Industrial Engineering and Engineering Management Postgraduate Prospectus 2019

Important notice:

This document is intended to disseminate information about the Industrial Engineering Department's postgraduate offer. It further aims to act as a guideline on how the postgraduate programme is administered and managed. If there is any conflict between information presented in this document and an official policy or arrangement by the University of Stellenbosch, the latter will take preference and supersede this document.

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Overview of important dates for 2019

Event	Date
Admission Tests:	
English test: Should you fail this test, you will not be allowed to attend the admissions week lectures and write the admissions exam.	22 Nov 2018
Analytics and Synthesis Admission Week Lectures	26 – 30 Nov 2018
Admission Exam	10-11 Dec 2018
Admission Exam Result: if you fail this exam, your admission to 2018's M.Eng programme will be cancelled	14 Dec 2018
Registration:	
New Registrations	Up to 15 Feb 2019
Continuing students	Up to 29 March 2019
Module Dates:	
Research Methodology	18-21 Feb 2019
Technology Management	25 Feb – 1 March 2019
Management Fundamentals for Engineers	4-8 March 2019
Professional Communication Enquiries: alisonb@sun.ac.za	Online via Sunlearn. Completed by 30 March 2019.
Contractual / Administrative Commitments:	
Research Agreement loaded on SUNLearn	29 March 2019
Interruption / Discontinuation of Studies	30 April 2019
Progress Report	31 July 2019
Submission for Examination	
Master Thesis Submission for Examination December Graduation March Graduation	 30 August 2019 21 November 2019
PhD Dissertation Submission for Examination December Graduation March Graduation	 1 August 2019 23 October 2019
Public Defences	
Masters December Graduation March Graduation	 5-6 November 2019 21-24 January 2020
PhDs December Graduation March Graduation	 3 October 2019 21-24 January 2020

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Introduction

The Department of Industrial Engineering at the University of Stellenbosch hosts two postgraduate study domains: Industrial Engineering and Engineering Management. In the Industrial Engineering study domain, there are two different programmes, i.e. the M.Eng (Industrial Engineering) programme and the PhD (Industrial Engineering) programme. There is only one programme in the Engineering Management study domain which is the M.Eng (Engineering Management) programme. These options add up to three different possible postgraduate qualifications for students in a variety of research areas:

1. M.Eng(Research) (Industrial Engineering);
2. M.Eng(Research) (Engineering Management); and
3. PhD (Industrial Engineering).

The PhD (Engineering Management) programme is under development and registration with the Department of Education at present and should be available in 2018/2019.

The department used to present the M.Eng programme in two different models (Research or Structured) but the Structured version has been discontinued from 2015. The department also used to present a PGDip programme in both Industrial Engineering and Engineering Management, this programme has been discontinued from 2016. In previous versions of this guide, the Structured M.Eng as well as the PGDip programmes were described in detail and mention are made of them here for the sake of clarity and continuity.

The study domains hosted by the department, i.e. Industrial Engineering and Engineering Management, are fundamentally different but do have some overlap in certain areas. This often leads to confusion with prospective students and one of the objectives of this guide is to provide clarity on the department's offering. The full list of objectives of the guide are:

- Providing definition to the different postgraduate product offerings of the department especially highlighting the differences between Industrial Engineering and Engineering Management;
- Explaining the department's approach to accommodate students with different backgrounds in the same programme;
- Explaining the application process; Establishing a baseline plan for the postgraduate activities in 2018;
- Enabling students to plan their course work for the year; and
- Helping students to understand the various rules and regulations applicable to them[1].

Note that due to the dynamic nature of the postgraduate offering, this guide will be updated and improved continuously. The latest version of the document will be available from the postgraduate coordinator or administrator or it can be downloaded from the link on the title page of this document.

Always confirm that you have the latest version of the guide when consulting it. Later versions of the guide always supersede earlier versions in all respects.

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[1] If there is a conflict between information in this guide, and the official regulations of the university, the official regulations will be applicable. This document is simply a guide to help the student to understand the process, and point him/her in the right direction, and is not a formal regulatory document. It does, however, contain department specific rules and requirements.

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1 Principles and orientation

A few principles according to which the department delivers its programmes as well as general orientation to the various programmes are presented in sections to follow.

1.1 Industrial Engineering vs Engineering Management

Definitions for the different study domains are adopted from various sources and institutions involved in the field and are presented in this section as a basis to distinguish the domains.

Industrial Engineering is a discipline of engineering dealing with the optimization of complex processes or systems. It is concerned with the development, improvement, implementation and evaluation of integrated systems of people, money, knowledge, information, equipment, energy, materials, analysis and synthesis, as well as the mathematical, physical and social sciences together with the principles and methods of engineering design to specify, predict, and evaluate the results to be obtained from such systems or processes. Its underlying concepts overlap considerably with certain business-oriented disciplines such as operations management and financial management, but the engineering side tends to emphasize extensive mathematical proficiency and usage of quantitative methods.

Engineering (and technology) Management on the other hand is a specialized form of management that is concerned with the application of engineering principles to business practice. Engineering management often leads to a career that brings together the technological problem-solving abilities of engineering and the organisational, administrative, and planning abilities of management in order to oversee complex systems from conception to completion. Technology management, as a sub-set of engineering management, is a specialised professional practice that captures technology-based innovation opportunities. It guides technological progress, assesses the potential of individual technologies and uses this potential to the benefit of business, society and the environment. It distinguishes five generic processes: (i) identification of technologies, which are (or may be) of importance to the business; (ii) selection of technologies that should be supported by the organization; (iii) acquisition and assimilation of selected technologies; (iv) exploitation of technologies to generate profit, or other benefits; and (v) protection of knowledge and expertise embedded in systems.

1.2 Programmes

The Industrial Engineering Department offers two main programme structures for post-graduate studies as introduced earlier:

1. Masters in Engineering (Research) (both for Industrial Engineering and Engineering Management) which is discussed in Section 3.3; and
2. Doctor of Philosophy (PhD) as discussed in Section 3.4.

The M.Eng (Research) programme is purely a research based programme with an element of supplementary course work. Course work is necessary to calibrate backgrounds and ensure a common standard in research practices.

PhD students normally have no supplementary course work as part of the degree and only perform research which leads to a dissertation. In some cases, supervisors of PhD students may decide that an element of supplementary course work could be beneficial to the student and will then prescribe supplementary courses to the student.

1.3 Accommodating different academic backgrounds and qualifications

It is important to note that you do not necessarily require an Industrial Engineering (or engineering) degree to be accepted to one of the postgraduate programmes at the department (see Section 3). This means that students start off with different backgrounds and at different levels when doing course work or doing research for thesis/dissertation purposes. The principle on which the department handles varying backgrounds is fairly simple from a programme delivery perspective: varying effort will be required initially to participate (depending on students' academic backgrounds) but on completion of a course the knowledge of all students is strengthened and enhanced to achieve the expected level of competence, irrespective of background. Figure 1 illustrates this principle. Section 3 provides more details on the requirements to be accepted to a specific programme.
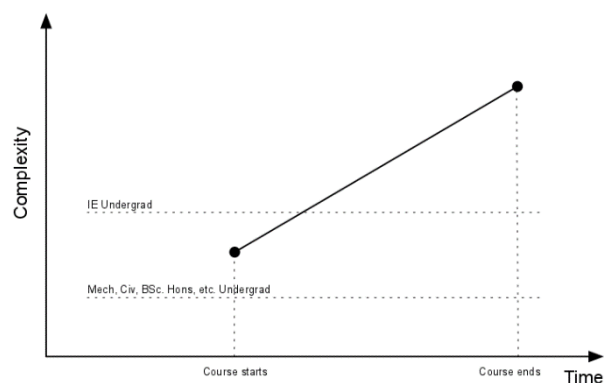
Figure 1: Accommodating different backgrounds

2 Research Groups

In this section a brief introduction is provided to the various research groups in the department.

2.1 Engineering Management

Engineering management includes fields such as project-, risk-, innovation-, quality- and performance management, and feasibility studies in the wider sense:

2.1.1 Enterprise Engineering

The analysis of enterprises (design, implement, operate) including knowledge and information-, innovation-, financial- and technology management.

Supervisors in this field:
Prof Corne Schutte
Prof Sara Grobbelaar
Prof Louis Louw

2.1.2 Sustainable Systems

The transition to a more sustainable economy and society, which will place emphasis on management of infrastructure/technology, including planning and design.

Supervisors in this field:
Ms Imke de Kock
Prof Fernando Lopez

2.1.3 Health Systems Engineering

Conceptualising novel, engineering-based solutions to the challenges facing the healthcare sector. The research hub is specifically focused on facilitating improved healthcare delivery within the public sector in sub-Saharan Africa.

Supervisors in this field:
Prof Sara Grobbelaar
Ms Louzanne Bam
Ms Imke de Kock

2.1.4 Innovation for Inclusive Development (I4ID)

Analysis, development and evaluation of inclusive innovations, inclusive innovation systems and innovation platforms. The goal is to explore how I4ID may provide solutions to societal problems (access to clean water, healthcare, financial services, etc.).

Supervisors in this field:
Prof Sara Grobbelaar

2.1.5 Beneficiation of Minerals

Investigates how mineral rich countries may optimally leverage their mineral endowments for sustainable development.

Supervisors in this field:
Mr Wouter Bam

2.2 Manufacturing

This area focuses on development of resource efficient process chains to ensure sustainable manufacturing as value creation system of products, but also for wider application in the services sector:

2.2.1 Additive Manufacturing

Additive manufacturing uses layer technology to create products in metals, polymers and other materials.

Supervisors in this field:
Prof Andre van der Merwe

2.2.2 Micro-manufacturing

This involves micromachining (milling and turning) and microassembly of microproducts in which micromaterial handling systems are utilised.

Supervisors in this field:
Dr Stephen Matope
Dr Theuns Dirkse van Schalkwyk

2.3 Operations Management

2.3.1 Physical Asset Management

The systematic and coordinated activities and practices through which an organisation optimally and sustainably manages its assets and related systems.

Supervisors in this field:
Dr Wyhan Jooste
Mr Philani Zincume

2.3.2 Supply Chain Management

Supply network design, performance management and feasibility studies in the wider sense, to contribute to efficient supply chains.

Supervisors in this field:
Prof Louis Louw

Mr Konrad von Leipzig
Dr Joubert van Eeden
Prof Wessel Pienaar

2.3.3 Learning Factories

The Stellenbosch Learning Factory (SLF) is a small but realistic production facility used for teaching undergraduate students various concepts related the design, management and improvement of production systems (using a "learning by doing" approach), as well as providing a research facility for research topics related to the "smart factory" of the future (in line with the 4th industrial revolution movement).

Supervisors in this field:
Prof Louis Louw

2.3.4 PRASA Engineering Research Chair

The PRASA Engineering Research Chair which initiates and executes research into aspects of maintenance-management and -processes best suited for the rail sector.

Supervisors in this field:
Prof Neels Fourie
Mr Pieter Conradie

2.4 Systems Modelling, Operations Research and Decision Support

This area focuses on the development of mathematical models and their incorporation into computerised systems aimed at supporting scientifically justifiable and effective decisions in industry. These models draw from the scientific fields of applied mathematics, statistics, industrial engineering and computer science and are applicable in the context of complex problems which admit a large variety of trade-off solutions. Strong decision support ties exist with a number of industry partners in the agricultural, retail, banking, insurance and military sectors, as well as various parastatals, NGOs and non-profit organisations. Examples are:
   * Routing and scheduling decisions for fleets of delivery vehicles.
   * Employee duty roster or timetabling decisions for the manufacturing and health sectors.
   * Shelf-space allocation and inventory decisions for retailers.
   * Crop irrigation and agricultural pest-control strategy decisions.
   * Power generator maintenance scheduling decisions in the energy sector.
   * Facility location decisions for effective supply chain logistics.
   * Optimal facility or production plant layout.

Supervisors in this field:
Prof James Bekker
Prof Jan van Vuuren
Dr Thorsten Schmidt-Dumont
Ms Christa de Kock

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2.5 Data Science

This area focuses on the development of innovative optimisation and machine learning techniques to produce novel, efficient and robust data science technologies.

Supervisors in this field:
Prof Andries Engelbrecht
Prof Jacomine Grobler

3 Programme requirements and format

Requirements for each programme are summarized below. For more details, please refer to the Engineering Calendar Part 11. The most recent version can be downloaded from http://www.sun.ac.za/english/faculty/Pages/Calendar.aspx. Note that the language used for postgraduate studies, particularly in the case of coursework, is in-line with the strategic framework of the University to be language-friendly. Although Afrikaans is used as the point of departure, English is used as the language of instruction, where necessary. Postgraduate courses are therefore taught in English.

3.1 Postgraduate Diploma (PGDip) in Engineering (Focus: Data Science)

Please refer to the brochure on the departmental website: http://ie.sun.ac.za/prospective-postgraduates/

On completion of this degree, candidates will be allowed access to the M.Eng degree, should they meet the requirements of the Admission Week of the department.

3.2 M.Eng (Structured) (Focus: Data Science)

Please refer to the brochure on the departmental website: http://ie.sun.ac.za/prospective-postgraduates/

3.3 M.Eng (Research)

The M.Eng (Research) is a research based programme, generally requiring full-time study and research over a period of typically18-24 months (minimum residence period is 1 year). A research thesis is produced together with the successful completion of a series of supplementary courses which aims to instil fundamental concepts but also to calibrate different backgrounds. The supplementary course requirements are shown in Figure 2.

M.Eng Programme Admission Requirements

Programme	Admission Requirements	Format	SAQA Credits
M.Eng (*Research*)(Industrial Engineering) M.Eng (Research)(Engineering Management)	1. Qualifications: • BEng • Applicable Hons BSc • Applicable 4-year B degree • PGDip(Engineering) • MTech 2. Successful completion of Admission Week 3. Selection by Department	100% research based programme with an element of compulsory supplementary studies, with the purpose of supporting the research.	180

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The M.Eng (Research) programme includes four or five compulsory supplemental courses depending on students' undergraduate background and the study domain that they plan to pursue. See table below for a graphical overview of course requirements. The objective of the supplemental courses is to secure a common foundation amongst students and to calibrate different backgrounds:

1. The ability to perform independent research taught through Research Methodology for both the M.Eng study domains;
2. Commercial and/or financial reasoning capability delivered through Management Fundamentals for Engineers for both M.Eng study domains if a student has a background in BEng other than Industrial Engineering;
3. Strategic technology operations management and awareness of externalities delivered through Technology Management for the Engineering Management M.Eng course; and
4. Advanced operations analysis and synthesis, delivered through Analytics and Synthesis, for both study domains irrespective of undergraduate background.

"Thesis Aligned Subjects" shown below are prescribed as a requirement for the M.Eng course to assist in the delivery of top quality theses. There is significant freedom in the selection of thesis aligned subjects and this is normally determined in conjunction with the thesis supervisors.

It is also possible to exchange one of the thesis aligned subjects for a peer reviewed publication produced while the student is registered for the M.Eng (Research) degree. More information on producing the peer reviewed publication is provided in the compulsory Research Methodology course.

The thesis component of this degree has to be handed in before or on 30 August of any year to graduate in December in that year. Students that hand in theses after 30 August but before 21 November will only graduate in March / April the next year. (These dates differ to those given in the SU Calendar Part 1. Departments have a degree of flexibility in the scheduling of postgraduate activities and this is an instance where the IE Department exercises this flexibility.)

"Professional Communication" was introduced from the 2018 intake as a compulsory course. For students who commenced their MEng registration before 2018, this course was not included and is therefore not compulsory.

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Degree Programme

M.Eng. (Industrial)	**M.Eng. (Engineering Management)**

Undergraduate background

B.Eng. (Industrial)

M.Eng. (Industrial)	M.Eng. (Engineering Management)
Analytics and Synthesis	Analytics and Synthesis
Research Methodology	Research Methodology
Professional Communication	Professional Communication
Thesis Aligned Subject #1	Technology Management
Thesis Aligned Subject #2	Thesis Aligned Subject #1

B.Eng. (Other)

M.Eng. (Industrial)	M.Eng. (Engineering Management)
Analytics and Synthesis	Analytics and Synthesis
Research Methodology	Research Methodology
Professional Communication	Professional Communication
Management Fundamentals for Engineers	Technology Management
Thesis Aligned Subject #1	Management Fundamentals for Engineers
	Thesis Aligned Subject #1

Figure 2: Subject logic for MEng (Research)

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3.4 PhD (Industrial Engineering)

The minimum residence period for a PhD is 2 years, but it is more common to do this in 3-4 years. What makes a PhD significantly different from a Masters degree, is that the candidate must prove the uniqueness of the research contribution.

<u>PhD admission requirements</u>

Programme	Admission Requirements	Format	SAQA Credits
PhD	1 Applicable Master's Degree 2 Suitable Research Topic 3 Selection by Department 4 Approved PhD proposal[2]	100% research programme.	360

The dissertation has to be handed in before or on 1 August of any year to graduate in December in that year. Students that hand in dissertations after 1 August but before 23 October will only graduate in March / April the next year. (These dates differ to those given in the SU Calendar Part 1. Departments have a degree of flexibility in the scheduling of postgraduate activities and this is an instance where the IE Department exercises this flexibility.)

As from 2018, all new PhD students are **recommended** to complete the faculty's "Professional Communication" module.

PhD students who do not have a prior research based degree, are also recommended to attend the Research Methodology module. It is not necessary to complete the assessment portion of the module.

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[2] Students have the option to enrol without an approved PhD title and proposal, but in this case an approved PhD proposal must be finalised within the first year of registration.

4 Admission, selection and registration of M.Eng students

It is important to note that some elements of the admission, selection and registration process are handled centrally by the university's administration department. For convenience, the university's administration department will be referred to as **"Admin"** hereinafter. Other elements involving admission, selection and registration are handled by the department itself, specifically the postgraduate administrator (contact details in Error! Reference source not found.). The term **"The Department"** will be used in when referring to administration done by the Industrial Engineering Department.

4.1 First time applicants

First time applicants who wish to be selected and admitted for postgraduate programmes at the department have to be successful in two processes:

a) The **initial application** which leads to provisional acceptance to the admissions week; and

b) **Admissions Week** which comprises of an English proficiency test and the first Masters module: Analytics and Synthesis.

More information on these processes are described below.

4.1.1 Initial Application

Applicants who have never studied or been registered with the University of Stellenbosch or former students who have not been registered for more than one year have to complete all the steps below:

Step1: Complete the electronic application form on the university's website at http://t2000-05.sun.ac.za/eAansoeke/alg.jsp?Tl=1 The purpose of this step is to be issued with a student number which you should use as a reference in all further steps. Admin will send you a formal letter confirming your student number. There is an example of such a letter in Appendix A. **Please note that this is only administrative application to the university. You still have to be approved by selection committee at the department as well as be successful during the Admissions Week for final acceptance.**

Step 2: Complete the electronic application form on The Department's website at http://ie.sun.ac.za/apply-postgraduates/ . The details that you have entered will be emailed to The Department for further processing.

