

University of Pretoria Yearbook 2021

BIT Information Systems (12133300)

Department Informatics

Minimum duration of study 3 years

Total credits 377

NQF level 07

Programme information

Candidates

The degree is awarded upon successful completion of a minimum of 377 credits, of which 136 are required at first-year level, 121 at second-year level, and 120 at third-year level.

Admission requirements

- 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 are in possession of 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.
- All lectures at the University of Pretoria are presented in English only.

Transferring students

Candidates previously registered for the BSc - Extended programme

The Admissions Committee of the faculty considers applications of candidates who were previously registered for the BSc - Extended programme, on grounds of their NSC results as well as academic merit. Such students will only be considered for the four-year programme if they have passed all the prescribed modules and obtained a minimum of 65% in the Mathematics, Physics and Chemistry modules, respectively.

Candidates previously registered at UP or at another university

The faculty's Admissions Committee considers applications of candidates who have already completed the final NSC examination and/or were previously registered at UP or at another university, on grounds of their NSC results as well as academic merit. Candidates who were dismissed from other faculties or universities will not be

considered.

Candidates previously registered at a teacher's college or university of technology

The faculty's Admissions Committee considers the application of these candidates on the grounds of their NSC results as well as academic merit.

Qualifications from countries other than South Africa

- Citizens from countries other than South Africa and South African citizens with foreign qualifications must comply with all the other admission requirements and the prerequisites for subjects/modules.
- In addition to meeting the admission requirements, it may be expected from candidates to write the **TOEFL, IELTS or SAT**, if required.
- Candidates must have completed the National Senior Certificate with admission to degree studies or a certificate of conditional exemption on the basis of a candidate's foreign qualifications, the so-called "Immigrant" or "Foreign Conditional Exemption". The only condition for the "Foreign Conditional Exemption" that is accepted is: 'completion of the degree course'. The exemption certificate is obtainable from Universities South Africa (USAf). Detailed information is available on the website at [click here](#).

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

Minimum requirements

Achievement level

English Home Language or English First Additional Language

NSC/IEB	AS Level	Mathematics	NSC/IEB	AS Level	APS
5	C	4	D		30

* Cambridge A level candidates who obtained at least a D in the required subjects, will be considered for admission.

* International Baccalaureate (IB) HL candidates who obtained at least a 4 in the required subjects, will be considered for admission.

Additional requirements

Also consult the G Regulations.

- A student is promoted to the following year of study after obtaining the required credits as mentioned below:
 - Second year of study after obtaining at least 70% of the credits of the first year of study.
 - Third year of study after obtaining at least 70% of the credits of the second year of study.
- The degree is conferred if all the prescribed modules have been passed.

Promotion to next study year

Also consult the G Regulations.

- A student is promoted to the following year of study after obtaining the required credits as mentioned below:
 - Second year of study after obtaining at least 70% of the credits of the first year of study.
 - Third year of study after obtaining at least 70% of the credits of the second year of study.
- The degree is conferred if all the prescribed modules have been passed.



Curriculum: Year 1

Minimum credits: 136

Choose one elective stream from: Computer Auditing, Information Science, Entrepreneurship, E-Business, Geography, Data Science Management and e-Taxation.

Please note: If FRK is selected as an elective, INF 183 has to be taken as well.

Fundamental modules

Academic information management 111 (AIM 111)

Module credits	4.00
NQF Level	05
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	Module is presented in 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
NQF Level	05
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	Module is presented in 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.

Academic literacy for Information Technology 121 (ALL 121)

Module credits	6.00
NQF Level	05
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Economic and Management Sciences
Prerequisites	No prerequisites.
Contact time	1 web-based period per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Unit for Academic Literacy
Period of presentation	Semester 2

Module content

By the end of this module students should be able to cope more confidently and competently with the reading, writing and critical thinking demands that are characteristic of the field of Information Technology.

Academic orientation 112 (UPO 112)

Module credits	0.00
NQF Level	00
Language of tuition	Module is presented in English
Department	EBIT Deans Office
Period of presentation	Year

Core modules

Informatics 112 (INF 112)

Module credits	10.00
NQF Level	05
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Natural and Agricultural Sciences

Prerequisites	A candidate must have passed Mathematics with at least 4 (50-59%) in the Grade 12 examination; or STK 113 60%, STK 123 60% or STK 110
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Informatics
Period of presentation	Semester 2

Module content

Introduction to information systems, information systems in organisations, hardware: input, processing, output, software: systems and application software, organisation of data and information, telecommunications and networks, the Internet and Intranet. Transaction processing systems, management information systems, decision support systems, information systems in business and society, systems analysis, systems design, implementation, maintenance and revision.

Information systems 113 (INF 113)

Module credits	10.00
NQF Level	05
Prerequisites	A candidate must have passed Mathematics with at least 5 (60-69%) in the Grade 12 examination.
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Informatics
Period of presentation	Semester 1

Module content

Introduction to quantitative methods for Information systems to students.

Informatics 154 (INF 154)

Module credits	10.00
NQF Level	05
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Natural and Agricultural Sciences
Prerequisites	A candidate must have passed Mathematics with at least 4 (50-59%) in the Grade 12 examination
Contact time	1 lecture per week, 2 practicals per week
Language of tuition	Module is presented in English
Department	Informatics
Period of presentation	Semester 1

Module content

Introduction to programming.

Informatics 164 (INF 164)

Module credits 10.00

NQF Level 05

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Natural and Agricultural Sciences

Prerequisites INF 154

Contact time 1 lecture per week, 2 practicals per week

Language of tuition Module is presented in English

Department Informatics

Period of presentation Semester 2

Module content

Programming.

