

BEng Computer Engineering

- [University of Pretoria](#)
- [Study at UP](#)
- BEng Computer Engineering

Computer engineering is one of the three internationally accepted and closely related subdisciplines of the traditional field of electrical engineering (electrical engineering, electronic engineering and computer engineering). Computer engineering is the most dynamic and rapidly growing engineering discipline in the vast and constantly expanding field of information and communication technology (ICT). There is hardly a technological system in the world that does not rely on computer engineering. It involves a combination of electronics, computer systems (hardware and software) and communication systems. A computer engineer is someone with a talent for optimising electronic systems with dedicated computing systems and control software. This includes computer and communication networks of all sizes – from a couple of microcontrollers to the worldwide web. It is essential to know what this career entails before enrolling for the programme.

A computer engineer has a good understanding of the basic sciences and a sound education in the theoretical and practical aspects (including design methodology) of electronics, digital systems, computer systems and control software. With the dramatic increase in computing and storage capabilities, as well as a decrease in size and cost, most technological systems include components of computer engineering.

The computer engineering degree at the University of Pretoria was developed in 1998 to deliver graduates who can undertake the most demanding challenges of the ICT world in all its forms. Examples of computer engineering include cellphone technology, car control computers for engine management, entertainment systems, security systems, air-conditioning, active suspension and the anti-lock braking system (ABSs), which all use the principles of sensing, computing and actuation under optimised software control. This is the fastest-growing new discipline in engineering, and job opportunities for graduates exist all over the world.

Computer engineering is used in the following fields in particular: telecommunications, computer networking, cellphone operations, computer system companies, military technologies (avionics, night vision, electronic warfare, smart bombs, drones, laser target designators), transport technologies (toll roads), internet banking, security systems, consumer equipment, modems, handheld scanners, voting, medical systems (portable and remote diagnostic recorders), robotics, entertainment equipment, global positioning system (GPS) navigation, measurement and control software, and fibre-optic (self-healing networks).

A computer engineer has to be innovative and must keep abreast of new technologies and developments in both software and hardware. Some computer engineers move very quickly into

management, where their analytical, synthesis, managerial and leadership skills enable them to reach the highest levels of corporate management.

The aim of computer engineering is to integrate electronics, computing and control systems in the best way possible to ensure fast, small and powerful systems. Typical subsystems include sophisticated software for artificial intelligence, biometrics, radio frequency (RF) subsystems and real-time applications, software engineering, human language technologies, e-commerce, m-commerce, billing software, data security and various networking applications, such as storage area networks.

For more information, please consult the Faculty webpage.

- **Disclaimer:** *This publication contains information about regulations and programmes of the University of Pretoria. Amendments to or updating of the information may be effected from time to time without prior notification. The accuracy, correctness or validity of the information contained here is therefore not guaranteed by the University at any given time and is always subject to verification. The user is kindly requested to verify the correctness of the information with the University at all times. Failure to do so will not give rise to any claim or action of any nature against the University by any party whatsoever.*
-

Career Opportunities

Computer engineers are active in all fields of the information superhighway and the information and communication technology (ICT) world, which include computer systems, software engineering, computer and communications networks, wireless sensor networks, embedded software, electronics, smart control systems and automation, data security, e-commerce, pattern recognition (face and speech recognition), and artificial intelligence. They specialise in combining hardware, software and communication technologies to optimise system performance.

Programme Code

12130009

Closing Dates

Applications for this plan have closed.

Admission Requirements

Important information for all prospective students for 2022

- The admission requirements apply to students who apply for admission to the University of Pretoria with a **National Senior Certificate (NSC) and Independent Examination Board (IEB) qualifications**.
- **Applicants with qualifications other than the abovementioned** should refer to:
 - **Brochure:** Undergraduate Programme Information 2022: Qualifications other than the NSC and IEB, available at [click here](#).
- **Citizens from countries other than South Africa (applicants who are not South African citizens)** should also refer to:
 - **Brochure:** Newcomer's Guide 2021, available at [click here](#).
 - **Website:** [click here](#).
- **School of Tomorrow (SOT), Accelerated Christian Education (ACE) and General Education Development Test (GED):** The University of Pretoria no longer accepts qualifications awarded by these institutions.
- **National Certificate (Vocational) (NCV) Level 4:** The University of Pretoria may consider NCV candidates, provided they meet the exemption for bachelor's status criteria and the programme requirements.

Transferring students

A transferring student is a student who, at the time of application for a degree programme at the University of Pretoria (UP) –

- is a registered student at another tertiary institution, **or** was previously registered at another tertiary institution and did not complete the programme enrolled for at that institution, and is not currently enrolled at a tertiary institution, **or** has completed studies at another tertiary institution, but is not currently enrolled at a tertiary institution, **or** has started with tertiary studies at UP, then moved to another tertiary institution and wants to be readmitted at UP.