Step 3: Confirm that you have completed both steps with the Postgraduate Manager, Ms Melinda Rust at mrust@sun.ac.za . Quote your student number in the email.

Candidates who have been registered at the university during the preceding year of intended M.Eng study only need to complete **Step 2**. Once you have performed all the relevant steps above, The Department will confirm that your application is under review via email.

Other points of importance are:

1   Selection of candidates is done by a dedicated committee in the department and the purpose is to identify candidates' suitability, and whether the department will be able to support the specific research intention;
2   Applications have to be done by 17 July (non South African applicants) or 31 October (South African applicants) in the preceding year of the intended study-year; and
3   Depending on the programme selected, the selection process may take some time. The meeting frequency of the selections committee is once a month. Where the applicant has an international qualification, the department first needs to verify the applicant's qualifications through the International Office at the university which may take additional time.

After your application has been considered, the Department will notify you of the outcome. Successful candidates are invited to the Admissions Week. Unsuccessful candidates will not be considered further. The reasons for declining an application are usually disclosed to unsuccessful candidates and these candidates are welcome to reapply once the shortcomings have been addressed.

5 Admissions Exams

Admissions Exams are compulsory for **ALL** first time applicants for the M.Eng programmes and consists of:

- English test on 22 Nov 2018. Should you fail this test, you will not be allowed to attend the admissions week lectures and write the admissions exam.
- Admissions week lectures: 26-30 Nov 2018 (contents: Analytics and Synthesis)
- Admissions exam: 10 and 11 Dec 2018 (contents: Analytics and Synthesis). Results will be available by 14 December 2018.
- if you fail this exam, you will not be admitted to 2019's M.Eng programme.

The goal of Admissions Week is for the department to assess students' suitability for postgraduate programmes but also for students to make sure that they have made the right choice to apply for selection at the Industrial Engineering department.

For the admissions exams:

(a)   100% attendance is required for all sessions;
(b)   The Inter-Institutional Center for Language Development and Assessment (ICELDA) will test applicants' ability to communicate in English More information on ICELDA is provided in Appendix C;
(c)   Starting and finishing times of scheduled activities can change at short notice. Make arrangements to be on campus every day between 08:00 and 17:00 and
(d)   The contents of the Admission week lectures is Analytics and Synthesis at Masters level.
(e)   To pass Admissions Week and to be accepted into a postgraduate programme, a final assessment of at least "low risk category" is required for the language assessment and the top 50 performers in Analytics and Synthesis will be admitted to the M.Eng programme. Due to a limited number of Masters positions available in the department, this number might vary from year to year. The results of the Admissions Week will be published electronically by 14 December 2018.

Note that even though you can formally register at the university for a particular programme, you will still have to find a study leader that can supervise your thesis. In an extreme case you might be allowed to register at the university but if you have an interest in a field for which there is no supervision available in the department, e.g. quantum astrophysics, it may theoretically mean that you will never finish your programme. This example is extreme but it is necessary to consider the risk before deciding to register. More information on finding a study leader in Section 10.

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6 Registration

This is the formal process where you will become an official student of Stellenbosch University and it is administered by the central administration.

In general, registrations are done in person at Mrs W Wessels' office (Admin A building, Room A2029). However, you may qualify for postal registration (where you can register by completing a form and submit this via email), please refer to Appendix A for details on postal registration;

The following documents must be presented when registering:

- Original degree certificate(s);
- Proof of payment or bursary (A quote for the 2019 study fees can be requested at http://www.maties.com/fees/provisional-statement-of-fees.html)
- Your admission issued by The Department;
- International students take note of the following:
    - Before registration, report to the international office (Wilcocks building);
    - Present your passport, permit, medical aid insurance and proof of payment with registration;
    - Present proof of payment and registration when activating your student card at the Student Card Office in the Admin A building;

New, first-time M.Eng students have to register by 15 February 2019 at the office of Ms Wilna Wessels. This means that new (and continuing) students have to be registered BEFORE attending any subjects. Registration grants you access to the university's e-services and online learning platform, which will be a crucial part of your studies.

The closing date for continuing students' registrations is 29 March 2019. This date would be applicable to those students who have completed all their subjects in previous year(s).

6.1 Reregistrations

Fulltime and part-time non-first year postgraduate students may register online at www.mymaties.com (the student portal) from 7 January 2019. Those students who struggle with online registration may send Mrs W Wessels, wilnaw@sun.ac.za, their proof of payment and she will register them. They may then print the proof of registration at www.mymaties.com. Candidates that are intending to take one of the four subjects offered by the department annually in 2019 must please ensure that they are registered **before** the subject commences as this is a prerequisite for granting access to the university's online learning platform.

6.2 Interrupting or discontinuation M.Eng studies

Should you need to interrupt your M.Eng studies for whatever reason, you have to apply for consent using the application form in Appendix E. Send the form to the postgraduate administrator for processing.

If you have decided to discontinue your studies, complete the form in Appendix G and send the form to the postgraduate administrator.

6.3 Reregistration after exceeding maximum allowable time

Students who exceed the maximum allowable time (as described in the En-gineering Calendar downloadable from http://www.sun.ac.za/english/faculty/Pages/Calendar.aspx for M.Eng (Research) have to apply for reregistration according to the procedure outlined in Appendix F.

7 Admission, selection and registration of PhD students

It is important to note that some elements of the admission, selection and registration process are handled centrally by the university's administration department. For convenience, the university's administration department will be referred to as **"Admin"** hereinafter. Other elements involving admission, selection and registration are handled by the department itself, specifically the postgraduate administrator (contact details in table 1). The term **"The Department"** will be used in when referring to administration done by the Industrial Engineering Department.

The formal process flow of the registration of PhD students is included in this guide as Appendix K. Some elements of the process are described below as a concise summary.

7.1 Initial Application

Applicants who have never been registered with the University of Stellenbosch or former students who have not been registered for more than one year have to complete all the steps below:

Step 1: Make contact with the postgraduate coordinator or a potential study leader in The Department via The Department's website (www.ie.sun.ac.za) to share your research interests with the study leader. If the study leader agrees to act as a potential supervisor for your work, obtain a written confirmation (via email) from the person that confirms his/her willingness to lead your research if you are formally accepted.

Step 2: Complete the electronic application form on the university's website at http://t2000-05.sun.ac.za/eAansoeke/alg.jsp?Tl=1 The purpose of this step is to be issued with a student number which you should use as a reference in all further steps. Admin will send you a formal letter confirming your student number. **Please note that this is only administrative application to the university. You still have to be approved by selection committee at The Department.**

Step 3: Complete the electronic application form on The Department's website at http://ie.sun.ac.za/apply-postgraduates/ . The details that you have entered will be emailed to The Department for further processing.

Step 4: Confirm that you have completed both steps with the Postgraduate Manager, Ms Melinda Rust at mrust@sun.ac.za . Quote your student number in the email.

Candidates who have been registered at the university during the year preceding the intended year of study only need to complete **Steps 1 and 3**. Once you have performed all the relevant steps above, The Department will confirm that your application is under review via email. The Department may also request addition information if deemed necessary.

Other points of importance are:

1. Selection of candidates is done by a dedicated committee in the department

and the purpose is to identify candidates' suitability, and whether the depart-ment will be able to support the specific research intention;

2. Applications have to be done in the year before the intended study-year, pref-erably by 31 October; and

3. Depending on the programme selected, the selection process may take some time. The meeting frequency of the selections committee is once a month. Where the applicant has an international qualification, The Department first needs to verify the applicant's qualifications through the International Office at the university which may take additional time.

After your application has been considered, The Department will notify you of the out-come. If you were successful, The Department will issue a "Permission to Register" letter permitting you to register at the university for the PhD degree. You do not require an approved dissertation title at this point, but you need to submit a formal research proposal in line with the type of registration described in Section 7.2. More info on the research proposal in Section 7.4.

7.2 PhD Registration Types

Depending on a PhD candidate's background, two types of PhD registration are ini-tially possible:

1. PhD Registration after the successful development of a PhD proposal: This is the original manner in how PhD students registered in the past, but is now re-served to students who are perceived to be a higher risk – typically if your back-ground is not in engineering, but in another related field, or if your time is limited and that full-time study is not possible. The challenge here is that you need to develop the PhD proposal without the formal support of the supervisor before you register. We recommend that students register in this case as a special student, to get the required support to make the PhD proposal successful.

2. PhD Registration without Title: This is the newer manner in how PhD students register – you then have full access to all PhD support, such as a supervisor, library etc. You **must** create and successfully propose a PhD proposal within the first year of registration, or your registration will not be allowed to proceed.

A candidate that will not be a full time PhD student in the Department of Industrial Engineering, and/or a candidate only registering after March of each year, will be reg-istered as a "special student". The candidate is then required to prepare a full PhD proposal; to be submitted to the Department by 20 August of each academic year. Once approved by an appointed panel (see next section), the candidate is allowed to register as a PhD student, with title, in the following academic year.

A candidate that will be full time based in the Department, with a study leader that has agreed in writing, will be allowed to register as PhD student without title. The registra-tion must be done before the end of March of each year. The candidate is then also required to submit a full PhD proposal by 20 August of their first registration year for approval by an appointed panel. Failure to have the research proposal approved within one year after registration as a PhD student without title, will result in the student not being allowed to continue their PhD studies at the Stellenbosch Engineering Faculty.

7.3 The PhD registration process

This is the formal process where you will become an official student of Stellenbosch University and it is administered by the central administration.

> Fulltime and part-time students must report to Mrs N Hartzenburg's office (Admin A building, Room A2030) for registration;

> The following documents must be presented when registering:

- Original degree certificate(s);
- Proof of payment or bursary (A quote for the 2019 study fees can be requested from http://www.maties.com/fees/provisional-statement-of-fees.html);
- Your Permission to Register letter issued by The Department;
- International students take note of the following:
    - Before registration, report to the international office (Wilcocks building);
    - Present your passport, permit, medical aid insurance and proof of payment with registration;
    - Present proof of payment and registration when activating your student card at the Student Card Office in the Admin A building;

> Closing date for 1st semester registration: 29 March 2019.

7.4 PhD Research Proposal

Students registered for the PhD degree must submit a formal research proposal to the Department by 20 August of each academic year, as communicated by the postgraduate coordinator. An accepted PhD proposal formalises the PhD study's existence and is a prerequisite for the student to proceed with and finalise a PhD.

The PhD proposal process of the department is quite involved whereby reviewers from outside the department are proposed by the supervisor and approved by the Vice-Dean: Research, and the candidate must submit a formal proposal and present this proposal to a panel. This proposal need to prove the following:

1. The the candidate is capable of conducting research.
2. The proposed research methodology is sound.
3. The anticipated research contribution will be unique.
4. The plan forward is feasible.

Since there are very few PhD students and they often have unique circumstances, the postgraduate manager will guide the student through the process and hence it is not described in detail in this document. A guideline for the arrangements and evaluation of a research proposal is attached as Appendix J.

7.5 Upgrading from M.Eng to PhD

In exceptional circumstances, M.Eng students are allowed to upgrade to the PhD programme. The appropriate steps are described below.

7.5.1 Upgrading during the normal master's evaluation process

1   The supervisor(s) is(are) of the opinion that the thesis to be submitted for evaluation exhibits such a degree of originality that the registration of the candidate may potentially be upgraded to PhD.

2   The supervisor requests the Postgraduate Coordinator to ask the examiners[3] pertinently in the cover letter accompanying the thesis to consider the possibility of upgrading to PhD, after subjecting the thesis to the usual assessment.

3   After completion of the oral examination the Postgraduate Coordinator, in consultation with all the examiners concerned and the supervisor(s), considers the desirability of upgrading to PhD.

4   If it is decided that an upgrade is NOT appropriate, the normal M evaluation process continues and a final mark is awarded.

5   If it is decided that an upgrade IS appropriate, the candidate is requested to prepare a formal research proposal such as is expected from doctoral students registered for PhD without a research topic. This proposal would usually build on and constantly refer to the M thesis.

6   The research proposal, together with the M thesis and the prescribed application form, will be submitted to the departmental Executive/Admissions Committee, as is the case with doctoral students who have already been registered without a research topic.

7   As the candidate's thesis has been formally evaluated by the examiners and an oral examination has been completed, the departmental Executive/Admissions Committee has the authority to make an autonomous decision regarding the advisability of recommending an upgrade. The departmental Executive/Admissions Committee completes the recommendation form (Recommendation form - PhD registration.doc). (This form can be found on the faculty's SharePoint.)

7.5.2 Upgrading on recommendation of supervisor(s)

1. The supervisor(s) realize(s) during the course of the candidate's M studies that the research exhibits such a degree of originality that the registration may potentially be upgraded to doctoral studies.

2. The supervisor(s) request(s) the candidate to prepare a formal research proposal such as is expected from doctoral students registered for PhD without a research topic, and which conforms to the requirements set out in the SU Calendar-Part 1 (downloadable from http://www.sun.ac.za/english/Documents/Yearbooks/2016/PoliciesAndRules2016.pdf).

3. The research proposal, together with the prescribed application form, will be submitted to the departmental Executive/Admissions Committee, as in the case of doctoral students who have already been registered without a research topic.

4. A Candidature Panel, comprising the proposed promoter and at least two further knowledgeable people, at least one of whom should be from outside the home department, is appointed by the departmental Executive/Admissions Committee.

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[3] Only examiners with a PhD qualification can make such an assessment – if there is a possibility that a student can be considered, the supervisor need to ensure that all appointed exminers have PhD degrees, otherwise a combination of the two methods described here, must be followed, where additional penel members are appointed.

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The Vice Dean: Research must approve the proposed Candidature Panel.

5. The Candidature Panel adjudicates the research proposal and, after a compulsory oral presentation and evaluation of the candidate, a final recommendation is made. The Candidature Panel is at liberty to request that the research proposal be revised and resubmitted for consideration.

6. The recommendation of the Candidature Panel is made known to the departmental Executive/Admissions Committee. The departmental Executive/Admissions Committee completes the recommendation form (Recommendation form - PhD registration.doc). (This form can be found on the faculty's SharePoint.)

7. If the upgrading is recommended the research proposal and prescribed PhD application form are subjected to the same process as those of doctoral students who have already been registered without a research topic.

8. If the upgrade is NOT recommended the candidate continues his/her M studies.

7.6 Interrupting PhD studies

Should you need to interrupt your PhD studies for whatever reason, you have to apply for consent using the application form in Appendix E. Send the form to the postgraduate administrator for processing. Valid reasons may be sickness, or a changing work environment, requiring more of your attention for a temporary period. A 1 or 2 year interruption is possible, if it is clearly motivated, and recommended by the supervisor, and then approved by the management committee, faculty committee and faculty board.

7.7 Reregistration after exceeding maximum allowable time

Students who exceed the maximum allowable time (as described in the Engineering Calendar downloadable from http://www.sun.ac.za/english/faculty/Pages/Calendar.aspx) for the PhD have to apply for reregistration according to the procedure outlined in Appendix F.

8 Modules

This section outlines the course work components of the M.Eng programmes.

8.1 Modules for M.Eng

M.Eng (Research) students don't have module credit requirements but they have to complete supplementary modules as per Section 3.3. A description of the courses are provided in Appendix N and the schedule of these courses is provided in section 9. Please note that the descriptions may change before the commencement of the courses.

Thesis Aligned Subjects (as described Section 3.3) are determined by the student in conjunction with his/her supervisor and the academic postgraduate coordinator BE-FORE commencing with the course. There is significant flexibility on these selections and the aim of prescribing thesis aligned course work is to produce a better research thesis. Some options for Thesis Aligned Subjects include:

1. Short courses at other departments in the faculty;
2. Short courses at other faculties;
3. Short courses presented in industry; and
4. Online courses, including (but not limited to) the following course providers:
   - Coursera at www.coursera.org;
   - Future Learn at www.futurelearn.com; and
   - MIT Open Courseware at http://ocw.mit.edu/index.htm.

The funding of Thesis Aligned Subjects (where applicable) is handled or sponsored by supervisors.

All postgraduate students need to submit a progress report by 31 July of every year of their studies (More details on progress reports can be found in Section 13.3.) This report contains details on the subjects that have been completed as well as those that the candidate still intends to take. Thesis-aligned subjects are signed off by the study-leader as part of the progress report.

Take note of the possibility to exchange one of the Thesis Aligned Subjects for a peer reviewed publication (while being registered for M.Eng (Research) as described in Section 3.3. The details of this will be disseminated in the Research Methodology course which is attended by all master students.

8.2 Course registration process

Details of course registrations for M.Eng are presented in sections to follow.

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9 M.Eng (Research) Programme Modules

Important: The fee for the M.Eng (Research) programme (both study domains) includes the fee for the first attempt at any compulsory course as part of the tuition fee. If you start but do not complete a course, you will need to pay the per-credit fee for the second time you register for the course. Please plan and commit yourself fully to your courses so that you will not be required to register a second time for a course.

9.1 Module schedules

This section contains the specific dates scheduled for every course. Note that additional information about the scheduled dates of a particular course is provided in Appendix N as part of the detail description of courses. The courses consist of a full week contact period during which time the fundamentals of the course are shared and the prescribed study material and project descriptions are given. The assessment of the course is done towards the end of the week following the course.

English proficiency test: 22 November 2018

9.1.1 Analytics and Synthesis

Date	Contact time	Room
Mon, 26-Nov-18	F	Incubator
Tue, 27-Nov-18	F	Incubator
Wed, 28-Nov-18	F	Incubator
Thu, 29-Nov-18	F	Incubator
Fri, 30-Nov-18	F	Incubator
Mo, 10-Dec-18	H	Incubator (exam)
Tue, 11-Dec-18	H	Incubator (exam)

M: Morning, A: Afternoon, F: Full day, H: Half day

9.1.2 Research Methodology

Date	Contact time	Room
Mon, 18-Feb-19	F	BIRGA
Tue, 19-Feb-19	F	BIRGA
Wed, 20-Feb-19	F	BIRGA
Thu, 21-Feb-19	F	BIRGA

M: Morning, A: Afternoon, F: Full day, H: Half day

9.1.3 Technology Management

Date	Contact time	Room
Mon, 25-Feb-19	F	BIRGA
Tue, 26-Feb-19	F	BIRGA
Wed, 27-Feb-19	F	BIRGA
Thu, 28-Feb-19	F	BIRGA
Fri, 01-Mar-19	F	BIRGA

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M: Morning, A: Afternoon, F: Full day, H: Half day

9.1.4 Management Fundamentals for Engineers

Date	Contact time	Room
Mon, 04-Mar-19	F	BIRGA
Tue, 05-Mar-19	F	BIRGA
Wed, 06-Mar-19	F	BIRGA
Thu, 07-Mar-19	F	BIRGA
Fri, 08-Mar-19	F	BIRGA

M: Morning, A: Afternoon, F: Full day, H: Half day

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10 Finding a study leader (M.Eng (Research) students)

M.Eng (Research) students have time until **29 March 2019** to find a supervisor for his/her thesis. The process of finding a supervisor is fairly easy after the Research Methodology course. During the Research Methodology course you will gain a good understanding of the various available topics, fields, research areas and capabilities of most of the potential supervisors in the department. Students are encouraged to make appointments and meet with supervisors <u>after</u> the Research Methodology course to discuss their research visions.

