

University of Pretoria Yearbook 2018

BSc Architecture (12132018)

Minimum duration of study	3 years
Total credits	404
Contact	Dr N Botes nico.botes@up.ac.za +27 (0)124204600

Programme information

Architecture entails the design of buildings and the spaces between those buildings. Art and science are employed to create liveable environments, that contribute towards the spiritual and material prosperity of the country. Architects are often innovative, critical thinkers that lead and form part of consultant teams. Although they are employed by organisations involved with development, investment, research, marketing, the industry or even education, many architects prefer to be independent consultants and entrepreneurs.

BScArch is regarded as an exit level that enables the graduate to register as a candidate architectural technologist, and BArchHons as candidate senior architectural technologist, at the South African Council for the Architectural Profession. A architectural technologist is a professional person registered by the SACAP in terms of the Act on the Architectural Profession (Act 44 of 2000). Such practitioners provide assistance in the practices of the disciplines of architecture, interior architecture, landscape architecture and urban design where their responsibilities would be the documentation of projects, project administration and site management.

Students are advised to work in the offices of an architect to gain practical experience during the university recesses and during a year out after completion of the BScArch degree.

A graduate wishing to become a professional architect must apply for, and pursue, a further two years of full-time studies in the professional degree programme. The Master of Architecture (Professional) degree is recognised by the South African Council for the Architectural Profession as qualifying the graduate to register as a candidate professional architect in terms of the Act on the Architectural Profession (Act 44 of 2000).

Admission requirements

- The following persons will be considered for admission: a candidate who is in possession of a certificate that is deemed by the University to be equivalent to the required Grade 12 certificate with university endorsement; a candidate who is a graduate from another tertiary institution or has been granted the status of a graduate of such an institution; and a candidate who is a graduate of another faculty at the University of Pretoria.
- Life Orientation is excluded when calculating the APS.
- Grade 11 results are used in the provisional 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. On first-year level a student has a choice between Afrikaans and English as language medium. In certain cases, tuition may be presented in English only, for example in electives, where the lecturer may not speak Afrikaans or in cases where it is not economically or practically viable.
- BSc (Architecture) will only be considered as first study choice. Selection programme: Selection includes an

interview.

Minimum requirements												
Achievement level												
Afrikaans or English				Mathematics				Physical Sciences				APS
NSC/IEB	HIGCSE	AS-Level	A-Level	NSC/IEB	HIGCSE	AS-Level	A-Level	NSC/IEB	HIGCSE	AS-Level	A-Level	
5	3	C	C	4	3	D	D	4	3	D	D	

Additional requirements

Please Note: Students wishing to transfer to other programmes in the Department of Architecture must obtain written consent from the admissions committee.

Other programme-specific information

Concurrent presentation

In the third year of study Design, Construction, Design communication, Environmental studies and Earth studies must initially be examined in the same year.

The degree is awarded to those students obtaining all the prescribed credits for the programme modules.

Promotion to next study year

A student is promoted to a subsequent year of study after acquiring all the prerequisite module credits of the preceding year of study.

A student is deemed to be in the year of study for which he or she is registered in Design.

If the student is not registered for Design the highest passed year of Design determines the year of study.

Please Note: Students not promoted to the next year of study must obtain the approval of the programme coordinator and the Head of Department to register for modules in the subsequent year of study. Students must re-apply for admission to the Department of Architecture in instances where:

- a student is not promoted to the second year of study;
- a student after repeating any year of study, is not promoted to the following year of study.

Pass with distinction

The degree is conferred with distinction on a student who, at first registration, passes all modules of the final year of study with a weighted average of 75%. The degree must have been completed within the minimum prescribed time and no supplementary/special examinations may have been written.

Curriculum: Year 1

Minimum credits: 116

Fundamental modules

Academic orientation 112 (UPO 112)

Module credits	0.00
Language of tuition	Afrikaans and English are used in one class
Department	EBIT Deans Office
Period of presentation	Year

Core modules

Earth studies 110 (AAL 110)

Module credits	10.00
Prerequisites	No prerequisites.
Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Architecture
Period of presentation	Semester 1

Module content

Introduction to the basic concepts of ecology, natural resources and stress on the environment; systems thinking; earth as system; changing paradigms and values; ecological design principles; geo-referencing; geo-mapping, basic site survey.

