Electrical and Electronic Engineering

University of Nairobi

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**Dr.-Ing. Wilfred Njoroge Mwema**

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| **Job Objective** |  | A challenging position offering excellent research and practical opportunities for both personal and professional advancement working in high frequency analogue circuit design and active device characterisation |
| **Education** |  | **PhD in Electrical Engineering** *(with distinction)*  Universität Kassel, Germany (2002)  **MSc in Electrical Engineering**  University of Nairobi, Kenya (1995)  **BTech. in Electrical and Communication Technology** *(First Class Hon.)*  Moi University, Kenya (1989) |
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| **Work Experience** |  | **From 2003**  **University of Nairobi**  Currently the Final Year Project Coordinator   * Have achieved timely project allocation to the candidates with tremendous improvement in quality and rate of success * Developed a lecture on project report preparation and submission with notable improvement on professionalism on the part of the candidates * Have involved industry through invitation of various professionals to introduce the candidates to the proper practice of results presentation * Improved on the presentation style and facilities at relatively low cost   Actively involved in teaching of various courses offered by the Department of electrical and Information Engineering, among them:  **Computer Science II for the First Year Class**   * Developed class notes and offered these as a bound booklet to alleviate unavailability of suitable text * Introduced a practical computer programming session which had been missing in the course description. This has been adopted for all programming courses in the Department   **Physical Electronics II for the Second Year Class**   * Currently teaching the physical electronics required for the understanding of solid-state semiconductor electronic devices * Have developed class notes and offered these as a bound booklet * Continuously reviewing this text to reflect the changing landscape of electronics * Have developed a booklet of solutions to tutorial problems accompanying the course. This is offered to students whenever 75% of the class show progress in solving the tutorials   **Analogue Electronics for the Third Year Class**   * Currently teaching the analogue electronics required for the understanding of analogue circuit design and analysis * Have developed class notes and offered these as a bound booklet * Continuously review this text to reflect the changing landscape of electronics * Have developed a booklet of solutions to tutorial problems accompanying the course. This is offered to students whenever 75% of the class show progress in solving the tutorials   **Electrodynamics for the Fourth Year Class**   * Developed class notes and offered these as a bound booklet to alleviate unavailability of suitable text * Developed an accompanying text on power series solutions to differential equations required in the solution of circular waveguides   **Electronic Laboratory Exercise Supervision for the Final Year Class**   * Current supervising electronic laboratory exercises for the final year class * Have instilled discipline in the conduct of these exercises so that the students leave with hands-on experience and the need to honour deadlines * Continuously developing new exercises within the limitations of the facilities in the Department * Have developed a booklet of solutions to tutorial problems accompanying the course. This is offered to students whenever 75% of the class show progress in solving the tutorials   **Postgraduate Courses**   * Have taught digital signal processing and analogue electronic circuit design at the MSc level * Have taught processes in energy management at the MSc level   **Postgraduate Supervision**   * Have supervised MSc. theses in energy, telecommunication systems and high-frequency electronic circuit design * Currently supervising PhD theses in signal processing and artificial neural network applications in image recognition   **August 2004**  Actively participated in the curriculum development for the MSc. Course in energy management  **September 2004**  Prepared a report used in the development of guidelines for the design of curricular for electrical engineering degree courses  Report used in the run up to converting the polytechnics to degree awarding institutions in Kenya  **April 2018**  Actively participated in the undergraduate electrical engineering curriculum review at the University of Nairobi  **1997 to 2002**  **Universität Kassel, Germany**  **Research Assistant**   * Developed a parameter extraction programme