

Workshops for SAIIE 27, October 2016



Johnson Carroll

Faculty of Engineering and the Built Environment
University of Johannesburg
Johannesburg

Workshop title: *New Engineering Qualifications in South Africa*

Dr. Johnson Carroll is a Senior Lecturer in the Faculty of Engineering and the Built Environment at the University of Johannesburg. He completed undergraduate degrees in Electrical and Computer Engineering, Plan II (Liberal Arts), and Mathematics (2004), followed by a MSc in Engineering (2008) and PhD in Electrical and Computer Engineering (2015), all with the University of Texas at Austin.

Johnson joined UJ's Electrical and Electronic Engineering Science department in 2010 and served as Head of Department from 2012-2013, then became the Faculty's Engineering Education Specialist while still lecturing first-year electrical students. He helps coordinate and promote engineering education research in the Faculty, and advises and represents the Faculty on curricula, teaching and learning pedagogy, and other academic matters. Johnson has given numerous talks and workshops on curriculum development, approaches to engineering education research, accreditation standards, and more.

He is also a registered Professional Engineer (Electrical), and has served on the Board of the South African Society for Engineering Education since 2013. Johnson is an active researcher in both engineering education and stochastic control theory; current research projects include academic pathways, predicting and supporting student success, novel assessment of learning outcomes, control of partially observed Markov processes, and networked control systems.

Workshop Outline

ECSA has developed a new suite of engineering technology qualifications in line with the CHE's new qualification framework, the HEQSF. These new qualifications will replace the current National Diploma and BTech structures. Notable changes include a new three-year Bachelor of Engineering Technology degree, two new diplomas, as well as certificates and advanced diplomas. This talk will present the structure of the new qualifications and routes to professional registration, compare South African qualifications with international practice, and discuss the curriculum development for the new qualifications.



John Cato

ECSA
Johannesburg

Workshop title: *Professional Engineering Registration Workshop*

I did my studies in the Zulu Kingdom at the University of Natal-Durban in 1993 and obtained my BSc in Civil Engineering. I have 18,5 years' experience in Civil Engineering of which 3 years were in the construction industry. Wanting to obtain the necessary design experience for Professional Registration, I then joined a small consulting firm where I obtained my necessary experience and registered as a Professional Engineer. Of my consulting years I spent 9,5 years consulting in South Africa and the other 6 years I spent consulting overseas in Ireland. I have mainly been involved in infrastructure development, roads (local), storm water, water and sewer. I joined ECSA in May 2015 as the Executive dealing with Policy Development and Standards Generation for Registrations and Education.



Clemens Dempers

Blue Stallion Technologies

Workshop title: *Modeling mini bus taxi mayhem*

Clemens Dempers obtained his BSc and Honors degrees from Stellenbosch University and then completed a MSc in physics at University of Natal.

While working on his PhD (not submitted) he became involved in importing technical and scientific software and was involved with a number of software and consulting companies before starting Blue Stallion Technologies in 2001.

Blue Stallion have the sole agency for a number of products including Wolfram Mathematica, Lingo and Anylogic.

He has been involved in a number of consulting projects, both in South Africa and internationally.

Workshop Outline

Anylogic is a simulation tool that combines discrete event, systems dynamics and agent based modeling in one software tool. These modeling approaches can be mixed and combined to suit the application that has to be modeled.

This hands-on workshop will showcase agent based modeling, by using the pedestrian and new road transport libraries.

We will build a simple traffic model of a minibus taxi route and then explore traffic flow where vehicles either obey or disregard road traffic rules. The model will be used to showcase Anylogic's capabilities and model building logic, and will also be of value to a wider audience who may not be specifically interested in traffic modeling.

Attendees need to bring their own laptops and chargers and we will supply the software and training material. No prior experience in using Anylogic is required.



Handré Dreyer

Simulation Engineering Technologies

Workshop title: *Rapid Simulation Modelling with Simio® - How simulation with Simio can effectively solve real problems*

Highest Qualification: M.Comm (Cum Laude), University of Stellenbosch

Professional affiliations: AMSAIE

Handré is a business improvement and simulation expert with more than 8 years' experience in simulation modelling, consulting, management, training and lecturing.

