

# MBEYA UNIVERSITY OF SCIENCE AND TECHNOLOGY



## WEEKLY RESEARCH SEMINAR SERIES

**MUST Community and General Public are cordially invited to attend the 6<sup>th</sup> Research Seminar Presentation**

**COLLEGE OF ENGINEERING AND TECHNOLOGY (CET)**

**DEPARTMENT OF BUILT ENVIRONMENT ENGINEERING**

**RESEARCH TOPIC:** *Optimizing the Conjunctive use of Surface Water and Groundwater in Water Stressed River Basins: Case of Olifants River Basin, South Africa*

**SPEAKER:** *Dr. Gislar Kifanyi (PhD in Civil Engineering)*

**BIOGRAPHY OF THE SPEAKER:** Dr. Gislar Kifanyi is a Lecturer in the Department of Built Environment Engineering (BEE) of the Mbeya University of Science and Technology with PhD in Civil Engineering Degree qualification obtained from Tshwane University of Technology in South Africa. He has a Masters degree in Engineering Management (Project Management) and a Bachelor Degree in Civil Engineering, both awarded by the University of Dar es Salaam. Dr. Gislar is a registered Professional Civil Engineer with Engineers Registration Board (ERB) of Tanzania and is a member of Institution of Engineers Tanzania (IET). Dr. Gislar has more than 22 years of experience in academics and his research interest areas is on Stochastic Simulation and Optimization methods, Modeling hydrology and Hydrogeology, Water Resources Management and Groundwater resources Management. He has published more than 10 papers in peer – reviewed journals.



**R-ID NO: 0018**

**DATE: Wednesday 22<sup>nd</sup> May, 2019**

**TIME: 04:00 PM**

**VENUE: NYERERE HALL**

**SUMMARY OF THE PRESENTATION:** In this research, an efficient simulation-optimization conjunctive water use management model which is capable of solving stochastic optimization problems under scanty data and uncertainty conditions was developed. The research was based on simulation-optimization approach through application of the most recently emerged Monte Carlo Sampling based method – Retrospective Optimization Approximation (ROA) approach. Key findings emanating from this study revealed that through ROA approach the stochastic conjunctive water use optimization problem solved, converged to its maximum expected total optimum (sustainable) conjunctive water use withdrawal rate value within a relatively few iterations (6 to 8 iterations), hence less expensive in terms of computational time. ROA approach has potentials to ensure sustainability of water resources utilization in the water stressed river basins. The potential benefits of this research to the community of Greater Letaba and other water stressed river basins of the world are that the proposed approach can be adopted to ensure water availability, security, and sustainability in the long run resulting in conservation of this precious resource.

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**INSTITUTE OF SCIENCE AND TECHNOLOGY (IST)**

**DEPARTMENT OF SCIENCE AND BUSINESS MANAGEMENT**

**RESEARCH TOPIC:** *Assessing the Actual Safety and Hygienic Control Practices of Farmers and the Status of Microbiological Safety of fresh Milk in Tanzania*

**SPEAKER:** *Mr. Fred Mwabulili (MSc. in Food Quality Management – Specializing in Food Safety)*

**BIOGRAPHY OF THE SPEAKER:** Mr. Fred J. Mwabulili is an Assistant Lecturer in the Department of Science and Business Management of the Mbeya University of Science and Technology. Mr. Mwabulili holds an MSc. in Food Quality Management from Wageningen University and Research, the Netherlands and a BSc. in Food Science and Technology from Sokoine University of Agriculture. Mr. Mwabulili is an experienced food quality and safety specialist. He has six (6) years experience in the food processing industry and four (4) years in an academic institution. His research interest is in the area of food quality and food safety.



**R-ID NO: 0019**

**DATE: Wednesday 22<sup>nd</sup> May, 2019**

**TIME: 04:45 PM**

**VENUE: NYERERE HALL**

**SUMMARY OF THE PRESENTATION:** This study describes the preventive measures and monitoring practices that influence the microbial load in raw milk at the farm level. Also, the status of microbiological safety of fresh milk was determined. A tool was developed to differentiate the safety and hygienic practices of the farmers into different levels which are poor, basic, intermediate and standard. The samples were analyzed for Total bacteria counts (TBC), Coliforms and Staphylococcus aureus (S. aureus). The results suggest that most of the farmers were operating their safety and hygiene practices ranging from poor to basic level. This finding was validated by microbiological data which showed that overall the raw milk collected from the farms were of poor microbiological quality.

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**COLLEGE OF SCIENCE AND TECHNICAL EDUCATION (CoSTE)**

**DEPARTMENT OF NATURAL SCIENCE**

**RESEARCH TOPIC: Formulation of Composite Granules (Montmorillonite Clay – Moringa Oleifera Seeds) for Water Treatment**

**SPEAKER: Mr. Phenson Justine (MSc. in Environmental Quality Sciences)**

**BIOGRAPHY OF THE SPEAKER:** Mr. Justine Phenson is an Assistant Lecturer in the Department of Natural Sciences at Mbeya University of Science and Technology since 2013. He possesses a Bachelor Degree in Chemistry from UDOM – Tanzania and Master's Degree in Environmental Sciences from Hebrew University of Jerusalem, Israel. His research interests are in the area of Environmental Sciences, Environmental Chemistry, Chemistry of Pollutants and Water Treatment. Currently, Mr. Justine Phenson is working as a Research Coordinator at CoSTE.



**R-ID NO: 0020**

**DATE: Wednesday 22<sup>nd</sup> May, 2019**

**TIME: 05:30 PM**

**VENUE: NYERERE HALL**

**SUMMARY OF THE PRESENTATION:** The study focuses on formulation of composite granules - montmorillonite clay and Moringa oleifera seeds for water treatment. Both Moringa oleifera and montmorillonite clay have shown effective contaminants removal from drinking and wastewater and thus their combined effect is proposed to have even a better contaminant removal. The specific goals of this research is to determine the optimal amount of Montmorillonite clay – Moringa oleifera seeds composite granules for water treatment and determine the saturation point of composite granules. Samples of Montmorillonite clay and Moringa oleifera seeds will be obtained through convenient – sampling. Efficiency of formulated granules will be determined by their ability to remove contaminants from water. Water quality parameters of treated drinking water /wastewater will be measured by using analytical instruments.

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