# University of Pretoria Yearbook 2016

# BEng Electrical Engineering Engage (12136031)

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| **Duration of study** | 5 years |
| **Total credits** | 568 |

## Programme information

**Please note:** The Engineering Augmented Degree Programme (ENGAGE) is an extended degree programme with a five-year curriculum. It is designed to enable students who show academic potential but who do not meet the normal entry requirements for the four-year degree programme, to obtain an Engineering degree. ENGAGE students spend the first three years of the programme covering the content of the first two years of the four-year degree programme. They also take compulsory augmented modules in each of the Level 1 subjects. These augmented modules provide students with background knowledge and skills needed to succeed in an engineering degree. The curriculum for years four and five of the ENGAGE programme are identical to the curriculum for years 3 and 4 of the 4-year programme, respectively. Students may apply directly for admission to the programme.

- Students must register for the entire programme, not components of it. The curriculum is fixed; there are no electives.
- Attendance at all components of years 1 to 3 of the programme is compulsory. Non-attendance will only be condoned in the case of illness (sick note required) or family crisis (e.g. a death in the family), in which case students must inform the programme administration immediately.
- Students who fail to meet the attendance requirement for any module in any semester of years 1 to 3 of the programme will be excluded from the programme.
- No augmented module may be repeated more than once.
- Selection into the programme will be based on a combination of performance in the National Senior Certificate examinations or equivalent and other selection tests approved by the faculty.
- A student who fails a mainstream module (e.g. Chemistry) but passes the associated augmented module (e.g. Additional chemistry) does not need to repeat the augmented module.
- A student who fails an augmented module (e.g. Additional chemistry) but passes the associated mainstream module (e.g. Chemistry) does not need to repeat the mainstream module.
- A student must meet the attendance requirement and obtain at least 40% for both the continuous assessment and test components as well as a final mark of 50% in order to pass an augmented module.

i. The curricula of the fourth and the fifth years of study are identical to those of the third and the fourth years of the four-year programme.
ii. JPO 110 is a prerequisite for JPO 120. Credit for JPO is obtained with a final mark of more than 50%. Conditional admission to JPO 120: If the final mark for JPO 110 is between 45% and 49%, a student can register for JPO 120 but credit for JPO 110 and JPO 120 will only be obtained if the final combined mark for JPO 110 and JPO 120 is above 50%.

**Please note:** All students will be required to successfully complete JCP 203, Community-based project 203, as part of the requirements for the BEng degree. A student may register for the module during any of the years of study of the programme, but preferably not during the first or the final year of study.

# Promotion to next study year

**Promotion to the second semester of the first year and to the second year of study (Eng. 14)**

a. A new first-year student who has failed in all the prescribed modules of the programme at the end of the first semester, is excluded from studies in the School of Engineering. A student who is registered for the Engineering Augmented Degree Programme and has passed only 8 credits will also be excluded.
b. A student who complies with all the requirements of the first year of study, is promoted to the second year of study.
c. A student who has not passed at least 70% of the credits of the first year of study after the November examinations, must reapply for admission should he/she intend to proceed with his/her studies. Application on the prescribed form must be submitted to the Student Administration of the School of Engineering not later than 11 January. Late applications will be accepted only in exceptional circumstances after approval by the Dean. Should first-year students be readmitted, conditions of readmission will be determined by the Admissions Committee.
d. Students who have not passed all the prescribed modules at first year level (level 100), as well as students who are readmitted in terms of Faculty Regulations must register for the outstanding first-year level (level-100) modules.
e. A student who is repeating his or her first year, may, on recommendation of the relevant heads of department and with the approval of the Dean, be permitted to enroll for modules of the second-year of study in addition to the first-year modules which he or she failed, providing that he or she complies with the prerequisites for the second-year modules and no timetable clashes occur. Students on the ENGAGE programme may, following the same procedure, be permitted to enrol for level-200 modules in addition to the level-100 modules which he/she failed providing that he/she complies with the prerequisites for the modules at 200-level and no timetable clashes occur. On recommendation of the relevant head of department and with special permission from the Dean, permission may be granted to exceed the prescribed number of credits. The total number of credits which may be approved may not exceed the normal number of credits per semester by more than 16 credits.
f. Students in Computer, Electrical and Electronic Engineering, who fail a first-year module for the second time, forfeit the privilege of registering for any modules of an advanced year of study.