He is representing Simulation Engineering Technologies (SET) and the Simio software.

Simulation Engineering Technologies (SET) is a leader in creating accurate computer simulation models of complex systems. We have over 50 years of collective experience in conducting simulation studies in mining, logistics, manufacturing and service industries and have offices in Centurion, Cape Town and Canada.

Our services include consulting, training, sales and support and SET is a Premier Representative of Simio® and a proud re-seller of SimMine® in Southern Africa.

Workshop Outline

The workshop will start with an introduction to simulation as a technology, the reason for using simulation and outcomes that can be expected. Further it will provide insights into the Simio® simulation software and why the Simio modelling framework is unique and provides unparalleled rapid modelling capabilities.

In addition we will take a look at Simio's background map support feature which is a geographic information system (GIS) that lets you to build your model on a map and allows you to find the fastest route between nodes. Risk based planning and scheduling, Simio's cloud based features and why variation matters will also be covered.

Case studies will be explored and actual models will be used. To finish, there will be a short practical workshop where we will build a model with Simio to illustrate the power and flexibility of this rapid 3-D simulation modelling software.



Louis Krüger

Founder and CEO, Novel Idea
Johannesburg, South Africa

Workshop title: *Professional Engineering Registration Workshop*

Louis L.S.J. Krüger is a D. Ing. student in Engineering Management at the Post Graduate School of Engineering Management of the University of Johannesburg. He holds B. Ing (Elektron) and MBA degrees from the University of Pretoria where he is currently a Senior Lecturer in Engineering Professionalism and previously Technological Entrepreneurship at undergraduate and postgraduate level. He has also taught Engineering Economics at University of Johannesburg. He is and was study adviser to 30+ masters dissertations since 2008. Prior to teaching he worked in a broad range of companies and was involved, among other, in the areas of process improvement, quality management, system integrity management, ICT, system acquisition and strategic business development.



Roland Röhrs

Chairman: Wispeco Holdings Limited – 100% subsidiary of the Remgro Group
Group Chairman and shareholder at University of Africa (Zambia) and its RSA holding company UoA Holdings (Pty) Ltd

Workshop title: *Looking at the training of Industrial Engineers of the future*

Roland Franz Röhrs was born on 11th September 1951 in Pretoria.

Education and awards

1972/3 University of Pretoria

- o Student Representative Council – Successful Werbo Committee (student work creation committee, including creating many overseas working opportunities for students)
- o Award for best All-round student in Engineering Faculty
- o Mopanie Residence–best first year All-rounder, member of various committees including house committee and house leader ('huisvoorsitter')
- o Dux-colours

1973 B Eng (Industrial) University of Pretoria (Cum Laude)

1977 MBA University of Pretoria (Old Mutual Medal for Best Student)

1981 Registered as Professional Engineer

1987 Joint-winner (Natal) of AHI “Junior Afrikaans Business Man of the Year” award
2008 University of Pretoria Tuks Alumni Laureate award

Work experience

Roland started his career as a consultant with Louis Heyl Associates, a Pretoria-based management consulting company, in 1974.

In 1978 he was a founder partner of the first industrial engineering consulting firm in South Africa, Röhrs & Buys Inc., later known as Xcel.

In the mid 1980's he rejoined and became a partner of Louis Heyl Associates.

In 1984 he became a major shareholder in a glass manufacturing concern, Glamosa Glass, in Estcourt (KwaZulu-Natal) and was managing director from 1985 to 1995..

Roland speaks Zulu, Afrikaans, English and

Other “Bridge-Building” activities

1986/94 Councilor - Estcourt Town Council (three years as Chairman of Manco and 3 years as Deputy Mayor)

1986/95 Member and/or Chairman of various bodies:

- Estcourt High School Model C Governing Body – chairman in the transition years first schools to reach out to engage and accommodate black learners
- Estcourt Museum Committee chairman – bringing in the ‘new’ history to the well-known Fort Durnford Town Museum
- Chairman of the local SBDC Committee (Small Business Development Corporation) supporting small (mainly Black and Indian) business men and women to set up businesses
- Member of Regional Development Associations in Natal Midlands / Battle Fields Tourism Committee, etc.

