



# Dr. Brian Daniel Oduor

PhD (Applied Statistics), M.sc (Applied Statistics), B. Ed (Arts)

*Curriculum Vitae*

## **PERSONAL DETAILS**

**DATE OF BIRTH:** 13 / 09 / 1978  
**PLACE OF BIRTH:** Siaya  
**CONTACT ADDRESS:** Jaramogi Oginga Odinga University of Science and Technology  
School of Biological Physical Mathematics and Actuarial Sciences.  
P.o. Box 210 Bondo  
**PERMANENT ADDRESS:** P.o. 139 Bondo  
**PHONE NUMBER** 0717656588  
**ID. No.:** 21696505  
**NATIONALITY:** Kenyan  
**MARITAL STATUS:** Married  
**PROFESSION:** Senior lecturer  
**Email:** [odubriano@gmail.com](mailto:odubriano@gmail.com); [doduor@jooust.ac.ke](mailto:doduor@jooust.ac.ke)  
**LANGUAGES:** English, Kiswahili

## **EDUCATIONAL AND PROFESSIONAL QUALIFICATION**

**Doctor of Philosophy in Applied Statistics** **2013-2016**  
*Jaramogi Oginga Odinga University of science and technology*  
Thesis on Estimation of volatility using mean-reverting European Logistic type option pricing model.

**Masters of Science in Applied Statistics** **2007-2012**  
*Maseno University*  
Thesis on ``Estimation of volatility using logistic Brownian motion'', much research work on volatility led to the publication of a book in financial

mathematics- *Volatility and its application*. During the study I got an excellent experience in Test of hypothesis, probability theory, sampling methods, economic statistics, epidemic modeling, and estimation theory.

**Bachelor of Education (Arts)**

*Kenyatta University*

**1999-2002**

The course provided me with broad education in research paper writing, teaching and academic course work in Mathematical units specializing in statistics courses and Business studies units specializing in accounting courses.

**Kenya Certificate of Secondary Education**

*Maranda High School*

**1994-1997**

Attained a mean grade of B plain

**Kenya Certificate of Primary Education**

*Kawino Primary School*

**1986-1993**

**WORK EXPERIENCE**

**Lecturer**

**JUNE 2016-present**

*School of Mathematics and Actuarial Science, Jaramogi Oginga Odinga University of Science and Technology, Full time.*

Thesis Examinations ,Lecture planning, preparation and research, teaching statistics and actuarial courses (**Courses:** Descriptive statistics, Sample Survey, Statistical Demography, Analysis of Design and Experiment, Introduction to probability theory, Probability and distribution theory one, Probability and distribution theory two, Further distribution theory, Theory of estimation, Time series Analysis, Non - Parametric methods, Stochastic processes, Statistical Modeling, Statistical Decision theory, Probability theory), writing research proposals, papers and other publications, Supervising PhD, M. sc students and assessing students work.

**Currently writing a course program on Bachelor of Science with IT in Financial Mathematics.**

**Tutorial Fellow**

**APRIL 2016-JUNE 2016**

*School of Mathematics and Actuarial Science, Jaramogi Oginga Odinga University of Science and Technology, Full time.*

Lecture planning, preparation and research, teaching statistics and actuarial courses, writing research proposals, papers and other publications and assessing students work.

## **DEPARTMENTAL RESPONSIBILITY**

- Complaints Handling Officer in the Department of Applied Statistics, Financial Mathematics and Actuarial Sciences

## **RESEARCH GRANTS**

- **JOUST internal research grant. Kshs. 163, 000.** Research title “Mean Reverting Logistic Brownian Motion with Jump Diffusion Model on Energy Commodity Prices”
- **National Research Fund (NRF)** PhD Research Grant Awards for financial year 2019/2020  
**Title:** On the European Logistic – Type option pricing with jump diffusion  
**Student:** Mulambula Andanje, Kibabii, Kenya (**KES 532,800**)

## **PUBLICATION**

### **PAPERS**

- Ronald Onyango, **Brian Oduor** and Francis Odundo – Mean Estimation of a Sensitive Variable under Nonresponse Using Three – Stage RRT Model in Stratified Two – Phase Sampling. Hindawi Journal of Probability and Statistics. Volume 2022, Article ID 4530120 <https://doi.org/10.1155/2022/4530120>
- **Oduor D. Brian** – Mean - Reverting logistic Brownian motion with jump diffusion process on energy commodity prices. International Journal of Statistics and Applied Mathematics 2022: 7(4): 69 – 74 ISSN: 2456 – 1452
- R. Onyango, **B. Oduor** and F.Odundo – Enhanced Estimation of Population Mean in Presence of Errors on Survey Variable in Stratified Two – Phase Sampling. International Journal of Scientific Research in Mathematical and Statistical Sciences. Volume-9, Issue-1, pp. 32-39, February (2022)
- **Oduor D. Brian** – Derivation of BlackScholes equation using Heston’s model with dividend yielding asset. International Journal of Statistics and Applied Mathematics 2022: 7(1): 08 – 12 ISSN: 2456 – 1452
- **Oduor D. Brian** – Formulating Black Scholes equation using a jump diffusion Heston’s model. International Journal of Statistics and Applied Mathematics 2022: 7(1): 13 – 18 ISSN: 2456 – 1452

