



University of Dar es Salaam

Our February 2021 UDSM Alumna

This is a “light corner” on the UDSM portal intended to feature for one month in turns two among many of the University’s graduates—alumni—since its foundation in 1961. The corner is designed to inform the public and the University itself, without prejudice in terms of historical precedence but guided only by professional information search, on the past graduates of the University, their whereabouts, their current position or engagement, what is remembered of them as past ‘boys’ and ‘girls’ of their time and, finally, on what is reckoned about their contribution to their Alma Mater, their nation, the Africa region and/or the wider world.

Verdiana Grace MASANJA [née Kashaga]



Year of matriculation: 1973

Year of graduation: 1976;

Degree: BSc (Honours) in Mathematics and Physics

More info:

- **M.Sc. (1979), University of Dar es Salaam;**
- **MSc. (1981), Technical University of Berlin, FRG**
- **PhD (1986), Technical University of Berlin, FRG**

Verdiana Grace Masanja (née Kashaga) is UDSM’s ‘*Alumna of the Month*’ for February 2021. Presently, she is a professor at the Nelson Mandela African Institution of Science and Technology (NM-AIST) in Arusha, Tanzania. She has been there since February 2018.

She was born in Bukoba on October 12, 1954, going to Nyakabungo school in Mwanza for primary education (1959-65), Chopra school in the same town for one year of ‘Ordinary’-level secondary education (1966-67) and Rosary College, for convenience of residency for the rest of the four years (1968-70) of Ordinary-level secondary education. Thereafter, she went to Jangwani Girls in Dar es Salaam for the two senior classes of Advanced-level secondary education in 1970-72. From Jangwani Girls, Verdiana, with very good passes in Mathematics and Physics, was admitted to the-then Faculty of Science (today’s College of Natural and Applied Sciences, CoNAS) for a three-year degree study programme running from 1973 to 1976. In the records of her old ‘Faculty,’ she is affectionately remembered to have been a brilliant student in both Physics and Mathematics, a record she had actually carried from her previous schools at Jangwani, Rosary and Chopra.

Upon completion of her bachelor’s degree in 1976, Verdiana was retained by the Department of Mathematics for a staff development position towards postgraduate training. She thus next undertook a master’s degree programme within the Department of Mathematics—cross-cutting with Physics—which she completed in 1981. Her master’s thesis was on ‘*The Effect of Injection on Developing Laminar Flow of Reiner-Philippoff Fluids in a Circular Pipe*’. Obviously, for a non-mathematical and non-Newtonian mind, the title immediately casts darkness on the novice’s daytime pathway. But for a Verdiana-Grace of the 1981 master-graduating class, this was already a “mathematics-and-physics made simple”!

Upon earning a postgraduate study scholarship abroad, in Germany, Verdiana was advised to pursue the theme of ‘fluids’ for her second, “equalisation master’s degree” in physics at the Technical University of Berlin (1979–1981). For this stretch, her subject of study was “*A Numerical Study of a Reiner-Rivlin Fluid in an Axi-Symmetrical Circular Pipe*”, jointly supervised by Professors Wolfgang Muschik and Gerd Brunk at the Department of Fluid Dynamics - two of some of the vibrant German scholars that were attracted to teach in a class of research universities in industrial Europe. This particular university was the first German university to adopt the name “*Technische Universität*” (back in 1920) in an evolving classification-specialisation of higher education and research in Germany. She thereafter continued into a PhD programme, which she completed successfully in 1986, becoming a first woman from Tanzania to receive a Ph.D. in mathematics.

After completing her doctorate, Masanja returned to Tanzania and took up her position at the University of Dar es Salaam, in the Mathematics Department, where she grew up through the ranks from tutorial assistant (April 1976-1981), to assistant lecturer (1981-1986) to lecturer and senior lecturer (1986-2000), associate professor (2000-2006) and finally professor (since 2006). Evidently, she was very active in the teaching and supervision of students. More particularly, she took an extraordinary role in popularizing mathematics not only as a ‘friendly

concept’ but also as a user-friendly tool in scientific thinking, innovation and proofs. She has for a long period participated fully as a member and also as an official and resource person in a number of professional associations such as the Mathematics Association of Tanzania (MAT), The African Academy of Science (AAS), Forum for African Women Educationalists (FAWE), World Science Forum (WSF) and Society for the Advancement of Science in Africa (SASA). She has been of particular assistance in popularizing both mathematics and science among young school girls and among womenfolk in general.

For some 16 years outside the total of the nearly 20 years of service at UDSM, Prof. Masanja had tours of academic work mostly with the University of Rwanda (and her predecessors Kigali Institute of Science and Technology (KIST), National University of Rwanda (NUR) and the University of Kibungo), since 2006, where, apart from teaching, she worked at levels of Director in portfolios of postgraduate studies, research, innovation and consultancy, and Deputy Vice-Chancellor responsible for strategic development, research and innovation, culminating, in 2007, in full professorship.

In 2018, Professor Masanja received an appointment by the Nelson Mandela African Institute of Science and Technology in Arusha for a professorship in applied and computational mathematics. She returned from Rwanda to Tanzania, taking up residency in Arusha. Her current research areas include mathematical/statistical modelling (in connection with blood flow in stenosed arteries); drug distribution within the brain; dynamics of transmission and control of diseases in livestock and plants; hydro-magnetic flows in nanofluids; as well as wastewater distribution networks. She has published over 130 works in mathematics, gender, science and technology; education and schooling; and related consultancies. Additionally, she has supervised scores of undergraduate and postgraduate students, attended and made presentations at various institutional conferences, as well as collaborated with colleagues on a number of international and regional projects. The University feels proud of her achievements.



Prof. Verdiana Grace Masanja providing individualized instruction and assistance to learners

**Verdiana Grace MASANJA [née Kashaga] is our February 2021 Alumna,
and her great stories begin here!**

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