1995 and 1996 Full-time lecturer at the University of Pretoria, Department of Industrial Engineering.

2014 - now Part-time lecturer at the University of Pretoria, Department of Industrial Engineering.

2015 Part-time lecturer at the University of Potchefstroom, Department of Industrial Engineering.

1997 Joined Organisational Development International (ODI), a productivity consulting company, as director doing 20 Keys (Kaizen) projects and turn-around projects. During the 2002 year he was managing director of the consulting company. He has been non-executive chairman of ODI from 1st January 2003 to date.

October 1997 Became Managing Director of Wispeco Holdings Limited. The shareholder, Remgro (part of the Rembrandt / Anton Rupert Group), was considering to close the company with loss of 600plus jobs. Roland accepted the turn-around challenge and after many complex, interesting and trying years, with Roland sticking with a strong believe to a team-based participative organisational culture, Wispeco is today a highly successful company which has grown more than 500% since those troubled years and has in addition to the expanded main operations in Alrode Gauteng also various plants and branches nationwide, impacting extensively on many people' lives.

2006 -2013 Became CEO of the Johannesburg based JSE listed company Dorbyl Limited.

Workshop Outline

The planned workshop will follow immediately on Dr Amanda Lourens' key note talk "Through the Looking Glass" which will be looking at the future of higher education in RSA.

The aim of this workshop is to build onto this in terms of looking at the future of Industrial Engineering training in South Africa and also in Africa. The idea is to set the scene by asking challenging questions such as the one below to the academics and practitioners who will be attending the workshop, to provoke debates on out-the-box approaches and solutions to utilise the uniquely strong position of industrial engineering in Southern Africa to play an expanding and leading role to establish their profession as a key role player in Africa's expected growth phase of the next 20 years: "That the Industrial Engineering community should seriously consider establishing within the next five years a privately owned university to train industrial engineers to support Africa's growth..."



Dr. Karl van der Merwe, Pr Tech Eng

Nelson Mandela Metropolitan University
South Africa

Workshop title: *Value Stream Mapping: Develop and Interpret a Current State Map*

Accomplished industrial engineering professional with a balance of industrial and academic experience gained in a wide variety of settings. I began my IE journey in the harsh and unforgiving environment of a major tyre manufacturer where basic IE skills were non-negotiable and had to be performed to very high standards before more complex and challenging problems could be tackled. In a sense this could be construed as learning the profession the "hard way" but a true understanding of production systems and behaviours is the most likely outcome! Moving up through the ranks of various automotive and related companies I was fortunate to be exposed to an ever growing and increasingly challenging set of industrial engineering problems and finally (with mixed feelings) left industry for the greener pastures of academia in 1997 after nearly twelve years at the industrial gamba. Although I originally intended to stay in academia only for a year or two it has now been considerably more than that. Exactly how many years I am not saying, suffice to say it is now more than fifteen!

I have lectured over twenty different subjects and developed many short learning programmes – all with the constant input of industrial partners. My research, I believe, reflects strong ties to national industries and the challenges that they are facing. Diversification of industrial contacts has been a welcome byproduct of academic freedom and I have facilitated a number of continuous improvement initiatives that are now firmly embedded in industries as diverse as furniture manufacturing and mineral extraction. I am a firm believer that the principles of

industrial engineering are applicable to every organisation on the planet and I will continually strive to convert them to our “way”.

