

Faculty of
Engineering
Postgraduate

Fakulteit
Ingenieurswese
Nagraads

2025 Yearbook



Address all correspondence to:

The Registrar
Marlene.Verhoef@nwu.ac.za

Tel: (018) 299-1111/2222

Fax: (018) 299-4910

Internet: <http://www.nwu.ac.za>

PLEASE MENTION YOUR UNIVERSITY NUMBER IN ALL CORRESPONDENCE.

The General Academic Rules of the University, to which all students have to subject themselves and which apply to all the qualifications offered by the University, appear in a separate publication and are available on the web page at: <http://www.nwu.ac.za/yearbooks>.

Please note: Although the information in this Calendar has been compiled with the utmost care and accuracy, the Council and the Senate of the University accept no responsibility whatsoever for errors that may occur. Before students finally decide on the selection of modules, they must consult the class timetable. If a clash occurs in the planned selection of a student, the relevant module combination is not permitted.

Table of Contents

1. FACULTY RULES	1
ENG 1.2 FACULTY SPECIFIC RULES	1
ENG 1.2.1. Registration	1
ENG 1.2.2 Research proposal and title registration	1
ENG 1.3 MASTERS DEGREES	1
ENG 1.3.1 Purpose and structure of general master’s degrees	1
ENG 1.3.2 Examination and moderation	1
ENG 1.3.3. Supervision	2
ENG 1.3.4 Requirements for the research component of a Masters degree	2
ENG 1.4 DOCTORAL DEGREES	2
ENG 1.4.1. Completion requirements for a doctoral degree	2
ENG 1.4.2 Requirements for the research component of a doctoral degree	2
ENG 1.4.3 Supervision	2
ENG 1.4.4 Research Articles submitted as research product	2
ENG 2. QUALIFICATIONS, PROGRAMMES AND CURRICULA	3
ENG 3. PROGRAMME OUTCOMES	5
ENG 4. PROGRAMME ASSESSMENT CRITERIA	6
ENG 5. THE DEGREE MASTER OF ENGINEERING	8
ENG 5.1 RULES FOR THE DEGREE MASTER OF ENGINEERING	8
ENG 5.1.1 Duration	8
ENG 5.1.2 Minimum admission requirements for the qualification	8
ENG 5.1.3 Composition of the programme	8
ENG 6. THE DEGREE MASTER OF SCIENCE IN ENGINEERING SCIENCE	9
ENG 6.1 RULES FOR THE MASTER OF SCIENCE IN ENGINEERING SCIENCES	9
ENG 6.1.1 Duration	9
ENG 6.1.2 Minimum admission requirements for the qualification	9
ENG 6.1.3 Composition of the programme	10
ENG 7. THE DEGREE OF DOCTOR OF PHILOSOPHY IN ENGINEERING	11
ENG 7.1 RULES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN ENGINEERING	11
ENG 7.1.1 Duration	11

ENG 7.1.2 Minimum admission requirements for the qualification.....	11
ENG 7.1.3 Composition of programme	11

NWU Office Bearers

<https://www.nwu.ac.za/governance-and-management/management-structures>

NWU EXECUTIVE DEANS

Faculty of Economics and Management

Prof B Surujlal

Faculty of Education

Prof LN Conley

Faculty of Engineering

Prof L van Dyk

Faculty of Health Sciences

Prof AF Kotzé

Faculty of Humanities

Prof D Moyo

Faculty of Law

Dr N Morei

Faculty of Natural and Agricultural Sciences

Prof DM Modise

Faculty of Theology

Dr H Goede

FACULTY BOARD

Chairperson

Prof L van Dyk (Executive Dean)

Directors

School of Chemical and Minerals Engineering

Ms NT Leokaoko

School of Electrical, Electronic and Computer Engineering

Prof G van Schoor

School of Mechanical Engineering

Prof A Jonker

School of Industrial Engineering

Prof H Marais (Acting)