Informatics 171 (INF 171)

Module credits 20.00

NQF Level 05

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Natural and Agricultural Sciences

Prerequisites A candidate must have passed Mathematics with at least 4 (50-59%) in the Grade 12 examination

Contact time 2 lectures per week

Language of tuition Module is presented in English

Department Informatics

Period of presentation Year

Module content

General systems theory, creative problem solving, soft systems methodology. The systems analyst, systems development building blocks, systems development, systems analysis methods, process modelling.

Business management 114 (OBS 114)

Module credits 10.00

NQF Level 05

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Education
Faculty of Humanities
Faculty of Natural and Agricultural Sciences

Prerequisites	May not be included in the same curriculum as OBS 155
Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Business Management
Period of presentation	Semester 1

Module content

The entrepreneurial mind-set; managers and managing; values, attitudes, emotions, and culture: the manager as a person; ethics and social responsibility; decision making; leadership and responsible leadership; effective groups and teams; managing organizational structure and culture inclusive of the different functions of a generic organisation and how they interact (marketing; finance; operations; human resources and general management); contextualising Sustainable Development Goals (SDG) in each of the topics.

Business management 124 (OBS 124)

Module credits	10.00
NQF Level	05
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Humanities Faculty of Natural and Agricultural Sciences
Prerequisites	Admission to the examination in OBS 114
Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Business Management
Period of presentation	Semester 2

Module content

Value chain management: functional strategies for competitive advantage; human resource management; managing diverse employees in a multicultural environment; motivation and performance; using advanced information technology to increase performance; production and operations management; financial management; corporate entrepreneurship.

Elective modules

Biometry 120 (BME 120)

Module credits	16.00
NQF Level	05
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Natural and Agricultural Sciences Faculty of Veterinary Science

Prerequisites	At least 4 (50-59%) in Mathematics in the Grade 12 examination, or at least 50% in both Statistics 113, 123
Contact time	1 practical per week, 4 lectures per week
Language of tuition	Module is presented in English
Department	Statistics
Period of presentation	Semester 2

Module content

Simple statistical analysis: Data collection and analysis: Samples, tabulation, graphical representation, describing location, spread and skewness. Introductory probability and distribution theory. Sampling distributions and the central limit theorem. Statistical inference: Basic principles, estimation and testing in the one- and two-sample cases (parametric and non-parametric). Introduction to experimental design. One- and twoway designs, randomised blocks. Multiple statistical analysis: Bivariate data sets: Curve fitting (linear and non-linear), growth curves. Statistical inference in the simple regression case. Categorical analysis: Testing goodness of fit and contingency tables. Multiple regression and correlation: Fitting and testing of models. Residual analysis. Computer literacy: Use of computer packages in data analysis and report writing.

Economics 110 (EKN 110)

Module credits	10.00
NQF Level	05
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Humanities Faculty of Natural and Agricultural Sciences
Prerequisites	No prerequisites.
Contact time	1 discussion class per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Economics
Period of presentation	Semester 1

Module content

This module deals with the core principles of economics. A distinction between macroeconomics and microeconomics is made. A discussion of the market system and circular flow of goods, services and money is followed by a section dealing with microeconomic principles, including demand and supply analysis, consumer behaviour and utility maximisation, production and the costs thereof, and the different market models and firm behaviour. Labour market institutions and issues, wage determination, as well as income inequality and poverty are also addressed. A section of money, banking, interest rates and monetary policy concludes the course.

Economics 120 (EKN 120)

Module credits	10.00
NQF Level	05

Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Humanities Faculty of Natural and Agricultural Sciences
------------------------	---

Prerequisites	EKN 110 GS or EKN 113 GS and at least 4 (50-59%) in Mathematics in the Grade 12 examination or 60% in STK 113 and concurrently registered for STK 123
----------------------	---

Contact time	1 discussion class per week, 2 lectures per week
---------------------	--

Language of tuition	Module is presented in English
----------------------------	--------------------------------

Department	Economics
-------------------	-----------

Period of presentation	Semester 2
-------------------------------	------------

Module content

This module deals with the core principles of economics, especially macroeconomic measurement the private and public sectors of the South African economy receive attention, while basic macroeconomic relationships and the measurement of domestic output and national income are discussed. Aggregate demand and supply analysis stands core to this course which is also used to introduce students to the analysis of economic growth, unemployment and inflation. The microeconomics of government is addressed in a separate section, followed by a section on international economics, focusing on international trade, exchange rates and the balance of payments. The economics of developing countries and South Africa in the global economy conclude the course.

Financial accounting 111 (FRK 111)

Module credits	10.00
-----------------------	-------

NQF Level	05
------------------	----

Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Law Faculty of Natural and Agricultural Sciences
------------------------	--

Prerequisites	No prerequisites.
----------------------	-------------------

Contact time	4 lectures per week
---------------------	---------------------

Language of tuition	Module is presented in English
----------------------------	--------------------------------

Department	Accounting
-------------------	------------

Period of presentation	Semester 1
-------------------------------	------------

Module content

The nature and function of accounting; the development of accounting; financial position; financial result; the recording process; processing of accounting data; treatment of VAT; elementary income statement and balance sheet; flow of documents; accounting systems; introduction to internal control and internal control measures; bank reconciliations; control accounts; adjustments; financial statements of a sole proprietorship; the accounting framework.