To make an appointment with a potential supervisor, report to the reception at the department or phone the department on (021) 808 4234 to request an appointment. Once a supervisor has agreed to supervise a student, the student can select his/her Thesis Aligned Subjects.

11 Thesis/Dissertation format, submission and evaluation

Important considerations before you start your research:

11.1 Ethical clearance

How do you determine whether you must apply for ethical clearance?
The quickest way to determine whether you need to apply for ethics clearance is if you answer "YES" to any of the five Statements below.

There is only exception, though, and that is Statement 3 (i.e. I am collaborating with an institution that is giving me access to physical or financial data that is NOT linked to individuals or any personal accounts or personal information). If you answer "YES" to Statement 3 and "NO" to all of the other Statements, then you do not have to apply for ethics clearance.

It would be prudent, however, to double-check with your supervisor before you decide not to apply for ethics clearance. There can be quite serious repercussions if you decide not to apply for ethics clearance, and then later down the line you realise (too late) that you require a letter of ethics clearance in order for your research article to be published in a journal.

Ethics clearance can unfortunately **not** be obtained retrospectively (i.e. once you've started with your data collection) so it is important to make 100% sure ahead of time whether or not you need to apply for ethics clearance.

1. I will collect data from (or interact with) one or more individuals (this includes students and/or staff members at Stellenbosch University) through interviews, surveys, focus groups, observations, video recording, etc.

2. I need access to confidential data or information (or archival data, contact lists or reports), of an organisation (or institution or company) where the data is not available in the public domain (i.e. not available to the general public). The data can be linked to individuals (or clients or employees, etc.)

3. I am collaborating with an institution (or organisation or company) that is giving me access to physical data (or financial data) that is NOT linked to individuals or any personal accounts (or information). I have been granted access to this data by an authorised representative of the organisation (or institution or company).

4. I will have access to a database/archive that holds information linked to personal identifiers (e.g. names, ID numbers, account numbers, student numbers); AND/OR the database contains coded information but I have access to the codes that links the information to personal identifiers

5. I will gather information/data that is available in the public domain, but that could be regarded as sensitive or potentially sensitive information (e.g. you will collect data via social media networks or public profiles such as Twitter, LinkedIn, Facebook)

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What are the steps to apply for ethical clearance?

1. Deadline: the annual deadline for the submission of ethics applications is Monday, 7 October, and that any ethics applications received after 7 October will not be processed by the Research Ethics Committee (REC) before January 2020.

2. **Submission of Ethics Applications**: Ethics applications are submitted electronically by clicking HERE, and the steps on how to submit an ethics application can be found HERE.

3. **Institutional Permission**: If you are planning to invite Stellenbosch University's staff, students, alumni, and/or third-party partners to participate in your research project, then it is essential that a separate application for institutional permission is submitted via the website of Stellenbosch University's Division of Institutional Research and Planning (IRP). Applications are submitted electronically via http://www.sun.ac.za/permission, and any queries regarding institutional permission can be addressed via email to permission@sun.ac.za. The approval process takes a minimum of 2 – 4 weeks.

4. **Confirmation of Receipt**: Once you have submitted your ethics application, it is your responsibility to follow up with your supervisor to ensure that he/she also submits your application so that Tanya Ficker receives it. Tanya Ficker I will confirm via email within **48 hours** if she received your application – as such, if you do not receive a confirmation email from her personally (via her personal email address - tanya@sun.ac.za), then it means that your supervisor has not yet had a chance to submit your application, and that she has not yet received your application. In such a case you can follow-up with your supervisor on a regular basis to ensure that he/she submits your application. To speed things up, you might want to let your supervisor know ahead of time that he/she would need to follow the steps outlined in THIS web link in order to submit your application.

11.2 Confidentiality of research

If a student's thesis/dissertation must be kept confidential for a maximum period of 3 years, the student must hand in a written request from the company involved PRIOR to commencement of the study, so that the approval by the faculty committee as well as faculty board can be done before the study.

Confidentiality of research cannot be requested and granted at any later point than BEFORE commencement of the study.

11.3 Style guide for theses and dissertations

A style guide for formatting theses and dissertations is attached in Appendix J. Study

the guide carefully before documenting your work in a thesis or dissertation. For a guaranteed professional and consistent result, students are encouraged to make use of LATEX to develop their documents. LATEX is free and can be downloaded from http://www.latex-project.org. The Stellenbosch University templates for theses and dissertations can be downloaded from http://www.ctan.org/tex-archive/macros/latex/contrib/stellenbosch.

Theses and dissertations are evaluated as per a formal process dictated by the Faculty of Engineering. The process flow is shown in Appendix C and Appendix I and the minimum standards for evaluation are listed in Appendix D. Make sure you follow Appendices K or L as part of the submissions process.

12 Fees

Registration fee as well as course fee information is available from the student fees division only. Academic departments are not involved in student fee related matters. Enquiries and requests for quotes can be directed to: studentaccounts@sun.ac.za.

13 General

13.1 Work hours

Work hour arrangements are handled individually by each supervisor. Typically, supervisors will require full-time students to be at the office during normal office hours (08:30 till 16:30).

13.2 Office space

Every supervisor has office space that they can offer to their full-time M.Eng students. The postgraduate office does not have access to "general" office space that can be offered to individuals that do not yet have a supervisor.

13.3 Adequate progress with a programme and progress reports

The department monitors the progress of students throughout their programmes carefully. If a student does not make sufficient progress with his/her particular programme, reregistration for the programme might be refused at the sole discretion of the department.

All postgraduate students are expected to submit a progress report during every year of enrolment:

1. **31 July 2019**: All M.Eng (Research) students. Satisfactory progress will have to be shown by departmental bursary holders before their bursaries are released.

These reports must be written by the student and signed off by themselves and by their study leader before being submitted to SunLearn. The progress reports are reviewed by the Postgraduate Co-ordinator before the list of students approved for bursary payments are released to the departmental officer.

The progress report should be a one to two-page document describing the path from the date of the progress report to the planned graduation date. The document must include at least the following:

1. A list of subject(s) completed (if applicable) to date and the mark(s) scored for every subject;
2. A list of subject(s) that will still be taken and their planned date(s);
3. A description of the progress made with the thesis including the thesis title, level of completeness of the literature study, experiments that have been completed, data that has been collected, etc. Also, very importantly, the anticipated hand-in date of the thesis must be indicated.
4. An indication of any obstacles that may be preventing progress with the degree;
5. A description of what the department can do to assist with overcoming these

> obstacles;

6. Any specific arrangements that have been made with the department with regards to subject exchanges, research visits, etc.

7. The document must contain a specific heading called Deviations. All deviations from the previous progress report (where applicable) must be clearly described. Include the reason for each deviation as well as a description on how the deviation will be overcome.

13.4 Funding

Funding can be applied for at https://web-apps.sun.ac.za/eBeurseNagraads/eBeurse-NagraadsShowPage.jsp. You could also enquire about funding at study leaders directly. Some study leaders have access to research grants which may, in certain cases, be disbursed as bursaries. The faculty has also compiled a list of funding opportunities which is available on the IE website.

13.5 Research agreement

All students that are enrolled for full-time postgraduate studies (whether they receive a bursary or not) are required to sign a research agreement with their primary study leader (as representative of the Department). A copy of this research agreement is included in Appendix P. The signed agreement must be submitted on Sunlearn by 29 March in the first year of studies.

13.6 Electronic communication

As far as possible, the department will endeavour to communicate with you via your preferred email address (as submitted in your application to the department or updated by you through a request to the Postgraduate Manager). However, the SU policy is that all electronic communication is sent to your University of Stellenbosch email address which you will receive when registering at the university. It is therefore your responsibility to make sure you check this email address regularly since important communication may be sent to your university address. You should also keep your Sunlearn-linked email address updated at all times.

13.7 Plagiarism and Turnitin

"Plagiarism is the theft and use of the ideas, material and other intellectual property of others that are passed off as one's own" is the formal definition of plagiarism at Stellenbosch University as published by the senate in 2010 in the formal policy document: "SUN policy on academic integrity: the prevention and handling of plagiarism." (See Appendix Q). The Industrial Engineering Department has a zero-tolerance policy on plagiarism and suspicions of plagiarism are dealt with strictly in accordance to the formal policy.

The university also uses a service called Turnitin to assist in eradicating plagiarism. Students upload assignments onto the Turnitin database where the papers are compared with billions of pages on the internet. The results are returned in the form of an "Originality Report" that gives clear indications and explanations of possible plagiarism.

For more information on the university's plagiarism policy or Turnitin, visit http://www.lib.sun.ac.za/library/eng/help/IG_Programme/Plagiarism/Plagiarism_Index.html

13.8 Important Contacts

The following contact details may assist you in your queries.

Important contacts

Role	Name	Email	Tel Nr
Chairman: Department	Prof Corne Schutte	corne@sun.ac.za	021 808 3617
Postgraduate Manager	Ms Melinda Rust	mrust@sun.ac.za	021 808 4295
Postgraduate co-ordinator: Masters (academic)	Mr Konrad von Leipzig	kvl@sun.ac.za	021 808 4299
Postgraduate co-ordinator: PhD (academic)	Prof Corne Schutte	corne@sun.ac.za	021 808 3617
Departmental financial administrator	Ms Anel de Beer	au1@sun.ac.za	021 808 3927

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A   Postal registration

Postal registration process

To understand the normal registration process, please refer to Section 5.1. Please note that official registration can only take place once a student has received a Permission to Register letter, issued by The Department. Generally, these letter are only issued after a candidate has successfully completed the postgraduate Admissions Week.

As described in Section 5.1, the normal registration process takes place in person, at the office of Ms W Wessels (Admin A building, Room A2029) by 15 February 2019. However, in some cases, students are allowed to register via post / email.

A.1 Eligibility

The following students are eligible to register via post / email:

1. Students that were enrolled at Stellenbosch University (no other institution) in 2018, and that are enrolling for an M / PhD at Stellenbosch for the first time in the 2019;
2. Students that were enrolled for an M / PhD at SU in 2018 and that are continuing their studies towards this same degree in 2019; and
3. Students that studied at SU in the past and that have not obtained a qualification at any other institution.

The following students are not eligible to register via post / email:

1. International students; and
2. Students that have obtained a qualification from any institution other that SU. (These students need to show the original degree certificate for this qualification to Ms Wessels during registration.)

A.2 Process

Student that are eligible for postal registration, need to complete the form on the following page.

The completed form (together with the full set of registration documentation as outlined in Section 5.1), needs to be submitted to Ms Wessels: wilnaw@sun.ac.za

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FAKULTEIT INGENIEURSWESE/ FACULTY OF ENGINEERING

	NAGRAADSE POSREGISTRASIEVORM - 2019												
	POSTGRADUATE POSTAL REGISTRATION FORM - 2019												

STUDENTENOMMER / STUDENT NUMBER								GEBOORTEDATUM / DATE OF BIRTH					
TITEL / TITLE								VOORLETTERS / INITIALS					
VOLLE NAME / FIRST NAMES													
VAN / SURNAME													
NOOIENSVAN / MAIDEN NAME													
GESLAG / GENDER							HUWELIKSTATUS / MARITAL STATUS						
BURGERSKAP / NATIONALITY							IDENTITEITSNOMMER / IDENTITY NUMBER						
KERKVERBAND / RELIGIOUS DEMONINATION							BEVOLKINGSGROEP* / POPULATION GROUP*						
HUISTAAL / HOME LANGUAGE							TIPE PERMIT# / TYPE OF PERMIT#						
PERMITNOMMER# / PERMIT NUMBER#							PERMIT VERVALDATUM# / PERMIT EXPIRY DATE#		D	D	M	M	J/Y	J/Y

WERKSTATUS – MERK EEN 'X' / WORK STATUS – CHOOSE ONE 'X'	VOLTYDS STUDENT FULL TIME STUDENT		VOLTYDS WERKSAAM BY US EMPLOYED FULL TIME AT SU		VOLTYDS WERKSAAM BY ANDER INSTANSIE EMPLOYED FULL TIME AT OTHER INSTITUTION	

PROGRAM (GRAAD) / PROGRAMME (DEGREE)		VAK/MODULE / SUBJECT MODULE	
VIR SIVIELE INGENIEURSWESE: SPESIFISEER ASB RIGTING IN SIVIELE ING (BV. KUS- EN HAWE INGENIEURSWESE) FOR CIVIL ENGINEERING: PLEASE SPECIFY STREAM IN CIVIL ENG (EG. PORT AND COASTAL ENGINEEIRNG)			
TIPE LOSIES, BV. KOSHUIS, PRIVAAT, OUERHUIS / TYPE OF ACCOMMODATION, E.G. US RESIDENCE, PRIVATE			
LOSIESADRES / ACCOMMODATION ADDRESS			
POSADRES / POSTAL ADDRESS			
REKENING AAN (TITEL, VOORLETTERS, VAN) / ACCOUNT TO (TITLE, INITIALS, SURNAME)			
REKENINGADRES / ACCOUNT ADDRESS			

TELEFOON / TELEPHONE	WERK / WORK	kode / code	nommer / number	HUIS / HOME	kode / code	nommer / number
	SELFOON / CELLPHONE					

KORRESPONDENSIE– MERK VOORKEUR / CORRESPONDENCE– MARK PREFERENCE	eksamenuitslae / Exam results		Registrasie inligting / Registration info		Graduasie inligting / Graduation info	
	e-pos / email	brief / letter	e-pos / email	brief / letter	e-pos / email	brief / letter

E-POS ADRES / EMAIL ADDRESS						
HANDTEKENING (STUDENT) / SIGNATURE (STUDENT)		DATUM / DATE	D	D	M	M	J/Y	J/Y

* **BENODIG VIR REGERINGSDOELEINDES / REQUIRED FOR GOVERNMENT PURPOSES**
\# **SLEGS VIR BUITELANDSE STUDENTE / FOR FOREIGN STUDENTS ONLY**

KANTOORGEBRUIK / FOR OFFICE USE					
KWITANSIENOMMER		BEDRAG		BEAMPTE	

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B Inter-Institutional Center for Language Development and Assessment

Testing of postgraduate students

Academic success and language ability

Studies have shown that the best predictors of academic success are firstly preparedness for the teaching and learning context, for example the ability to think critically and logically, and, secondly, motivation (Pascarella & Terenzini, 2005). The former, however, cannot be separated from language ability, as one uses language to structure thoughts while seeking for information, processing information and producing information, whether it is by means of listening, reading, speaking or writing, or a combination of these, as it always happens to be (Van Dyk & Weideman, 2004; and Bachman & Palmer, 1996). This is illustrated in Lipman's observation that this ability

> … ranges from very specific to very general abilities, from proficiency in logical reasoning to the witty perception of remote resemblances, from the capacity to decompose a whole into parts to the capability to assemble random words or things so as to make them well-fitting parts of a whole, from the ability to explain how a situation may have come about to the ability to foretell how a process will likely eventuate, from a proficiency in discerning uniformities and similarities to a proficiency in noting dissimilarities and uniquenesses, from a facility in justifying beliefs through persuasive reasons to a facility in generating ideas and developing concepts, from the capacity to solve problems to the capacity to circumvent them or forestall their emergence, from the ability to evaluate to the ability to re-enact – the list is endless because it consists in nothing less than an inventory of the intellectual powers of mankind Coles and Robinson (1991:12).

Low levels of ability in the language(s) of teaching and learning are widely considered as one of the main reasons for a lack of academic success, even among those with high academic potential. This is particularly evident in the ability of first-year and postgraduate (master's and PhD-level) students who have a great deal of difficulty in dealing with prescribed material, and producing proper academic text (both orally and written). The international body of research moreover indicates that approximately ten percent of academic success can be ascribed to language ability (cf. McNamara, 1996). Similarly, Van Rensburg and Weideman (2002) emphasise the importance of language ability for students by stating that it is a *sine qua non* for completing one's studies successfully.

Since the percentage mentioned above is quite substantial (Van Dyk 2010), the immediate issue to be addressed is to respond to evidence of inadequate success in whichever way it manifests, whether it be by a decline in throughput rates, students expressing a need for support, or supervisors maintaining that their students on master's or doctoral level do not meet the linguistic requirements associated with postgraduate studies (Butler, 2007). If one furthermore considers that English is in most cases the *lingua*

franca for postgraduate studies and that a large number of students are additional language users of English, it is imperative that innovative solutions for the implementation of fully functional language policies and plans be developed. These underlie and guide the educational resources mustered to solve the problem. Such policies and plans should include, *inter alia*, clear descriptions of language levels according to international standards, and the necessary conditions to implement and facilitate support mechanisms for students and staff, such as tests and support courses. The need to identify students who are at risk of failing or dropping out , so as to make informed decisions and intervene with relevant support programmes, is therefore urgently required to increase student success and enable effective language development to take place (Wickham, Van Schalkwyk, Pym, Schreiber & Bozalek, 2009; Du Plessis, 2012; and Rambiritch, 2012).

The Inter-institutional Centre for Language Development and Assessment (ICELDA)

The Inter-institutional Centre for Language Development and Assessment, a partnership of four multilingual South African universities (Pretoria, Stellenbosch, North-West and the Free State), identified a need for the development of an integrated, standardised, reliable and valid test to measure the academic language ability of entry level postgraduate students. The purpose of this test would firstly be to determine whether students find themselves at risk as a result of too low a level of academic language ability, and, secondly, to identify specific problem areas that need to be addressed through different kinds of support, i.e. academic language development courses, workshops in academic reading and writing and in proposal writing, the development of academic speaking skills for oral presentations, listening skills development, support from a writing centre, etc.

The Test of Academic Literacy for Postgraduate Students (TALPS) was consequently developed. This test is highly reliable and valid. The ICELDA partnership is responsible for the standard administration of the test, for marking them, and for assisting in the interpretation of their results.

The Test of Academic Literacy for Postgraduate Students (TALPS)

TALPS is used in the first instance to determine whether students find themselves at risk as a result of too low a level of academic literacy. Should that be the case, such students may be advised to put plans into place to help develop their ability to handle academic discourse more competently. It tests a number of components of academic literacy, that allow it to assess whether students are able to:

- understand a range of academic vocabulary in context;
- interpret and use metaphor and idiom, and perceive connotation, word play and ambiguity;
- understand relations between different parts of a text, be aware of the logical development of (an academic) text, via introductions to conclusions, and know how to use language that serves to make the different parts of a text hang together;
- interpret different kinds of text type (genre), and show sensitivity for the meaning that they convey, and the audience that they are aimed at;
- interpret, use and produce information presented in graphic or visual format;
- make distinctions between essential and non-essential information, fact and opinion, propositions and arguments; distinguish between cause and effect, classify, categorise and handle data that make comparisons;

- see sequence and order, do simple numerical estimations and computations that are relevant to academic information, that allow comparisons to be made, and can be applied for the purposes of an argument;

- know what counts as evidence for an argument, extrapolate from information by making inferences, and apply the information or its implications to other cases than the one at hand;

- understand the communicative function of various ways of expression in academic language (such as defining, providing examples, arguing); and

- make meaning (e.g. of an academic text) beyond the level of the sentence.