Workshop Outline

At the end of the workshop delegates will be able to:

- Explain what Lean *actually* is
- Develop a manufacturing and/or service current state map
- Interpret the map and expose waste



Tilla van der Walt

Founder and CEO, Novel Idea
Johannesburg, South Africa

Workshop title: *Lean Six Sigma as the integrated approach to winning in the future*

- Experienced in Lean Six Sigma and Strategic Business and Operational Excellence consulting, coaching, certification
- Extensive experience in the application of Six Sigma as a Leadership philosophy with a focus of integration of people, process, systems, tools to deliver bottom line results
- Developer of Integrated Business Models for business improvement and innovation for execution from shop floor to Executive level
- Business Leadership development on Senior, Middle and top management level.
- Lean Six Sigma expertise in planning, deployment, business process management system, Six Sigma Methodologies – DMAIC, DFSS as well as Problem solving methodologies incorporating Lean, Six Sigma and Complexity management.
- Project coaching, assessment and certification of learners
- Lean Six Sigma Project Management Software and toolkit development.
- Leadership development with strong focus on change management and teams – assisting organization on the journey to become world class
- Southern Africa and Sub Sahara Africa experience in training, coaching, assessments and certification in multi-cultural environment, at all organizational levels and departments in order to create value to customers and stakeholders.

Experience:

- Tilla has a strong background as well as passion for leadership and business development with solid experience in finance, sales, marketing, supply chain , key accounts, Technology development, manufacturing, mining, call centre's which she applies in the context of the deployment, training, development of Lean Six Sigma, Lean Management, Business management, Process Management, Problem solving, Technology development and New product development .
- Tilla trained and coached hundreds and certified hundreds of Belts (Yellow, Green, Black and Master Black Belts) and saved companies hundreds of millions of Rands.
- She worked for 10 years at 3M (a multinational as well as Multi Cultural Organization functioning in Multiple Industries), 6 years as part of the leadership team in the capacity of Senior Business manager in the Health Care Business unit, 2 years as part of the Six Sigma Deployment Team where she fulfilled a dual role, Black Belt as well as Six Sigma Coach and Trainer.

Qualifications:

- BA (Psychology) University of Pretoria
- MDP (Management Development Program) University of Pretoria
- MBA (Masters of Business Administration) Newport University (USA)
- As a 3M trained and certified BB, She has lead several cross-functional project teams across the Industrial, Chemical, Telecommunications, Health Care, Pharmaceutical, Consumer, and Traffic and Personal Safety Markets. As a certified Six Sigma Coach and trainer as well as Master Black Belt she develops the capacity in the organization at all levels- from training Leadership Teams, to the development, training, coaching, assessment and certification of dozens of Belts from master Black Belts to Black, Green and Yellow Belts, to leading the initiative and guiding process improvement / redesign teams who lead in a positive cultural change as well as multi-million quality net incomes.
- As a Master Black Belt her approach is one of assisting organisation to set up Business Improvement and Innovation models through the utilisation of different methodologies, systems and tools for a capability shift in their business.
- She facilitates learning at all levels through various means, these include Client specific work, Public programs, Learnerships , Six Sigma Knowledge sharing workshops, The Six Sigma User Group as well as Peer groups that are facilitated on a regular basis for both existing clients and new clients.

Lean Six Sigma includes:

- DMAIC
- DFSS
- Lean
- Business Process Management System
- From day to day problem solving to Process improvement
- Six Sigma Champion Development
- Six Sigma Belt Development – MBB, BB, GB, YB
- Six Sigma Deployment and Six Sigma Infrastructure
- Change Process
- Leadership development methods and programs
- For Leaders, Champions, Master Black Belt, Black Belt, Green Belt and Yellow Belts

Workshop Outline

The combination of Lean and Six Sigma can be used to accelerate the improvement of business performance and success, and assist Roche in their journey of winning for the future.

Topics:

Introduction and background to the journey to being a world class organisation

- Key Issues facing business today
 - What is your burning platform?
 - Basic understanding of Six Sigma
- Lean Sigma – What is Lean Sigma?
- The building blocks needed for executing the plan to winning in the future.
 - The right environment
 - The right alignment
 - The right people
 - The right projects
 - The right Methodology and tools
 - The right Support

The DMAIC methodology

- Define
- Measure
- Analyse
- Improve
- Control
-

In Summary:

Alignment with Lean Sigma for human capital Improvement

- What will the future look like and what are the components to take on this journey (The Lean Sigma map, compass, passport , adventure, terrain, reward and describing the Lean Sigma explorer)