- **Oduor D. Brian** – A combination of dividend and jump diffusion process on Heston model in deriving Black Scholes equation. International Journal of Statistics and Applied Mathematics 2022: 7(1): 19 – 24 ISSN: 2456 – 1452
- M. O. Opondo, **D. B. Oduor** and F. Odundo – Jump diffusion logistic Brownian motion with dividend yielding asset. International Journal of Mathematics and its Application 9(4) (2021) 25 – 34 ISSN: 2347 – 1557
- Onyango O. Ronald, **Oduor Brian** and Odundo Francis – Estimation of Population Mean in the Presence of Nonresponse and Measure Errors Under Double Sampling for Stratification. International Journal of Mathematics and Statistics. ISSN 0973 – 8347 (2021) Vol. 22 Issue 1
- Ronald Onyango, **Brian Oduor** and Francis Odundo – Joint influence of measurement errors and randomized response technique on mean estimation under stratified double sampling. Open journal of Mathematical Sciences. 2021 PSR Press
- Andanje Mulambula, **D. B. Oduor** and B. O. Kwach – Volatility estimation using European – logistic Brownian motion with Jump diffusion process. International Journal of Mathematics and its Application, 8(2)(2020), 155 – 163 ISSN: 2347 – 1557
- Andanje Mulambula, **D. B. Oduor** and B. O. Kwach – Derivation of Black – Scholes – Merton Logistic Brownian motion differential equation with jump diffusion process. International Journal of Mathematics and its Application, 7(3)(2019), 85 – 93 ISSN: 2347 – 1557
- Onyango O Ronald, **Oduor Brian** and Odundo Francis – Optimal allocation in double sampling for stratification in presence of nonresponse and measurement errors. International Journal of Statistics and Applied Mathematics ISSN: 2456 – 1452 Maths 2019: 4(6): 37 - 44
- **D. B. Oduor**. Silas N. Onyango, N. Omolo Ongati – “Estimation of Market volatility – A case of logistic Brownian motion” IJMRA-MT620 publishers, Vol 2, Issue1, January 2012
- **D. B. Oduor**. Silas N. Onyango, – “A logistic Brownian motion with price of dividend yielding asset” IJMRA-RSS944 publishers, Vol 2, Issue2, May 2012

- **D. B. Oduor**; Black-Scholes-Merton model- A case of logistic Brownian motion with dividend yielding asset; IJMRS-PMMT820 publishers, Vol 3, Issue1, January 2013
- **D. B. Oduor**. Silas N. Onyango, N. Omolo Ongati; Derivation of volatility with logistic Brownian motion having dividend yielding asset; IJMRS-MMT799 publishers, Vol 4, Issue1, May 2015
- **D. B. Oduor**. Silas N. Onyango, N. Omolo Ongati; Estimates of parameters of European logistic type option pricing model having mean reversion; IJMS-RSS540 publishers, Vol 3, Issue1, January 2016

## **BOOK**

- **Brian Oduor**, Benard Okello, Silas Onyango; **Financial Mathematics, Volatility and its application**. LAP Lambert Acad. Publ. Oct 25, 2011- Mathematics

## **ACCEPTED PAPERS FOR PUBLICATIONS**

- Omolo W. Norman, **D. B. Oduor**, F.O. Odundo : `` Mixture on Gumbel- Pareto distribution and their properties 2021

## **PAPERS PRESENTED IN WORKSHOPS, SEMINARS AND CONFERENCES**

- 5<sup>TH</sup> Annual Virtual International Conference - Kirinyaga University March 24 – 25, 2022  
**Theme:** “Re – Engineering Leadership for sustainable development  
**Title:** Mean – Reverting logistic Brownian motion with Jump diffusion process on Energy commodity prices.  
**Abstract**  
*Models that can describe strike prices of energy commodities that might seem costly to store are best modeled by mean – reversion and jump diffusion processes. Physical characteristics of energy commodities makes it very difficult to store due to their salient features hence there is need to incorporate jumps and mean – reversion to some stochastic volatility models and particularly in this paper, we forecast on logistic Brownian motion. I construct a real option model to predict prices of energy commodities. This study also examines some implications on assumptions that can be portrayed by mean – reverting logistic Brownian motion with jump diffusion process. This study uses Heave – side cover up method, logistic Brownian motion, jump diffusion models and mean – reverting models to derive a pricing process that can be used to predict prices of energy commodities*
- 4<sup>TH</sup> Annual Virtual International Conference - Kirinyaga University March 24 – 25, 2021  
**Title:** European – Logistic Brownian motion with Jump Diffusion Process

