

Graduate School of Technology Management

GSTM

Masters in Engineering Management

MEM 2012



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Graduate School of Technology Management

www.up.ac.za/gstm

MEM | Masters in Engineering Management

The MEM program proved to be extremely useful in many aspects. The principles learnt are applicable in a variety of situations, professionally and personally. I feel I am a better professional after doing MEM and would recommend it to all practicing and aspiring engineering managers.

Viren Heera, 2009

MEM Philosophy

Globalisation, rapid change driven by technology and the ever-increasing customer demand force companies to become extremely effective and efficient. The increased complexity of technology strengthens the realisation that an enterprise cannot perform all required processes themselves, but need to (re)focus on core competencies. Coupled to this focus on core internal processes a strong partnering capability should be established. The creation of real value requires original thinking in terms of integrated products and services delivered to customers. Intelligent and efficient procurement of these technology-based subsets of the final "solution to customers" becomes paramount. Innovation is hence not only the mastering of technology per se, but the identification and integration of technologies across organisational boundaries.

Engineers are educated in a specific discipline such as electronic, mechanical, civil, industrial or computer engineering. Graduate engineers and scientists enter their careers primarily as specialists. Within the first few years however, they become increasingly involved in the management of the value-creating process by which engineering systems, products and services are created. Hence, an in-depth understanding of the total engineering process and the total life-cycle of systems and related services is required. Resources to be acquired and integrated into the "final solution" by the engineering manager are typically technology, people, money, facilities, equipment and information. All of these should be understood and managed within a business context.



Purpose of the MEM

The purpose of the MEM is to provide relevant management education to the practising engineer or scientist who is active in primarily technology-based enterprises. The MEM is aimed at the engineer pursuing a career in general management or functional management. Where the traditional engineering disciplines focus mainly on technology, the programme is dedicated to the utilisation of technology in its broadest sense in the business environment (industry) for the creation of wealth at enterprise and national level. The career development needs of engineers after obtaining their Bachelors degree and a number of years experience are directly addressed.

The MEM is well-established in the Southern-African market. MEM focuses on the process of value creation, i.e. product and system development, production and operations and the maintenance of systems and related services within a business context. The question of strategically positioning the enterprise in terms of technological capability is paramount. The above mentioned study areas are the key factors which distinguish MEM from other postgraduate and business management degrees.



Domain Specialisation

Domain specialisation allows an exciting and meaningful expansion of the programme. The domain model provides the opportunity for a number of derivatives based on a single platform with a similar architecture, while responding to the specific needs of various industries. Students complete their first study year and then follow the general programme option or select a domain for their second year. Summary of the four available domains:

- **Asset and Maintenance Management Domain**
This domain is aimed at companies with capital intensive and long-term infrastructure and resources, e.g. factories, process plants, power stations, etc. Typical courses will be Asset Management, Risk Management and Life-cycle Management. Asset acquisition up to disposal will be addressed.
- **Sustainable Development Domain**
This domain focuses on the automotive and similar industries in terms of sustainable development, design for the environment (SHE), re-manufacturing, life-cycle management considerations, and so forth.
- **Engineering Services Management Domain**
The international economy is fundamentally changing from product based (manufacturing) to a more service oriented economy. South Africa has a dual economy, i.e. product (manufacturing) and services based. This domain addresses the fundamentals of services science in the engineering type of environment. The design and delivery of services are explored. Relevant management approaches, e.g. complex adaptive systems (CAS) are studied. Web based service delivery, required technology support, market orientation and a human systems perspective are addressed.

After studying MEM through GSTM I have been equipped with the tools, approach, knowledge and mind-shift to find the fine balance between, technology, engineering, money, people and skills to solve the problems we have today, problems that did not even exist in our frame of reference as little as five years ago.

Danie Dreyer, 2009

• System Engineering Domain

The engineering of competitive and adaptable products, systems and services is essential to all business. Enterprise Integration challenges are also addressed. System Architecture and System Management focus on development and operational aspects respectively. A model-based approach is followed. Engineering Logistics and Reliability Engineering are also available as electives.

Learning model

The programme is offered on a part-time, modular basis over two years. Participants are typically professionals, entrepreneurs, project managers, (technical) managers and scientists who are currently fully active in their careers. The time available for class attendance is hence limited. Student/lecturer contact is considered to be crucial. In view of the above, candidates are expected to free themselves completely from other duties during class contact block weeks. Candidates will be expected to work in the evenings and over weekends during study blocks, and attendance is compulsory. The programme is structured around two class contact modules per year: The first two-week contact module is scheduled typically during February, and the second one during August. Web-based support is provided to create a virtual classroom and an e-learning experience. For this reason all students are required to have access to the Internet via a suitable browser.

Students must be able to take part in discussions using the Internet. Lecturers facilitate distance learning (group and individual activities) throughout each academic cycle. It is expected of participants to attend the contact sessions fully prepared.

Pre-assignments are required for most courses. Assignments are done during and after the class contact sessions. Group interaction is emphasised as an integral part of learning and

personal development. A balance between theory and practice, individual and group activity, class contact and distance support is strived for. A personal development programme is integrated into the academic activities of the MEM. The medium of instruction is English.

Assessment

Assessment takes the form of individual and group assignments, oral presentations and written examinations. Students are allowed, and indeed encouraged to use challenging areas in their work environment as subject material for assignments. A final year symposium where students present their research concludes the MEM.