A transferring student will be considered for admission based on

- an NSC or equivalent qualification with exemption to bachelor's or diploma studies (whichever is applicable); **and** meeting the minimum faculty-specific subject requirements at NSC or tertiary level; **or** having completed a higher certificate at a tertiary institution with faculty-specific subjects/modules passed (equal to or more than 50%), as well as complying with faculty rules on admission;
- previous academic performance (must have passed all modules registered for up to the closing date of application) or as per faculty regulation/promotion requirements;

- a certificate of good conduct.

Note: Students who have been dismissed at the previous institution due to poor academic performance, will not be considered for admission to UP.

Returning students

A returning student is a student who, at the time of application for a degree programme –

- is a registered student at UP, and wants to transfer to another degree at UP, **or** was previously registered at UP and did not complete the programme enrolled for, and did not enrol at another tertiary institution in the meantime (including students who applied for leave of absence), **or** has completed studies at UP, but is not currently enrolled or was not enrolled at another tertiary institution after graduation.

A returning student will be considered for admission based on

- an NSC or equivalent qualification with exemption to bachelor's or diploma studies (whichever is applicable); **and** meeting the minimum faculty-specific subject requirements at NSC or tertiary level; **or** previous academic performance (should have a cumulative weighted average of at least 50% for the programme enrolled for);
- having applied for and was granted leave of absence.

Note: Students who have been excluded/dismissed from a faculty due to poor academic performance may be considered for admission to another programme at UP. The Admissions Committee may consider such students if they were not dismissed more than twice. Only ONE transfer between UP faculties will be allowed, and a maximum of two (2) transfers within a faculty.

Important faculty-specific information on undergraduate programmes for 2022

- The closing date is an administrative admission guideline for non-selection programmes. Once a non-selection programme is full and has reached the institutional targets, then that programme will be closed for further admissions, irrespective of the closing date. However, if the institutional targets have not been met by the closing date, then that programme will remain open for admissions until the institutional targets are met.
- The following persons will be considered for admission: Candidates who have a certificate that is deemed by the University to be equivalent to the required National Senior Certificate (NSC) with university endorsement; candidates who are graduates from another tertiary institution or have been granted the status of a graduate of such an institution, and candidates who are graduates of another faculty at the University of Pretoria.
- Life Orientation is excluded when calculating the APS.
- Grade 11 results are used for the conditional admission of prospective students.
- A valid qualification with admission to degree studies is required.



- Minimum subject and achievement requirements, as set out below, are required.
- Conditional admission to the four-year programmes in the School of Engineering is guaranteed only if a prospective student complies with ALL the requirements as indicated in the table.
- Admission to ENGAGE in the School of Engineering will be determined by the NSC results, achievement levels of 5 for Mathematics, Physical Sciences and English, and an APS of 30.
- Students may apply directly to be considered for the ENGAGE programme.
- All modules will be presented in English, as English is the language of tuition, communication and correspondence.

Note: Our programmes are accredited by the Engineering Council of South Africa (ECSA), and our degrees meet the requirements for Professional Engineers in SA.

University of Pretoria website: [click here](#)

Minimum requirements			
Achievement level			
English Home Language or English First Additional Language	Mathematics	Physical Sciences	APS
NSC/IEB	NSC/IEB	NSC/IEB	
5	6	6	35

ENGAGE Programme minimum requirements			
Achievement level			
English Home Language or English First Additional Language	Mathematics	Physical Sciences	APS
NSC/IEB	NSC/IEB	NSC/IEB	
5	5	5	30

Duration of study

4 years, full-time.

Faculty Notes

The Faculty of Engineering, Built Environment and Information Technology at the University of Pretoria is a leading source of graduates in the engineering, built environment and information technology professions. We achieve this by a focus on research to drive innovative and enquiry-led teaching for educating and positioning our students to be leaders in their professions. The Faculty has extensive and cutting-edge teaching, learning and laboratory facilities integrated with the excellent suite of facilities and services offered by the University. We facilitate access to our qualifications through our extended programmes but expect our students to excel and develop as future professionals through our programme offering. We invite you to consider enrolling in one of our programmes if you share our vision of excellence and want to position yourself as a leader in the professions that we support.

The Faculty is organised in four schools: the School of Engineering, the School for the Built Environment, the School of Information Technology and the Graduate School of Technology Management. The School of Engineering is the largest of its kind in the country in terms of student numbers, graduates and research contributions and offers programmes in all the major engineering disciplines with many specialisations also offered at undergraduate and graduate level.

The University of Pretoria aims to be internationally competitive while also locally relevant. Advisory boards at both faculty and departmental level promote alignment and excellence in our teaching and research activities. Where applicable and available our programmes are accredited by statutory and professional bodies at both national and international level.

Enquiries about the programme

[Click Here](#)



How to apply



Online Application





Note: Also consult General Rules and Information on the Yearbook website for additional information.

Disclaimer: Due to the continuous restructuring of the Faculty and this website, some of the information displayed here may not fully reflect the most recent developments in the Faculty. Any discrepancies that are experienced may be taken up with Student Administration of the Faculty.