Centre for Engineering Education

Prof M le Roux

Unit for Energy and Technology Systems

Prof R Coetzee

Research Director

Prof HWJP Neomagus

Business Development and Stakeholder Engagement

Prof R Siriram

Academic staff

Professor

Prof A Jonker

Prof V Naicker

Associate Professors

Prof Marina du Toit

Prof P van Vuuren

Senior Lecturers

Vacant

Vacant

Lecturers

Dr F Moyo

Vacant

Junior Lecturers

Vacant

Vacant

Student Representative

Chairperson FENG SAC

Faculty Administrator

Mrs B Mackenzie

RESEARCH

Unit for Energy and Technology Systems

Prof R Coetzee

Centre of Excellence in Carbon Based Fuels

Prof HWJP Neomagus

Centre for Research and Continued Engineering Development (CRCED)

Prof EH Mathews

Centre of Competence - Hydrogen Energy

Prof DG Bessarabov

Niche Area: Multilingual Speech Technologies (MuST)

Prof MH Davel

Centre for Advanced Manufacturing

Mr DB Vorster

HIGHER DEGREES COMMITTEE CHAIRS

Engineering Research Ethics Committee (ENG-REC)

Prof P van Vuuren

Higher Degrees Committee

Prof R Coetzee

HIGHER DEGREES PROGRAMME MANAGERS

Chemical and Minerals Engineering

Dr FH Conradie

Electrical, Electronic and Computer Engineering

Dr M Ferreira

Industrial Engineering

Prof R Coetzee

Mechanical Engineering

Dr JH Kruger

Nuclear Engineering

Prof V Naicker

Centre for Research and Continued Engineering Development (CRCED)

Dr J van Laar

1. FACULTY RULES

ENG.1.1 AUTHORITY OF THE GENERAL ACADEMIC RULES

The faculty rules valid for the different qualifications, programmes and curricula of this faculty and contained in this faculty calendar are subject to the [General Academic Rules](#) of the University, as determined from time to time by the Council of the University on recommendation by the Senate. The faculty rules should therefore be read in conjunction with these General Academic Rules.

The Manual for Masters and Doctoral students, with specific guidelines and procedures for masters and doctoral studies, as well as quality measures of research entities also apply.

General Provisions

Please refer to the [General Academic Rules](#) for the rules on:

- i. Recognition of Prior learning
- ii. Active Enrolment
- iii. Protection of personal and education-related information
- iv. Examination
- v. Maximum duration of study
- vi. Monitoring of academic performance
- vii. Progression requirements
- viii. Termination of Studies

ENG 1.2 FACULTY SPECIFIC RULES

ENG 1.2.1. Registration

With reference to General Academic Rule 4.7.2, and 5.7.2 an existing postgraduate student who fails to re-register for any academic year, must apply for re- admission and continuation. Such student will be responsible for paying outstanding tuition fees of preceding year(s) as well

ENG 1.2.2 Research proposal and title registration

In accordance with General Academic Rule 4.11.1 and 5.10.1 a student must, within six months after the final date of registration determined in the annual university calendar, present a research proposal and proposed title for approval and registration to a Scientific Committee.

ENG 1.2.3 Extension of study period

In accordance with General Academic Rule 4.23 and 5.20.1 students may apply for extension of their study period. Applications are presented to the higher degrees committee for consideration

ENG 1.3 MASTERS DEGREES

ENG 1.3.1 Purpose and structure of general master's degrees

In accordance with General Academic Rule 4.2.3.1 and the faculty of Engineering offers a general master's degree in the form of a research master's degree by dissertation with a minimum of 180 credits for research. Each credit represents 10 hours of notional study.

ENG 1.3.2 Examination and moderation

In accordance with [General Academic Rule](#) 4.18.2.3., examination materials must be submitted for external moderation

ENG 1.3.3. Supervision

In accordance with [General Academic Rule](#) 4.10, for each student, at least one supervisor/promotor will be appointed that is of the status of being eligible to be appointed as a member of the Faculty Board. However, applications for exceptions, may be presented to the Higher Degrees Committee, who will make a recommendation to the Faculty Board for final consideration.