Academic information management 102 (AIM 102)

Module credits	6.00
Service modules	Faculty of Education Faculty of Economic and Management Sciences Faculty of Humanities Faculty of Law Faculty of Health Sciences Faculty of Natural and Agricultural Sciences Faculty of Theology and Religion Faculty of Veterinary Science
Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Separate classes for Afrikaans and English
Department	Information Science

Period of presentation Semester 2

Module content

Find, evaluate, process, manage and present information resources for academic purposes using appropriate technology. Apply effective search strategies in different technological environments. Demonstrate the ethical and fair use of information resources. Integrate 21st-century communications into the management of academic information.

Academic information management 111 (AIM 111)

Module credits 4.00

Service modules

Faculty of Engineering, Built Environment and Information Technology
Faculty of Education
Faculty of Economic and Management Sciences
Faculty of Humanities
Faculty of Law
Faculty of Health Sciences
Faculty of Natural and Agricultural Sciences
Faculty of Theology and Religion

Prerequisites No prerequisites.

Contact time 2 lectures per week

Language of tuition Separate classes for Afrikaans and English

Department Information Science

Period of presentation Semester 1

Module content

Find, evaluate, process, manage and present information resources for academic purposes using appropriate technology.

Academic information management 121 (AIM 121)

Module credits 4.00

Service modules

Faculty of Engineering, Built Environment and Information Technology
Faculty of Education
Faculty of Economic and Management Sciences
Faculty of Humanities
Faculty of Law
Faculty of Health Sciences
Faculty of Natural and Agricultural Sciences
Faculty of Theology and Religion
Faculty of Veterinary Science

Prerequisites No prerequisites.

Contact time 2 lectures per week

Language of tuition Separate classes for Afrikaans and English

Department Informatics



Period of presentation Semester 2

Module content

Apply effective search strategies in different technological environments. Demonstrate the ethical and fair use of information resources. Integrate 21st-century communications into the management of academic information.

Elective module 110 (ARC 110)

Module credits 6.00

Prerequisites No prerequisites.

Language of tuition Afrikaans and English are used in one class

Department Architecture

Period of presentation Semester 1

Construction 111 (KON 111)

Module credits 8.00

Prerequisites No prerequisites.

Contact time 3 lectures per week

Language of tuition Module is presented in English

Department Architecture

Period of presentation Semester 1

Module content

The context of architectural technology and the relationships between technology, theory, structure and materials. Drawing conventions. The typical city site. The construction and materials of a single storey dwelling with masonry walls and a pitched roof, from preparation for building work to substructure, retaining walls and floors.

Construction 121 (KON 121)

Module credits 8.00

Prerequisites KON 111 GS

Contact time 1 practical per week, 3 lectures per week

Language of tuition Module is presented in English

Department Architecture

Period of presentation Semester 2

Module content

Continuation of the construction and materials of a single storey dwelling. Superstructure: walls, opening, roofs, finishes and services.

Design communication 120 (OKU 120)

Module credits	6.00
Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Afrikaans and English are used in one class
Department	Architecture
Period of presentation	Semester 2

Module content

Quarter 3: Introduction to basic computer aided design.

Quarter 4: Introduction to the theory of structures: Forces, moments, stresses, strains, Young's Modulus, Structural components: beams, columns and trusses.

Environmental theory 110 (OML 110)

Module credits	6.00
Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Afrikaans and English are used in one class
Department	Architecture
Period of presentation	Semester 1

Module content

Introductory contextualisation of twentieth century artefacts within the framework of history from Antiquity to Modernity. Building types as artefacts of material culture. Approaches and guidelines to the study of history of the environment. Understanding of the process of endemic construction and its monumentalisation, settlement and urbanisation of various ages and environments. An interdisciplinary investigation of living spaces as shapers of social interaction. The history of the environment of the Mediterranean Antique, Bronze Age, Classical and Biblical societies.

Environmental studies 120 (OML 120)

Module credits	6.00
Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Afrikaans and English are used in one class
Department	Architecture
Period of presentation	Semester 2

Module content

The history of the environment of and the link between North-Europe and the Mediterranean area, the Arabic peninsula and the Indies, from the fall of Jerusalem up until the fall of Constantinople in 1453 AD. Tao, Shinto and the landscape of the Far East.