for GaAs-based field effect transistors resulting in improved computation time, model reliability and accuracy in microwave circuit simulation * Designed and realised solid-state microwave oscillators at 24 GHz to improve teaching, quality of experimentation and ease of experiment set up * Demonstrated excellent coaching skills through successful supervision of five MSc theses on oscillator design   **1994 to 1997**  **University of Nairobi, Kenya**  **Tutorial Fellow (1996 to 1997)**   * Demonstrated strong presentational skills through delivery of training programmes for electrical engineers * Demonstrated strong interpersonal skills through active involvement in training engineers   **Part-time Lecturer (1994 to 1996)**   * Taught physical electronics, analogue electronic circuit design and electromagnetic field theory at undergraduate level * Taught digital communication systems at the Jomo Kenyatta University of Agriculture and Technology   **1986 to 1994**  **Moi University**  **Graduate Assistant (1993 to 1994 and 1990 to 1991)**   * Developed excellent teaching skills through training programmes in the undergraduate Electrical and Electronic Engineering programme * Gained valuable experience in design of experiments with electronic circuits   **Graduate Student, University of Nairobi (1991 to 1993)**  **Undergraduate Student (1986 to1989)** |
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| **Educational and Industrial Attachment** |  | **March 1997**  One-month compact training in management of UNIX-based networks, Korea Advanced Institute of Science and Technology, Seoul, Republic of Korea  **May-August 1988**  Two-month practical training in the Civil Service at the Directorate of Civil Aviation, Jomo Kenyatta International Airport, Nairobi, Kenya  **January 1985 to April 1986**  Vacational position in engineering and quality control in a commercial food processing company, East African Industries, Nairobi, Kenya |
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| **Short Courses** |  | **August 2004**  Two-week intensive parallel courses in Energy Efficiency Curriculum Development and Adult Training Principles and Practice offered by GEF-KAM (Global Environment Facility-Kenya Association of Manufacturers) at the Grand Regency Hotel, Nairobi, Kenya  **July 2000 and May 2002**  One-day seminars on optical and microwave and millimetre wave measurement techniques offered by the Agilent Technologies Company at Böblingen and Universität Kassel, Germany respectively  **June 2000**  Two one-day seminars on artificial neural network applications in RF design and choice of CAD software for electromagnetic simulations offered by the Microwave Theory and Techniques Society of the IEEE, Boston, USA  **October 1999**  One-day seminar on design of low-noise microwave oscillators offered at the European Microwave Conference, München, Germany  **August 1994**  One-week seminar on Finite Element Methods, Moi University, Kenya |
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| **Professional Associations** |  | Member of the Institute of Electrical and Electronic Engineers (IEEE)  Member of the IEEE Microwave Theory and Techniques (MTTS)  Member of the IEEE Electronic Devices Society (EDS)  Graduate Member Institution of Engineers of Kenya (IEK) |
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| **Publications** |  | * “A Spectral Subtraction Method for Noise Reduction in Speech Signals”, IEEE African Conference, May 1996 (co-author) * “A New simplified and Reliable HEMT Modelling Approach Using Pinched Cold FET S-Parameters”, IEEE International Microwave Symposium, Boston, June 2000 (main author) * “A 24 GHz PHEMT-Based Oscillator”, Proceedings of the 14th Microwave Conference, MIKON-2002, Gdansk, Poland (co-author) * Typed course material on   1. Computer science (one semester, undergraduate)   2. Mathematics (one semester, undergraduate)   3. Electrical network synthesis and analysis (one semester, undergraduate)   4. Analogue electronics (two semesters, undergraduate)   5. Analogue electronics (one semester, MSc.)   6. Digital signal processing (one semester, MSc.)   7. Processes in energy management (one semester, MSc.)   8. Electrodynamics (one semester, undergraduate) |
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| **Other Information** |  | Date of Birth: 1965  Fluent in English, German and Kiswahili |
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| **References** |  | **Prof. A. V Otieno**  Electrical & Communication Engineering  Moi University  **Prof. E. Mwangi**  Electrical & Information Engineering  University of Nairobi  **Prof. H. L. Kaane**  P. O. Box 55793-00200  Nairobi, Kenya  **Prof. G. Rading**  Mechanical and Manufacturing  University of Nairobi |