With reference to General Academic Rule 4.10.4., the faculty board may in exceptional circumstances approve the appointment of a co-supervisor on the grounds of relevant technical expertise despite such a person not being in possession of a master's degree. Such applications will be motivated by the applicable research director, applicable scientific committee and recommended for approval by the Faculty Board.

ENG 1.3.4 Requirements for the research component of a Masters degree

In accordance with [General Academic Rule](#) 4.4.2, students enrolled for a Masters degree may make use of the research article format.

ENG 1.4 DOCTORAL DEGREES

ENG 1.4.1. Completion requirements for a doctoral degree

In accordance with [General Academic Rule](#) 5.3.2, a doctoral candidate is required to

- a) In addition to the title registration presentation at a Scientific committee meeting, a PhD student needs to present the progress of their work at a Scientific Committee Meeting or an accredited conference where aspects of their work are presented to an audience of established researchers and peers: and
- b) Have at least one full-length research paper on aspects of the thesis accepted for publication in a DHET accredited journal. The list of DHET accredited journals is available at:
<https://collections.nwu.ac.za/dbtw-wpd/textbases/accredited-journals/accred.html>

ENG 1.4.2 Requirements for the research component of a doctoral degree

In accordance with [General Academic Rule](#) 5.4.2, a doctoral candidate is required to

Have at least one full-length research paper on aspects of the thesis accepted for publication in a DHET accredited journal. The list of DHET accredited journals is available at:

<https://collections.nwu.ac.za/dbtw-wpd/textbases/accredited-journals/accred.html>

ENG 1.4.3 Supervision

In accordance with [General Academic Rule](#) 5.9.2, for each student, at least one supervisor/promotor will be appointed that is of the status of being eligible to be appointed as a member of the Faculty Board. However, applications for exceptions, may be presented to the Higher Degrees Committee, who will make a recommendation to the Faculty Board for final consideration.

ENG 1.4.4 Research Articles submitted as research product

In accordance with [General Academic Rule](#) 5.12, when the research product is submitted for examination, the candidate needs to provide proof that the research article was accepted by a scholarly journal.

ENG 2. QUALIFICATIONS, PROGRAMMES AND CURRICULA

MASTER'S DEGREES (Research)					
Qualification	Specialisation	Qualification Code	Mode of delivery	Campus	NQF level
Master of Engineering in Chemical Engineering		7CE N01	Contact	PC	9
Master of Engineering in Computer and Electronic Engineering		7CD N01	Contact	PC	9
Master of Engineering in Electrical and Electronic Engineering		7CC N01	Contact	PC	9
Master of Engineering in Electrical and Electronic Engineering	Electromechanical Engineering	7CC N02	Contact	PC	9
Master of Engineering in Industrial Engineering		7CP N01	Contact	PC	9
Master of Engineering in Mechanical Engineering		7CB N01	Contact	PC	9
Master of Engineering in Mechanical Engineering	Electromechanical Engineering	7CB N03	Contact	PC	9
Master of Science in Engineering Sciences with (MSc)	Chemical Engineering	7CM N02	Contact	PC	9
	Computer and Electronic Engineering	7CM N04	Contact	PC	9
	Electrical and Electronic Engineering	7CM N03	Contact	PC	9
	Mechanical Engineering	7CM N01	Contact	PC	9
	Nuclear Engineering	7CM N05	Contact	PC	9
	Nuclear Engineering and Nuclear Technology Management	7CM N06	Contact	PC	9
	Industrial Engineering	7CM N07	Contact	PC	9

DOCTORAL DEGREES					
Qualification	Specialisation	Qualification Code	Mode of delivery	Campus	NQF level
Doctor of Philosophy in Engineering	Chemical Engineering	7CA R01	Contact	PC	10
	Computer Engineering	7CA R03	Contact	PC	10
	Computer and Electronic Engineering	7CA R02	Contact	PC	10
	Electrical Engineering	7CA R06	Contact	PC	10
	Electronic Engineering	7CA R07	Contact	PC	10
	Electrical and Electronic Engineering	7CA R05	Contact	PC	10
	Industrial Engineering	7CA R11	Contact	PC	10
	Mechanical Engineering	7CA R09	Contact	PC	10
	Nuclear Engineering	7CA R10	Contact	PC	10

