

MTIM Modules

12 prescribed modules and mini-dissertation

Decision Analysis (IBD 880)

The module Decision Analysis, **IBD 880**, will focus on insight in the field of **Decision Analysis (DA), Risk Management (RM) and Techno-economics analysis (TEA)**, with the application of the basic principles of decision analysis and risk identification, assessment, etc in the context of innovation and technology activities in the enterprise. Theory as well as practice is important and is illustrated by for example the application of Decision analysis and TEA in various functional areas of the enterprise. Techno-economics analysis (TEA), also referred to as economic feasibility studies, is a core technique which is used to support decision making also in the technology and innovation context of enterprises. Some fundamental approaches for DA, RM and TEA in Technology Development use the generic models of net present values, discounted cash flows, internal rates of return and the time value of money to compare expenses against earnings. In this module, aspects of the principles of techno-economics and the structure of TEA will be integrated with DA and RM to support and guide decisions relating to investment in for example future technology and innovation projects.

Financial Management (FBS 831)

"The goal of a firm is to maximise the long-term wealth of its shareholders." Why do most management experts generally accept this statement? How do all the other objectives of a firm relate to this goal? Why is the success of most companies measured in financial terms? In FBS831 answers to these questions are sought. The nature of and interaction between different financial statements are investigated, as well as their role in the creation of shareholder wealth. Although maximizing shareholder wealth is the basic general cornerstone of management, recent developments point out that non-quantitative factors are also important in the measurement of company performance.

Human Resources (PEM 884)

While the cliché "Our company's most important asset is our people" is often used, the aim of the PEM 884 module is to bring life to this statement, equipping managers in the technology environment to manage people in a way that enhances both their value and humanity. The course centres around challenges in the technology environment for the 21st century, considering how organizational behaviour and human resource management processes can be used in mastering these. The course includes aspects such as managing individuals, teams and organisations with regard to various dimensions of behaviour including: individual diversity, emotional intelligence, motivation and team performance, group dynamics in managing teams, communication, leadership, power and politics, organisational culture, organisational change and stress, labour relations and human resource processes.

Literature Study (ILS 801)

The overall objective of this module is to provide students with sufficient knowledge and skills to undertake a detailed and comprehensive literature review. This course is an integral part of the

Research Project and will be aligned with the Research Proposal of the student. The major part of the course consists of individual self-study done by the student outside the classroom in his/her own time, complemented by student-centred and co-operative learning/teaching methods during lectures. The self-study includes prescribed reading and individual assignments.

Mini-dissertation (ISC/IGB898)

The research project is the capstone of the MTM programme. It comprises an independent research study into an area of engineering, project or technology management, applying the principles learned during the programme. Although not a full Masters dissertation, it is essential to produce something original and useful, both to an academic field in the respective programmes and to the public/private sector that searches for solutions. Although this is a research project of limited breadth and scope, it nonetheless has to comply with the requirements of scientific research.

Organisation and Innovation (INV 880)

The Master module Organisation and Innovation has been designed for Master students wishing to build substantive and methodological knowledge in two profound and related disciplines and phenomena: organisation studies and innovation studies. It focuses on providing an overview of the main concepts, theoretical perspectives and models regarding organisation, technological innovation and the relationships between different forms of organisation and technological innovation (e.g. organizing for creativity; systems supporting innovation). This module further explains innovation at several levels of analysis (individuals, teams, organisations, sectors, nations). Students are expected to apply the acquired knowledge in their workplace.

New Product Development (INP 880)

The development of new products is a very important activity within a firm. There is always a high risk of failure but the best companies manage to bring out successful new products on a continuous basis. The module introduces the processes, tools and techniques and strategies used by leading-edge companies for new-product development. It examines different stages of product development, from idea generation to market testing and includes the assessment and selection of appropriate business models. Fourth industrial revolution technologies are considered as well.

Project Management (IPK 804)

This module addresses basic project management concepts, principles and techniques. The module is aligned with both the U.S. Project Management Institute's Project Management Body of Knowledge (PMBok) as well as PRINCE2 methodology developed in the UK. Scheduling of projects is a core element of project management and IPK780 covers project scheduling in somewhat more detail and at a more advanced level than the other topics.

The aim of the module is to develop the learner's ability to identify and solve problems in a way that display critical thinking and the application of quantitative methods. The module focuses on project initiation, planning, monitoring and control. Specifically the development of a project plan, different scheduling techniques, earned value, decision making and basic risk management. A deliverable of the module is a project plan (including project scope, WBS, schedule, risk management plan and cash flow) for a project in the learner's work environment.

Research Methodology (INI 800)

The overall objective of this module is to provide students with sufficient knowledge and skills to undertake independent research for a masters' dissertation. The major part of the course consists of individual self-study done by the student outside the classroom in his/her own time, complemented by student-centred and co-operative learning/teaching methods during lectures. The self-study includes prescribed reading, individual assignments and preparation for the examination. The lecturer will act as a guide to the students to acquire the necessary knowledge and skills through self-study and practical exercises, in addition to formal lectures.

Science, Technology and Innovation Policy (ISP 880)

Science, Technology & Innovation (STI) Policy is considered to drive innovation and innovation is considered to be a core contributor to economic growth in all countries. As a result, STI policy is critical to the effective generation and utilisation of STI knowledge, whether this be undertaken for public good or private gain. In this module the student will be given an introduction to, and the linkage between, Science and Technology, research and development, and innovation. This introduction will be followed by a brief history of innovation theory and how S&T links to both national and technological innovation systems. The range of policy instruments which can be used to stimulate science, technology and innovation will then be reviewed, followed by the characterisation of the instruments which are presently adopted in South Africa. The student will then be presented with a range of frameworks to allow the analysis of different S&T policies and innovation systems, with particular reference to South Africa and other countries in the region.

Strategic Technology & Innovation Management (IST 880)

The objective of this module is to provide students with the necessary skills to develop technology and innovation strategies for organisations. Themes include the concepts of technology and innovation strategy, processes of strategic management, formulation of technology and innovation strategies, strategy implementation, technology roadmapping, scenario development and future thinking. Appropriate case studies are used to link the theory and practice.

Technological Intrapreneurship (IEE 880)

Technological Intrapreneurship or Corporate Entrepreneurship (CE) refers to the means by which an organisation revitalises itself and alter its competitive contour through embarking in entrepreneurial activities which focus on innovation. CE is one of the key tools to take organisations forward in an environment faced by global challenges. This module focuses on the fundamentals of CE, how to design an entrepreneurial organisation, building cultures to support technological intrapreneurship and enable continuous intrapreneurial performance within a corporation.

Technology Commercialisation (IKG 881)

(Only students who have completed Project Management - IPK 780)

The survival of modern companies increasingly depends on the development and successful commercialisation of new products and services. The module is designed to address the principles embedded in the process of identifying, transferring and commercialising inventions and knowledge

within the context of national systems of innovation. The intention is to integrate the functional elements of innovation management with emphasis on the entrepreneurial process of commercialising new methods, practices, processes, products, services, systems and technology towards the generation of economic growth, wealth and prosperity.

Technology Management (ITB 802)

The module aims to provide students with insight into the concept of technology and the utilisation thereof in the business environment. The module provides theory and application skills on the operational level. Themes addressed are: Theory of technology, Technology forecasting and dynamics, Technology audits, Technology planning and Technology acquisition. The themes form part of the portfolio of technology management activities that organisations should be able to master in order to be competitive.