### **Abstract**

*Volatility is the measure of how we are uncertain about the future stock or asset price. The measure of volatility and good forecast of future volatility are crucial for implementation, evaluation of asset and derivative pricing of asset. In particular, volatility has been used in financial markets in assessment of risk associated with short – term fluctuation in financial time – series. Constant volatility is not true in practical sense especially in short – term intervals because stock prices are able to produce the leptokurtic feature and to some extent “volatility smile”. To address this problem we introduce Jump diffusion model. We venture into a research that will involve volatility estimation using European – Logistic type option pricing with jump diffusion. The knowledge of Logistic Brownian motion will be used to develop a logistic Brownian motion with Jump diffusion model for price process.*

- Conference of the Southern Africa Mathematical Sciences Association – SAMSA 2021 November 22 – 24. Virtual Conference.

**Title:** A Jump diffusion logistic Brownian motion with dividend yielding asset.

### **Abstract**

*Jump diffusion process has been used in modern finance to capture discontinuous behavior in asset pricing. Logistic Brownian motion for asset security prices shows that naturally asset security prices would not shoot indefinitely due to regulating factors that may limit the asset prices. Geometric Brownian motion cannot accurately reflect all behaviors of stock quotation therefore; Merton who was involved in the process of developing the Black Scholes model came up with Merton Jump model superimposed on Geometric Brownian motion without considering the dividend yielding rate of the asset. Oduor derived a dividend yielding asset on logistic Brownian motion but not with jump process while Mulambula derived logistic Brownian motion with Jump process without considering dividend yielding rates. Therefore there is need to derive the price of a dividend yielding asset that follows logistic Brownian motion with Jump diffusion process. This study uses the knowledge of geometric Brownian motion and logistic Brownian motion with Heave – side cover up method to derive the price of dividend yielding asset that follows Brownian motion with Jump diffusion process.*

- 5<sup>TH</sup> Strathmore International mathematics conference 12<sup>TH</sup> – 16<sup>TH</sup> August, 2019, Title: On the European Logistic – Type option pricing with jump diffusion.

## **SUPERVISION OF POSTGRADUATE STUDENTS** **COMPLETED PhD SUPERVISION**

- **Adanje Mulambula**  
**Thesis Title:** On the European Logistic type option pricing with Jump Diffusion  
**Program:** PhD in Applied Mathematics.  
**Institution:** Kibabii University, Kenya  
**Status:** **Completed**
- **Onyango O. Ronald**

**Thesis Title:** Mean estimation in presence of non-response and measurement errors under stratified double sampling.

**Program:** Applied Statistics

**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya

**Status:** **Completed.**

### **COMPLETED MASTERS SUPERVISION**

- **Opondo Mark Ochieng'**

**Thesis Title:** A jump diffusion logistic Brownian motion with dividend yielding asset.

**Program:** Applied Statistics.

**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya

**Status:** **Completed**

### **ON - GOING PhD SUPERVISION**

- **Magero Eric Nyaaga**

**Thesis Title:** Estimation of volatility using dividend yielding Orstein – Uhlenbeck Model with Jump diffusion process.

**Program:** Applied Statistics.

**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya

**Status:** Continuing

- **Oburu Jeffar Junior**

**Thesis Title:** On  $(p, q)$  Binomial Extension of Cox – Ross – Rubinstein model for optimization of portfolio with noisy observation in life Insurance.

**Program:** Applied Statistics.

**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya

**Status:** Continuing

- **Ondima Cleophas Mecha**

**Thesis Title:** Raleigh distribution and its generalization.

**Program:** Applied Statistics.

**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya

**Status:** Continuing.

### **ON – GOING MASTERS SUPERVISION**

- **Omolo W. Norman**  
**Thesis Title:** Mixture on Gumbel- Pareto distribution and their properties  
**Program:** Applied Statistics.  
**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya  
**Status:** Continuing.
- **Ochieng' O. Joram**  
**Thesis Title:** Mixture on Gumbel- Lindley distribution and their properties.  
**Program:** Applied Statistics  
**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya  
**Status:** Continuing.
- **Onguru Evans**  
**Thesis Title:** Mixture on Gumbel- Fretche't distribution and its generalization  
**Program:** Statistics.  
**Institution:** Kisii University, Kenya.  
**Status:** Continuing.
- **Wafula John Werunga**  
**Thesis Title:** Volatility estimation using mean reverting European Logistic type option with jump process  
**Program:** Applied Statistics  
**Institution:** Kibabii University, Kenya.  
**Status:** Continuing
- **Maina Eric**  
**Thesis Title:** Volatility estimation using a dividend yielding logistic Brownian motion with jump diffusion process.  
**Program:** Applied Statistics  
**Institution:** Kibabii University.  
**Status:** Continuing