The Academic Listening Test (ALT)

Listening to lectures, seminars, symposia, etc. is such an important part of university study, it seems logical that an assessment of academic listening could add new insights to the body of knowledge that is being gathered on the subject of academic success. Although some progress has been made on the "cognitive nature" of listening, it remains the least researched of the four language skills. It must, however, be remembered that language skills are inter-connected and cannot be dissociated. A lecture situation is a good example of this, where listening, writing and reading, combine to facilitate learning. The development of these skills can pose a problem for students (Lynch, 2011) particularly if they are second language speakers who are hampered by a general lack of linguistic, and therefore content, understanding. It is thus imperative that some of the cognitive factors, such as the role played by listening, which contribute to the academic success or failure of tertiary level students in South Africa, are identified. A recent development has therefore been the design and refinement of the Academic Listening Test (ALT). This test aims to measure the academic listening ability of students. The purpose of ALT is to assist other tests, like TALPS, in more accurate screening of students, particularly the borderline cases. Its reliability has already been proven and its validity is currently under investigation.

The test consists of five tasks:

- The first task comprises a lecture situation where the students listen to a 12 minute video extract from a Psychology 1 lecture and answer the multiple choice questions that follow. This task tests a candidate's ability to differentiate between main and subordinate information and whether the main themes can be identified.

- The second task is based on listening for detail, where a lecturer gives the class instructions on the completion of an upcoming assessment. Multiple choice questions follow the audio clip.

- The third task is a gap-fill exercise based on a summary of what is heard through the headphones, as opposed to the exact words delivered in the clip. It is an extract from a talk given on Foreign Direct Investment by a specialist from the Gordon Institute of Business Science. In this task, the candidates can listen to the audio file twice, before being asked to select the correct words from a list (this is to prevent spelling from becoming an assessment factor), which also includes additional words that serve as red herrings, and place them in the relevant spaces.

- In the fourth task, candidates listen to an informal discussion by two Law students on the legal aspects of euthanasia. The multiple choice questions, that follow, require test-takers to infer meaning, as well as to supplement gaps in the information from their own background knowledge.

- The final task introduces the idea of listening effectively in spite of a speaker having a strong foreign accent. The topic of the seminar extract is 'Climate Change' and the speaker has a broad South Korean accent, making his pronunciation difficult to decipher at times. The fact that he has an oriental accent, rather than being from somewhere in the west, is so as to increase the fairness for all

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test-takers, since the majority would be unfamiliar with this type of accent. Here too, the test-takers are required to take notes and answer the multiple choice questions that follow.

General enquiries

Internet address:

> http://sun.ac.za/icelda

Contact persons:

> Tobie van Dyk
>
> North-West University
>
> tobie.vandyk@nwu.ac.za

> Fiona Stanford
>
> Stellenbosch University
>
> fcm@sun.ac.za

> Albert Weideman
>
> University of the Free State
>
> albert.weideman@ufs.ac.za

> Jurie Geldenhuys
>
> University of Pretoria
>
> jurie.geldenhuys@up.ac.za

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C Process flow of examining Master's theses

PROCESS FLOW FOR EXAMINATION OF MASTER'S THESIS

PROCESS FLOW FOR EXAMINATION OF MASTER'S THESIS (continue)

SUPERVISOR
Option to submit thesis (without grade mark)

SUPERVISOR
Did student submit thesis without permission?

Previous page

YES

SUPERVISOR
Put student's research into context (orally or report)

YES →

SUPERVISOR
Write report and submit to PG Administration before the deadline

NO

SUPERVISOR
Finished?

NO →

SUPERVISOR
Any reason to submit report, e.g. right to appeal?

YES →

NO

YES

CHAIRPERSON EXAMINATION COMMISSION
Supervisor is excused

CHAIRPERSON EXAMINATION COMMISSION
Determine final mark

CHAIRPERSON EXAMINATION COMMISSION
Differ regarding pass or fail

← NO

CHAIRPERSON EXAMINATION COMMISSION
Consensus from ALL examiners regarding final mark?

NO →

CHAIRPERSON EXAMINATION COMMISSION
Marked difference in final mark (>20%)

YES

MANAGEMENT COMMITTEE
Arbitration re. final mark

CHAIRPERSON EXAMINATION COMMISSION
The outcome form is completed and signed

DEPARTMENTAL EXECUTIVE COMMITTEE
Determination of final mark

SHAREPOINT
MIng Eksamenkommissievorm - 2012.doc
MEng Examination Commission Form - 2012.doc

CHAIRPERSON EXAMINATION COMMISSION
Outcome form, and all documentation, is given to PG Coordinator

PG COORDINATOR
Outcome form, and all documentation, is given to PG Administration

SUPERVISOR
Serious concerns re. outcome?

YES →

SUPERVISOR
Written appeal is given to PG Coordinator

NO

PG COORDINATOR
Refer appeal to Management Committee or Departmental Executive Committee

MANAGEMENT COMMITTEE/ DEPARTMENTAL EXECUTIVE COMMITTEE
Appeal is investigated

MANAGEMENT COMMITTEE/ DEPARTMENTAL EXECUTIVE COMMITTEE
Can final mark be awarded?

PG ADMINISTRATION
Final mark loaded onto SU system

← YES

NO

PG ADMINISTRATION
Outcome form, and all documentation, is sent to Faculty Secretary

MANAGEMENT COMMITTEE/ DEPARTMENTAL EXECUTIVE COMMITTEE
Decide on further handling of thesis, e.g. appointment of new/additional examiners

Next page

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PROCESS FLOW FOR EXAMINATION OF MASTER'S THESIS (continue)

D Minimum standards for postgraduate dissertation/thesis examination procedures

MINIMUM STANDARDS FOR POSTGRADUATE DISSERTATION/THESIS EXAMI-NATION PROCEDURES

1. APPOINTMENT OF EXAMINERS
    1) Examiner appointments:
        a) M.Eng: One internal and one external examiner.
        b) PhD: One internal, and 2 external examiners. One of the external examiners must be an international examiner from a reputable university.
        c) The resumes of the external examiners must convince their expertise in the field being examined.
        d) None of the examioners must have had a prior connection to the research conducted. Note the other requirements as well in the appointment form.
        e) The supervisor need to ensure that the examiner knows beforehand the expected timescales when examination is to be conducted.
        f) If a supervisor believes that no suitable internal examiner exists, an additional external examiner may be appointed. The honorarium will be payable from the supervisor's research fund in this case. (Honorariums for external examiners are otherwise paid by the faculty)
    2) The study leader(s)/supervisor(s) nominate the examiners in writing, on condition that the examiners have been consulted prior to the nomination and that the independence of the external examiner(s) has been confirmed on the form. The template *Appointment* of Postgraduate Examiners-2019.doc, as well as the corresponding Afrikaans version, is available for this purpose on SharePoint.
    3) The nominations are submitted to the Departmental Executive Committee and, upon approval thereof, sent to the Faculty Secretary for placement on the agenda of the next Faculty Committee. Supervisor's need to plan this carefully – the appointment process should be complete before the thesis or dissertation is distributed to an examiner.
    4) Following approval by the Faculty Committee, and thereafter final approval by the Faculty Board, appointment letters are sent out by the Faculty Secretary. The study leader(s)/supervisor(s) may under no circumstances get in touch with the examiners with regards to the candidate for as long as the examination process has not yet been completed.
    5) Once the examiner is appointed, the supervisor may not discuss the thesis or dissertation with the examiner, until after the examination is completed.

2. SUBMISSION OF DISSERTATION/THESIS
    1) It is the responsibility of the study leader(s)/supervisor(s) to verify that the content and editorial care of the dissertation/thesis is of acceptable quality.
    2) The student submits the dissertation/thesis to *Turnitin*, in order to ensure that the candidate responsibly made use of citations and references.
    3) In the case of a dissertation/thesis having been classified as secret, the document is not submitted to Turnitin, but instead it becomes the responsibility of the study leader(s)/supervisor(s) to ensure that the document is above reproach

with regards to plagiarism.

4) A designated person, aside from the study leader(s)/supervisor(s), checks a random sample with regards to the editing of the dissertation/thesis, and reports the submission suitability of the document to the study leader(s)/supervisor(s).

5) The study leader(s)/supervisor(s) gives written permission for the dissertation/thesis to be submitted for examination. The template Declaration M.Eng supervisor - 2019.doc and Declaration PhD promoter-2019.doc, as well as the corresponding Afrikaans versions, are available for this purpose on SharePoint.

6) If the study leader(s)/supervisor(s) does not give permission for the dissertation/thesis to be submitted, the candidate may insist that his dissertation/thesis be examined. In such a case it is required that the study leader(s)/supervisor(s) submit a report, by the due date for submission of examiners' evaluation reports. The Examination Commission will review the report upon completion of the examination process.

7) It is the prerogative of the study leader(s)/supervisor(s) to submit a clarifying report on the dissertation/thesis, by the due date for submission of examiners' evaluation reports, at the designated departmental officer. The latter is only valid if no attempt is made to influence an examiner, no grade is recommended (in the case of a thesis) or no recommendation is made with regards to the outcome (in the case of a thesis). If it so happens that there are serious objections with regards to the official result, such a report will ensure that the study leader(s)/supervisor(s) has the right to appeal.

8) The student submits the required number of copies of the dissertation/thesis at the postgraduate departmental officer who is responsible for distributing the documents. (An attempt is made to determine if an examiner prefers an electronic or physical copy – however, no attempt must be made to influence an examiner to select either an electronic or physical copy. The default is always a physical copy.)

3. DISTRIBUTION OF DISSERTATION/THESIS

1) In addition to the following documentation, the postgraduate departmental officer who is responsible for distributing the documents sends the dissertation/thesis to the internal and external examiner(s) – preferably by courier to the external examiner(s):

    a) A cover letter that identifies the candidate and indicates the deadline for submission of the evaluation report.

    b) The evaluation report form, of which the master template *M.Eng report form - 2019.docx or PhD report form - 2019.docx*, as well as the corresponding Afrikaans versions, are available for this purpose on SharePoint.

    c) The Faculty Secretary initiates the payment for external examination by, upon completion of the evaluation process, sending claim forms to the external examiner(s).

2) The written letter of consent, which confirms that the dissertation/thesis may be submitted for examination, is not sent to the examiner(s).

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4. RECEIPT OF DISSERTATION/THESIS EVALUATION REPORTS

1) The postgraduate departmental officer, who is responsible for receiving the evaluation reports, ensures that all reports are received by the due date. Timely reminder messages for the examiners may sometimes be necessary.

2) The Postgraduate Coordinator and study leader(s)/supervisor(s) are notified once all the evaluation reports have been received. The study leader(s)/ supervisor(s) are requested, in consultation with the Postgraduate Coordinator (who is responsible for appointing the Chairperson of the Examination Commission), to schedule an oral examination.

3) The study leader(s)/supervisor(s) now has full access to the examiners' evaluation reports and may, if the examiner(s) indicate it as such on the report form, share the feedback with the candidate. The grade point (in case of M.Eng), as recommended by the examiners, may however not be conveyed to the candidate. Seeing that the candidate is at this stage not allowed to contact any of the examiners, THE CANDIDATE IS NOT ALLOWED TO KNOW THE IDENTITY OF THE EXAMINERS AT THIS STAGE.

5. ORAL EXAMINATION

1) The Examination Commission consists of an independent Chairperson (the appointment of the Chairperson is confirmed by the relevant Post-graduate Coordinator), the internal examiner, and at least one of the external examiners. An examiner who is available via telephone, Skype, or a similar acceptable connection technology, is regarded as present.

2) If an external examiner is unable to be present, he/she can send a list of questions to the Chairperson, who in turn will present these questions to the candidate.

3) The Chairperson is in possession of all the examiners' evaluation reports and recommendations.

4) The candidate submits a copy of the journal article on his research. In the case of an M-thesis, it is the study leader(s) prerogative to submit the article to a journal for publication, or to hold it back. In the case of a doctoral dissertation, the article should have been sent off prior to the oral. It is not required that the journal article be sent off in the case of a dissertation/thesis that has been classified as SECRET.

5) The candidate has the opportunity to deliver a presentation (20 minutes for M.Eng and 30 minutes for PhD) on his/her research. This presentation is open to the public and general questions may be posed to the candidate at the end of his/her presentation.

6) In the event of the presentation and the examination process following one after the other, the general public is excused and only the members of the Examination Commission, the study leader(s)/supervisor(s), and the candidate remain for the formal examination process.

7) The Chairperson now facilitates the candidate's examination by the examiners.

The study leader(s)/supervisor(s) does not participate in the question session.

8) Upon completion of the question session (and after the candidate has been excused), the study leader(s)/supervisor(s) are given the opportunity to put the candidate's research into context with regards to issues such as workload, autonomy, unique contributions, etc. The report by the study leader(s)/supervisor(s) is now, if submitted, presented by the Chairperson to the Examination Commission for consideration.

9) The study leader(s)/supervisor(s) is now excused and the Chairperson attempts to reach consensus with regards to the grade point (for M-theses) and the outcome (for doctoral dissertations).

10) In a case where no initial consensus on the final grade mark or outcome can be reached, all the examiners must be consulted in determining the grade mark or outcome, even if an examiner was not present at the oral examination.

11) Once consensus is reached, the outcome is recorded on the Examination Commission Form and signed by the members present. The template M.Eng Examination Commission Form - 2019.doc or PhD_DEng Examination Commission Form - 2019 .doc, as well as the corresponding Afrikaans versions, are available for this purpose on SharePoint.

12) If consensus cannot be reached, the situation is handled as follows:

a) If the candidate passes, but there is a huge difference in the grade mark (typically greater than 20%), and if the examiners stick to the original grade mark that was awarded, then the case is referred to the Departmental Executive Committee for a final decision.

b) If the candidate fails, and the examiners stick to their original standpoint, then the case is referred to the Faculty Management Committee for a final decision.

c) The Departmental Executive Committee / Faculty Management Committee may decide to appoint additional examiners.

13) The Chairperson returns the Examination Commission Form (and all the evaluation reports and recommendations) to the postgraduate administrative officer, who, in consultation with the Postgraduate Coordinator, is responsible for capturing the final grade mark/outcome on the SU system.

14) The study leader(s)/supervisor(s) has the right to appeal if the study leader(s)/supervisor(s) has serious objections regarding the final outcome of the Examination Commission, and if a report was submitted on time. Written appeal must take place via the relevant Postgraduate Coordinator, who can then refer it to the Departmental Executive Committee or the Faculty Management Committee for further handling.

15) The required editorial changes should now be implemented in consultation with the study leader(s)/supervisor(s). THE CANDIDATE WILL NOW KNOW THE IDENTITY OF THE EXAMINERS, AS WELL AS THE FINAL GRADE MARK THAT HAS BEEN AWARDED.

16) If the study leader(s)/supervisor(s), or the examiners, are satisfied with the edited dissertation/thesis, the study leader(s)/supervisor(s) should inform the

postgraduate administrative officer in writing (usually via email) that the pdf version of the document can be loaded onto the SU database.

17) The supervisor must now nominate on the SunScholar, the the student who will upload the dissertation/thesis onto the SU database.

18) The dissertation/thesis is uploaded to the SU database by the student.

19) The supervisor must accept the submission.

20) The candidate must supply the study leader(s)/supervisor(s) with at least one hard copy of the final dissertation/thesis.

E   Applying for consent to interrupt M.Eng or PhD studies

Faculty of Engineering
Application for consent to interrupt M- or D-studies

STUDENT			
Name:			
Degree programme:		Student number:	
Supervisor:			
Signature: (Student)			

MOTIVATION
Only the situation at work, medical reasons, financial reasons and highly special personal circumstances, with appropriate supporting documents, are valid reasons for consent to interrupt studies.

PERIOD OF INTERRUPTION OF STUDIES				(Mark with cross)
MEng	1 year			
PhD	1 year		2 years	

DEPARTMENTAL RECOMMENDATION			
Was application submitted before 30 April? (YES/NO)			
Is interruption recommended? (YES/NO with reasons)			
Signature: (Supervisor)		Date:	
Signature: (Departmental Chair)		Date:	

The recommendation must be sent to the Faculty Secretary, irrespective of the outcome of the recommendation, with a copy to the Departmental Postgraduate Coordinator.

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F Reregistration after exceeding maximum allowable time

PROPOSED PROCEDURE FOR THE RE-ADMISSION OF POSTGRADUATE STUDENTS WHO EXCEED THE MAXIMUM TIME ALLOWED TO GRADUATE

1. Master's and doctoral students who, at the end of the current year, exceed their maximum permissible period within which to graduate in that year, are warned via email by the Faculty Secretary in June of that year that they will not be able to automatically register for the next academic year.

2. Qualifying master's and doctoral students are informed via email by the Faculty Secretary in November that, in the following year, they will exceed their allotted time within which to graduate, and that they cannot continue their studies without first obtaining permission from the department concerned.

3. The list of students is sent to the relevant department's Postgraduate Coordinators, Departmental Chairs and the Vice Dean (Research).

4. The students concerned must submit documents for re-admission to the Office of the Departmental Chair by 15 January, for consideration by a departmental committee / management committee.

5. The departmental recommendations (with motivation) regarding the re-admission of master's students are sent by 31 January to the Vice Dean (Research) for final approval, after which it is sent to the Faculty Secretary, who will then officially inform the students regarding the Faculty's decision.

6. The departmental recommendations (with motivation) regarding the re-admission of PhD students are sent to the Faculty Secretary, with copies sent to the Vice Dean (Research). The recommendations must reach the Faculty Secretary by the closing date of the Faculty Committee's agenda, so that it can serve at the first Faculty Council meeting in February.

7. The department will only support students' application to exceed the maximum period of enrolment under exceptional circumstances.

8. The department is under no obligation to support a student's application to exceed the maximum period of enrolment.

G Discontinuation of M.Eng studies

Administrasie en Dienste
Akademiese Administrasie

STAKING VAN STUDIE / *DISCONTINUATION OF STUDIES*

A.   VERKLARING / *DECLARATION*

Hiermee gee ek skriftelik kennis van my staking van studie, en dus van my hele registrasie as student, met ingang van
I hereby give notice in writing of discontinuing my studies and hence my registration with effect from

Datum / *Date*: _____

Minderjariges: Ek het reeds my ouers / voog / beursgewer verwitting.
Minors: I have informed my parents / guardian / bursary donor.