Financial accounting 121 (FRK 121)

Module credits	12.00
-----------------------	-------



NQF Level	05
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Natural and Agricultural Sciences
Prerequisites	FRK 111 GS
Contact time	4 lectures per week
Language of tuition	Module is presented in English
Department	Accounting
Period of presentation	Semester 2

Module content

Property, plant and equipment; intangible assets; inventories; liabilities; presentation of financial statements; enterprises without profit motive; partnerships; companies; close corporations; cash flow statements; analysis and interpretation of financial statements.

Financial accounting 122 (FRK 122)

Module credits	12.00
NQF Level	05
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Law Faculty of Natural and Agricultural Sciences
Prerequisites	FRK 111 GS or FRK 133, FRK 143
Contact time	4 lectures per week
Language of tuition	Module is presented in English
Department	Accounting
Period of presentation	Semester 2

Module content

Budgeting, payroll accounting, taxation – income tax and an introduction to other types of taxes, credit and the new Credit Act, insurance, accounting for inventories (focus on inventory and the accounting entries, not calculations), interpretation of financial statements.

Aspects of human geography 156 (GGY 156)

Module credits	8.00
NQF Level	05
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Humanities Faculty of Health Sciences
Prerequisites	No prerequisites.



Contact time	1 tutorial per week, 3 lectures per week
Language of tuition	Module is presented in English
Department	Geography Geoinformatics and Meteorology
Period of presentation	Quarter 2

Module content

This module begins by fostering an understanding of human geography. Then follows with the political ordering of space; cultural diversity as well as ethnic geography globally and locally; population geography of the world and South Africa: and four economic levels of development. The purpose is to place South Africa in a world setting and to understand the future of the country.

Cartography 110 (GMC 110)

Module credits	10.00
NQF Level	05
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	No prerequisites.
Contact time	1 practical per week, 3 lectures per week
Language of tuition	Module is presented in English
Department	Geography Geoinformatics and Meteorology
Period of presentation	Semester 2

Module content

History, present and future of cartography. Introductory geodesy: shape of the earth, graticule and grids, datum definition, elementary map projection theory, spherical calculations. Representation of geographical data on maps: Cartographic design, cartographic abstraction, levels of measurement and visual variables. Semiotics for cartography: signs, sign systems, map semantics and syntactics, explicit and implicit meaning of maps (map pragmatics). Critique maps of indicators to measure United Nations Sustainable Development Goals in South Africa.

Informatics 183 (INF 183)

Module credits	3.00
NQF Level	05
Prerequisites	No prerequisites.
Contact time	1 practical per week
Language of tuition	Module is presented in English
Department	Informatics
Period of presentation	Year

Module content

Computer processing of accounting information.

Information science 110 (INL 110)

Module credits	12.00
NQF Level	05
Service modules	Faculty of Humanities
Prerequisites	No prerequisites.
Contact time	1 practical per week, 3 lectures per week
Language of tuition	Module is presented in English
Department	Information Science
Period of presentation	Semester 1

Module content

This module is an introduction to the study field of information science and its various professions. Key concepts that will be discussed include the following: the human as information processor and user; the life-cycle of information in terms of processes, products and role-players; as well as the communication of information. The social-ethical impact of globalisation is included as a key concern, with reference to Africa.

Information science 120 (INL 120)

Module credits	12.00
NQF Level	05
Service modules	Faculty of Humanities
Prerequisites	No prerequisites.
Contact time	1 practical per week, 3 lectures per week
Language of tuition	Module is presented in English
Department	Information Science
Period of presentation	Semester 2

Module content

Organisation and representation of information. This module provides the student with an introduction to the basic principles and processes underlying the organisation and representation of information. The process of organising information in documents and on the web, in multimedia formats, by means of document image processing and in databases are dealt with. Themes on the representation of information through the creation of metadata include various general and domain specific metadata schemas such as Dublin Core as a metadata standard for the Web, as well as various other metadata schemas.

Practical classes include basic HTML and the design of Web pages incorporating and applying what was covered in theory.

Information science 130 (INL 130)

Module credits	12.00
NQF Level	05

Service modules	Faculty of Humanities
Prerequisites	No prerequisites.
Contact time	1 practical per week, 3 lectures per week
Language of tuition	Module is presented in English
Department	Information Science
Period of presentation	Semester 1

Module content

Personal information management. This module focuses on personal information management within an organisational context. It deals with managing information and knowledge that is peculiar to an individual and which enables him/her to perform his/her job.

Topics include: creating an environment in which the individual can manage his/her information and knowledge; the skills needed to be able to manage personal information and knowledge; information overloading which gives rise to personal information and knowledge management, as well as the manner in which individuals can switch from personal information management to personal knowledge management; personal information and knowledge management as a career.

Information science 140 (INL 140)

Module credits	12.00
NQF Level	05
Service modules	Faculty of Humanities
Prerequisites	No prerequisites.
Contact time	1 practical per week, 3 lectures per week
Language of tuition	Module is presented in English
Department	Information Science
Period of presentation	Semester 2

Module content

Information and communication technology. This module offers a brief overview of hardware and software, telecommunications technology, LANs, WANs and intranets, the information highway, the internet and the World Wide Web, computer ethics, ICTs, e-commerce, mobile computing technology and the influence that new trends and developments have on the distribution of information.