Design 100 (ONT 100)

Module credits	60.00
Prerequisites	No prerequisites.
Contact time	17 studio hours per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Architecture
Period of presentation	Year

Module content

Introduction to design and integration with supporting modules. Design principles, skills and techniques. Small-scale design projects and environmental influences (physical, social, cultural, historical), space requirements and creative interpretation. Acquisition of skills in design communication through imagination, intuition and conceptual thinking. Relation of internal to external space. Anthropometry and ergonomics; visual literacy (visual media, analysis and interpretation) and criticism. The designer as visual thinker. Perception; ideograms. Development of a vocabulary to describe and illustrate the discipline of design. Pertinent theory that informs and supports the design process.

Curriculum: Year 2

Minimum credits: 136

Core modules

Earth studies 210 (AAL 210)

Module credits	8.00
Prerequisites	No prerequisites.
Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Architecture
Period of presentation	Semester 1

Module content

Meso-environment:

Climate: atmospheric constituents and processes, weather systems, heat radiation and transfer, solar charts, sun movement and heat gain control.

Air: airflow patterns around structures, natural ventilation.

Water vapour: diffusivity, transfer and condensation.

Heat: thermal comfort and comfort indices, thermal performance of materials and structures, time lag, decrement and periodic heat transfer.

Earth studies 224 (AAL 224)

Module credits	4.00
Prerequisites	No prerequisites.
Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Architecture
Period of presentation	Quarter 4

Module content

Environmental filters and forecasting techniques:

Sound: the physical nature of sound, physiology of hearing, sound and noise sources, transfer, absorption and isolation, noise control; measurement, levels, frequency analysis, A-loading, room acoustics, reverberation periods.

Light: properties of natural light, design criteria, daylight factors, diffusion, quality, energy requirements and saving.

Geomorphology of the built environment 265 (GGY 265)

Module credits	12.00
Service modules	Faculty of Engineering, Built Environment and Information Technology

Prerequisites	No prerequisites.
Contact time	4 lectures per week
Language of tuition	Afrikaans and English are used in one class
Department	Geography Geoinformatics and Meteorology
Period of presentation	Quarter 3

Module content

*This module is for Architecture and Landscape Architecture students only.

The theory component covers geomorphological aspects of the built environment including landscape identification; weathering or deterioration of natural stone and application to design and preservation of buildings and monuments; slope hydrology and stability conditions; soil erosion processes and construction impacts; drainage modification in urban areas; wetland identification, human impacts and rehabilitation; recreational impacts and management. In addition to the theory a field-based project is undertaken.

Community-based project 201 (JCP 201)

Module credits	8.00
Prerequisites	No prerequisites.
Contact time	1 other contact session per week
Language of tuition	Separate classes for Afrikaans and English
Department	Informatics
Period of presentation	Year

Module content

This project-orientated module is a form of applied learning which is directed at specific community needs and is integrated into all undergraduate academic programmes offered by the Faculty of Engineering, Built Environment and Information Technology. The main objectives with the module are as follows:

- (1) The execution of a community related project aimed at achieving a beneficial impact on a chosen section of society, preferably but not exclusively, by engagement with a section of society which is different from the student's own social background.
- (2) The development of an awareness of personal, social and cultural values, an attitude to be of service, and an understanding of social issues, for the purpose of being a responsible professional.
- (3) The development of important multidisciplinary and life skills, such as communication, interpersonal and leadership skills.

Assessment in the module will include all or most of the following components: evaluation and approval of project proposal, assessment of oral and/or written progress reports, peer assessment in the event of team projects, written reportback by those at which the project was aimed at, and final assessment on grounds of the submission of a portfolio and a written report.

Construction 210 (KON 210)

Module credits	8.00
Prerequisites	KON 111 and KON 121
Contact time	3 lectures per week



Language of tuition Module is presented in English

Department Architecture

Period of presentation Semester 1

Module content

Double-storeyed buildings: reinforced concrete, steel and timber-framed structures. Offshutter concrete. Load-bearing masonry. Low-pitch roofs and waterproofing, other pitched-roof finishes. Lightweight partitioning. Glass. Joinery. Small precast elements.