ENG 3. PROGRAMME OUTCOMES

<p>DOCTOR OF PHILOSOPHY (PhD)</p>	<p>The programme outcomes have been achieved if the student has made an original contribution to knowledge in the chosen field as evidenced by a thesis with proper structure, style, and language that includes:</p> <ul style="list-style-type: none"> • Identification and formulation of an original engineering research problem; • Critical engagement with existing knowledge to compile a comprehensive and relevant exposition thereof, which also reveals the originality of the envisaged contribution; • Development and execution of appropriate and advanced research procedures to solve research problem and verify solution; • Assessment, validation and conclusion of research results and solutions; and • Communication and defense of the research problem, research process, research results and the originality of the contribution.
<p>MASTER OF ENGINEERING (MEng)</p>	<p>The programme outcomes have been achieved if the student demonstrates competence in applying research methodology as evidenced by a dissertation with proper structure, style, and language that includes:</p> <ul style="list-style-type: none"> • Identification and formulation of an engineering research problem; • Critical engagement with existing knowledge to compile a relevant literature survey; • Development and execution of appropriate research procedures to solve research problem and verify solution; • Assessment, validation and conclusion of research results and solutions; and • Communication of the research problem, research process and research results.
<p>MASTER OF SCIENCE IN ENGINEERING SCIENCES (MSc)</p>	<p>The programme outcomes have been achieved if the student demonstrates competence in applying research methodology as evidenced by a dissertation with proper structure, style, and language that includes:</p> <ul style="list-style-type: none"> • Identification and formulation of a research problem within the context of engineering science; • Critical engagement with existing knowledge to compile a relevant literature survey; • Development and execution of appropriate research procedures to solve research problem and verify solution; • Assessment, validation and conclusion of research results and solutions; and • Communication of the research problem, research process and research results.

ENG 4. PROGRAMME ASSESSMENT CRITERIA

DOCTOR OF PHILOSOPHY (PhD)	<p>Question existing knowledge boundaries and practices in the field related to research problem. Formulate complex, unfamiliar problems in the field of Engineering. Deal with complexity, lacunae and contradictions in the knowledge base of the field of Engineering to identify and formulate an original research problem.</p>
	<p>Demonstrate in-depth and critical knowledge and high levels of theoretical understanding in a complex and specialised area within the field of Engineering and/or across specialised or applied areas and expand or redefine existing knowledge in the field of Engineering. Show mastery of the literature and state of research in area related to the research problem.</p>
	<p>Use intellectual independence and advanced research skills through the ability to apply sophisticated knowledge and research methodologies towards solving the research problem and to verify the solution.</p>
	<p>Execute autonomous independent judgements about information and concepts at highly abstract levels and make evaluations of research results on the basis of independently generated criteria and confirm that the proposed solution solves the research problem.</p>
	<p>Compile an appropriately structured and coherent written thesis to communicate and defend the research problem, research process, research results and originality of the contribution and to demonstrate accomplishments of all other outcomes. This may be presented in traditional monograph format, or as a thesis based on a series of journal articles authored by the candidate. Disseminate some research results by means of academic journals and/or conferences.</p>
MASTER OF ENGINEERING (MEng)	<p>Identify knowledge boundaries and practices in the field related to research problem. Within this context, formulate a research problem in the field of Engineering.</p>
	<p>Demonstrate knowledge and theoretical understanding in a specialised area within the field of Engineering. Synthesise existing knowledge in the field of Engineering. Show mastery of the literature and state of research area related to the research problem.</p>
	<p>Use appropriate research skills to apply appropriate knowledge and research methodologies towards solving the research problem and to verify solution.</p>
	<p>Execute judgements and make evaluations to confirm that the proposed solution solves the research problem. Apply theoretical insights and research findings beyond the context of research process.</p>
	<p>Compile an appropriately structured and coherent written dissertation to communicate the research problem, research process and research results and to demonstrate accomplishment of all the other outcomes.</p>