**Please note:**

i. From the second year of study each student should be in possession of an approved calculator. It is assumed that each student will have easy access to a personal computer.
ii. Students who intend transferring to Mining Engineering, must familiarise themselves with the stipulations set out in the syllabi of PWP 121 Workshop practice 121.

**Promotion to the third year of study of the Four-year Programme, as well as to the third and the fourth years of study of the ENGAGE Programme. In case of the fourth year of study of the ENGAGE Programme, the words "first", "second" and "third" must be substituted with the words "second", "third" and "fourth" respectively. (Eng. 15)**

a. A student who complies with all the requirements of the second year of study, is promoted to the third year of study.
b. A student must pass all the prescribed modules at first year level (level 100) before he or she is admitted to any module at third year level (level 300).
c. A student who is repeating his or her second year must register for all the second-year modules still outstanding. Such a student may, on recommendation of the relevant head of department and with the approval of the Dean, be permitted to enroll for modules of the third year of study in addition to the second-year modules which he or she failed, providing that he or she complies with the prerequisites for the third-year modules and no timetable clashes occur. On recommendation of the relevant head of department, and with special permission from the Dean, permission may be granted to exceed the prescribed number of credits. The total number of credits which may be approved may not exceed the normal number of credits per semester by more than 16 credits.
d. Students in Computer, Electrical and Electronic Engineering who fail a second-year module for the second time forfeit the privilege of registering for any modules of the third year of study.
e. Students who intend transferring to Mining Engineering must familiarise themselves with the stipulations set out in the syllabi of PWP 120 Workshop practice 120, as well as PPY 317 Practical training 317.

**Promotion to the fourth year of study of the Four-year Programme, as well as to the fifth year of study of the ENGAGE Programme. In case of the fifth year of study of the ENGAGE Programme, the words "second", "third" and "fourth" must be substituted with the words "third", "fourth" and "fifth" respectively. (Eng. 16)**

a. A student who complies with all the requirements of the third year of study is promoted to the fourth year of study. A student who does not comply with all the requirements but who is able to register for all outstanding modules in order to complete the degree programme, may at registration be promoted to the fourth year of study.
b. A student must pass all the prescribed modules of the second year of study, before he or she is admitted to any module of the fourth year of study.
c. A student who has not passed all the prescribed modules of the third year of study, must register for the outstanding modules. A student may be admitted by the Dean, on the recommendation of the head of department concerned, to modules of the fourth year of study, in addition to the outstanding third-year modules, provided that he or she complies with the prerequisites of the fourth-year modules and no timetable clashes occur. The total number of credits per semester for which a student registers may not exceed the normal number of credits per semester by more than 16 credits. In exceptional cases, the Dean may, on recommendation of the relevant head of department, permit a student to exceed the above limit.
d. Students in Computer, Electrical and Electronic Engineering who fail a third-year module for the second time, forfeit the privilege of registering for any modules of the fourth year of study.

## Pass with distinction

a. A student graduates with distinction if:

i. no module of the third or fourth year of study of the four year programme or of the fourth or fifth year of the ENGAGE programme was repeated and a weighted average of at least 75% was obtained in one year in all the modules of the final year of study; and
ii. the degree programme was completed within the prescribed four years for the four year programme and

within the prescribed five years of the ENGAGE programme.

b. Exceptional cases to the above will be considered by the Dean.