Statistics 122 (STC 122)

Module credits	13.00
NQF Level	05
Prerequisites	At least a 60% in STK 110 or an average of 60% for either (1) WST 133, WST 143, WST 153; (2) STK 113, STK 123, STK 121; (3) STK 133, STK 134, STK121; (4) WST 133, WST 143, STK 121 (An aegrotat exam is available to students who obtained 50%-59%)

Contact time	1 practical per week, 1 tutorial per week, 3 lectures per week
Language of tuition	Module is presented in English
Department	Statistics
Period of presentation	Semester 2

Module content

Inferential concepts. Experimental and observational data. Measures of association, uncertainty and goodness of fit. Sampling error and accuracy of estimation. Introduction to linear regression, reduction of variation due to regression. Conditional distributions of residuals. Simulation based inference: conditional means and prediction intervals. Bivariate data visualisation. Supporting mathematical concepts. Statistical concepts are demonstrated and interpreted through practical coding and simulation within a data science framework.

This module is also presented as a summer school for students who initially elected and passed STK 120 with a final mark of at least 60% and then decides to further their studies in statistics as well as for students who achieved a final mark of between 40% - 49% in STC 122 during semester 2.

Statistics 110 (STK 110)

Module credits 13.00

NQF Level 05

Service modules
Faculty of Engineering, Built Environment and Information Technology
Faculty of Education
Faculty of Humanities
Faculty of Natural and Agricultural Sciences

Prerequisites At least 5 (60-69%) in Mathematics in the Grade 12 examination. Candidates who do not qualify for STK 110 must register for STK 113 and STK 123

Contact time 1 practical per week, 1 tutorial per week, 3 lectures per week

Language of tuition Module is presented in English

Department Statistics

Period of presentation Semester 1

Module content

Descriptive statistics:

Sampling and the collection of data; frequency distributions and graphical representations. Descriptive measures of location and dispersion.

Probability and inference:

Introductory probability theory and theoretical distributions. Sampling distributions. Estimation theory and hypothesis testing of sampling averages and proportions (one and two-sample cases). Supporting mathematical concepts. Statistical concepts are demonstrated and interpreted through practical coding and simulation within a data science framework.

Statistics 120 (STK 120)

Module credits 13.00

NQF Level 05

Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Humanities Faculty of Natural and Agricultural Sciences
Prerequisites	STK 110 GS or both STK 113 GS and STK 123 GS or both WST 133 and WST 143 or STK 133 and STK 143
Contact time	1 practical per week, 1 tutorial per week, 3 lectures per week
Language of tuition	Module is presented in English
Department	Statistics
Period of presentation	Semester 2

Module content

Students can only get credit for one of the following two modules: STK 120 or STK 121.

Analysis of variance, categorical data analysis, distribution-free methods, curve fitting, regression and correlation, the analysis of time series and indices. Statistical and economic applications of quantitative techniques: Systems of linear equations: solving and application. Optimisation, linear functions, non-linear functions. Marginal and total functions. Stochastic and deterministic variables in statistical and economic context: producers' and consumers' surplus. Supporting mathematical concepts. Statistical concepts are illustrated using simulation within a data science framework.

This module is also presented as STK 121, an anti-semester module. This is a terminating module.

Curriculum: Year 2

Minimum credits: 121

Choose one elective stream from: Computer Auditing, Information Science, Entrepreneurship, E-Business, Geography, Data Science Management and e-Taxation.

Fundamental modules

Community-based project 202 (JCP 202)

Module credits	8.00
NQF Level	07
Service modules	Faculty of Economic and Management Sciences
Prerequisites	No prerequisites.
Contact time	1 other contact session per week
Language of tuition	Module is presented in English
Department	Informatics
Period of presentation	Year

Module content

This module is integrated into all undergraduate academic programmes offered by the Faculty. Main objectives: execution of a community project aimed at achieving a beneficial impact on a section of a socio-economically underprivileged community located in socio-economically deprived areas our society; awareness of personal, social and cultural values and an understanding of social issues; and development of life skills.

Core modules

Introduction to moral and political philosophy 251 (FIL 251)

Module credits	10.00
NQF Level	06
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Economic and Management Sciences
Prerequisites	No prerequisites.
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Philosophy
Period of presentation	Quarter 2, 3 and 4

Module content

In this module students are equipped with an understanding of the moral issues influencing human agency in economic and political contexts. In particular philosophy equips students with analytical reasoning skills necessary to understand and solve complex moral problems related to economic and political decision making. We demonstrate to students how the biggest questions concerning the socio-economic aspects of our lives can be broken down and illuminated through reasoned debate. Examples of themes which may be covered in the module include justice and the common good, a moral consideration of the nature and role of economic markets on society, issues concerning justice and equality, and dilemmas of loyalty. The works of philosophers covered may for instance include that of Aristotle, Locke, Bentham, Mill, Kant, Rawls, Friedman, Nozick, Bernstein, Dworkin, Sandel, Walzer, and MacIntyre.

Informatics 214 (INF 214)

Module credits 14.00

NQF Level 06

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Natural and Agricultural Sciences

Prerequisites AIM 101 or AIM 111 and AIM 121

Contact time 2 lectures per week, 2 practicals per week

Language of tuition Module is presented in English

Department Informatics

Period of presentation Semester 1

Module content

Database design: the relational model, structured query language (SQL), entity relationship modelling, normalisation, database development life cycle; practical introduction to database design. Databases: advanced entity relationship modelling and normalisation, object-oriented databases, database development life cycle, advanced practical database design.

Informatics 225 (INF 225)

Module credits 14.00

NQF Level 06

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Natural and Agricultural Sciences

Prerequisites INF 112; AIM 101 or AIM 102 or AIM 111 and AIM 121

Contact time 1 lecture per week, 3 practicals per week

Language of tuition Module is presented in English

Department Informatics

Period of presentation Semester 2

Module content

An overview of systems infrastructure and integration.

