Graduate School of Technology Management
GSTM
Masters in Engineering Management
MEM 2015

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 modules 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 orientated 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.

- **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 focusses 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 study blocks per year. The first two-week contact block is scheduled typically during February, and the second 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.

Assignments are done before, 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.

Assessment

Assessment takes the form of individual and group assignments, oral presentations, tests 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. Programme 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. Compliance with the criteria does not guarantee admission.

The medium of instruction is English.

A TOEFL or IELTS test may be required of candidates who have not studied the prerequisite degree through the medium of English.

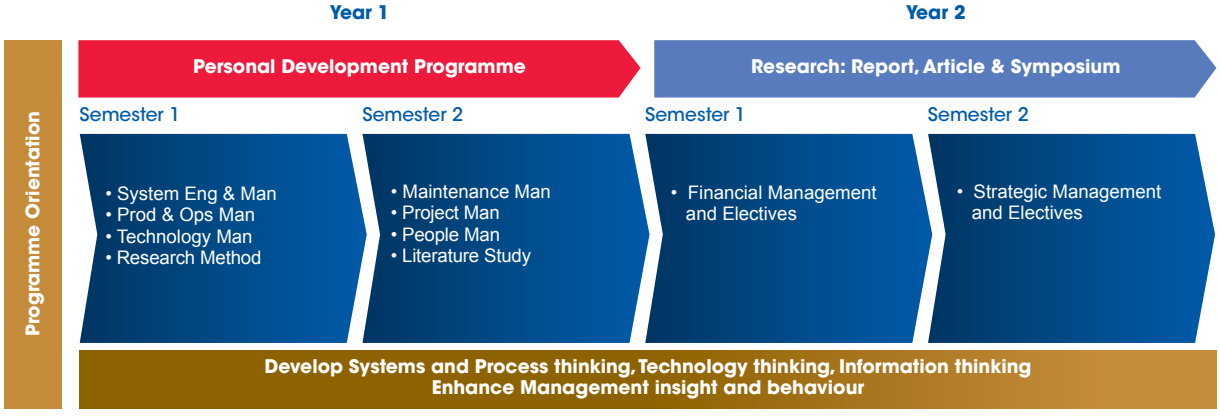
Admission Criteria

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 degree as well as a BSc Honours degree (four study years) in a suitable scientific field and also have at least 3 years' relevant postgraduate experience.

Only applicants with a minimum average of 60% (calculated on the grades of all the final year modules (failed/passed) for the prerequisite degree) will be considered for registration for the MSc (Engineering Management) degree.

Outcome and Architecture



More information is available 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 at UP".

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

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, Tanya van Zyl, Engineering Building 2, Room 2-12, University of Pretoria, Lynnwood Road, Pretoria, 0001.

The closing date for applications for 2015 is 31 October 2014.

Programme Fees

The total fee will be approximately R 100 000. The fee includes tuition, textbooks, study material and meals on campus. These fees are applicable for 2015 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 of R 7 500 for a third (final) year is payable. The University reserves the right to increase the fee annually. Students who do not have South African citizenship are liable for an additional R 2 500 per annum administration fee.

Distance examinations are arranged for students who apply, but at an extra cost of R 550 per examination paper within the RSA and SADC countries and R 1 100 per examination paper for international countries. Examination fees are reviewed annually, and could thus be higher in 2015. 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)
- Logistics
- System Engineering
- Technology Management

Short course programmes

- Project Management Principles and Practices
- Project Management Principles and Practices in Organisations

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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