

St. Elmo Wilken

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EDUCATION

University of Pretoria (2009-2015):

- Bachelor of Engineering, Chemical Engineering, December 2012
With distinction.
- Bachelor of Engineering Honours, Control Engineering, December 2013
With distinction.
- Bachelor of Science Honours, Applied Mathematics, December 2014
With distinction.
- Master of Engineering, Control Engineering, August 2015
With distinction.

The University of California, Santa Barbara (2015-):

- Doctor of Philosophy, Chemical Engineering.
Started fall 2015.

ACADEMIC EXPERIENCE

Research Experience:

- Final year undergraduate research project:
Extended a graph theoretic eigenvector method for ranking the importance of control loops in a complex industrial plant. Presented work at regional SACAC conference (2012) and co-author of a conference paper at ESCAPE 24 (2014).
- Honours research project in Applied Mathematics:
The analysis and numerical solution (using finite elements) of a system of coupled partial differential equations modelling an unsteady non-isothermal tubular reactor (2014).
- Master's thesis in Control Engineering:
The development of computationally efficient stochastic dynamical model control systems within the context of dynamic Bayesian networks (2015).

Notable coursework:

Chemical Engineering: multi-variable control theory and design, reactor modelling.

Applied Mathematics: finite difference method, finite element method, continuum mechanics, analysis, optimisation, stochastic modelling¹.

Computer Engineering: intelligent systems.

¹financial modelling: Black-Scholes equation.

**PRACTICAL
EXPERIENCE**

- Contributed to the concept design of a Uranium conversion plant at NECSA (Nuclear Energy Company of South Africa) for 6 weeks in 2010.
- Modelled a quasi-Acheson type reactor at Sublime Technologies for 6 weeks during 2011.
- Modelled, built, and implemented control on a small distillation column used by the University of Pretoria (2013).

**AWARDS AND
RECOGNITION**

- Dux Scholar at St. John's College (2008).
- Member of the Golden Key Association since (2010).
- Chemical Engineering faculty prize at the University of Pretoria for the best undergraduate research project (2012).
- Allan Gray academic achiever award (2014).
- The South African Mathematical Society's award for the best honours student in 2014.