# Curriculum: Year 1

**Minimum credits: 128**

## Fundamental modules

Academic orientation 112 (UPO 112) - Credits: 0.00

## Core modules

General chemistry 172 (CHM 172) - Credits: 16.00
Physics 116 (FSK 116) - Credits: 16.00
Professional orientation 110 (JPO 110) - Credits: 8.00
Professional orientation 120 (JPO 120) - Credits: 8.00
Calculus 158 (WTW 158) - Credits: 16.00
Additional Mathematics 1 116 (JPO 116) - Credits: 8.00
Additional Mathematics 2 126 (JPO 126) - Credits: 8.00
Additional Physics 152 (JPO 152) - Credits: 8.00
Additional Chemistry 1 161 (JPO 161) - Credits: 8.00
Humanities and social sciences 110 (HAS 110) - Credits: 8.00
Humanities and social sciences 120 (HAS 120) - Credits: 8.00
Mathematics 164 (WTW 164) - Credits: 16.00

# Curriculum: Year 2

**Minimum credits: 120**

## Core modules

Electricity and electronics 111 (EBN 111) - Credits: 16.00
Practical wiring 200 (EPW 200) - Credits: 4.00
Community-based project 203 (JCP 203) - Credits: 8.00
Graphical communication 110 (MGC 110) - Credits: 16.00
Materials science 123 (NMC 123) - Credits: 16.00
Mechanics 122 (SWK 122) - Credits: 16.00
Calculus 258 (WTW 258) - Credits: 8.00
Numerical methods 263 (WTW 263) - Credits: 8.00
Additional Electricity and electronics 112 (JPO 112) - Credits: 8.00
Additional Graphical communication 113 (JPO 113) - Credits: 8.00
Additional Materials science 123 (JPO 123) - Credits: 8.00
Additional Mechanics 125 (JPO 125) - Credits: 8.00
Introduction to laboratory measurements and computer simulations 101 (EMR 101) - Credits: 4.00

# Curriculum: Year 3

**Minimum credits: 120**

## Core modules

Engineering statistics 220 (BES 220) - Credits: 8.00
Electrical engineering 211 (EIR 211) - Credits: 16.00
Linear systems 220 (ELI 220) - Credits: 16.00
Digital systems 220 (ERS 220) - Credits: 16.00
Dynamics 210 (MSD 210) - Credits: 16.00
Mathematics 238 (WTW 238) - Credits: 16.00
Differential equations 256 (WTW 256) - Credits: 8.00
Imperative programming 132 (COS 132) - Credits: 16.00
Professional and technical communication 210 (EJJ 210) - Credits: 8.00

# Curriculum: Year 4

**Minimum credits: 144**

## Core modules

Control systems 320 (EBB 320) - Credits: 16.00
Power electronics 320 (EDF 320) - Credits: 16.00
Electrical machines 311 (ELX 311) - Credits: 16.00
Microprocessors 310 (EMK 310) - Credits: 16.00
Electromagnetism 310 (EMZ 310) - Credits: 16.00
Analogue electronics 310 (ENE 310) - Credits: 16.00
Power system components 320 (EKK 320) - Credits: 16.00
Electrical engineering design 320 (EWE 320) - Credits: 16.00
DSP programming 300 (ESP 300) - Credits: 4.00
Engineering management 310 (BSS 310) - Credits: 8.00
Engineering activity and group work 320 (MIA 320) - Credits: 8.00

# Curriculum: Final year

**Minimum credits: 136**

## Core modules

Electrical drives 410 (EAD 410) - Credits: 16.00
Automation 410 (EBT 410) - Credits: 16.00
Energy systems 420 (ENR 420) - Credits: 16.00
Project 400 (EPR 400) - Credits: 64.00
Power system analysis 410 (EKK 410) - Credits: 16.00
Practical training and report 423 (EPY 423) - Credits: 16.00
Engineering professionalism 410 (IPI 410) - Credits: 8.00

The information published here is subject to change and may be amended after the publication of this information. The General Regulations (G Regulations) apply to all faculties of the University of Pretoria. It is expected of students to familiarise themselves well with these regulations as well as with the information contained in the General Rules section. Ignorance concerning these regulations and rules will not be accepted as an excuse for any transgression.