My rede(s) vir staking van studie / *My reason(s) for discontinuing my studies*:

_____

_____

B.   PERSOONLIKE BESONDERHEDE / *PERSONAL PARTICULARS*
Studentenr / *Student No*:   Voorbeeld / *Example*: 13045841-2001

								-				

Van / *Surname*: _____

Volle naam / *First names*: _____

Program / *Programme*: _____

Universiteitskoshuis, Huis, Woonstel / *University Residence, House, Flat*:

_____

C.   BANKBESONDERHEDE / *BANK DETAILS*
Bank / *Bank*: _____
Bankrek no / *Account nr*: _____
Takkode / *Branch Code*: _____
Tipe rekening / *Type of Account*: _____
Naam van rekeninghouer / *Name of account holder*: _____

LW: Indien u van Universiteitsbehuising gebruik maak, MOET u u behuising by die Afdeling Toelating en Losies in Blok A formeel kanselleer.
PLEASE NOTE: If you have been making use of University accommodation, you MUST cancel your accommodation formally with the Division for Admissions and Accommodation in Block A.

Adres waarheen enige korrespondensie gestuur moet word:
Address to which any correspondence should be sent:

_____

_____

_____Poskode / *Postcode*: _____

Telefoonnommer / Selfoonnommer: _____

_____   _____
HANDTEKENING / *SIGNATURE*   DATUM / *DATE*

Faksnr: (021) 808 3822

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H Proposed Process for PhD Selection and Readmission for Faculty of Engineering

MINIMUM STANDARDS REGARDING PHD REGISTRATION

1. The prospective student and possible supervisor come to a verbal agreement regarding a possible field of study.
2. If the supervisor is willing to accept the student, the short application form for registration as a PhD candidate is completed and signed by both the supervisor and the student.
3. The application form and academic transcript of the prospective student are submitted for approval by the departmental Admissions Committee and, if so approved, the signature of the Chair. Typically the Admissions Committee comprises of at least 3 persons with PhD qualifications, of which two members are not involved in the particular study, and where at least one person is appointed on the same level as the proposed supervisor. The Committee may request additional information (such as a CV) to help in making the decision.
4. The signed form is sent to the Faculty Secretary, who then registers the student, without a dissertation subject.
5. The student has a maximum of twelve months from the beginning of the semester of first registration to formulate a research proposal with a descriptive title, in collaboration with the supervisor. The student's registration will lapse unless the research proposal is submitted, at the latest, to the first meeting of the Faculty Council after the expiration of the twelve month period.
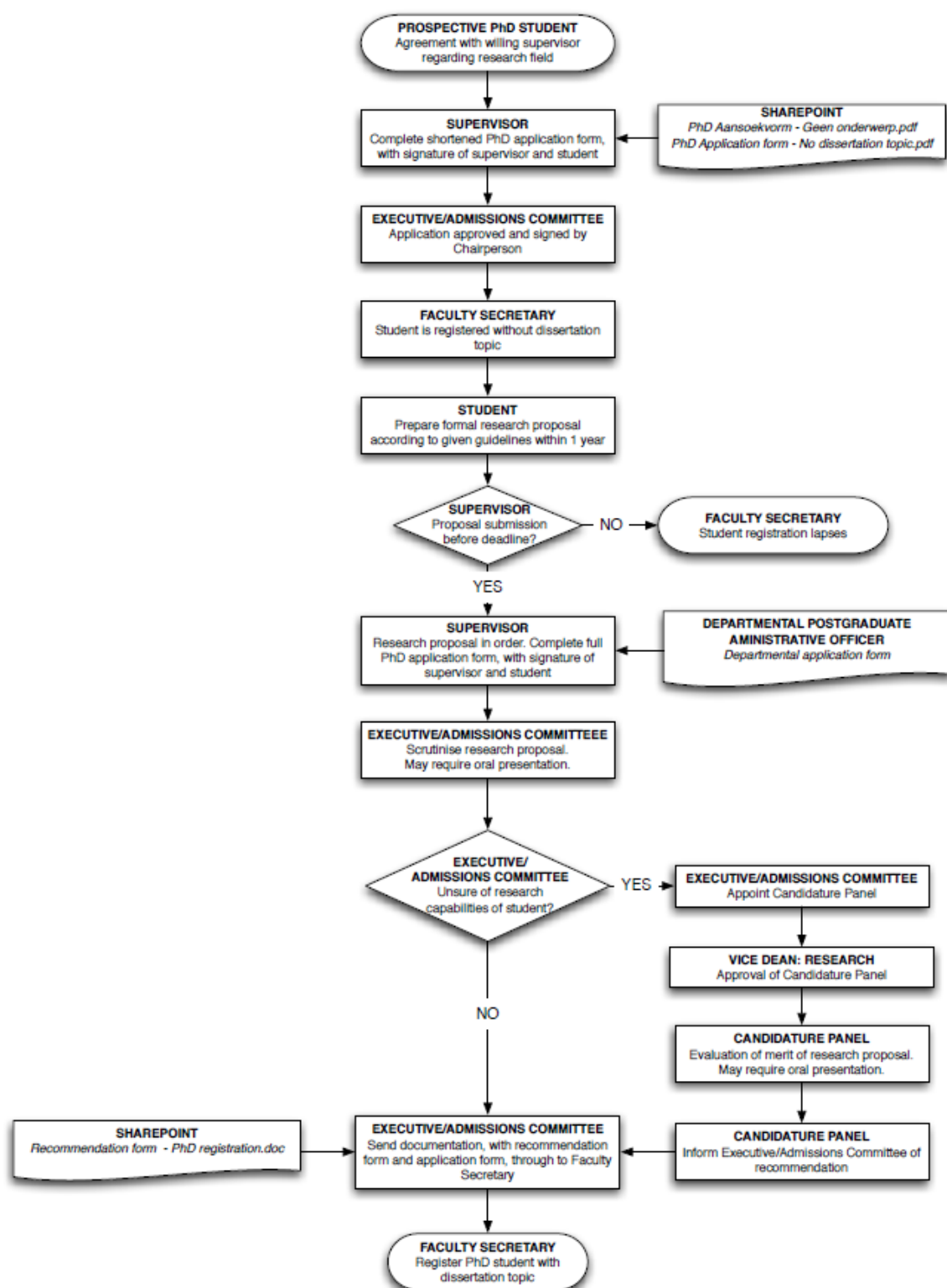
    The research proposal, typically 20 to 30 pages in length, should contain at least the following information:
    5.0. An extensive exposition of literature relevant to the PhD studies as well as a synthesis and evaluation of the most important themes found in the literature.
    5.1. A clear explanation of the study's objectives with specific reference to how it relates to previously published work and what the expected original contribution of the study will be.
    5.2. A description of the research methodology proposed in order to attain the set objectives.
    5.3. A broad time schedule for the study, typically in terms of 4-10 activities, with a short description of the focus of each.
    5.4. A clear explanation of the infrastructure (software, equipment, laboratories, operating costs etc) necessary to complete the study, as well as arrangements that have been made to ensure its availability.
    5.5. A critical self evaluation by the student of the progress made to date.
6. In addition to the research proposal, an Executive Summary (maximum of 600 words) must be prepared by the student. Only the following information must be contained in the document:
    6.1. The title of the research project.
    6.2. Name of student.
    6.3. Name of supervisor(s).
    6.4. The body of the Executive Summary with the following numbered sections:
        6.4.1. A short summary of the research project and the goals of the study.
        6.4.2. The anticipated unique research contribution(s) of the study.
        6.4.3. A broad time framework for the study, typically in terms of 4 to 10 activities.
7. When the supervisor is satisfied with the research proposal it is submitted, together with the separate Executive Summary and the prescribed PhD application form, signed

by both the student and the supervisor, to the departmental Admissions Committee. The Committee may request that the candidate make an oral presentation and/or to request that the research proposal be revised and resubmitted for consideration.

8. If the supervisor(s) is(are) not satisfied with the research proposal or if the departmental Admissions Committee decides that further opinion should be sought regarding the research proposal and/or the student's research capabilities, a Candidature Panel is appointed, comprising the proposed supervisor(s) and at least two further knowledgeable people, at least one of whom should be from outside the home department. The Vice Dean: Research must approve the proposed Candidature Panel. It is important to note that the rejection of a research proposal can only by recommended by a Candidature Panel.

9. The Candidature Panel adjudicates the research proposal and makes a recommendation to the departmental Admissions Committee. The Candidature Panel may request that the candidate make an oral presentation and/or to request that the research proposal be revised and resubmitted for consideration.

10. The Candidature Panel's recommendation is then made known to the departmental Admissions Committee.

11. After acceptance of the research proposal by the departmental Admissions Committee, the recommendation form (*Recommendation form - PhD registration.doc*) is completed and the prescribed PhD application form is signed by the Chair and then sent, together with the Executive Summary and the research report, to the Faculty Secretary for inclusion in the agenda of the Faculty Committee for approval.

12. The recommendation form and the Executive Summary serve at the Faculty Committee for approval. The research proposal is available online as a pdf document.

13. After approval by the Faculty Council, the subject of the dissertation is entered in the existing academic record of the student.

I   Process flow for PhD Registration

PROCESS FLOW FOR PHD REGISTRATION

PROSPECTIVE PhD STUDENT
Agreement with willing supervisor regarding research field

SUPERVISOR
Complete shortened PhD application form, with signature of supervisor and student

SHAREPOINT
PhD Aansoekvorm - Geen onderwerp.pdf
PhD Application form - No dissertation topic.pdf

EXECUTIVE/ADMISSIONS COMMITTEE
Application approved and signed by Chairperson

FACULTY SECRETARY
Student is registered without dissertation topic

STUDENT
Prepare formal research proposal according to given guidelines within 1 year

SUPERVISOR
Proposal submission before deadline?

NO → **FACULTY SECRETARY**
Student registration lapses

YES

SUPERVISOR
Research proposal in order. Complete full PhD application form, with signature of supervisor and student

DEPARTMENTAL POSTGRADUATE AMINISTRATIVE OFFICER
Departmental application form

EXECUTIVE/ADMISSIONS COMMITTEEE
Scrutinise research proposal.
May require oral presentation.

EXECUTIVE/ ADMISSIONS COMMITTEE
Unsure of research capabilities of student?

YES → **EXECUTIVE/ADMISSIONS COMMITTEE**
Appoint Candidature Panel

VICE DEAN: RESEARCH
Approval of Candidature Panel

CANDIDATURE PANEL
Evaluation of merit of research proposal.
May require oral presentation.

NO

CANDIDATURE PANEL
Inform Executive/Admissions Committee of recommendation

SHAREPOINT
Recommendation form - PhD registration.doc

→ **EXECUTIVE/ADMISSIONS COMMITTEE**
Send documentation, with recommendation form and application form, through to Faculty Secretary

FACULTY SECRETARY
Register PhD student with dissertation topic

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J Thesis Style Guide

Note on the length of theses/disserations:
M.Eng 100% research: recommended maximum length of core thesis: 150 pages
PhD: recommended maximum length of core dissertation: 250 pages

SECTION B

THE TECHNICAL EDITING

OF

MANUSCRIPTS

CONTENTS

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THE ABRIDGED HARVARD REFERENCE SYSTEM THAT IS RECOMMENDED (SEE SECTION C) IS ADAPTED FOR USE BY STUDENTS OF THE FACULTY OF EDUCATION, UNIVERSITY OF STELLENBOSCH

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THE TECHNICAL EDITING

OF

MANUSCRIPTS

INTRODUCTION

An assignment, thesis or dissertation must offer proof that you

- have the ability to do independent research
- can come to specific, valid conclusions concerning the subject of study
- can combine the data that are obtained and/or the results of the inquiry into a logical and rounded whole
- can convey all the information that is obtained in a concise, clear and meaningful way to the reader.

In the course of the study or inquiry, you will have to study sources

- to orientate yourself to the field of study in which the inquiry will be conducted,
- to scrutinise authoritative viewpoints or opinions or specific research on aspects of the field
- to gain more information about the subject.

Your writing must demonstrate an

- honesty and freedom from bias
- logical coherence and clarity
- thoroughness and comprehensiveness
- clear formatting and attention to detail.

The submitted work will be assessed on

- the content
- the quality of research
- the logic of the argument
- how systematic the presentation is
- the style of writing, formulation and language usage
- the professionalism of the technical production.

Section B provides guidelines on the kind of submitted work that is acceptable to the Faculty of Education. The following aspects of a thesis/assignment/portfolio/dissertation are discussed:

- preparation for the study/inquiry
- the format and presentation of the text
- the compilation of a thesis/assignment or dissertation
- the presentation of illustrative and reference material, and
- the reference system that the student should use.

1. PREPARATION FOR THE RESEARCH

1.1 INTERPRETATION OF THE TOPIC

After the study topic has been finalised, first clarify how it **is to be interpreted** and what the **its scope** should be. It will then be necessary **to read** extensively in the field of study in which the topic has to be studied.

1.2 SEARCH FOR SOURCES

In trying to find relevant literature, it is advisable to begin with general sources (such as indexes) which will help you find bibliographies that will put you on the track of topic-related sources. The **University librarians** can assist you in initiating a search for sources.

Sources should be chosen carefully because the quality of the eventual product depends on the nature and status of the sources that are chosen. Unless the historical origin and course of an item or the topic also have to be traced, it is advisable to give more attention to contemporary sources because they offer the latest research findings.

1.3 LITERATURE STUDY

A search for sources should also involve an intensive period of reading during which you orientate yourself to the subject and develop the capacity to analyse and evaluate the information that is obtained. Eventually you will be in a position to begin systematising the information and so finally to arrive at a synthesis of it. Only then should you try to articulate your personal insights on the topic.

1.4 SCOPE OF THE RESEARCH

Generally, a research design includes both quantitative and qualitative research. A **doctoral dissertation** will require research of greater scope than a **master's thesis**, while the nature of the topic of a **research portfolio/assignment** or **50% thesis** will probably demand an inquiry on a smaller scale. Whatever the scope of the research may be, the student will probably first have to consult a variety of sources (and resource people), before planning the actual research.

Planning the research will include the following:

the steps to be followed (the planning framework)
the nature of the information to be collected
the data gathering techniques to be used
the design of the questionnaires, activities, etc
the people to be involved in the inquiry.

1.5 CONSULTATION WITH THE SUPERVISOR/PROMOTOR

The student ought to consult the supervisor/promotor regularly particularly in the initial stages of the research

to ensure that the topic is being interpreted correctly
to ensure the appropriateness and feasibility of the planned enquiry
to obtain approval relating to certain aspects
to report on progress.

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1.6   PERMISSION TO DO THE RESEARCH

Depending on the nature of your inquiry you may need to obtain the approval of institutions (for example, an education department or a school governing body) or persons before the inquiry can be launched.   The supervisor/promotor will be able to give the necessary advice on the steps to be followed.

1.7   PROFESSIONAL PRESENTATION

All work should be word-processed and edited before being submitted.   Preliminary work should already show evidence of logic, thoroughness, organisation and refinement of ideas.

2. FORMAT AND PRESENTATION OF SUBMITTED WORK

2.1   UNIVERSITY REQUIREMENTS

2.1.1   Theses and dissertations
Apart from this manual, the **US Calendar, Part 1** should also be studied with regard to

    requirements for theses/assignments for master's studies and dissertations for doctoral degrees
    the form and format in which these should be submitted
    copies that are needed for examining and later of the completed manuscript
    the duplication and binding of theses/assignments/dissertations
    the publication of theses and dissertations or part thereof.

2.1.2   Research portfolios and research assignment
A student who has to submit a research portfolio or research assignment should discuss the nature, scope and format with the supervisor.

2.1.3   Submission of the final manuscript
A final and original copy of the dissertation or thesis (100% or 50%) should be submitted to the printing department of the US **at least 10 working days** before the relevant degree ceremony. Comprehensive regulations in this regard are clearly set out in the **US Calendar, Part 1**.

2.2   FACULTY STIPULATIONS

2.2.1   Form of presentation
Your work must be presented in word-processed form.   Unless the supervisor/promotor arranges otherwise with the student, handwritten texts may not be submitted.   Perforated computer paper will not be accepted.

The **compilation** of theses and dissertations is discussed in **par 3 of this section**.

2.2.2   Format of the submitted work

Paper	- White Bond paper, A4 size (80g thickness), on one side only
Paragraphs	- Block format
Spacing	
Text	- Double spacing (or one-and-half line spacing)
References	- single spacing with an open line between each entry
Footnotes	- single spacing
Appendices	- single spacing
Margins	- 2cm width around the written section
Font size	- Font 10-12 for the text (as prescribed by the University)
Headings	- Bold
Page numbers	
Title page	- No page number
Introductory pages	- Small Roman numerals, at head of page, centred
Text	- Arabic numerals, without a stop, at head of page, centred
Reference lists	- Continuous with the text
Appendices	- Continuous with the reference lists
Paragraph numbers	- Arabic numerals

Sub-paragraphs	- 3.2
	- 3.2.1
	- 3.2.1.1
	- **Thereafter:** Small Roman numerals: (I), (ii), (iii), etc.
	- **Thereafter:** Small letters: (a), (b), (c), etc.
	OR
	- **Symbols** (*bullets*) in a consistent sequence.

2.3 REFERENCE SYSTEM

2.3.1 The abridged Harvard System

The abridged **Harvard system** (see **Section C**) is recommended for students of the Faculty of Education. Another reference system may, however, be used if the supervisor/promotor so desires. The student should consult the supervisor/promotor in this regard.

2.3.2 Preliminary work

Preliminary chapters: A list of the sources that have been consulted for a particular chapter should always accompany the preliminary chapters. Find out whether the preliminary chapters should be bound or not.

Final manuscript for examination: A complete reference list should of course accompany the final manuscript. The number of copies that has to be submitted for examination/evaluation purposes will depend on the number of examiners that has been assigned (consult the supervisor/promotor and the **US Calendar, Part 1**).

2.3.3 Illustrative or reference material

Preliminary chapters: Relevant graphic work, tables, appendices and other essential illustrative material should also accompany the preliminary chapters.

Final manuscript: The final manuscript that is submitted to the examiners should contain all illustrative or reference material (see also **US Calendar, Part 1**).

3. THE COMPILATION OF A THESIS OR A DISSERTATION

The completed thesis/assignment or dissertation consists of five distinct parts:

Title page: Not numbered.
Introductory pages: Numbered with small Roman numerals.
Text: Numbered from page 1.
Reference list (list of sources): Numbered continuously with the text.
Illustrative material (appendices): Numbered continuously with the text and the list of sources.

3.1 TITLE PAGE

The **US Calendar, Part 1** sets out clearly the university's requirements regarding the compilation of the title page, the format and the essential information that has to be distributed across the title page. Some aspects are discussed here.

Complete title: From the beginning of the studies, the title should be formulated as briefly but as comprehensively as possible. The title on the title page may not differ from the **registered** title (which has been approved officially and in writing by die Faculty Council and the Senate at the first registration). The title may be altered only with permission and by being re-registered. The subsequent **cover** title of the final, bound copy may however be shortened on the spine in consultation with the binder.

Initials and surname of writer: No title is indicated; only one first name is given in full.