MASTER OF SCIENCE ENGINEERING SCIENCES (MSc)	<p>Identify knowledge boundaries and practices in the field related to research problem. Within this context, formulate a research problem in the field of Engineering science.</p>
	<p>Demonstrate knowledge and theoretical understanding in a specialised area within the field of Engineering and/or across specialised or applied areas and expand or redefine existing knowledge in the field of Engineering. Show mastery of the literature and state of research in area related to the research problem.</p>
	<p>Use appropriate research skills to apply appropriate knowledge and research methodologies towards solving the research problem and to verify solution.</p>
	<p>Execute judgements and make evaluations to confirm that the proposed solution solves the research problem. Apply theoretical insights and research findings beyond the context of research process.</p>
	<p>Compile an appropriately structured and coherent written dissertation to communicate the research problem, research process and research results and to demonstrate accomplishment of all the other outcomes.</p>

ENG 5. THE DEGREE MASTER OF ENGINEERING

ENG 5.1 RULES FOR THE DEGREE MASTER OF ENGINEERING

ENG 5.1.1 Duration

Refer to [General Academic Rule](#) 1.13.

The minimum term of study is **one (1) year**.

ENG 5.1.2 Minimum admission requirements for the qualification...

- a) An applicable four (4) year bachelor's degree (ECSA-accredited) in engineering or an equivalent qualification.

ENG 5.1.3 Composition of the programme

In accordance with General Academic Rule 4.2.2., the master's degree consists of a total number of 180 credits. Each credit represents 10 hours of notional study

In accordance with General Academic Rule 4.2.3., the faculty of Engineering offers a general master's degree in the form of a research master's degree by dissertation with a minimum of 180 credits for research.

UNIT FOR ENERGY AND TECHNOLOGY SYSTEMS					
Qualification	Specialisation	Qualification Code	Module	Module Name	Credits
Master of Engineering in Chemical Engineering		7CE N01	CEMI 871	Dissertation	180
Master of Engineering in Computer and Electronic Engineering		7CD N01	EERI 871	Dissertation	180
Master of Engineering in Electrical and Electronic Engineering		7CC N01	EERI 871	Dissertation	180
Master of Engineering in Electrical and Electronic Engineering	Electromechanical Engineering	7CC N02	EEEM 871	Dissertation	180
Master of Engineering in Industrial Engineering		7CP N01	INGB 871	Dissertation	180
Master of Engineering in Mechanical Engineering		7CB N01	MEGI 871	Dissertation	180
Master of Engineering in Mechanical Engineering	Electromechanical Engineering	7CB N03	MEEM 871	Dissertation	180

ENG 6. THE DEGREE MASTER OF SCIENCE IN ENGINEERING SCIENCE

ENG 6.1 RULES FOR THE MASTER OF SCIENCE IN ENGINEERING SCIENCES

ENG 6.1.1 Duration

Refer to [General Academic Rule](#) 1.13.

The minimum term of study is **one (1) year**.

ENG 6.1.2 Minimum admission requirements for the qualification

Chemical, Computer, Electrical, Electronic, Industrial, Mechanical and Development and Management Engineering:

- a) Applicable BSc (Hons) degree; or
- b) Applicable four (4) year bachelor's degree (*ECSA-accredited*) in engineering; or
- c) A Postgraduate diploma in Engineering,
- d) Another recognised qualification that allows the student to attain equivalent status and which has been approved by the Higher Degrees Committee (or FB see 5.1.2c); or

Nuclear Engineering:

- a) Postgraduate Diploma in Nuclear Science and Technology; or
- b) Postgraduate Diploma in Nuclear Science and Technology with Nuclear Technology Management; or
- c) Applicable BSc (Hons) degree that provides the required theoretical knowledge in Nuclear Engineering; or
- d) Applicable four (4) year bachelor's degree (ECSA-accredited) in engineering that provides the required theoretical knowledge in Nuclear Engineering; or
- e) Another recognised qualification that allows the student to attain equivalent status and which has been approved by the Higher Degrees Committee.