Construction 220 (KON 220)

Module credits 8.00

Prerequisites KON 210 GS

Contact time 3 lectures per week

Language of tuition Module is presented in English

Department Architecture

Period of presentation Semester 2

Module content

Soil mechanics: foundations, basement construction and waterproofing. Site structures: geotextiles and geomembranes, stairs, walls, retaining walls, fences, ramps, gabions, prefabricated retaining blocks. Built planters, lapas, braais, pavilions, decks.

Environmental theory 210 (OML 210)

Module credits 6.00

Prerequisites No prerequisites.

Contact time 2 lectures per week

Language of tuition Module is presented in English

Department Architecture

Period of presentation Semester 1

Module content

The history of the environment and the link between North-Europe and a newly discovered world from the time of the circumnavigation of the southernmost Cape Point of Africa till the Industrial Revolution.

Environmental studies 220 (OML 220)

Module credits 6.00

Prerequisites No prerequisites.

Contact time 2 lectures per week

Language of tuition Module is presented in English

Department Architecture

Period of presentation Semester 2

Module content

History of the environment of Western societies and their dominions from the Industrial Revolution up to the intellectual questioning of Modernism. Southern African housing typologies and Western artefacts as manifestation of socio-political realities since 1488 AD.

Design 200 (ONT 200)

Module credits 60.00

Prerequisites AAL 110, KON 111, KON 121, OML 110, OML 120 and ONT 100

Contact time 17 studio hours per week, 2 lectures per week

Language of tuition Afrikaans and English are used in one class

Department Architecture

Period of presentation Year

Module content

The process and product of design through the integration of supporting modules. Spatial design as response to tectonic and contextual influences. The production of space and the reading of place as central concerns in the design disciplines. The design of residential and simple public spaces and buildings with the emphasis on planning, plan-making, structure and economy as design determinants. Skills: programming, site analysis, time management, advanced graphic and reprographic techniques. Pertinent theory that informs and supports the design process in architecture.

Theory of structures 211 (STU 211)

Module credits 8.00

Prerequisites No prerequisites.

Contact time 3 lectures per week

Language of tuition Module is presented in English

Department Civil Engineering

Period of presentation Semester 1

Module content

Introduction to structural engineering concepts like design, analysis, sizing and planning of structures. Introduction to Newton's laws, equilibrium, free body diagrams. The application of equilibrium in solving reactions of statically determinate structures. The principles of determinacy and stability of structures. The application of Newton's laws in determining the internal forces in common structural systems like cable structures, trusses, frames and beams. The fundamental principles of weight and forces and how forces are transmitted through structural members and load tracing.

Theory of structures 221 (STU 221)

Module credits 8.00

Prerequisites STU 211 GS

Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Civil Engineering
Period of presentation	Semester 2

Module content

Introduction to material science in structural engineering. Concepts like stress, strain, elasticity, stress-strain diagrams, elasticity modules, strength and deformation as applied in structural engineering. Cross-sectional properties of structural elements. Types of stresses, and their transmission in structural elements. Introduction to the relationship between stress and strain (deflection) in beams by Coulomb's theory. Introduction to the analysis of compressive structural elements by means of Euler's theory.

Curriculum: Final year

Minimum credits: 152

Core modules

Earth studies 320 (AAL 320)

Module credits	6.00
Prerequisites	AAL 210
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Architecture
Period of presentation	Semester 2

Module content

Ecosystemic thinking for the designer in terms of culture, science and environment. The designer as critic; analysis of precedents. Application of principles of sustainable development and ecological design including energy demand and efficiency and energy dissipation.

Business law 310 (BER 310)

Module credits	16.00
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	No prerequisites.
Contact time	4 lectures per week
Language of tuition	Separate classes for Afrikaans and English
Department	Mercantile Law
Period of presentation	Semester 1

Module content

Introduction to law. General principles of the law of contract. Specific contracts: purchase contracts; letting and hiring of work; employment contracts. Agency. General aspects of entrepreneurial law. Dispute resolution – mediation and arbitration.

Construction 310 (KON 310)

Module credits	8.00
Prerequisites	KON 210 and KON 220
Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Architecture
Period of presentation	Semester 1

Module content

Roads: design and construction, materials and finishes, kerbing. Water features: design and construction. Street furniture. Construction equipment. Site and building services: water lines, sanitary plumbing and pipe systems above ground and indoors, underground sewer systems, electricity and gas. Electrical lighting: light, lamp types, luminaires; lighting requirements. Design application.