Degree/degrees already achieved: The degree/degrees that the writer has already achieved are placed on the line just after the author's name. The name of the degree must be written as it is stated on the degree certificate.

Indication if this is an assignment/thesis/dissertation: The following formulation is obligatory:

Thesis 100%: **Thesis submitted in partial fulfilment** **of the requirements for the degree of** **Master of Education** **at the** **University of Stellenbosch** **Thesis/Research Portfolio/Assignment (50%):** **Thesis** (or Research Portfolio or Assignment) **submitted in partial fulfilment** **of the requirements for the degree of** **Master of Education** **at the** **University of Stellenbosch** **Dissertation:** **Dissertation presented for the degree of** **Doctor of Education** **at the** **University of Stellenbosch**

Title, initials and surname of supervisor/promotor

Date: The **month** and **year** in which the degree will be received.

3.2 OTHER INTRODUCTORY PAGES (BEFORE CHAPTER ONE)

3.2.1 Declaration of originality
This declaration is inserted on a separate page immediately after the title page and is formulated according to university requirements. It is set out as follows:

DECLARATION **I, the undersigned, hereby declare that the work contained in this dissertation** (or thesis/research portfolio/assignment) **is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.** *Signature:* …………………………………….. *Date:* ……………………………………………

3.2.2 Abstracts in Afrikaans and English
An abstract of about 500 words in both Afrikaans and English, on separate pages, must precede the text. The abstract states very succinctly the problem that is investigated, the method and procedure that are followed and the findings of the inquiry. If the thesis/dissertation is written in Afrikaans, the Afrikaans abstract is placed first. If it is written in English, the reverse applies.

3.2.3 Acknowledgements
It is usual (but not essential) for the writer to thank certain people for help or guidance with the completion of the thesis or dissertation. Occasionally the work is also dedicated to someone. An acknowledgement should preferably be limited to **one** page.

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3.2.4 Table(s) of contents of the text

The work as a whole ought to be provided with a table of contents with page references. This gives the reader a general view of the contents and makes it easier to consult the work. The heading for this is **CONTENTS** (capital letters and centred).

Each **chapter** may also be provided with a table of contents in which main and sub-paragraphs are indicated.

The **headings** for chapters and main or sub-paragraphs should be represented in the table of contents **exactly as written in the text**.

3.2.5 Table of contents of the source material

Immediately after the table of contents of the text, the reference and illustrative material is mentioned (with page references), for example:

REFERENCES …………………………..	**210**	
APPENDIX A …………………………..	**215**	
APPENDIX B …………………………..	**231**	etc

3.2.6 Table of contents of the tables, figures and other graphic material

On separate pages, after the list of reference material, lists of the tables and figures and other graphic material (with numbers, titles and page references) respectively.

3.3 THE TEXT

Together with this, consult Section C of the Guidelines.

The term **text** refers only to the content of the thesis, assignment or dissertation. The tables of contents, reference list, appendices and illustrative or reference material are thus not included here.

3.3.1 Presentation of the information or research results

3.3.1.1 Presentation style

The nature of the research will to a large extent determine the style of presentation of the information. Consult your supervisor/promotor in this regard.

3.3.1.2 Terminology

If you wish to use terms in a specific context or attach specific connotations to them, or use words that are possibly unknown to the reader(s), explain these terms either on a separate page before the start of the text or in the first chapter of the thesis or dissertation. Words from another language that are used once may be explained by adding the meaning, or the translation or the familiar form after the word, for example: *abantwana* (boys).

3.3.1.3 Chapter division

Chapters should reflect the logical course of the study.

The contents of the **first chapter** may be finalised in consultation with the supervisor/promotor. Usually this chapter serves as an introduction to the problematic aspect of the research topic. Items such as the following may be discussed in it:

> **statement of the problem and formulation of aim:** a succinct formulation of the aim of the research
> **demarcating the field:** the nature and scope of the research
> **literature survey:** a survey of previous research that has been conducted in this particular field or of works that deal with the particular topic or problem
> **research design** which includes the **method of inquiry and/or procedure of inquiry** that will be followed

explanation or definition of concepts so that the reader will interpret the specific concepts within the framework of the assignment/thesis/dissertation.

In the **subsequent chapters** the content is presented in the order agreed to with the supervisor/promotor.

Provide each of the **preliminary chapters** with a table of contents, also when they are submitted individually for a first evaluation, and number the pages again from page 1. Only with the **final copy** are the pages of the text and the tables of contents of the chapters numbered continuously from page 1 of chapter one.

Each chapter begins on a **new page**.

The **title** of the chapter is centred and written in **bold** capital letters.

Each chapter should have an **introductory paragraph** and should be concluded with a succinct **summary**. Such a summary may also include a **link with or connection to** the contents of the following chapter(s).

3.3.1.4 Paragraphs

Paragraph division should reflect the essentially argumentative nature of theses and dissertation. A thesis or dissertation can not just be a compilation of other people's points of view and ideas – or of relevant material – on a topic. Quotations, information and inquiry data should **serve a specific purpose** (such as supporting or refuting a particular proposition) and/or **be critically analysed**.

Sub-paragraphs should be limited to those that are really necessary for the logical exposition of the subject or problem. A thesis/assignment/dissertation is not just an inventory of other writers' opinions or research, and is also not just a manual for the reader (with lists of hints or proposals offered in sub-paragraphs), but deals with research that is undertaken to resolve a particular problem or to present information that will support or reject a particular hypothesis.

Paragraph headings: Paragraphs and sub-paragraphs should have appropriate and succinct headings. The headings of the **main sections** (for example, **2** and **2.1**) are typed in **capital letters** and in **bold** (not underlined). Different font sizes may however be used. The **US Calendar, Part 1** contains prescriptions regarding the font size of the text itself. The headings of **subsections** (in **bold**) that follow are written in small letters, naturally with the exception of the first letter. If for practical reasons an exception has to be made to this, the change should be applied consistently. Consult the supervisor/promotor in this regard.

EXAMPLE OF POSSIBLE FONT FORMATS

Font type = Arial (computer)

CHAPTER TWO	(14)
MANAGEMENT STYLES	(14)

2.1	A DEMOCRATIC MANAGEMENT STYLE	(12)
2.1.1	Introduction	(12)
2.1.1.1	Historical perspective	(12)

HINTS

Prior **paragraph planning** can ensure that each paragraph follows logically on the other. The paragraphs may be rearranged later if they do not contribute to the logical build-up of the argument, description, etc.

Logical progression may be, for example, from the broader perspective to the narrower, from the international perspective to the more local, sequence according to passage of time, from the beginning of the process to the end, etc.

Classify in categories the information that is to be used in a particular paragraph before the paragraph is arranged in a **logical order**. Give **temporary headings** to sub-paragraphs under a particular broad argument, description or exposition to serve as guidelines and to keep your train of thought on track as you write.

Example:
ATTITUDES REGARDING MULTICULTURAL EDUCATION
Community / Parents / School / Teachers / Learners / Individual learner
(The paragraphs are arranged from a broader to a narrower perspective).

3.3.2 Technical editing of the text

3.3.2.1 Language editing
The **final** manuscript of the thesis or dissertation should be edited for language usage according to **university requirements** (see **US Calendar, Part 1**) before the final copy is submitted. **Preliminary** work must satisfy the language requirements of the supervisor/promotor.

3.3.2.2 Pagination
Preliminary chapters should be numbered individually to begin with.

Final copy: Only after the compilation of the manuscript has been finalised, the chapter corrections have been effected, and all the graphic work, tables, the reference list and appendices have been added, are the pages numbered in sequence. The first page of the **text** is page **one** (1) of the thesis/assignment/dissertation.

Illustrative or reference material that is added at the end of the thesis/dissertation must be numbered continuously with the text and reference list. Each type of reference material begins on a new page. The first page of each of these sections is also recorded in the table of contents.

3.3.2.3 Abbreviations of words
Only the following abbreviations may be used in the text:

Titles of address abbreviations are written without stops. If the title appears in the middle of a sentence it is written with a small letter in Afrikaans but always with a capital in English.

Afrikaans:	Mev / Prof / Dr (beginning of sentence) / mev / prof / dr (within sentence)
English:	Mrs / Prof / Dr (always)

Names of organisations, institutions, and psychometric instruments (without stops). When the name is used for the first time in the text it is written in full with the abbreviation in brackets afterwards. Consult a dictionary or glossary.

North Atlantic Treaty Organisation (NATO)

Standard Latin abbreviations

et al.

Statistical, mathematical and scientific concepts

```
N / s
```

3.3.2.4 Written usage for amounts, numerals, formulæ and symbols
Amounts up to nine (9) should be written out in the text except when mathematical, statistical, natural science and technical content demands numerals, as well as where dates, percentages, decimals and sums of money are concerned. In such cases, follow the prescriptions of the subject field concerned. However, avoid as far as possible sentences that begin with a numeral (see examples below).

```
Only 290 children (20%) passed the test.
Twenty children (11%) suffer from leukaemia.
```

3.3.2.5 Underlining / Italicising
Avoid as far as possible the underlining of words or headings in computer processed text. The only exception is the underlining of word in a quotation for emphasis (see **Section C, par. 4.2: Own initial**).

Italicise as follows:

Foreign language words (= foreign to the language of the text). *Palaistra* and stadium are both Greek words but only the former will be italicised.
Latin words or abbreviations: *et al.*
Emphases: The term *stress* refers in this study to ….
Published titles of books, names of journals and **statutes** when they are named in the text: key articles can be found in *Tesol Quarterly*.

3.3.2.6 Style of font
Avoid too many kinds of font style in the text as this leads to a "busy" final product.

```
aaaa aaaa aaaa aaaa
```

3.3.2.7 Quotations
Quotations should be presented in such a way that the text can be clearly distinguished from the quotation. The quotation may be italicised provided it is written in a language other than that of the thesis/assignment/dissertation. A quotation is placed between **double quotation marks**. **Single quotation marks** are used for a quotation within a quotation. Excessively long quotations from sources should, however, be avoided. A longer quotation (more than three lines) is treated as a separate paragraph, slightly indented (0.5 cm) on both sides, with or without quotation marks and typed in single spacing (see also **Section C, par. 4.2**).

Students should especially take note of the following:

Spelling, punctuation and paragraphing of the original text must be retained.

Copyright regulations for the quotation of texts or the use of tables, figures or illustrations from other sources should be strictly observed.

Authors/ names are **not** written in italics, in bold or underlined.

3.3.2.8 References in the text
The use of authors' names in the text, as well as quotations from their works, requires references to the particular work that is being used. Textual references are discussed fully in **Section C**.

3.3.2.9 Illustrations, figures and other graphic material
Graphic work should be of a high standard throughout.

Figures: Figure (or the abbreviation = **Fig**) is used in the text for any graphic illustration except tables. Figures are numbered per chapter and in succession and are provided with headings above or below the figure.

FIGURE 3.2: SECOND MOVEMENT

(This is the second figure of **Chapter 3**.)

Tables: Tables are identified by numbers per chapter and in succession and with descriptive or explanatory headings/titles above or below the table.

TABLE 4.1: TARGET GROUP

(This is the first table of **Chapter 4**.)

A table (with the descriptive title) should be able to fit onto a **particular page** completely. If there is space under the table on a page, the text should be continued. If a table has too many columns, it may be placed widthways on the page, but the page number is placed in the usual position. Tables may also be reduced for easier placing on an A4 page, or a folding page may be used for exceptionally large tables. Footnotes may be placed below tables.

Textual references to tables and other graphic material: If tables, figures, photographs and other graphic material are used, there should be references to them in the text. They should be placed as close as possible to the textual reference.

It is important to remember that tables and graphic material may not contain references to the text whereas the facts that are contained in the tables, figures and other graphic material may be referred to in the text.

Example:

Table 5 reflects the increase in the number of children who have been diagnosed over a period of 10 years as children with minimal brain dysfunction. This indicates that ….

3.3.2.10 Footnotes

The abridged Harvard reference system excludes the use of footnotes for making references. A footnote may indeed still be used, but only when the writer wishes to explain or expand on something in the text without disturbing the flow of the argument. It is thus an explanatory (interpretative) footnote and is indicated in the text with the aid of a **symbol**, for example (*), or a numeral, for example [1] or [(1)]. This symbol or numeral is also placed at the foot of the relevant page in front of the footnote. Footnotes are written in single spacing and in a smaller font size than the text.

3.4   LISTS OF REFERENCES

Different types of reference lists may be compiled.

3.4.1   List of References

A **list of sources/resource material** is usually included in a thesis, assignment or dissertation. It contains only works that have been consulted – ie the sources that the writer actually studied or consulted during his research – and which have been referred to in some way or other (with or without quotations) in the text or appendices. This list includes published and unpublished works.

All works that are referred to in the text must be mentioned in the list of references.

Sources are arranged **alphabetically** in the reference list according to the name of the writer and are not numbered. The works of one writer are placed in **chronological sequence** (see, however, also **Section C, par 3.2.2**). The titles of references are always recorded in the language of the version used by the student.

Complete guidelines are presented in **Section C** for

    the recording of **the different types of consulted sources**
    the **citing of reference works in the text**
    the **compilation of a list of reference works**.

3.5   ILLUSTRATIVE MATERIAL/APPENDICES

Illustrative material is inserted directly after the list of references. Each type of appendix begins on a new page.

Appendices consist of material that cannot reasonably be included in the text or that could obstruct the flow of the argument. They are inserted only if they contribute an essential explanatory or elucidatory contribution to the text. **Questionnaires, schedules of interviews, important documents, letters of permission, extended mathematical deductions, sketches, programmes** and so on may be included here. They are arranged in the order indicated in the table of contents and the pages are numbered continuously with the text and the reference lists.

K M.Eng Examination Online Submission Process

M.Eng Examination Online Submission Process

To understand the M.Eng requirements and important dates, please refer to Section 3.3.

Take note that some supervisors follow the process provided in the URL below, but the process that follows in this Appendix is generally used by the Industrial Engineering department. http://library.sun.ac.za/en-za/Help/Pages/online-thesis-submission.aspx

This Appendix applies to the following course as shown on http://learn.sun.ac.za:

881 Industrial Engineering / Engineering Management master's thesis

K.1 Before Submission

Students must submit their work to TURNITIN to check their similarity score for plagiarism purposes.

This can be found by logging into SunLearn at http://learn.sun.ac.za/.

Click on the Thesis DRAFT version (sandbox) and if no previous submission was made, click the Add Submission button.

Please take note that you will need to confirm that you accept the TURNITIN user agreement.

Once you have read the TURNITIN user agreement, select the "I agree - Continue" button.

This area is an unofficial TURNITIN playground which is open to as many attempts as is required by the student.

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K.2 Examination Process

Once you, and your supervisor, are satisfied that the thesis is ready for examination, proceed to Thesis EXAMINATION version and submit the final document.

Together with this process, the student needs to submit 2 (two) hard copies of the thesis to Melinda Rust at the postgraduate office. These hard copies need to be printed on a single side and ring bound.

Two examination colloquiums are held annually, one for the December graduation and one for the March / April graduation. Dates can be found on the last page of this document.

The student needs to:

1. Prepare for the examination; and
2. Provide Melinda Rust with the Abstract of their thesis 1 (one) week before the examination date (in order to send out the Masters Examination meeting request to the Industrial Engineering Department).

K.3 Post Examination

The student will most probably require some rework to their thesis. After the agreed upon rework has been done, the student will submit their final .pdf version of their thesis to the Thesis PUBLICATION version link on SunLearn.

It is crucial that the title of the dissertation .pdf file is in the following format:

Surname_firstwordoftitle_2018.pdf.

The student must also:

1. Submit their relevant journal publications to Publication management section (if applicable); and
2. Submit 6-8 keywords on the dissertation to the 6 - 8 keywords link.

The supervisor will then grade all these actions in order to approve that the thesis can be uploaded to SunScholar and will be available for viewing under scholar.sun.ac.za.

L PhD Examination Online Submission Process

PhD Examination Online Submission Process

To understand the PhD requirements and important dates, please refer to Section 3.4.

Take note that some supervisors follow the process provided in the URL below, but the process that follows in this Appendix is generally used by the Industrial Engineering department. http://library.sun.ac.za/en-za/Help/Pages/online-thesis-submission.aspx

L.1 Before Submission

Dissertations must be handed on SunLearn to check the Turnitin plagiarism count.

Select the course module **Bedryfsingenieurswese / Industrial Engineering 978** and proceed to the Dissertation Management Section.

Click on the Dissertation DRAFT version (sandbox) and if no previous submission was made, click the Add Submission button.

Please take note that you will need to confirm that you accept the TURNITIN user agreement.

Once you have read the TURNITIN user agreement, select the "I agree - Continue" button.

This area is an unofficial TURNITIN playground which is open to as many attempts as is required by the student.

L.2 Examination process and public defence

Once you, and your supervisor, are satisfied that the dissertation is ready for examination, proceed to Dissertation (for examination) and submit the final document.

Please note that Article 1 (compulsory), a 50 word summary, a 100 word summary and a high resolution picture of yourself also must be submitted and accepted by your supervisor before the link is available to submit the final dissertation.

Together with this process, the student must submit 3 hard copies of the dissertation to Melinda Rust at the postgraduate office. These hard copies need to be printed on a single side and ring bound.

The student needs to:

1. Prepare for the public defence;
2. Supply the examiners with hard copies of his/her 2 journal articles; and
3. Provide Melinda Rust with the Abstract of their dissertation a week before the public defence (in order to send out the Public Defence meeting request to the Industrial Engineering Department).

L.3 Post Public Defence

The student will most probably require some rework to their dissertation. After the agreed upon rework has been done, the student will submit their final .pdf version of their Dissertation to the Dissertation PUBLICATION version link on SunLearn.

It is crucial that the title of the dissertation .pdf file is in the following format:

Surname_firstwordoftitle_2018.pdf.

The student must also:

1. Submit their relevant journal publications to Publication management section;
2. Submit a 100-word abstract to the 100 words link;
3. Submit a 50-word abstract to the 50 words link; and
4. Submit 6-8 keywords on the dissertation to the 6 - 8 keywords link.

The supervisor will then grade all these actions in order to approve that the dissertation can be uploaded to SunScholar and will be available for viewing under scholar.sun.ac.za. *The student's name will be published in Die Burger approximately one week before the graduation ceremony.*

M Admissions Week Exam Proxies

As from 2018's new intake of students (i.e. students who apply in 2017 for 2018), the Department of Industrial Engineering will only consider admitting applicants on the basis of the outcome of the department's admissions week and exam. The department will no longer consider the outcomes of tests such as GRE, GMAT, TOEFL or IELTS.

Should an applicant not be able to attend the admissions week and/or exam (for whatever reason), he/she will not be considered for admission. In such a case, it is recommended that the applicant applies for the following year.