Nuclear Engineering and Nuclear Technology Management:

- a) NWU's Postgraduate Diploma in Nuclear Science and Technology with Nuclear Technology Management; or
- b) Applicable BSc (Hons) degree that provides the required theoretical knowledge in Nuclear Engineering and Nuclear Technology Management; or
- c) Applicable four (4) year bachelor's degree (ECSA-accredited) in engineering that provides the required theoretical knowledge in Nuclear Engineering and Nuclear Technology Management; or
- d) Another recognised qualification that allows the student to attain equivalent status and which has been approved by the Higher Degrees Committee. However it should be noted that the endorsement of the International Atomic Energy Agency (IAE) can only be obtained if students has the NWU's Postgraduate Diploma in Nuclear Science and Technology with Nuclear Technology Management, or another similar qualification which is endorsed by the IAEA.

Explanatory notes for the above Nuclear Engineering admission requirements are available at the following link:

<http://engineering.nwu.ac.za/nuclear-engineering/masters-degrees-nuclear-engineering>

ENG 6.1.3 Composition of the programme

In accordance with General Academic Rule 4.2.2., the master's degree consists of a total number of 180 credits. Each credit represents 10 hours of notional study.

In accordance with General Academic Rule 4.2.3., the faculty of Engineering offers a general master's degree in the form of a research master's degree by dissertation with a minimum of 180 credits for research;

UNIT FOR ENERGY AND TECHNOLOGY SYSTEMS					
Qualification	Specialisation	Qualification Code	Module	Module Name	Credits
(MSc) Master of Science in Engineering Sciences with	Chemical Engineering	7CM N02	CEMI 871	Dissertation	180
	Computer and Electronic Engineering	7CM N04	EERI 871	Dissertation	180
	Electrical and Electronic Engineering	7CM N03	EERI 871	Dissertation	180
	Mechanical Engineering	7CM N01	MEGI 871	Dissertation	180
	Nuclear Engineering	7CM N05	NUCE 871	Dissertation	180
	Nuclear Engineering and Nuclear Technology Management	7CM N06	NUCE 871	Dissertation	180
	Industrial Engineering	7CM N07	INGB871	Dissertation	180

ENG 7. THE DEGREE OF DOCTOR OF PHILOSOPHY IN ENGINEERING

ENG 7.1 RULES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN ENGINEERING

ENG 7.1.1 Duration

Refer to [General Academic Rule](#) 1.13.
The minimum term of study is **two (2) years**.

ENG 7.1.2 Minimum admission requirements for the qualification

- MEng; or
- Applicable MSc in Engineering/Natural Sciences; or
- Another recognised qualification that allows the student to attain equivalent status which is approved by the Faculty Board.

ENG 7.1.3 Composition of programme

In accordance with General Academic Rule 5.2.2, a doctoral degree consists of a total number of 360 credits. Each credit represents 10 hours of notional study
The faculty of Engineering offers a doctoral degree in the form of a research thesis of 360 credits.

UNIT FOR ENERGY AND TECHNOLOGY SYSTEMS				
Program	Qualification Code	Module Code	Module Name	Credit
Chemical Engineering	7CA R01	CEMI 972	Thesis	360
Computer Engineering	7CA R03	EREI 972	Thesis	360
Computer and Electronic Engineering	7CA R02	REEI 972	Thesis	360
Electrical Engineering	7CA R06	EERI 972	Thesis	360
Electronic Engineering	7CA R07	EEEE 972	Thesis	360
Electrical and Electronic Engineering	7CA R05	ELEI 972	Thesis	360
Industrial Engineering	7CA R11	INGB 972	Thesis	360
Development and Management Engineering	7CA R04	IIOB 972	Thesis	360
Mechanical Engineering	7CA R09	MEGI 972	Thesis	360
Nuclear Engineering	7CA R10	NUCI 972	Thesis	360