000
Licenses	2,486,800
Travel inland	8,713,442
Fuel, Lubricants and Oils	82,440,000
Maintenance – Buildings and Structures	46,164,000
Maintenance – Transport Equipment	13,282,600
Maintenance – Machinery & Equipment Other than Transport Equipment	43,373,960
Maintenance – Other Fixed Assets	27,090,940
Incapacity, death benefits and funeral expenses	6,299,900
TOTAL	2,852,584,067

NOTICE TO FINANCIAL STATEMENTS.

- College was able to pay all the part time lecturers who taught and submitted results.
- The College procured and paid for teaching materials, internship materials, and Recess term materials, Examination materials, Industrial Supervision, Recess term supervision and Field work activities.
- We were able to carry out repairs to the offices, lecture rooms, student chairs, CEDAT Lift, students and staff toilets, to improve on the learning and working environment for students and staff.
- The College procured and paid for cleaning materials to ensure that the teaching and working environment is clean.
- We paid for assorted stationery and Fuel to enable the college administration offices operate smoothly.
- The College catered for staff welfare by providing break tea to all staff, Eats and refreshments during meetings, vivas, PhD defence etc.

8

INFRASTRUCTURE DEVELOPMENT

In the period under review, the College did not have any infrastructure developments worth reporting about.

9

CHALLENGES

1. Insufficient budget ceiling given to the College.
2. Delays in releasing of funds which affect the college work plan
3. The college has many part-time lecturers who consume a bigger percentage of the budget because we need their services.
4. The College being a science based, it has many Laboratories which require a sufficient budget for maintenance.
5. We budget for Capital Development but funds are never released.
6. Computers in the Labs and Offices are all obsolete which need to be replaced but because of budget constraints we cannot replace them.
7. The College lacks technicians yet it is science based.



APPENDIX

10

Publications 2023

1. Assessment of irrigation water distribution using remotely sensed indicators: A case study of Doho Rice Irrigation Scheme, Uganda: Fawaz Wamala, Anthony Gidudu, Joshua Wanyama, Prossie Nakawuka, Erion Bwambale, Abebe D. Chukalla Link: <https://www.sciencedirect.com/science/article/pii/S277237552300014X>
2. Sustainable valorisation of agri-food waste from open-air markets in Kampala, Uganda via standalone and integrated waste conversion technologies: T. Somorin, L.C. Campos, J.R. Kinobe, R.N. Kulabako, O.O.D. Afolabi
3. Access to and drivers of drinking water and sanitation service levels in informal settlements: evidence from Kampala Uganda: Innocent Tumwebaze, Hakimu Sseviiri, Fred Henry Bateganya, John Twesige, Rebecca Scott, Sam Kayaga, Robinah Kulabako, Guy Howard (Corresponding author for this work)
4. Link: <https://research-information.bris.ac.uk/en/publications/access-to-and-drivers-of-drinking-water-and-sanitation-service-le>
5. Non-emission hydrothermal low-temperature synthesis of carbon nanomaterials from poly (ethylene terephthalate) plastic waste for excellent supercapacitor applications: Moses Kigozi, Gabriel N. Kasozi, Sachin Balaso Mohite, Sizwe Zamisa, Rajshekhar Karpoornath, John Baptist Kirabira & Emmanuel Tebandeke Green Chemistry Letters and Reviews, Volume 16, 2023 - Issue 1 Article | Published Online: 20 Feb 2023 | Views: 548 Link: <https://doi.org/10.1080/17518253.2023.2173025>
6. Development of a sustainable low-carbon footprint for the Greater Kampala Metropolitan Area: The efficacy of a TIMES/CGE hybrid framework: Kimuli Ismail, Michael Lubwama, John Baptist Kirabira, Adam Sebbit Link: <https://doi.org/10.1016/j.egy.2022.11.144>
7. Electrochemical exfoliation and deposition of sodium-graphene oxide composite for high specific capacity cathode/anode for dual-carbon sodium ion battery application: Moses Kigozi, Gabriel N. Kasozi, Emmanuel Tebandeke, Salluri Aswini, Tanarapu Venkata Anusha, Pawan Kumar Jain, John Baptist Kirabira Link: <https://doi.org/10.1016/j.cplett.2023.140499>
8. An integrated energy recovery system for productive biogas applications: Continuous mode operation and assessment: Edmund Tumusiime, John Baptist Kirabira, Wilson Babu Musinguzi. Link: <https://doi.org/10.1016/j.egy.2023.03.097>
9. Assessment of the techno-economic viability of B10 synthesis from second-generation biodiesel feed stocks in Uganda: Timothy Tibesigwa, Peter Wilberforce Olupot, John Baptist Kirabira. Link: <https://doi.org/10.1080/14786451.2023.2191144>