N Details of M.Eng courses

N.1 Analytics and Synthesis

Course name:	Analytics and Synthesis
Short Description of the Course:	Analytics and Synthesis builds on the undergraduate Operations Research background of the candidate and exposes him/her to new Operational Research tools and techniques not encountered in the undergraduate studies.
Presenter(s):	Prof. Jan van Vuuren, Dr Danie Lötter, Dr Thorsten Schmidt-Dumont, Ms Christa de Kock
Contact Time:	5 consecutive contact days, with extra two days for assessment
Objectives/Overview:	The objective of the course is to extend the students' knowledge of the Operations Research tools available and its application in solving problems.
Course Content:	• Optimization modelling (linear programming, non-linear programming, metaheuristic modelling); • Applied statistics including probability theory, hypothesis testing, regression, correlation, ANOVA, data reduction and presentation, extrapolation, goodness of t tests, etc.; and • Modelling in stochastic and uncertain environments.
Course Outcomes:	To introduce the student to operations research tools they have not encountered before and to verse them in the application thereof.
Delivery Mechanisms:	Lectures
Assessment Methods:	• Optimisation modelling project assignment; • Applied statistics project assignment; • Modelling in stochastic and uncertain environments project assignment; and • A written examination covering all content covered in the module.
Assessment Criteria Information:	Students should demonstrate a firm grasp of the underlying theory and must be able to solve exercise problems on all topics covered in the module. The students must also show competence in practically applying the techniques to solve problems (from designing the model to solution implementation and interpretation to communication of solution).

Textbook:	none
Notes:	Not available

N.2 Technology Management

Course Name:	Technology Management
Short Description of the Course:	Technology Management focuses on improving the management practises over the technology life cycle to improve the competitive advantage of the firm - and the country.
Presenter(s):	Prof Sara Grobbelaar
Contact Time:	5 consecutive contact days with an assignment(s) for assessement.
Objectives/Overview:	The objective of the course is to create awareness, a certain level of understanding, and some application skills in the management of technology, relevant to the engineering management functions in industry.
Course Content:	1. Technology and competitiveness; 2. Innovation and the technology colony; 3. Concepts of technology; 4. Technology dynamics; 5. Technological capability; 6. Linking technology to business; 7. Technology acquisition management; and 8. Technology exploitation.
Course Outcomes:	1. To understand the evolutionary forces and patterns that lead to the development of technology over time and in societies, the competitive position of South Africa in the broader international context, and what leads to this position. 2. To understand the concept of innovation and the very important link between technology and innovation. It is also important to understand government policy in this regard and implementation thereof. 3. To understand the basic definitions of technology

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	and the problems of context, dimension and perspective.
	4. To understand the dynamic nature of technology and its reflection in management decision-making, as well as the lateral thinking stimulated by the functional perspective; and to develop some skill in the application of these concepts.
	5. To understand the concept of technology as capability and to develop the language and graphical means to record and communicate practical information regarding capability to non-technical senior management; and to apply the same framework to quantify technology gaps that need to be addressed and the ways and means to bridge these gaps.
	6. To understand the process of linking technology to the business concept and the value creation process, as well as the relationship between business strategy, business life cycle and product life cycle; and to develop some skill in the application of these concepts.
	7. To understand the distinction between internal and external acquisition of technology and, as a logical extension of this insight, the distinction between internal and external technology transfer, as well as to understand the strategic implications of deciding on the alternative for acquiring technology and to create a framework to plan the acquisition process.
	8. To understand the nature and content of, and reasons for technology sales to other enterprises; and the strategic implications of technology sales and the possible ways of protecting the value of such technologies have to be appreciated.
Delivery Mechanisms:	Lectures and the SunLearn platform
Assessment Methods:	Individual assignment/report.
Assessment Criteria Information:	The student needs to be able to: • Discuss South Africa as technology colony. How can we improve on the situation? Structure a firm's broader technology network. • Analyse an organisations core technologies by using scurves. • Design a technology space map to audit an organisations technological capabilities. • Define parameters that would typically be used to

		measure technological capability.
		• Describe the purpose of a gap analysis.
		• See the link between the technological capability audit and technology acquisition.
		• Draw a technology balance sheet for an organisation.
		• Discuss the product/market mix of an organisation from a strategic point of view.
		• Use the s-curve techniques to determine the different technology lifecycles.
		• Describe how the technology lifecycles compare with the product lifecycles.
		• Discuss possible technology push / market pull strategies for an organisation.
		• Develop a product technology roadmap for a new product.
		• Evaluate a technology acquisition case in a firm using the Ford decision framework and the capability hierarchy diagram.
		• Discuss management of technology acquisition in an organisation.
		• Discuss the link between technology audits and technology acquisition.
	Textbook:	To be confirmed.
	Notes:	De Wet, G. Emerging from the technology colony - A view from the South. Department of Engineering & Technology Management article, University of Pretoria. De Wet, G. Technology Space Maps for Technology Management and Audit. Department of Engineering & Technology Management article, University of Pretoria. De Wet, G. Corporate Strategy and Technology Management: Creating the Interface. Department of Engineering & Technology Management article, University of Pretoria. Huston L. & Sakkab, N. 2006. Connect and Develop in side Procter & Gambles new model for innovation. Harvard Business Review, vol. 84, no, 3, pp58. Iansiti, M. & West, J. 1997. Technology Integration: Turning great research into great products. IEEE Engineering Management Review. Phaal, R., Farrukh, C. & Probert, D. 2004. Technology roadmapping A planning framework for evolution and revolution. Technological forecasting and social change, vol. 71, no. 1-2, pp. 5-26.

N.3 Management Fundamentals for Engineers

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Course Name:	Management Fundamentals for Engineers
Short Description of the Course:	The one week course in Management Fundamentals focusses on two specific areas, financial management and the supply chain. Basic accounting mechanisms and financial statement analysis as well as the integrative nature of decision making within a supply chain will be addressed.
Presenter(s)	Mr Konrad von Leipzig & Dr Joubert van Eeden
Contact Time:	5 contact days
Objectives/Overview:	The objective of the course is to create awareness of the importance of the bottom line within an enterprise, to illustrate the role of integrated managerial decision making within an enterprise and highlight the impact these have on the cash flow and efficiency of a supply chain. The financial aspects are structured around three central concepts, namely: 1. An emphasis on intuition the principles are discussed on a common sense or intuitive basis, as participants have very little financial background; 2. A unified valuation approach, where NPV is used as the common denominator, showing the impact particular decisions have on valuation; and 3. A managerial focus, with avoidance of a "black box" approach, but rather an emphasis on an approximate or pragmatic approach to decision making.
Course Content:	The financial statements of a company, specifically income statements and balance sheets are discussed, with particular emphasis on the importance of cash flow. The importance of financial planning for especially small firms and a long term sustainable growth rate is explored. The time value of money and discounted cash flow valuations are done in detail. The SA bond market as well as the JSE is discussed, and ratio analysis along with a Du Pont analysis are done to illustrate the complexity of a company's valuation. Project cash flows are covered thoroughly, along with a balanced examination of various project evaluation criteria, such as NPV, IRR, payback and risk. Sources of finance are looked at along with some of the implications of the financial and monetary policy framework in SA. The Supply Chain Management is built around the critical links between the management of enterprises resources within a formal or informal supply chain, and how successful operations directly support the creation of value for the

	firm's customers, and long-term sustainability for the company and the company's supply chains. The supply chain integration is structured around an on-line simulation which students will play in groups of 4.
Course Outcomes:	At completion of this module the student should be able to: • Understand the role of financial managers as decision makers, requiring managerial input and judgment; • Understand and analyse the basic financial statements of a company, and perform a Du Pont analysis of a company; • Calculate the free cash flow of a firm; • Grasp the net present value (NPV) as the basic concept underlying corporate finance; • Realize that NPV represents the excess of market value over cost; • Discuss the JSE in general, share trading in particular, and apply some of the common share valuing approaches; • Fully understand the complexities of company valuations; • Understand and apply capital budgeting techniques; • Do a financial project analysis and evaluation, including a risk evaluation; • Have a basic understanding on some of the contemporary policies and approaches specific to SA, such as BBBEE; • Understand the role an individual firm plays within a larger supply chain, and how specific frameworks facilitate co-operation between supply chain members; • Discuss business profitability as dependent on the firm's ability to generate sales of the goods and services it creates and the control of associated costs operations are expected to control the costs of resources required and manage the processes needed to create value; • Experience how to draft, communicate, implement and evaluate SC strategies & tactics; • Understand the concept of trade-offs between different performance attributes; and • Know and experience how different SC strategies & tactics can have a dramatic influence on a business

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	financial performance.
Delivery Mechanisms:	Participants will be expected to do pre-course reading to familiarize themselves with the theoretical framework(s). Contact periods will be used to further explore the pre-course reading, expand on specific approaches and/or techniques, and illustrate their applicability through the use of exercises and/or case studies.
	The on-line simulation will be explained, and groups need to discuss their situation and make their decisions after hours, while feedback on the results will be provided by the lecturers.
Assessment Methods:	A short introductory test will be written covering the material from the pre-course reading. Students need to successfully complete the on-line simulation (showing a positive ROI for their company). Students have to prepare a case study based on financial analysis and risk evaluation in the week after the classes. An exam will be written one week after the classes.
Textbook:	Not available
Notes:	Will be disseminated via the SunLearn platform.

N.4 Research Methodology

Course Name:	Research Methodology
Short Description of the Course:	Engineers are disciplined to solve real-world problems with known techniques and methods. However, these known techniques and methods may not be adequate to understand certain problems in a comprehensive manner and develop appropriate solutions. This is the domain of research, and in this module the nature and process of research is explained to enable students to formulate and conduct a research effort to find answers to specific problems.
Presenter(s):	Dr Wyhan Jooste
Contact Time:	4 consecutive contact days
Objectives/Overview:	Research is said to be a blind date with knowledge. A blind date since we do not know the outcome yet, but we have an expectation of success. Research is a process that involves the scientific gathering of data through various methods, to bring forth a truth, previously unknown. Research is meant to provide an objective view of a practical or abstract problem and research should never be undertaken to satisfy personal curiosity only. Research should have application beyond the individual and academic research is meant to increase your understanding

of the engineering discipline. For this purpose, research serves to describe, explain and predict. In this module you will ask yourself:

1. What type of researcher am I? Exploring the theoretical foundations of research, its different paradigms and your role as researcher.
2. What type of research do I want to do? Exploring whether your study will inherently be inductive, deductive or abductive.
3. Which research design suits my research question? Exploring the differences between qualitative, quantitative and mixed method designs.
4. How will I present my findings? Exploring data analysis and presentation techniques.
5. How will I convince my study leader of my ability to conduct research? Exploring the requirements for writing a research proposal and article in your specific discipline.

This module is presented against the background of the specific research context in Africa and South Africa and also with acknowledgement of the several ethical pitfalls that re- searchers and researchers-in-training should be aware of. In summary, this module introduces students to research methodology. This enables students to become research- orientated and to be in a position to plan research and write research outputs in the form of a proposal and article.

Course Content:	The content of the course is based on the chapters of Bryman and Bell (2011): 1. The aims of research. 2. The research topic, project title, and research problem. 3. Literature review. 4. Population and sampling types. 5. Types of quantitative research designs. 6. Validity of conclusions. 7. Data-collecting methods and measuring instruments in quantitative research. 8. Qualitative research designs. 9. Data analysis and interpretation of results. 10. Writing the research proposal. 11. Writing research articles.
Course Outcomes:	At completion of this module the student should be able

	to:
	- Formulate a research purpose, research questions, propositions/hypotheses and approach. - Demonstrate through a literature analysis of the research field that the research output will build upon the current body of knowledge. - Decide on (an) appropriate research method(s) to accomplish the research objectives and embed the(se) method(s) in the research proposal. - Participate in peer review processes. - Write a comprehensive research proposal. - Write or present a concise research output in the form of an article suitable for journal publication or paper for a conference or a presentation at a peer attended colloquium.
Delivery Mechanisms:	Lectures and participation in a workshop format. Engagement through the SunLearn online platform. Peer-review writing groups.
Assessment Methods:	Online tests through the SunLearn platform on the chapters of Bryman and Bell (2011). Peer and lecturer assessment of the research proposal. Peer and lecturer assessment of the research article or conference paper of a colloquium presentation.
Assessment Criteria Information:	Did the student demonstrate sufficient knowledge concerning the science of research? An 75% mark is required for each online test on the chapters of Bryman and Bell (2011). Are the research proposal and article (or paper or presentation) clear, appropriate, sufficient and in line with the research principles taught? A 60% mark is required for both the proposal and the article (or paper or presenation).
Textbook:	Bryman A and Bell E (2011). Research methodology. 3rd edition, Cape Town: Oxford University Press Southern Africa.
Notes:	Will be made available on Sunlearn.

N.5 Professional Communication

Course Name:	Professional Communication

Short Description of the Course:	Forms of plagiarism in engineering research and professional documentation. Referencing styles in text, figures, and diagrams appropriate to engineering documentation. Appropriate referencing of research literature, scientific and engineering texts, commercial literature (such as data sheets), standards, websites and other sources typically used in engineering writing.
Presenter(s):	Ms Alison Buchholz (alisonb@sun.ac.za)
Contact Time:	Online via Sunlearn
Objectives/Overview:	See description above.
Course Content:	See description above
Course Outcomes:	At completion of this module the student should be able to: • Explain what constitutes plagiarism in engineering research and professional documentation. • Apply referencing styles in text, figures, and diagrams appropriate to engineering documentation. • Appropriately reference research literature, scientific and engineering texts, commercial literature (such as data sheets), standards, websites and other sources typically used in engineering writing.
Delivery Mechanisms:	Lectures and participation in a workshop format OR engagement through the SunLearn online platform.
Assessment Methods:	"Satisfactory attendance" will be awarded if the student attends the complete session and satisfactorily contributes in the session.
Assessment Criteria Information:	"Satisfactory attendance" will be awarded if the student attends the complete session and satisfactorily contributes in the session.
Textbook:	None.
Notes:	Will be made available on Sunlearn.

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O SUN policy on academic integrity: the prevention and handling of plagiarism

POLICY ON PLAGIARISM (IN SUPPORT OF ACADEMIC INTEGRITY)

Policy governance	
Document reference and version number	
Purpose	**Set standards of academic conduct for the use of the work of others and the reuse of one's own published work; promote academic integrity.**
Document type	**Policy**
Commencement date	**1 December 2016**
Date of next review	**2021**
Revision history	**Revised Policy. Second Version. The original Policy "Stellenbosch University Policy on academic Integrity: The prevention and handling of plagiarism" was approved by SU Council in 2009.**
Policy ownership	
Policy Owner[1]	**Vice-Rector: Research, Innovation and Postgraduate Studies[1] and Vice-Rector: Learning and Teaching**
Policy custodian	**Senior Directors: Research and Innovation and Learning and Teaching Enhancement**
Date of Approval	**28 November 2016**
Approval by	**Stellenbosch University Council**
Key words	**Academic integrity, plagiarism, self-plagiarism**

1. Introduction

The academic activities of a university entail the exposure of academics and students to the ideas, written material and various intellectual and creative products of fellow students, colleagues and other scholars. At the same time, a process of critical evaluation is required to place this information in context and to make new or original inputs or syntheses that address contemporary international and local questions.

The original contribution to work presented by a person as part of an academic activity can only be evaluated if it can be distinguished clearly from the contributions of others or the author's own earlier work. This is done by acknowledgement and referencing. By not following these conventions, the integrity of the academic work at a university is undermined. The representation of work (words, ideas, creations) of other people as the writer's own is plagiarism. The re-use of one's own previously presented or published work, without disclosure or adequate referencing, is now widely viewed as self-plagiarism.

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[1] The Vice-Rector (Research, Innovation and Postgraduate Studies) will assume responsibility as Policy owner at an institutional level, recognising that this Policy is as relevant to teaching and learning as it is to research.

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The University must ensure that mechanisms are in place that promote academic integrity and eliminate plagiarism. At the same time it is important that plagiarism cases are dealt with in a consistent and fair manner. As a consequence, it is essential that the University has a policy and procedures in place to intercept these aspects of misconduct and to create a framework within which it is possible for staff and students to write and publish.

This Policy should in particular be read together with the *Procedure for the investigation and management of allegations of plagiarism*, henceforth referred to in this Policy as "the Procedure" in support of the Policy, but not as part of it. Other important documents that should be read together with this Policy include the *Guideline for avoiding plagiarism*, the *Policy for responsible research conduct at Stellenbosch University (SU),* the *Policy in respect of exploitation of intellectual property*, the *Disciplinary code for students of SU*, the *Disciplinary code for staff of SU*, the *Procedure for the investigation of allegations of breach of research norms and standards*, as well as any other University policies and guidelines that may be applicable.

2. Application of Policy

This Policy applies to the academic activities of the University and by implication all those involved in these activities.

This Policy is intended for institutional use and does not confer any rights or privileges to a third party.

3. Definitions

In this Policy the following words will carry the meaning ascribed to them below.

3.1 **Academic activity:** Any activity that contributes to or is part of the broad academic project of the University. This includes all activities in teaching and learning, research, writing and publishing and community interaction.

3.2 **Acknowledgement**: Reference indicating the source of previously expressed ideas or published material and the details of the publication.

3.3 **Affected area**: Any faculty, department or other environment within the University that may need to manage plagiarism.

3.4 **Member**: Any person permanently employed or under contract to the University, registered students, and any others engaged in academic activities falling under the jurisdiction of the University; joint staff employed by the Western Cape Department of Health and SU and also any person formerly in any of the aforementioned categories, whose work remains associated with the name of SU.

3.5 **Plagiarism**: The use of the ideas or material of others without acknowledgement, or the re-use of one's own previously evaluated or published material without acknowledgement (self-plagiarism).

3.6 **Self-plagiarism**: The re-use of one's own previously evaluated or published material without acknowledgement or indication thereof.

4. **Purpose of the Policy**

The purpose of this Policy is to support the academic integrity of the University and its members and to reinforce the value system of Stellenbosch University as an ethically responsible institution.

5. **Practical objectives of the Policy**

The practical objectives of this Policy are to define plagiarism and to provide a framework for identifying and avoiding plagiarism and managing instances of alleged plagiarism.

6. **Principles of this Policy**

6.1 No person(s) participating in the academic activities of the University should commit plagiarism or self-plagiarism.

6.2 Honesty and transparency are two core values that must be upheld when participating in the academic activities of the University.

6.3 All students, staff and affiliates are obligated to act ethically and in the best interests of the University at all times.

6.4 All cases of plagiarism must be handled consistently according to established processes, either at department, faculty or central management level. These processes must comply with both this Policy and the **Procedure for the investigation and management of allegations of plagiarism**.

7. **Determining plagiarism**

Plagiarism is a form of wrongdoing which can have serious consequences for the person concerned. These consequences include suspension or expulsion (in the case of a student) or dismissal from the University (in the case of a member of staff). In addition, criminal or civil legal proceedings could ensue.

