



SCIENCE, ENGINEERING & TECHNOLOGY

Course in Systems Design (7 – 16 September 2015)

BRIEF DESCRIPTION

Although most engineers and technical specialists, as part of their initial engineering studies, are taught how to design products and solutions, most are not taught the importance of higher system level design and the functional integration that is a prerequisite for a successful outcome. The Certificate in Systems Design focuses on three important aspects that need to be achieved to ensure a successful product. These include *Systems Engineering Fundamentals* that introduce delegates to the important processes and tools of systems engineering, *Systems Architectures & Design* that introduces the delegate to the more popular architecture frameworks such as Zachman and TOGAF and their use to systems designers. These two modules link well to the modules addressing requirements engineering (addressed by the Certificate in Requirements Engineering) while the last module in this focus area addresses the important theme of *System Test & Evaluation*. This is a key element in any product's development as no amount of design can make up for poor or incomplete testing against specifications in a representative environment.

COURSE CONTENT

The certificate comprises of the following modules and related content:

Systems Engineering Fundamentals (3 days)

- Role of systems engineering in successful projects
- History of systems engineering
- Introducing the system life cycle model

- Systems engineering processes, overview of popular models
- Moving from requirements to solution to product
- Integration of speciality engineering
- Introducing model-based systems engineering
- Advanced systems engineering concepts
- Systems engineering standards
- Case studies

Systems Architecture and Design (3 days)

- Fundamentals of system architecting
- Architecture frameworks (Zachmann, TOGAF, DODAF, MODAF)
- Developing a system architecture
- Overview of system architecting tools
- Case study and practical exercises

Test and Evaluation of Systems (2 days)

- Why is test and evaluation important?
- Proceeding from system design to test and evaluation
- Test planning
- Test design
- Role of modelling and simulation
- Dealing with test and evaluation of software; why is it different?
- Case study

LEARNING OUTCOMES

After successfully completing these three modules, delegates will be able to:

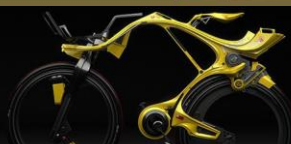
- Tailor a system engineering process to fit the specific needs of a project
- Define an appropriate systems architecture for the product, in accordance with best practice framework standards



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- Define the requirements of testing and evaluation during both the development progress of the product as well as final representative testing in an environment close to that which the product would experience during use by the client

DELIVERY MODE OF COURSE

Class contact sessions

ASSESSMENT

Group assignments and an individual assignment

CPD ACCREDITATION

This course is accredited by the Engineering Council of South Africa (ECSA) and course participants will be eligible to claim 5 Continued Professional Development (CPD) points. The verification number is P003315-2015.

COURSE FEE

R25, 520.00 (VAT inclusive) per participant

The fee includes:

Extensive course notes for each module

Refreshments and lunch

Suitable training venue

The full fee should be paid at least two weeks before commencement of class.

CONTACT DETAILS

Registration and Enquiries

Nocwaka Combo (Course Coordinator)

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For Course Content Information

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