10. Numerical modelling of a solar salt pan for improved salt production at Lake Katwe, Uganda: Hillary Kasedde, Aidah Namagambe, Joseph Ddumba Lwanyaga, John Baptist Kirabira, Denis Okumu: link: <https://doi.org/10.1016/j.csite.2022.102592>
11. A low-cost method for developing a β -sheet packed silk fibroin powder for medical application in LMICs: Yvonne Tusiimire, Michael Lubwama, John Baptist Kirabira, Peter Wilberforce Olupot, Charles Ibingira, Robert Tamale Ssekitoleko. Link: <https://doi.org/10.21203/rs.3.rs-2466560/v1>
12. Life cycle assessment of biodiesel production from selected second-generation feedstocks: Timothy Tibesigwa, Brian Iezzi, Tae Hwan Lim, John B. Kirabira, Peter W. Olupot Link: <https://doi.org/10.1016/j.clet.2023.100614> (Available online 10 March 2023, Version of Record 14 March 2023.)
13. Progress in deployment of biomass-based activated carbon in point-of-use filters for removal of emerging contaminants from water: A review: Emmanuel Menya, Joseph Jjagwe, Herbert Mpagi Kalibbala, Henning Storz, Peter Wilberforce Olupot. Link: <https://doi.org/10.1016/j.cherd.2023.02.045> (Published online: 22 Mar 2023)
14. Synthesis and efficacy of cactus-banana peels composite as a natural coagulant for water treatment: Herbert Mpagi Kalibbala, Peter Wilberforce Olupot, Onzere Maxwell Ambani. Link: <https://doi.org/10.1016/j.rineng.2023.100945> (Available online 8 February 2023)
15. Effects of waste paper on fuel and mechanical properties of biogas digestate-derived briquettes. Link: Sebyoto Misaeri Lutaaya, Peter Wilberforce Olupot, Joel Wakatuntu & Hillary Kasedde; Published: 21 February 2023. Link: <https://link.springer.com/article/10.1007/s13399-023-03929-z>
16. Optimization of pyrolysis conditions for production of rice husk-based bio-oil as an energy carrier: Joel Wakatuntu, Peter Wilberforce Olupot, Joseph Jjagwe, Emmanuel Menya, Mackay Okure. Available online 9 February 2023. Link: <https://doi.org/10.1016/j.rineng.2023.100947>
17. Pyrolysis, kinetics and thermodynamic analyses of rice husks/clay fiber-reinforced polylactic acid composites using thermogravimetric analysis: Vianney Andrew Yiga, Michael Lubwama & Peter Wilberforce Olupot ; Journal of Thermal Analysis and Calorimetry (2023), Published: 20 January 2023 Link: <https://link.springer.com/article/10.1007/s10973-022-11927-y>
18. Optimisation of eggshell-zeolite composite as a potential surfactant adsorbent for hand-washing wastewater: Medard Turyasingura, Joel Wakatuntu, Michael Lubwama, Joseph Jjagwe, Oliver Hensel, Peter Wilberforce Olupot. Case Studies in Chemical and Environmental Engineering, Volume 7, June 2023
19. Adherence to severe malaria treatment guidelines in children at a Ugandan regional hospital: a baseline assessment for a malaria treatment quality improvement project: Cynthia A. Moffitt, Peter Olupot-Olupot, Joan Wamulugwa Onen & Nicole O'Brien. Published: 25 February 2023. Link: <https://malariajournal.biomedcentral.com/articles/10.1186/s12936-023-04507-4>
20. Optimization of pyrolysis conditions for production of rice husk-based bio-oil as an energy carrier: Joel Wakatuntu a, Peter Wilberforce Olupot a, *, Joseph Jjagwe a, Emmanuel Menya b, Mackay Okure. Available online 9 February 2023. Link: <https://doi.org/10.1016/j.rineng.2023.100947>