Construction 320 (KON 320)

Module credits	8.00
Prerequisites	KON 310 GS
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Architecture
Period of presentation	Semester 2

Module content

Integration of the foregoing coursework. Introduction to construction norms and standards, technical drawing practice and specifications. Cost estimates, feasibility and payability. Advanced materials: ceramics, polymers, adhesives, paint, metals, glass. Human transportation systems: types, applications. Design of a small commercial building/landscape/interior space (in DESIGN) and the preparation of its construction drawings.

Design communication 313 (OKU 313)

Module credits	6.00
Prerequisites	No prerequisites.
Contact time	2 lectures per week, 2 studio hours per week
Language of tuition	Afrikaans and English are used in one class
Department	Architecture
Period of presentation	Semester 1

Module content

Advanced graphic and presentation techniques.

History of the environment 310 (OMG 310)

Module credits	6.00
Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Architecture
Period of presentation	Semester 1

Module content

History of the environment of African societies between the tropics within global context until the present.

History of the environment 320 (OMG 320)

Module credits	6.00
Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Architecture
Period of presentation	Semester 2

Module content

History of the environment of Southern African societies from the old Stone Age until the present.

Environmental studies 310 (OML 310)

Module credits	6.00
Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Architecture
Period of presentation	Semester 1

Module content

Normative positions: Normative positions that guide design thinking: Surface features, broad inclinations and differentiating features. Problems of substantiation. Theory and practise.

Theory of design disciplines: A hermeneutic appraisal of contemporary philosophical directions defining the current intellectual context in which the design disciplines are practised and appraised. Contextualising culture, philosophy and science as the ecosystem of the designer.

Housing studies: Contemporary theory, approaches and projects in housing. Developing a personal approach.

Environmental studies 320 (OML 320)

Module credits	6.00
Prerequisites	OML 310 GS
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Architecture
Period of presentation	Semester 2

Module content

The relationship between global intellectual movements and the local debate. Appraising the state of current design production and the establishment of identity through design. Presentation is programme specific.

Design 300 (ONT 300)

Module credits	60.00
Prerequisites	KON 210, KON 220, OML 210, OML 220 and ONT 200
Contact time	17 studio hours per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Architecture
Period of presentation	Year

Module content

Semester 1

The process of design through the integration of supporting modules. The design of spaces and buildings with the emphasis on lateral thinking and ritual. Skills: technology-backed reprographic techniques, competitions and exhibitions, decision making and time planning.

Semester 2

The product of design through the integration of supporting modules. The design of a mixed-use project in an urban context with a complex program developed to construction drawings in KON 320. Statutory requirements, feasibility and payability studies.

Practice management 320 (PJS 320)

Module credits	8.00
Prerequisites	No prerequisites.
Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Construction Economics
Period of presentation	Semester 2

Module content

The structure of the built environment in South Africa; basic principles and techniques of project management and financial management; methodology of measuring; building cost estimates; feasibility studies; economic design; contract administration; valuation of buildings.

Theory of structures 311 (STU 311)

Module credits	8.00
Prerequisites	STU 211 and STU 221
Contact time	3 lectures per week
Language of tuition	Module is presented in English

Department Civil Engineering

Period of presentation Semester 1

Module content

1. Concrete Structures.
 - Loads on concrete structures, Limit-states design principles.
 - Bending, shear and punching: Design of beams, slabs and footings.
 - Compression members: Design of columns.
2. Load bearing brickwork.
 - Limit-states design principles. Effective length and width of compression members.

Theory of structures 321 (STU 321)

Module credits 8.00

Prerequisites STU 311 GS

Contact time 3 lectures per week

Language of tuition Module is presented in English

Department Civil Engineering

Period of presentation Semester 2

Module content

1. Timber structures
 - Loads on typical timber structures, Limit-states design principles
 - Bending, shear and deflection: Design of flexural members without and with axial loads
 - Tension members: Tension members in roof trusses
 - Compression members: Design of compression members in trusses and as support members for trusses
 - Bracing systems
2. Steel Structures
 - Loads on typical steel structures, Limit-states design principles
 - Bending, shear and deflection: Design of flexural members without and with axial loads
 - Tension members: Tension members in roof trusses
 - Compression members: Design of compression members in trusses and as support members for trusses
 - Bracing systems

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.