Plagiarism covers a broad spectrum of wrongdoing, and for the purposes of deciding at which level of University management an allegation of plagiarism should be dealt with, the gravity of the wrongdoing must be considered by taking into account all the circumstances, including the following factors:

7.1 Blameworthiness (intent or negligence) of the person committing plagiarism: Did the person commit plagiarism knowingly (intentionally), or in circumstances indicating that he/she should reasonably have known of the plagiarism (negligently)? A state of blameworthiness (either intent or negligence) is required to make a finding of plagiarism. To determine intent or negligence, all the circumstances must be taken into account, including but not limited to the following factors:

7.1.1 The extent of the plagiarism: How much of the work presented as part of an academic activity constitutes plagiarism, in relation to the part of the work constituting an own intellectual contribution? Is the plagiarism contained in the work so extensive that it is not possible to determine or assess own intellectual contribution?

7.1.2 The importance of the academic activity: Did the alleged plagiarism occur in a small assignment, a final thesis, or an article submitted for publication?

7.1.3 Harmfulness of the plagiarism: The extent of harm that the plagiarism has caused or can potentially cause to personal and institutional reputation, taking into account all the

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circumstances, including the seniority of the person committing the plagiarism, the relevant academic activity and the extent of the plagiarism.

    7.1.4 Repeated acts of plagiarism.

It is the responsibility of the Dean of the Faculty or person(s) to whom he/she has delegated the authority (for example Department Chairperson or a 'Plagiarism Advisor(s)') to make an assessment of the gravity of any alleged plagiarism, for the purposes of deciding on the appropriate steps to handle such an allegation.

8.   Management of allegations of plagiarism

The management of allegations of plagiarism must be appropriate to both the academic status of the member and the academic setting of the alleged plagiarism. Hence the University's policy approach to plagiarism is based on developing and fostering an awareness of plagiarism and its ramifications, particularly among undergraduate students and in the context of the University's Learning and Teaching Policy. This means that first-time junior offenders such as first year students will be treated differently to repeat offenders, or more senior students.

This does not mean that the University is lenient in its handling of plagiarism; on the contrary, it creates a basis for the firm, consistent and tenable treatment of cases of plagiarism, while acknowledging that ignorance may well be a contributing factor especially when junior students are involved.

The University creates an opportunity for the handling of suspected instances of plagiarism in a decentralised manner. Certain cases will be dealt with at the departmental level, while others will be dealt with at faculty level or referred to the University's central disciplinary committee for either staff or students, as set out in the *Procedure for the investigation and management of allegations of plagiarism.*

9.   Roles and Responsibilities

All members of the University are responsible for ensuring that they understand and can fully comply with the requirements of this Policy. The identification of the following roles and responsibilities does not imply exclusive responsibility:

9.1 All members of the University are responsible for ensuring that they understand and can fully comply with the requirements of this Policy at an individual level. A plagiarism declaration that is in line with this Policy (See 11.) must accompany all written work submitted for degree purposes at a post-graduate level. At the discretion of lecturers and supervisors, all substantial work submitted for marking, including assignments and essays should also include a plagiarism declaration. Notwithstanding this requirement, students who submit work without such a written declaration are in no way absolved from responsibility for plagiarism and from compliance with the requirements of this Policy.

9.2 All those engaged in teaching, including tutors, short-course or diploma presenters, and all post-graduate supervisors, are responsible for establishing mechanisms to create an awareness of plagiarism and to facilitate the detection and consistent reporting of plagiarism.

9.3 Supervisors of Masters theses and Doctoral dissertations are responsible for ensuring that adequate standards and procedures for the avoidance of plagiarism have been met prior to submission

of a thesis or dissertation for examination. Notwithstanding this requirement, the primary responsibility for avoidance of plagiarism and for complying with the policy requirements remains with the student or researcher, who will be held accountable should the work involve plagiarism or in any other way fail to meet the required standards of ethical conduct. Theses and dissertations must be submitted to the Turnitin playground module (or other appropriate similarity detection software) prior to submission for examination. The student and supervisor should concur that the Turnitin or similar report is acceptable.

9.4 Departments and Faculties are responsible for creating an awareness of the contents of this Policy as well as the *Procedure for the investigation and management of allegations of plagiarism* and for providing learning opportunities to all students and staff regarding the avoidance of plagiarism and to keep a record of such activities and attendance thereof.

9.5 Departments and Faculties are responsible for establishing processes for the detection, reporting and investigation of allegations of plagiarism that are compliant with the University's overarching policy and procedures. Such processes could include an internal memo containing the following information: Detail on the appropriate use of Turnitin (or similar similarity-detection software) in a specific environment; the identification of persons in a department who are responsible for receiving allegations of plagiarism; and measures to facilitate further investigation.

9.6 Examiners and moderators who suspect plagiarism in a submitted workpiece are responsible for immediately alerting the departmental chairperson of their suspicions. The allegation must be made in writing to the departmental chairperson and supporting documentation, such as an indication of the plagiarised source or a Turnitin (or similar) report, should be provided.

10. Policy control and governance

10.1 The Policy custodians (Senior Directors: Research and Innovation as well as Learning and Teaching Enhancement) are responsible for the policy's formulation, approval, review, communication, availability and monitoring. The Policy custodians are also responsible for interpretation and guidance in respect of the implementation of the Policy.

10.2 Faculty management is responsible for the implementation of the Policy and specific control in their own areas.

10.3 The management in all affected areas is responsible for the following procedures within their respective areas:

a. Sensitising and educating both students and staff on avoiding plagiarism.

b. Managing allegations of plagiarism and breach of copyright in accordance with the *Procedure for the investigation and management of allegations of plagiarism* or the *Procedure for the Investigation of allegations of breach of research norms and standards*, if deemed appropriate. (The latter is used for example if the allegation involves senior researchers or includes additional allegations such as data fabrication or falsification).

11. Plagiarism Declaration (for use by students)

- *I have read and understand the Stellenbosch University Policy on Plagiarism and the definitions of plagiarism and self-plagiarism contained in the Policy [Plagiarism: The use of the ideas or material*

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of others without acknowledgement, or the re-use of one's own previously evaluated or published material without acknowledgement or indication thereof (self-plagiarism or text-recycling)].

- *I also understand that direct translations are plagiarism.*

- *Accordingly all quotations and contributions from any source whatsoever (including the internet) have been cited fully. I understand that the reproduction of text without quotation marks (even when the source is cited) is plagiarism.*

- *I declare that the work contained in this assignment is my own work and that I have not previously (in its entirety or in part) submitted it for grading in this module/assignment or another module/assignment.*

12. Supporting documentation

This Policy on **Plagiarism (In Support of Academic Integrity)** is supported by:

Procedure for the investigation and management of allegations of plagiarism
Guideline on the avoidance of plagiarism

13. Related documentation[2]

Significant related documents include:

Item #	Name	Status	Custodian Division
13.1.	Policy for Responsible Research Conduct at Stellenbosch University	Approved	Division for Research Development
13.2.	[SU Framework policy on academic integrity]	Proposed	To be developed
13.3.	Procedure for the investigation and management of allegations of plagiarism	Under development	Division for Research development
13.4.	Procedure for the Investigation of allegations of breach of research norms and standards	Approved	Division for Research development
13.5.	Disciplinary Code for Staff of Stellenbosch University	Approved	Human Resources
13.6.	Disciplinary Code for Students of Stellenbosch University	Approved	Legal services
13.7.	SU Risk Management Committee Regulations	Approved	Risk and Security Services
13.8.	SU Remuneration and Performance Management Policy	Approved	Human Resources
13.9.	SU Policy in Respect of Exploitation of Intellectual Property	Approved	InnovUS

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[2] These include the most significant related documents and would need to be correlated with other policies and processes to ensure alignment.

P   Full-time studies: Research agreement

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IE Postgraduate Research Contract: Obligations with regards to full-time studies

Student	
Student number	
Study leader	
Degree enroled for	☐ MEng ☐ PhD
Research Group	
Starting date of research study	
Validity period of this agreement	01/01/2019 to 01/12/2020 (or upon satisfactory completion of all of the requirements of the MEng/PhD degree)

This agreement sets out the mutual obligations of the student towards the Department of Industrial Engineering at Stellenbosch University (the Department) and of the Department towards the student.

1. **The Department (as represented by the study leader) undertakes (where applicable) to:**
   1.1 supervise the student's work formally on an agreed-upon basis;
   1.2 allow the student reasonable access to all facilities necessary for the completion of the project;
   1.3 liaise with the student's main project sponsors and industrial contacts; and
   1.4 make all reasonable efforts to enable the student to fulfil his/her contractual obligations towards the Department and towards outside sponsors.

2. **Validity and extent of this agreement:**
   2.1 In the case of MEng studies, this agreement is concluded for the duration of the MEng studies, a period normally not exceeding 24 months, starting on the first day of the validity period of this agreement. This agreement is terminated when the student obtains the MEng degree.
   2.2 In the case of PhD studies, this agreement is concluded for the duration of the PhD studies, a period normally not exceeding 36 months, starting on the first day of the validity period of this agreement. This agreement is terminated when the student obtains the PhD degree.
   2.3 If a student receives bursaries or scholarships other than those listed in Section 3 of this agreement, these bursaries or scholarships are not subject to the terms set out in this agreement.

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3. <u>Other agreements between the study leader and the student:</u>

(This section of the agreement is unique for each study leader and each student, tick the clauses that are applicable and complete the details of these clauses.)

3.1 Bursaries: The Department undertakes to pay to the student a study bursary, as agreed upon between the student and study leader:

☐ **Research allocation bursary**   Total amount: R_____

Year 1, Semester 1 instalment:	R_____	Year 1, Semester 2 instalment:	R_____
Year 2, Semester 1 instalment:	R_____	Year 2, Semester 2 instalment:	R_____
Year 3, Semester 1 instalment:	R_____	Year 3, Semester 2 instalment:	R_____
(Year 3 payments are only applicable to PhD studies.)			

First semester payments take place in March, second semester in August.

☐ _____ **bursary**   Total amount: R_____

Year 1, Semester 1 instalment:	R_____	Year 1, Semester 2 instalment:	R_____
Year 2, Semester 1 instalment:	R_____	Year 2, Semester 2 instalment:	R_____
Year 3, Semester 1 instalment:	R_____	Year 3, Semester 2 instalment:	R_____
(Year 3 payments are only applicable to PhD studies.)			

First semester payments take place in March, second semester in August.

☐ _____ **bursary**   Total amount: R_____

Year 1, Semester 1 instalment:	R_____	Year 1, Semester 2 instalment:	R_____
Year 2, Semester 1 instalment:	R_____	Year 2, Semester 2 instalment:	R_____
Year 3, Semester 1 instalment:	R_____	Year 3, Semester 2 instalment:	R_____
(Year 3 payments are only applicable to PhD studies.)			

First semester payments take place in March, second semester in August.

3.2 Articles: The Department undertakes to pay to the student the following incentives for article(s), as agreed upon between the student and the study leader:

☐ Article submission incentive:

If a journal article has been submitted to an accredited journal, and the study leader has signed off on the submission on or before 1 December of Year 2, an incentive payment will be made. The following incentives apply:

- Local accredited journal: R_____
- International accredited journal: R_____
- ISI accredited journal: R_____
- DHET accredited journal: R_____

This amount must be approved by the supervisor and the payment of this amount will be based solely on his/her discretion. This incentive is available for a maximum of _____ articles.

☐ Article acceptance incentive:

If a journal article has been submitted to an accredited journal on or before 1 December of Year 2, and is ultimately accepted by that journal, an incentive payment will be made. The following incentives apply:

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- Local accredited journal: R_____
- International accredited journal: R_____
- ISI accredited journal: R_____
- DHET accredited journal: R_____

This amount must be approved by the supervisor and the payment of this amount will be based solely on his/her discretion. This incentive is available for a maximum of _____ articles.

3.3   Other incentives: The Department undertakes to pay to the student the following incentives for specific agreements between the student and the study leader:

☐   **Early graduation incentive:**

If the thesis is approved for examination and submitted for examination on or before 1 September of Year 2, and the student proceeds to graduate in December of Year 2, an early graduation incentive of R_____ will be paid to the student. This amount must be approved by the supervisor and the payment of this amount will be based solely on his/her discretion.

☐   _____

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☐   _____

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4.   **Progress reports:**

4.1   MEng and PhD students are required to submit a progress report during every year of enrolment, whilst PhD students are required to submit a total of five progress reports.

The progress report is due on 31 July of every year of enrolment.

4.2   These reports must be written by the student and signed off by their study leader before being submitted on Sunlearn by 31 July.

4.3   The required contents of these reports are described in Appendix A;

4.4   The progress reports are reviewed by the Postgraduate Co-ordinator before the list of students approved for bursary payments are released to the Departmental Officer;

4.5   No bursary payments are made unless the progress report has been approved by both the study leader and the Postgraduate Co-ordinator.

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5. **The student (undersigned) undertakes to:**

    5.1   register as a full-time student for the programme MEng (Research) or PhD (as indicated on page one of this document) and thereby commits to at least 1800 hours to undertake the MEng or 3600 hours to undertake the PhD in the Department;

    5.2   not engage in full-time employment elsewhere unless agreed to by the study leader in the Department;

    5.3   be at the Department as agreed to by the study leader;

    5.4   agree with the Department on a research proposal detailing the title, background, rationale, preliminary literature study, objectives, methodology, outline and timetable;

    5.5   submit a thesis to the University for examination to be awarded either and MEng degree no later than two years after these studies were begun, or a PhD no later than three years after these studies were begun, with a work content of at least 1 800 hours for the MEng or 3600 hours for the PhD;

    5.6   adhere to all the normal University and Departmental rules and regulations over and above those referred to in this contract;

    5.7   adhere to the code of conduct included in Appendix B;

    5.8   pay back any funds received from and costs incurred by the Department at the prime interest rate calculated on the daily outstanding balance, within two years of breach of contract. The student must request in writing from the Department the details of the bank account to which the funds are to be paid back and must pay the funds into such bank account;

    5.9   serve in the Department during his/her postgraduate studies, in accordance with the mentor/tutor/assistant programme as run by the Department as part of the Faculty of Engineering (this is not required of PhD students); and

    5.10   receive no moneys from any industrial or research partner of the Department for the duration of this contract, unless the receipt of each and every amount received from said partner is agreed to in writing by the Department.

Signed on this date _____, at Department of Industrial Engineering, Stellenbosch.

STUDENT	*FOR DEPT INDUSTRIAL ENGINEERING (COMPANY STAMP)*
SUPERVISOR *DEPT INDUSTRIAL ENGINEERING*	*CO-SUPERVISOR* *DEPT INDUSTRIAL ENGINEERING*

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CONTENTS OF POSTGRADUATE PROGRESS REPORT

The progress report should be a **one to two page document** describing the path from the date of the progress report to the planned graduation date. The document must include at least the following:

- A list of subject(s) completed (if applicable) to date and the mark(s) scored for every subject;
- A list of subject(s) that will still be taken and their planned date(s);
- A description of the progress made with the thesis including the thesis title, level of completeness of the literature study, experiments that have been completed, data that has been collected, etc. Also, very importantly, the anticipated hand-in date of the thesis must be indicated.
- An indication of an obstacles that may be preventing progress with the degree;
- A description of what the Department do to assist with overcoming these obstacles;
- Any specific arrangements that have been made with the Department with regards to subject exchanges, research visits, etc.
- The document must contain a specific heading called "Deviations". All deviations from the previous progress report (where applicable) must be clearly described. Include the reason for each deviation as well as a description on how the deviation will be overcome.

The document above has to be <u>**signed and dated by both the student and the study leader(s).**</u> This document is submitted on Sunlearn and is used to evaluate future progress reports. Should there be insufficient progress or should there be significant unexplained deviations in the game plan, the student may be called in for an interview with the post graduate committee to discuss their future with the Department.

APPENDIX B

**CODE OF CONDUCT FOR THE RELATIONSHIP BETWEEN SUPERVISOR
AND RESEARCH-BASED POSTGRADUATE STUDENT**

The following set of guidelines is proposed as a code of conduct for ensuring that the nature of the relationship between the supervisor and the research-based postgraduate student is conducive to successful postgraduate studies at Stellenbosch University (SU):

1 The candidate (with the necessary input from the supervisor) undertakes to remain up to date with regard to the infrastructure and related rules of the specific department.

2 SU undertakes not to select a student for a specific project unless the faculty concerned gives prior written confirmation that the project can be undertaken. Responsibility with regard to the required funding and applicable infrastructure will be indicated specifically.

3 The candidate, with the help of the supervisor, will acquaint him-/herself with the guidelines for keeping a record of research according to what is generally acceptable within the relevant discipline.

4 The candidate confirms that he/she has the necessary computer skills to complete the project satisfactorily.

5 The necessary preparatory study, as required by SU, should be completed within an agreed period of time.

6 A work programme must be compiled for the candidate, in collaboration with the supervisor, within a reasonable period of time (usually not exceeding 60 days) after the start of the project. The programme must indicate target dates, for example those for the submission of a project protocol, the completion of a literature survey, the completion of specific chapters and the submission of progress reports. Times of absence (study leave, university vacations, etc.) must also be noted.

7 Appointments between the candidate and the supervisor must be arranged to take place at regular and predetermined times throughout the academic year.

8 The supervisor must give the departmental chairperson/postgraduate coordinator/dean annual written feedback regarding the progress of studies.

9 The supervisor must comment on and return all submitted work to the candidate within a reasonable time, not exceeding 60 days for a full thesis.

10 When the project nears completion, the candidate must make the necessary submissions according to the specific requirements for graduation within the discipline concerned. (Special attention must be paid to SU's Calendar, as set out in the *General Prospectus Part 1*, to ensure that there is sufficient time for the rounding off and examining of the thesis/dissertation, bearing in mind the scheduling of the various graduation ceremonies in December and April of each year.)

11 The candidate undertakes to deliver the relevant outputs (e.g. publications, patents and academic papers) as discussed with the supervisor. The candidate must acquaint him-/herself with the conventions regarding authorship that are relevant to the specific discipline.

12 Where applicable, the candidate and supervisor must acquaint themselves with the regulations applicable to intellectual property within the relevant environment.

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THE SUPERVISOR'S RESPONSIBILITIES

The supervisor has the responsibility to:

- be acquainted with procedures and regulations;
- establish a stimulating research environment;
- establish a relationship between supervisor and student;
- advise on the choice of project and planning;
- discuss issues related to intellectual property and publishing;
- ensure that the appropriate facilities are available;
- provide training in research;
- consult with the student, monitor progress continuously and provide structured feedback;
- remain aware of the student's situation and needs; and
- arrange for guidance during periods of absence.

THE STUDENT'S RESPONSIBILITIES

The student has the responsibility to:

- be familiar with SU regulations regarding postgraduate studies, and adhere to such regulations;
- undertake research with commitment;
- develop initiative and independence;
- keep thorough records of all research findings;
- establish a relationship with the supervisor;
- obtain feedback by means of reports and seminars, and apply such feedback;
- undertake a literature survey and remain aware of new, relevant information;
- benefit from the research environment;
- inform the supervisor of non-academic problems;
- prepare and write the thesis/dissertation; and
- prepare and write publications, patents and reports.

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