Informatics 261 (INF 261)

Module credits 7.00

NQF Level 06

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Education
Faculty of Natural and Agricultural Sciences

Prerequisites INF 214

Contact time 1 lecture per week, 1 practical per week

Language of tuition Module is presented in English

Department Informatics

Period of presentation Semester 2

Module content

Database management: transaction management, concurrent processes, recovery, database administration: new developments: distributed databases, client-server databases: practical implementation of databases.

Informatics 271 (INF 271)

Module credits 14.00

NQF Level 06

Service modules Faculty of Engineering, Built Environment and Information Technology

Prerequisites INF 164, INF 171

Contact time 1 discussion class per week, 1 lecture per week, 1 practical per week

Language of tuition Module is presented in English

Department Informatics

Period of presentation Year

Module content

Systems analysis. Systems design: construction; application architecture; input design; output design; interface design; internal controls; program design; object design; project management; system implementation; use of computer-aided development tools.

Informatics 272 (INF 272)

Module credits 14.00

NQF Level 06

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Natural and Agricultural Sciences



Prerequisites INF 164 and INF 171

Contact time 1 lecture per week, 2 practicals per week

Language of tuition Module is presented in English

Department Informatics

Period of presentation Year

Module content

Advanced programming.

Elective modules

Business accounting 200 (BAC 200)

Module credits 32.00

NQF Level 06

Service modules

Faculty of Engineering, Built Environment and Information Technology
Faculty of Education
Faculty of Law
Faculty of Natural and Agricultural Sciences

Prerequisites FRK 111 and FRK 121 or FRK 100/101

Contact time 4 lectures per week

Language of tuition Module is presented in English

Department Accounting

Period of presentation Year

Module content

To use a conceptual understanding of intermediate foundational knowledge of International Financial Reporting Standards (IFRS) in order to prepare, present and interpret company and basic group company financial statements in a familiar business context and to propose clear solutions with adequate justification to solve financial problems in an ethical manner.

Taxation 200 (BEL 200)

Module credits 32.00

NQF Level 06

Service modules Faculty of Engineering, Built Environment and Information Technology

Prerequisites FRK 111 and FRK 121 or FRK 100 or FRK 101. Only available to BCom (Option Taxation, Accounting Sciences, Financial Management Sciences, Financial Sciences, Informatics, Investment Management and Law) students.

Contact time 1 practical per week, 3 lectures per week

Language of tuition Module is presented in English

Department Taxation

Period of presentation Year

Module content

In this module an introduction to taxation as a discipline in the South African tax environment is provided. The income tax concepts covered in this module are gross income, special inclusions, exempt income, general deductions, special deductions, prohibited deductions and allowed assessed losses. The implications of a capital gains tax event, specific sections of the Income Tax Act applicable on individuals as well as fringe benefits and specific allowances for individuals are discussed. Concepts such as the prepaid tax system, tax implications of donations tax events as well as the tax implications of a deceased person will be covered. Finally an introduction to the basic principles of VAT is included.

Introductory geographic information systems 283 (GGY 283)

Module credits 14.00

NQF Level 06

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Education
Faculty of Humanities

Prerequisites GMC 110

Contact time 1 practical per week, 2 lectures per week

Language of tuition Module is presented in English

Department Geography Geoinformatics and Meteorology

Period of presentation Semester 1

Module content

Introduction to Geographic Information Systems (GIS), theoretical concepts and applications of GIS. The focus will be on the GIS process of data input, data analysis, data output and associated technologies. This module provides the foundations for more advanced GIS and Geoinformatics topics. Practical assessments and a mini-project make use of South African and African examples and foster learning and application of concepts aligned to the UN Sustainable Development Goals.

Geographic data analysis 220 (GIS 220)

Module credits 14.00

NQF Level 06

Service modules Faculty of Engineering, Built Environment and Information Technology

Prerequisites GMC 110 and (STK 110 OR BME 120)

Contact time 1 practical per week, 2 lectures per week

Language of tuition Module is presented in English

Department Geography Geoinformatics and Meteorology

Period of presentation Semester 2

Module content

The nature of geographical data and measurement. Application of statistics in the geographical domain. Probability, probability distributions and densities, expected values and variances, Central Limit theorem. Sampling techniques. Exploratory data analysis, descriptive statistics, statistical estimation, hypothesis testing, correlation analysis and regression analysis. Examples used throughout the course are drawn from South African and African case studies and taught within the framework of the UN Sustainable Development Goals.

Remote sensing 220 (GMA 220)

Module credits	14.00
NQF Level	06
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	GMC 110
Contact time	1 practical per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Geography Geoinformatics and Meteorology
Period of presentation	Semester 1

Module content

This module aims to provide students with a working knowledge and skills to learn methods and techniques for collecting, processing and analysing remotely sensed data. Throughout the module, emphasis will be placed on image processing, image analysis, image classification, remote sensing and applications of remote sensing in geographical analysis and environmental monitoring. The module is composed of lectures, readings, practical exercises research tasks and a project or assignments of at least 64 notional hours. In particular, the practical exercises and research tasks incorporate South African examples using satellite remotely-sensed data, as well as field spectral data measurements, to promote understanding of the state of land cover and land use types (e.g. spanning agricultural resources, water resources, urbanization) and how changes over time could impact on the changing climate in accordance with the United Nation's Sustainable Development Goals.

Information science 210 (INL 210)

Module credits	20.00
NQF Level	06
Service modules	Faculty of Humanities
Prerequisites	AIM 101 or AIM 102 or AIM 111 and 121
Contact time	3 lectures per week, 3 practicals per week
Language of tuition	Module is presented in English
Department	Information Science
Period of presentation	Semester 1

Module content

Information seeking and retrieval. This module explores the theory and practice of effective information seeking and retrieval. It builds on supporting research paradigms such as the systems, user-centred, cognitive and socio-cognitive paradigms. The focus is on the complexities of effective information seeking and retrieval within the context of information behaviour on a personal level, as well as in the context of professional, academic or everyday information needs.

