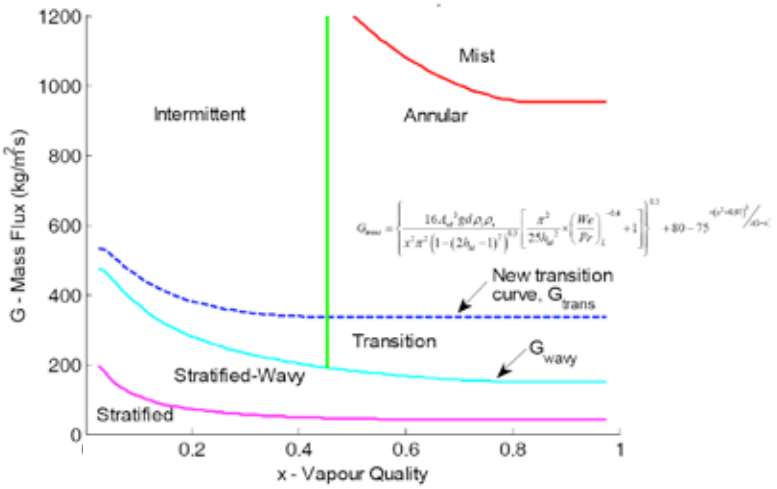
# Top Graduate

Ridhwaan Suliman was the top-performing undergraduate student in the Faculty of Engineering, Built Environment and Information Technology for 2007. He obtained a cumulative average mark of 90% over all four years of study, with an average of 91% in the final year of study. Mr Suliman won the Vice-Chancellor's Medal for this excellent achievement, and numerous other awards, including

- the ECSA medal for the most outstanding achievement in the final year in the School of Engineering,
- Sasol medal and award for the best final year student in the Department of Mechanical and Aeronautical Engineering
- Best final year dissertation and best final year project presentation in the Department of Mechanical and Aeronautical Engineering
- National Sasol Golden Key Excellence Award
- Eskom academic award in the open category for final year university students
- CA du Toit medal and award for best student in Heat Transfer in the final year of study
- Award for the best student in Computer-aided Structural Mechanics in the final year of study.


*→ Ridhwaan Suliman was the top-performing graduate in the Faculty of Engineering, Built Environment and Information Technology for 2007, obtaining an aggregate of 90% over four years of study.*




*→ New flow pattern transition criterion ($G_{trans}$, blue dashed line in figure) developed by Ridhwaan Suliman as part of his final year undergraduate project. This new criterion differs significantly from that which is currently used by designers of two-phase flow heat exchanger systems.*

Mr Suliman performed his final year dissertation work on the development of improved flow-pattern-based heat transfer correlations for low-mass flux refrigerant condensation in horizontal tubes. A new test section was designed, constructed and installed onto an existing macrochannel experimental set-up in the Thermoflow Laboratory of the Department of Mechanical and Aeronautical Engineering. According to Mr Suliman's undergraduate project supervisor, Prof Leon Liebenberg, a new flow pattern predictor was developed that included a transition region between the stratified-wavy and annular or intermittent flow regimes. Suliman's new flow-pattern-based heat transfer correlation proved to be acceptably accurate with a mean deviation of 9.89%. Furthermore, 92% of the data points fell within the ±25% deviation lines. The validity of this new correlation was tested with data from three independent international heat transfer laboratories. The new flow-pattern-based heat transfer correlation performed well (including the effects of experimental uncertainties) and significantly improved the prediction of heat transfer within the low mass flux range. The new flow-pattern-based heat transfer model is deemed to be a significant contribution to the international heat transfer community, and the work has been submitted for publication in class-leading ISI journals.

Mr Suliman is currently engaged in master's research involving the development of computer modelling technology aimed at extending the state-of-the-art capabilities in simulating fluid-structure interaction (FSI) problems in the biomedical (e.g. human respiratory system), energy generation (e.g. heat and mass transfer in packed pebble beds), or aerospace (e.g. wing flutter) applications. He is working under the supervision of Professor Schalk Kok and Dr Arnaud Malan.