21. The mediation effect of total quality management on the relationship between master production scheduling and blood transfusion sustainability in Uganda: Authors: James Kaconco, Betty Nabuuma, Jude Thaddeo Mugarura. *Management Science Letters*, Volume 13 Issue 1 pp. 65-74, 2023. Link: https://www.growingscience.com/msl/Vol13/msl_2022_22.pdf
22. Development of Rice Husk and Sawdust Mycelium-Based Bio-composites: Optimization of Mechanical, Physical and Thermal Properties. Herman Mbabali, Michael Lubwama, Vianney Andrew Yiga, Evans Were & Hillary Kasedde. *Journal of The Institution of Engineers (India): Series D* (2023). Link: Published: 24 February 2023
23. Development of a Predictive Model for Industrial Circuit Breaker Degradation in Stochastic Environments. Kayenga Tendo Joshua, Peter Okidi Lating, Milton Edimu. Link: *International Journal of Innovative Science and Research Technology*, Volume 8, Issue 1, January – 2023. Link: [https://ijisrt.com/assets/upload/files/IJISRT23JAN1561_\(1\).pdf](https://ijisrt.com/assets/upload/files/IJISRT23JAN1561_(1).pdf).
24. 2Feecal sludge emptying in Sub-Saharan Africa, South and Southeast Asia: A systematic review of emptying technology choices, challenges, and improvement initiatives: Authors: Muoghalu Chimdi, Semiyaga Swaib, Manga, Musa. DOI: <https://doi.org/10.17615/cz3m-q728>. Published February 2023
25. Willingness to pay for COVID-19 mitigation measures in public transport and paratransit in low-income countries. Authors: Andrew Bwambale, Chinebuli Uzundu, Mohaimanul Islam, Farzana Rahman, Zahara Batool, Paul Isolo Mukwaya, Zia Wadud. *Transportation Research Part A: Policy and Practice*, Volume 167, January 2023, 103561. Link: <https://doi.org/10.1016/j.tra.2022.103561>
26. Application of black soldier fly larvae in decentralized treatment of faecal sludge from pit latrines in informal settlements in Kampala city. Authors: Richard Tokwaro, Swaib Semiyaga, Charles B. Niwagaba, Musa Manga, Chimdi C. Muoghalu, Jotham Ivan Sempewo, Anne Nakagiri. *Front. Environ. Sci.*, 07 February 2023, Sec. Water and Wastewater Management, Volume 11 - 2023 | <https://doi.org/10.3389/fenvs.2023.1118635>
27. Biochar as a novel technology for treatment of onsite domestic wastewater: A critical review: Authors; Chimdi C. Muoghalu, Prosper Achaw Owusu, Sarah Lebu, Anne Nakagiri, Swaib Semiyaga, Oliver Terna Iorhemen, Musa Manga. *Front. Environ. Sci.*, 23 February 2023, Sec. Water and Wastewater Management, Volume 11 – 2023, Link: <https://doi.org/10.3389/fenvs.2023.1095920>
28. Production and Characterization of Paper from Banana Stem Fiber: Optimization Using Box-behnken Design (BBD). Authors: Vianney Andrew Yiga, Michael Lubwama, James Opio, Emmanuel Menya, Denis Nono, Harriet Nalubega Lubwama. Published online: 22 Mar 2023. Link: <https://doi.org/10.1080/15440478.2023.2192019>
29. Emissions and emission factors for *Dichrostachys cinerea*, *Morus Lactea*, *Piliostigma thonningii*, *Combretum molle*, and *Albizia grandibracteata* firewood species and their charcoals. Authors: Michael Lubwama, Vianney Andrew Yiga, Harriet Nalubega Lubwama, Ivan Ssempijja & Joseph Kihedu. *Biomass Conversion and Biorefinery* (2023). Published: 01 March 2023. Link: <https://link.springer.com/article/10.1007/s13399-023-04005-2>
30. 2James Kaconco , Betty Nabuuma , Jude Thaddeo Mugarura , John Baptist Kirabira; (2023): Investigating relationship of master production scheduling on blood transfusion sustainability

in Uganda. Published by Elsevier B.V, Social Sciences & Humanities Open, Accepted 1 April 2023, <https://doi.org/10.1016/j.ssaho.2023.100514>