Information science 220 (INL 220)

Module credits	20.00
NQF Level	06
Service modules	Faculty of Humanities
Prerequisites	INL 210 or LP
Contact time	3 lectures per week, 3 practicals per week
Language of tuition	Module is presented in English
Department	Information Science
Period of presentation	Semester 2

Module content

Representation and organisation. Information needs to be represented and organised in a system for it to be effectively retrievable. This module deals with the representation and organisation of information on the level of individual entities (e.g. indexing), from the perspective of the users (user profiling), as well as within a document collection (taxonomies and ontologies).

Internal auditing 211 (IOK 211)

Module credits	16.00
NQF Level	06
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	FRK 111 and FRK 121
Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Auditing
Period of presentation	Semester 1

Module content

Introduction to the audit environment. Nature, objectives, history and development of internal auditing. The internal auditing profession and the role of the Institute of Internal Auditors (IIA). Ethical code and standards of internal auditors (IPPF). An organisation's internal control environment and internal control systems. Introduction to Information Technology (IT). General controls and application controls frameworks. The internal audit process and tools and techniques used during the audit Introduction to sampling.

Internal auditing 221 (IOK 221)

Module credits	16.00
NQF Level	06
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	IOK 211 GS
Contact time	1 practical per week, 3 lectures per week
Language of tuition	Module is presented in English
Department	Auditing
Period of presentation	Semester 2

Module content

Introduction to corporate governance. Relationship between internal auditing and other related disciplines and individuals. Background to external auditing. Internal and external audit approaches. The identification of weaknesses, risks and controls for the revenue and procurement systems in the system. The audit of internal control systems and the audit of financial statements.

Business management 210 (OBS 210)

Module credits	16.00
NQF Level	06
Service modules	Faculty of Engineering, Built Environment and Information Technology Faculty of Education Faculty of Natural and Agricultural Sciences
Prerequisites	OBS 114 or 124 with admission to the examination in the other
Language of tuition	Module is presented in English
Department	Business Management
Period of presentation	Semester 1

Module content

Logistics management

The role of logistics in an enterprise; definition and scope of customer service; electronic and other logistics information systems; inventory management; materials management with special reference to Japanese systems; management of the supply chain. Methods of transport and transport costs; types and costs of warehousing; electronic aids in materials handling; cost and price determination of purchases; organising for logistics management; methods for improving logistics performance.

Design thinking and business innovation 211 (OBS 211)

Module credits	16.00
NQF Level	06
Prerequisites	OBS 114 or 124 with admission to the examination in the other.
Contact time	3 lectures per week

Language of tuition Module is presented in English

Department Business Management

Period of presentation Semester 1

Module content

Creativity, innovation and identification of opportunities: the role of creativity; techniques to facilitate creativity; barriers to creativity; creative versus critical thinking within the broad business managerial context. Creative problemsolving and identification of opportunities: identification of opportunities; development of ideas; evaluation and prioritising of ideas, ideation and design thinking. Creativity and its role in design thinking towards facilitating business innovation. Design thinking techniques are applied with an emphasis on customer empathy. Business innovation is translated from the process of design thinking into incremental or disruptive new products, services and or processes. A clear understanding is created with regards to the following elements in business innovation: types and forms; technology waves; models; processes and sources. The management of innovation is also an integral part of the module.

Business creation 212 (OBS 212)

Module credits 10.00

NQF Level 06

Prerequisites OBS 213

Contact time 3 lectures per week

Language of tuition Module is presented in English

Department Business Management

Period of presentation Semester 2

Module content

Creating a new product, service or process to market. Comprehensive prototype feasibility and business modelling. Designing business models aligned with the market realm. Value-to-customer building and business efficiency development. Translation of business models into bankable business plans.

Responsible management 214 (OBS 214)

Module credits 10.00

NQF Level 06

Prerequisites No prerequisites.

Contact time 3 lectures per week

Language of tuition Module is presented in English

Department Business Management

Period of presentation Semester 1

Module content

Business ethics; sustainability and the economic system; key social challenges; key environmental challenges; key economic challenges; conventional vs. progressive measure of progress; short-term vs long-term orientation; development as an outcome of growth; sustainable development as opposed to conventional development; sustainable development goals; sustainable development goals and the changing role of business in society; implications for the notion of corporate citizenship; global responses and solutions; local responses and solutions.

Business management 220 (OBS 220)

Module credits 16.00

NQF Level 06

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Education
Faculty of Natural and Agricultural Sciences

Prerequisites OBS 114 or 124 with admission to the examination in the other. Students from other Faculties are required to have 50% for Mathematics in Grade 12.

Contact time 3 lectures per week

Language of tuition Module is presented in English

Department Business Management

Period of presentation Semester 2

Module content

Project management and negotiations:

Introduction Project management concepts; needs identification; the project, the project manager and the project team; types of project organisations; project communication and documentation. Planning and control: planning, scheduling and schedule control of projects; resource considerations and allocations; cost planning and performance evaluation.

Negotiation and collective bargaining: The nature of negotiation; preparation for negotiation; negotiating for purposes of climate creation; persuasive communication; handling conflict and aggression; specialised negotiation and collective bargaining in the South African context.