Qualifications Awarded

Two types of qualifications are awarded MEng (Engineering Management) and MSc (Engineering Management), depending on the undergraduate qualification of the student. Course structure, content and duration are nominally the same in both cases.

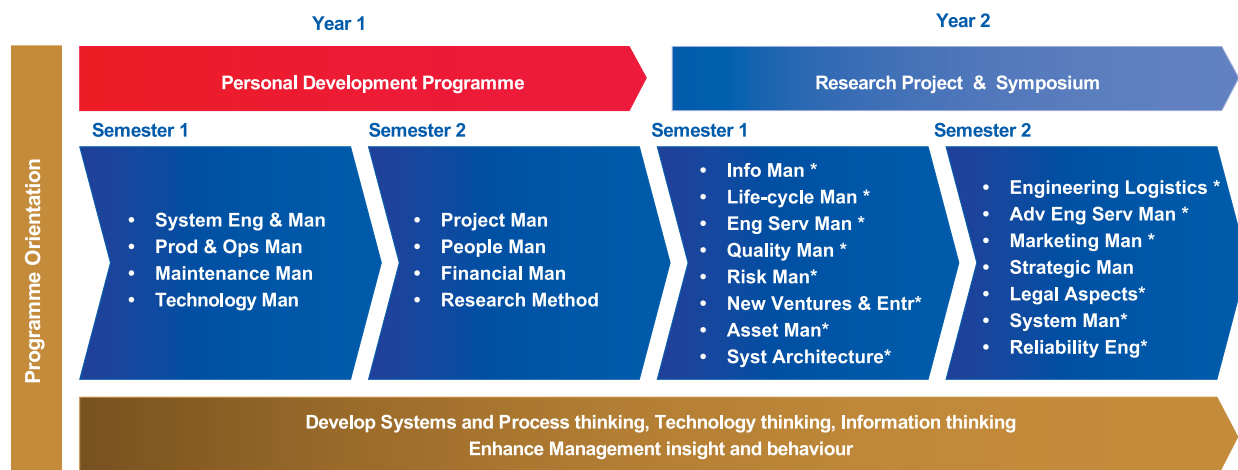
Admission and Selection

Admission is competitive and a selection committee carefully screens applicants. Selection procedures may include a personal interview.

Admission criteria

Candidates for the MEng degree must be in possession of a four-year Bachelors degree in Engineering from a recognised institution and have at least 3 years' relevant postgraduate experience. Candidates for the MSc degree must be in possession of a BSc Honours degree (four study years) in a suitable scientific field and also have at least 3 years' relevant postgraduate experience. Compliance with the criteria does not guarantee admission.

Outcome and Architecture



*Electives. More information at www.up.ac.za/gstm/mem

Application and Closing date

1. Application at UP

Any person who wishes to register at the University for the first time, or after an interruption of studies: Please complete the on-line University's Application form at www.up.ac.za and click on "Apply for admission".

OR

To receive a hard copy application form, please contact the Client Service Centre at csc@up.ac.za or 012 420 3111. A hard copy application form will then be posted to you.

2. Application for selection to MEM

Please complete the application form at www.up.ac.za/gstm/mem Follow the links at the bottom of the web page.

This application for admission to the programme as well as a copy of the form to register at UP, should go to the programme administrator, Hellen Kriek, Engineering Building 2, Room 4-7, University of Pretoria, Lynnwood Road, Pretoria, 0001

The closing date for applications for 2012 is 28 October 2011.



Programme fees

The total fee will be approximately R83 000. This includes tuition, textbooks, study material and meals on campus. A non-refundable application fee of R500 is payable. These fees are applicable for 2012 and apply to students completing the programme within the prescribed two-year period. The fees are typically payable as follows: 60% in the first year, and 40% in the second year. Where necessary, arrangements can be made to pay each year's portion in two equal instalments. In the case of the programme not being completed in the prescribed two years, a re-registration fee is payable for the next year. The University reserves the right to increase the fee annually. Distance examinations are arranged for students who apply, but at an extra cost of R500 per examination paper within the RSA and SADC countries and R1100 per examination paper for international countries. Examination fees are reviewed annually, and could thus be higher in 2012. Fees will be finalised towards the end of the year, typically during November.

Contact Details

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Certificate Programmes

The Graduate School of Technology Management (GSTM) offers several certificate programmes with Continuing Education at University of Pretoria (Pty) Ltd. The goal with these programmes is to develop individual and organisational skills for individuals and organisations that do not want to follow the formal degree route or do not comply with the admission criteria for doing a masters programme.

One-year certificate programmes

- Engineering Management (PEM)
- Project Management (PPM)
- Advanced Programme in Project Management (APPM)
- Maintenance Management (PMM)
- Logistics (LOG)
- Asset Management (PAM)
- Systems Engineering

Short course programmes

- Modelling and Simulation for Technical Managers
- Project Management Principles and Practices
- Fundamentals of Maintenance Management
- Critical Chain Project Management
- Principals of Risk Management

Method of presentation

Lectures and group work during course days. Assessment takes the form of practical assignments that solve real problems in the workplace.

Admission

The courses are designed to assist all technologists with the development of their career skills. Grade 12, work experience and preferably some tertiary education are required.

Further information on Certificate Programmes

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