31. Vianney Andrew Yiga, Michael Lubwama, Peter Wilberforce Olupot. (2023) Thermal stability of NaOH modified rice husk fiber-reinforced polylactic acid composites: Effect of rice husks and clay loading; Published by Elsevier B.V, Available online 15 April 2023, <https://doi.org/10.1016/j.rinma.2023.100398>
32. Innocent K. Tumwebaze, Hakimu Sseviiri, Fred Henry Bateganya, John Twesige, Rebecca Scott, Sam Kayaga, Robinah Kulabako, Guy Howard; (2023) Access to and factors influencing drinking water and sanitation service levels in informal settlements: Evidence from Kampala, Uganda. Published by Elsevier Ltd, Available online 2 May 2023, <https://doi.org/10.1016/j.habitatint.2023.102829>
33. P.J. White, Dorothy Okello, Brian P. Casey, Claire Najjuuko, Ronald Lukanga, (2023): Co-designing with engineers for community engagement in rural Uganda. Design Science , Volume 9 , 2023 , e12; Published online by Cambridge University Press: 04 May 2023. DOI: <https://doi.org/10.1017/dsj.2023.10>
34. Godwin Erima, Anthony Egeru, Anthony Gidudu, Yazidhi Bamutaze, Isa Kabenge, Robert Asiimwe; (2023) Determinants of households' flood risk coping strategies in a high exposure system of the Manafwa catchment and Lake Kyoga Basin: Volume 25, Issue 5, 1 May 2023, Water Policy (2023) 25 (5): 468–491, <https://doi.org/10.2166/wp.2023.231>
35. Victor Alirach, Michael Lubwama, Peter Wilberforce Olupot & Loyce Kukunda: Development and characterisation of bio-sheets from sugarcane bagasse as a potential packaging material, Biomass Conversion and Biorefinery, Published: 04 August 2023. Link: <https://link.springer.com/article/10.1007/s13399-023-04689-6>
36. Derrick Robert Irumba, Anthony Gidudu, Lydia Mazzi Kayondo: Analyzing the Variability of Wildfire Susceptibility in Queen Elizabeth National Park – Uganda; <https://doi.org/10.5194/ica-abs-6-99-2023>
37. G. M. Wangi, P. W. Olupot, J. Byaruhanga & R. Kulabako: Characterization of Natural Zeolite and Determination of its Ion-exchange Potential for Selected Metal Ions in Water; Published: 18 September 2023, Springer line, Environmental Processes , link:<https://link.springer.com/article/10.1007/s40710-023-00654-7>
38. Ivan Bamweyana, Moses Musinguzi, Lydia Mazzi Kayondo; Geostatistical Assessment of Forest-Based, Exponential Smoothing and Curve Fitting Algorithms in Forecasting Wet and Dry Conditions of the Short Rain Season at a Local Scale in Uganda. Vol 6, No 4: September 2023. Link: <https://revues.imist.ma/index.php/AJLP-GS/article/view/40215/0>
39. V.A. Yiga, A. Nuwamanya, A Birungi, M. Lubwama, H.N. Lubwama: Development of carbonized rice husks briquettes: Synergy between emissions, combustion, kinetics and thermodynamic characteristics. Energy Reports, Volume 9, December 2023, 5977-5991. <https://doi.org/10.1016/j.egy.2023.05.066>
40. V.A. Yiga, M. Katamba, M. Lubwama, K.H. Adolfsson, M. Hakkarainen, E. Kamalha. Combustion, kinetics and thermodynamic characteristics of rice husks and rice husk-bio-composites using thermogravimetric analysis. Journal of Thermal Analysis and Calorimetry. Volume 148, 11435-11454 (2023). <https://doi.org/10.1007/s10973-023-12458-w>