Statistics 210 (STK 210)

Module credits 20.00

NQF Level 06

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Humanities
Faculty of Natural and Agricultural Sciences

Prerequisites STK 110, STC 122 or WST 111, WST 121

Contact time 1 practical per week, 3 lectures per week

Language of tuition Module is presented in English

Department Statistics

Period of presentation Semester 1

Module content

Statistical problem solving. Causality, experimental and observational data. Probability theory. Multivariate random variables. Discrete and continuous probability distributions. Stochastic representations. Measures of association. Expected values and conditional expectation. Simulation techniques. Supporting mathematical concepts. Statistical concepts are demonstrated and interpreted through practical coding and simulation within a data science framework.

Statistics 220 (STK 220)

Module credits 20.00

NQF Level 06

Service modules Faculty of Engineering, Built Environment and Information Technology
Faculty of Humanities
Faculty of Natural and Agricultural Sciences

Prerequisites STK 210 GS

Contact time 1 practical per week, 3 lectures per week

Language of tuition Module is presented in English

Department Statistics

Period of presentation Semester 2

Module content

Multivariate probability distributions. Sampling distributions and the central limit theorem. Frequentist and Bayesian inference. Statistical learning and decision theory. Simulation techniques enhancing statistical thinking. Supervised learning: linear regression, estimation and inference. Non-parametric modelling. Supporting mathematical concepts. Statistical algorithms. Statistical concepts are demonstrated and interpreted through practical coding and simulation within a data science framework.

Applications in data science 212 (WST 212)

Module credits 12.00

NQF Level 06

Prerequisites WST 111, WST 121 or STK 110, STC 122

Contact time 1 practical per week, 2 lectures per week

Language of tuition Module is presented in English

Department Statistics

Period of presentation Semester 1

Module content

Introductory machine learning concepts. Data base design and use. Data preparation and extraction. Statistical modelling using data base structures. Statistical concepts are demonstrated and interpreted through practical coding and simulation within a data science framework.

Curriculum: Final year

Minimum credits: 120

Choose one elective stream from: Computer Auditing, Information Science, Entrepreneurship, E-Business, Geography, Data Science Management and e-Taxation.

Core modules

Informatics 315 (INF 315)

Module credits	15.00
NQF Level	07
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	INF 261, INF 225, INF 271
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Informatics
Period of presentation	Semester 1

Module content

A review of current trends which are relevant to the application of information systems within a business environment.

Informatics 324 (INF 324)

Module credits	15.00
NQF Level	07
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	INF 261, INF 225, INF 271
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Informatics
Period of presentation	Semester 2

Module content

Information systems in organisations.

Informatics 354 (INF 354)

Module credits	15.00
NQF Level	07
Service modules	Faculty of Engineering, Built Environment and Information Technology



Prerequisites	INF 261, INF 225, INF 271 and INF 272
Contact time	1 lecture per week, 2 practicals per week
Language of tuition	Module is presented in English
Department	Informatics
Period of presentation	Semester 1

Module content

Advanced programming.

Informatics 370 (INF 370)

Module credits	35.00
NQF Level	07
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	INF 261, INF 225, INF 271 and INF 272
Contact time	1 lecture per week, 2 practicals per week
Language of tuition	Module is presented in English
Department	Informatics
Period of presentation	Year

Module content

Application of systems analysis and design in a practical project; programming; use of computer-aided development tools.

Elective modules

Taxation 300 (BEL 300)

Module credits	40.00
NQF Level	07
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	BEL 200 and FRK 221 or FRK 201
Contact time	1 discussion class per week, 4 lectures per week
Language of tuition	Module is presented in English
Department	Taxation
Period of presentation	Year

Module content

The purpose of the module is to enable the learner to calculate the value-added tax liability and to journalise transactions; calculate the normal tax liability (including the determination of taxable capital gains and assessed capital losses) of individuals, companies, estates and trusts, discuss tax principles on value-added tax and normal tax; and calculate and discuss provisional and employees' tax and to object against an assessment.

Geographic information systems 310 (GIS 310)

Module credits	22.00
NQF Level	07
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	GGY 283
Contact time	1 practical per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Geography Geoinformatics and Meteorology
Period of presentation	Semester 1

Module content

Advanced theory and practice of Geographic Information Systems; GIS applications; design and implementation of GIS applications. A project or assignments of at least 64 notional hours. Diverse South African examples will be used to expose the students to various data sources, geospatial analyses, and data representation to support the UN Sustainable Development Goals.

Spatial analysis 320 (GIS 320)

Module credits	22.00
NQF Level	07
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	GIS 220 and GGY 283
Contact time	1 practical per week, 2 lectures per week
Language of tuition	Module is presented in English
Department	Geography Geoinformatics and Meteorology
Period of presentation	Semester 2

Module content

Construction of Raster Geovisualisations, spatial model construction and use, multi-criteria decision analysis. Factor analysis: Principle component analysis. Geostatistics: Spatial dependence modelling, ordinary kriging. Markov chains and cellular Automata, combined models. Examples using data from South Africa are implemented. A project or assignment of at least 64 notional hours.

Information science: Information organisation 310 (INL 310)

Module credits	30.00
-----------------------	-------

NQF Level	07
Service modules	Faculty of Humanities
Prerequisites	No prerequisites.
Contact time	3 lectures per week, 3 practicals per week
Language of tuition	Module is presented in English
Department	Information Science
Period of presentation	Semester 1

Module content

Information Organisation. The module is concerned with the organisation of information in the digital environment focusing on the structure and use of document management and workflow systems, as well as distribution channels and virtual environments. The characteristics and application of the internet, intranets, as well as portals and applications use, are considered.

