University of Pretoria Yearbook 2020

BEng Civil Engineering ENGAGE (12136007)

Minimum duration of study	5 years
Total credits	680
NQF level	08

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.

Learning outcomes of the BEng degree:
A graduate in engineering should be able to apply the following skills on an advanced level:

a. Engineering problem solving.
b. Application of specialist and fundamental knowledge, with specific reference to mathematics, basic sciences and engineering sciences.
c. Engineering design and synthesis.
d. Investigation, experimentation and data analysis.
e. Engineering methods, skills, tools and information technology.
f. Professional and general communication.
g. Awareness and knowledge of the impact of engineering activity on society and the physical environment.
h. Work in teams and in multidisciplinary environments.
i. An awareness and ability for lifelong learning.
j. An awareness and knowledge of principles of professional ethics and practice.
k. Awareness and knowledge of engineering management principles and economic decision-making.

Learning contents of the BEng programmes:
Six essential knowledge areas are included in the syllabi of the programmes. The typical representation of each knowledge area as a percentage of the total contents of an undergraduate programme is given in brackets ( ) in the list below. This percentage varies for the different study directions, but conforms in all instances to the minimum knowledge area content as stipulated by ECSA.
Knowledge areas:

a. Mathematics, including numerical methods and statistics (13%)
b. Basic sciences: the natural sciences essential to the programme (15%)
c. Engineering sciences (40%)
d. Engineering design and synthesis (16%)
e. Computing and information technology (5%)
f. Complementary studies: communication, economy, management, innovation, environmental impact, ethics, engineering practice (11%).

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 laptop 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 relevant head of department, 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 171 (CHM 171) - Credits: 16.00
Physics 176 (FSK 176) - Credits: 16.00
Humanities and social sciences 110 (HAS 110) - Credits: 8.00
Humanities and social sciences 120 (HAS 120) - Credits: 8.00
Professional orientation 110 (JPO 110) - Credits: 8.00
Additional Chemistry 1 111 (JPO 111) - Credits: 8.00
Additional Mathematics 1 116 (JPO 116) - Credits: 8.00
Professional orientation 120 (JPO 120) - Credits: 8.00
Additional Physics 122 (JPO 122) - Credits: 8.00
Additional Mathematics 2 126 (JPO 126) - Credits: 8.00
Workshop practice 121 (SWP 121) - Credits: 6.00
Calculus 158 (WTW 158) - Credits: 16.00
Mathematics 164 (WTW 164) - Credits: 16.00

Curriculum: Year 2

Minimum credits: 120

Core modules

Electricity and electronics 111 (EBN 111) - Credits: 16.00
Community-based project 203 (JCP 203) - 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
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

Curriculum: Year 3

Minimum credits: 128

Core modules

Engineering statistics 220 (BES 220) - Credits: 8.00
Geology for engineering 256 (GLY 256) - Credits: 16.00
Programming and information technology 213 (MPR 213) - Credits: 16.00
Pavement materials and design 221 (SGM 221) - Credits: 16.00
Structural analysis 223 (SIN 223) - Credits: 16.00
Strength of materials 210 (SWK 210) - Credits: 16.00
Strength of materials II 211 (SWK 211) - Credits: 16.00
Mathematics 238 (WTW 238) - Credits: 16.00
Differential equations 256 (WTW 256) - Credits: 8.00

Curriculum: Year 4

Minimum credits: 154

Core modules

Civil building materials 321 (SBM 321) - Credits: 16.00
Civil engineering measurement techniques 321 (SBZ 321) - Credits: 8.00
Soil mechanics 311 (SGM 311) - Credits: 16.00
Geotechnical engineering 323 (SGM 323) - Credits: 16.00
Hydraulics 310 (SHC 310) - Credits: 16.00
Hydraulics 321 (SHC 321) - Credits: 16.00
Timber design 310 (SIB 310) - Credits: 8.00
Civil engineering economics 310 (SIE 310) - Credits: 8.00
Structural analysis 311 (SIN 311) - Credits: 8.00
Steel design 323 (SIN 323) - Credits: 8.00
Reinforced concrete design 324 (SIN 324) - Credits: 8.00
Professional and technical communication 310 (SJJ 310) - Credits: 8.00
Transportation engineering 323 (SVC 323) - Credits: 16.00

Curriculum: Final year

Minimum credits: 158

Core modules

Engineering professionalism 410 (IPI 410) - Credits: 8.00
Civil engineering construction management 420 (SBZ 420) - Credits: 16.00
Computer applications in civil engineering 420 (SCA 420) - Credits: 16.00
Detailed design 420 (SDO 420) - Credits: 24.00
Civil environmental management 421 (SEV 421) - Credits: 16.00
Hydraulics 410 (SHC 410) - Credits: 16.00
Steel design 411 (SIN 411) - Credits: 8.00
Reinforced concrete design 413 (SIN 413) - Credits: 8.00
Practical training 410 (SPY 410) - Credits: 16.00
Research project 412 (SSC 412) - Credits: 30.00
Infrastructure planning 412 (SVC 412) - Credits: 16.00

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.