## **INTERNAL THESIS/PROJECTS EXAMINATION**

- **Candidate:** Ojung'a Samson Okoth  
**Project Title:** Extension of stage based projection matrices in population modeling of *cetrum aurantiacum*.  
**Program:** PhD Applied Statistics  
**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya.
- **Candidate:** Isaac Odhiambo Okwany  
**Project Title:** Norms and numerical radii inequalities of derivations induced by orthogonal projections.  
**Program:** PhD Pure Mathematics.



**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya

- **Candidate:** Julia Ndong'a Owino  
**Project Title:** On compact operators whose norms are eigen values.  
**Program:** PhD Pure Mathematics.  
**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya
- **Candidate:** Otwande Andrea  
**Project Title:** Binomial mixtures based on Beta prior distribution and their generalizations.  
**Program:** PhD Applied Statistics  
**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya
- **Candidate:** Odhiambo Moses Nyabola  
**Project Title:** Bilateral shifts and spectrum of compact operators.  
**Program:** Msc. Pure Mathematics  
**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya
- **Candidate:** Oyake Maurice Otunga  
**Project Title:** Norms of inner derivations induced by norm – attainable operators.  
**Program:** Msc. Pure Mathematics  
**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya
- **Candidate:** Ogola Blasus  
**Project Title:** On normality and compactness of dense topological subspaces.  
**Program:** Msc. Pure Mathematics  
**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya
- **Candidate:** Hellen Atieno Ochieng'  
**Project Title:** Numerical solution of dynamic vibration equation with restoring force  $x = \sec x$   
**Program:** Msc. Applied Mathematics  
**Institution:** Jaramogi Oginga Odinga University of Science and Technology, Kenya.

## **EXTERNAL THESIS/PROJECTS EXAMINATION**

- **Candidate:** Kalama Sammy Fondo  
**Project Title:** Modeling of Petroleum Prices in Kenya using Autoregressive Integrated Moving Average and Vector Autoregressive Models.  
**Program:** MSc in Statistics  
**Institution:** Technical University of Mombasa

## **TRAINING/WORKSHOPS ATTENDED**

- Statistical Packages – R\_GUI and STATA (2016)
- Pedagogical Skills (2019)

## **RESEARCH AREAS OF INTEREST**

- Financial Statistics/Mathematics

## **MEMBERSHIP OF PROFESSIONAL ASSOCIATION**

- Kenya National Statistical Society (KNSS)

## **COMMUNITY/OUTREACH SERVICE**

- Educational Consultant – Taji Ministries: Supporting the ministry in their outreach programs such as visits and offering financial support to Children’s homes as well as offering Educational consultancy services

## **OTHER LEADERSHIP POSITIONS**

- Delegate at University Academic Staff Union (UASU) JOOUST Chapter

## **EXTRA CURRICULA ACTIVITIES**

- Playing Hockey

## **PREVIOUS WORK EXPERIENCE**

NAME OF SCHOOL	SUB-COUNTY	RESPONSIBILITY	PERIOD	
			FROM	TO
HUMA GIRLS' SEC SCHOOL	KISUMU WEST	DIRECTOR OF STUDIES	Sept 2003	April 2016
JOOUST	BONDO	EXAMINATION CO-ORDINATOR AT SCHOOL LEVEL	Jan 2017	April 2017

## **REFEREES**

- 1) Prof. Omolo Ongati  
School of Biological Physical Mathematics and Actuarial Sciences  
Jaramogi Oginga Odinga University of Science and Technology  
P.O Box 210  
BONDO KENYA  
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Mobile: +254723340602
  
- 2) Prof. Regina Nyunja  
Dean School of Biological Physical Mathematics and Actuarial Sciences  
Jaramogi Oginga Odinga University of Science and Technology  
P.O Box 210  
BONDO KENYA  
Email: [reginanyunja@yahoo.com](mailto:reginanyunja@yahoo.com)  
Mobile: +254721465969
  
- 3) Prof. Benard Okelo  
Associate Dean School of Biological Physical Mathematics and Actuarial  
Sciences  
Jaramogi Oginga Odinga University of Science and Technology  
P.O Box 210  
BONDO KENYA  
Email: [bnyaare@yahoo.com](mailto:bnyaare@yahoo.com)  
Mobile: +254723397455
  
- 4) Dr. Otula Joseph Nyakinda  
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Jaramogi Oginga Odinga University of Science and Technology  
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