Information science: Information and knowledge management 320 (INL 320)

Module credits	30.00
NQF Level	07
Service modules	Faculty of Humanities
Prerequisites	No prerequisites.
Contact time	3 lectures per week, 3 practicals per week
Language of tuition	Module is presented in English
Department	Information Science
Period of presentation	Semester 2

Module content

Information and Knowledge Management. This module focuses on information and knowledge management at an operational level and introduces information and knowledge management at a corporate strategic level. It deals with the management of information and knowledge, which enables the organisation to be competitive. In this module the focus is on four aspects, namely: the 21st century organisation, the external and internal stakeholders that have an interest in information products, as well as the infrastructure that should be in place in organisations to manage information products. The module concludes with a few topics relating to information management at a corporate strategic level.

Internal auditing 311 (IOK 311)

Module credits	20.00
NQF Level	07
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	IOK 211 and IOK 221
Contact time	1 practical per week, 3 lectures per week

Language of tuition Module is presented in English

Department Auditing

Period of presentation Semester 1

Module content

General and application IT controls. The identification of weaknesses, risks and controls for the inventory, bank and cash systems. Statistical sampling. The audit of internal control systems and the audit of financial statements. Internal audit and external audit reports.

Internal auditing 321 (IOK 321)

Module credits 20.00

NQF Level 07

Service modules Faculty of Engineering, Built Environment and Information Technology

Prerequisites IOK 311 GS

Contact time 3 lectures per week

Language of tuition Module is presented in English

Department Auditing

Period of presentation Semester 2

Module content

The identification of weaknesses, risks and controls for the payroll system and health and safety environment. The audit of internal control systems and the audit of financial statements. Computer Assisted Audit Techniques (CAATS). Introduction to performing an operational/performance audit. Relevant legislation and other guidelines that affect the internal audit profession. Introduction to the public sector internal audit environment.

Business management 310 (OBS 310)

Module credits 20.00

NQF Level 07

Service modules Faculty of Engineering, Built Environment and Information Technology

Prerequisites OBS 114 or 124 with admission to the examination in the other

Contact time 3 lectures per week

Language of tuition Module is presented in English

Department Business Management

Period of presentation Semester 1

Module content

Strategy formulation: the deliberate strategy process of formulating a vision and mission statement, conducting internal and external environmental analyses and selecting appropriate strategies. It will enhance an understanding of the level of strategy formulation, gaining competitive advantage in your market place and thinking strategically.

Business management 330 (OBS 330)

Module credits	20.00
NQF Level	07
Prerequisites	No prerequisites.
Contact time	3 lectures per week
Language of tuition	Module is presented in English
Department	Business Management
Period of presentation	Semester 2

Module content

Strategy execution: The role of management in strategy implementation; budgets as instrument in the implementation process; leading processes of change within enterprises; supporting policies, procedures and information systems for implementation in the various functional areas; evaluation and control of implementation. South African case studies to create contextual relevance.

International business management 359 (OBS 359)

Module credits	20.00
NQF Level	07
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	OBS 114 or OBS 124 with admission to the examination in the other
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Business Management
Period of presentation	Semester 1

Module content

Introduction to international management

International business management; the process of internationalisation; growth in international trade and investment; the evolution of multinational enterprises; management perspectives on international trade and international trade theories; international trade regulation; economic integration; the formation of trading blocks, and free-trade areas.

The international business environment

The cultural environment of international business; the political and legal environments as well as the economic environment of international business; the international monetary system; the foreign exchange market; and international capital markets.

Business analytics 370 (OBS 370)

Module credits	20.00
NQF Level	07
Prerequisites	Admission to exam in OBS 359.

Contact time 3 lectures per week

Language of tuition Module is presented in English

Department Business Management

Period of presentation Semester 2

Module content

Evaluates how to strategically align, plan for and direct investments in, and governance of, processes for continuous renewal of analytic deployments in business. An overview of analytics in the business context will be provided that will cover: concepts of strategic and operational analytics; overview of concepts like dimensional modeling, the Model Life cycle, data mining, big data, KPIs and metrics, ERP and analytics, in-database/memory analytics; real-time analytics and data stream analysis. The applied decision making aspect will focus on mastering quantitative modeling tools and techniques for business decision-making and deterministic optimisation techniques.

Statistics 310 (STK 310)

Module credits 25.00

NQF Level 07

Service modules

Faculty of Engineering, Built Environment and Information Technology
Faculty of Humanities
Faculty of Natural and Agricultural Sciences

Prerequisites STK 210, STK 220

Contact time 1 practical per week, 3 lectures per week

Language of tuition Module is presented in English

Department Statistics

Period of presentation Semester 1

Module content

Supervised learning. Linear and non-linear regression. Ordinary least squares and maximum likelihood estimation. Violations of the assumptions, residual analysis. Cross validation. Statistical inference. Bootstrap inference. Supporting mathematical concepts. Statistical concepts are demonstrated and interpreted through practical coding and simulation within a data science framework.

The science of data analytics 353 (STK 353)

Module credits 25.00

NQF Level 07

Service modules Faculty of Natural and Agricultural Sciences

Prerequisites STK 210, STK 220, WST 212 or WST 211, WST 221, WST 212

Contact time 1 practical per week, 3 lectures per week

Language of tuition Module is presented in English

Department Statistics

Period of presentation Semester 2

Module content

Data exploration. Data wrangling. Statistical coding. Algorithmic thinking. Sampling: basic techniques in probability, non-probability, and resampling methods. Text mining and analytics. Machine learning: classification and clustering. Statistical concepts are demonstrated and interpreted through practical coding and simulation within a data science framework.

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.