41. H.F. Kiwumulo, H. Muwonge, C. Ibingira. M. Lubwama, J.B. Kirabira, R.T. Ssekitoleko. A dielectrophoretic simulation procedure of iron-oxide micro-particle drug attachment system for leukemia treatment using COMSOL software: a potential treatment reference for LMICs. *Frontiers in Medical Technology*, Volume 5, 2023. <https://doi.org/10.3389/fmedt.2023.1250964>
42. I. Kimuli, G. Goldstein, M. Lubwama, J.B. Kirabira, A. Sebbit. Energy scenarios for Greater Kampala Metropolitan Area towards a sustainable 2050: A TIMES_VEDA analysis. *Smart Energy*. Volume 10, 100099, May 2023. <https://doi.org/10.1016/j.segy.2023.1>
43. J. Atidi, H. Kasedde, E. Menya, P. W. Olupot, Optimization of physical and mechanical properties of porcelain tiles from coffee parchment husk ash, *Journal of Engineering Research*, 2023, ISSN 2307-1877, <https://doi.org/10.1016/j.jer.2023.11.013>.
44. J. Jjagwe, P. W. Olupot, S. Carrara, Iron oxide nanoparticles/nanocomposites derived from steel and iron wastes for water treatment: A review, *Journal of Environmental Management*, Volume 343, 2023, 118236, ISSN 0301-4797, <https://doi.org/10.1016/j.jenvman.2023.118236>.
45. Davis Ssemwanga, Ronald Ssengendo, Lilian Mono, Ivan Bamweyana, 2023. Exploring the spatial variation of the effect of COVID-19 on property market activity in Kampala District, *South African Journal of Geomatics*, Vol. 12. No. 1, February 2023, <http://dx.doi.org/10.4314/sajg.v12i1.2>
46. Josephine Moriku Thomas Celestino, Peter Okidi Lating, Betty Nabuuma, Vianney Andrew Yiga. (2023) "Effects of clay, gum Arabic and hybrid binders on the properties of rice and coffee husk briquettes" *Results in Engineering*. <https://doi.org/10.1016/j.rineng.2023.101488>
47. Vianney Andrew Yiga, Moses Katamba, Michael Lubwama, Karin. H. Adolfsson, Minna Hakkarainen, Edwin Kamalha. (2023) "Combustion, kinetics and thermodynamic characteristics of rice husks and rice husk-biocomposites using thermogravimetric analysis" *Journal of Thermal Analysis and Calorimetry*. <https://doi.org/10.1007/s10973-023-12458-w>
48. Vianney Andrew Yiga, Michael Lubwama, Denis Karemani, Denis Bbosa, Emmanuel B.O. Olotu, Peter Wilberforce Olupot, Faith Natukunda. (2023) "Prediction of tensile strength of biochar filled polylactic acid composites via box-behnken design" *Journal of Engineering Research*. <https://doi.org/10.1016/j.jer.2023.100142>
49. Vianney Andrew Yiga, Andrew Nuwamanya, Agatha Birungi, Michael Lubwama, Harriet Nalubega Lubwama. (2023) "Development of carbonized rice husks briquettes: Synergy between emissions, combustion, kinetics and thermodynamic characteristics". *Energy Reports*. <https://doi.org/10.1016/j.egyr.2023.05.066>
50. Vianney Andrew Yiga, Michael Lubwama & Peter Wilberforce Olupot. (2023) "Thermal stability of NaOH modified rice husk fiber-reinforced polylactic acid composites: Effect of rice husks and clay loading". *Results in Materials*. <https://doi.org/10.1016/j.rinma.2023.100398>
51. Denis Nsubuga, Isa Kabenge, Ahamada Zziwa, Vianney Andrew Yiga, Yusufu Mpendo, Mawejje Harbert, Ronald Kizza, Noble Banadda & Kerstin D. Wydra. (2023) "Optimization of adsorbent dose and contact time for the production of jackfruit waste nutrient-enriched biochar". *Waste Disposal & Sustainable Energy*. <https://doi.org/10.1007/s42768-022-00123-1>
52. Athony Gidudu, Yazidhi Bamutaze, Anthony Egeru & Isa Kabenge (2023): Spatiotemporal Analysis of the Hydrological Responses to Land-Use Land-Cover Changes in the Manafwa Catchment, Eastern Uganda. <https://doi.org/10.1080/00330124.2023.2275317>

53. Henry Fenekansi Kiwumulo, Haruna Muwonge, Charles Ibingira' Michael Lubwama, John Baptist Kirabira, Robert Tamale Ssekitoleko (2030) A di-electrophoretic simulation procedure of iron-oxide micro-particle drug attachment system for leukemia treatment using COMSOL software: a potential treatment reference for LMICs. Volume 5 – 2023, <https://doi.org/10.3389/fmedt.2023.1250964>
54. Nakiwala, M., Mukiibi, S., Kiggundu, A., & Elias, H. (2023). Examining Awareness, Attitudes, and Challenges of Owner Developers Regarding Mortgage Financing Eligibility Terms in GKMA, Uganda. *East African Journal of Business and Economics*, 6(1), 456-472. <https://doi.org/10.37284/eajbe.6.1.1512>
55. Christopher Kanyesigye, Innocent Twesigye, Sara J. Marks, Charles B. Niwagaba, Robinah N. Kulabako, Giuliana Ferrero, Frank Kansiime (2023); Assessment of risks to the quality of water supplied in Bushenyi-Uganda using the water safety plan approach. <https://doi.org/10.2166/wpt.2023.193>



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