

**FACULTIES OF THE
UNIVERSITY OF PRETORIA**

HUMANITIES
NATURAL AND AGRICULTURAL SCIENCES
LAW
THEOLOGY
ECONOMIC AND MANAGEMENT SCIENCES
VETERINARY SCIENCE
EDUCATION
HEALTH SCIENCES
ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

**FACULTY OF ENGINEERING, BUILT ENVIRONMENT
AND INFORMATION TECHNOLOGY**

SECTION I

(separate publication)

SCHOOL OF ENGINEERING

- Industrial and Systems Engineering
- Chemical Engineering
- Electrical, Electronic and Computer Engineering
- Mechanical and Aeronautical Engineering
- Materials Science and Metallurgical Engineering
- Mining Engineering
- Civil Engineering

GRADUATE SCHOOL OF TECHNOLOGY MANAGEMENT

- Engineering and Technology Management

SECTION II

(separate publication)

SCHOOL FOR THE BUILT ENVIRONMENT

- Architecture
- Construction Economics
- Town and Regional Planning

SECTION III

(this publication)

SCHOOL OF INFORMATION TECHNOLOGY

- Informatics
- Information Science
- Computer Science

SCHOOL OF INFORMATION TECHNOLOGY

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FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

SCHOOL OF INFORMATION TECHNOLOGY

ACADEMIC PERSONNEL AS AT 30 SEPTEMBER 2012

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Prof R.F. Sandenbergh, PrEng MEng DEng(Pretoria) GSAIMM LSAKorrr

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Van Loggerenbergh, J.J., BSc MBA(Potchefstroom)..... DCom(Pretoria)(Gijima AST chair)	Senior Lecturer
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Mawela, T., BCom(Pretoria), HDipComAud, MBA(Witwatersrand)	Lecturer
Pretorius, H.W., BSc(Hons) PGCHE MIT(Pretoria)	Lecturer
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Department of Information Science

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Britz, JJ ,BA BD BBib(Hons) DD(Pretoria)	Extraordinary Professor

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Eloff, J.J., BIS(Hons)(Pretoria).....	Junior Lecturer
Olwagen, W., BIS(Hons)(Pretoria)	Junior Lecturer

Department of Computer Science

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Watson, B.W., JB(Math) JB(Math)(Hons)(Waterloo) PhD(Eindhoven) PhD(Pretoria)	Extraordinary Professor
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Solms, F., BSc(Hons) MSc PhD Physics(Pretoria)	Senior Lecturer
Croft, N.J. MSc PhD(Pretoria)	Lecturer
Fasan, M., MSc(Stellenbosch)	Lecturer
Kroeze, J.C.W., BIT(Pretoria) MSc(NWU)	Lecturer
Malan, K.M, BSc(Hons) MSc(Cape Town)	Lecturer
Marshall, L., BSc(Hons) MIT(Pretoria)	Lecturer
Naidoo, S, DSP(TCE) HED(SCE) BEd MEd(RAU)	Lecturer
Pieterse, V., BSc HED(Pretoria) BSc(Hons)(Unisa) MSc(Pretoria).....	Lecturer
Strauss, M.D., BSc(Hons) MSc(Pretoria)	Lecturer
Breedt, H. BSc(Hons)(Pretoria).....	Junior Lecturer
Klazar, R.D., BSc(Pretoria) BSc(Hons)(Pretoria)	Junior Lecturer
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Riekert, M., BSc(Hons)(Pretoria).....	Junior Lecturer
Van Heerden, W.S., BSc(Hons)(Pretoria)	Junior Lecturer

Head: Computer and Information Literacy

Jacobs, E.

Head: Student Administration

Jones, E.

GENERAL INFORMATION

Admission

Any person, who wishes to register at the University for the first time, or after an interruption of studies, should apply or reapply for admission. Application for admission to all undergraduate programmes closes on 30 September. Visit the website (<http://sit.up.ac.za>) for application details concerning the postgraduate programmes.

Selection

A selection procedure takes place prior to admission to the degree programmes in the School of Information Technology. The number of students admitted to the undergraduate programmes in the school may be limited. Postgraduate selection takes place in accordance with departmental policy.

Number restrictions

If limited human resources and/or facilities are available, number restrictions will be applied.

Statement of symbols

When registering at this university for the first time, an undergraduate candidate must submit a statement of symbols obtained for subjects in the final Grade 12 examination.

National Senior Certificate

All undergraduate candidates who enrol at the University of Pretoria for the first time must show their original National Senior Certificate at the student administration of their faculty before the end of the first semester.

Language of tuition

In conducting its general business, the University uses two official languages, namely Afrikaans and English.

In formal education, the language of tuition is either Afrikaans or English or both languages, taking the demand as well as academic justification and economic viability into consideration. However, it remains the student's responsibility to determine in which language a module and any further level of that module is presented. This information is published annually in the Timetable book. The University reserves the right to change the language of tuition on short notice, depending on the size of the groups and the availability of lecturers. In respect of administrative and other services, a student may choose whether the University should communicate with him or her in Afrikaans or English.

Bursaries and loans

Particulars of bursaries and loans are available on request.

Accommodation

Applications for accommodation in university residences for a particular year may be submitted as from March 1 of the preceding year. Applications will be considered while vacancies exist, and prospective students are advised to apply well in advance. Please note that admission to the University does not automatically mean that lodging will also be available.

Welcoming day, registration and start of the academic year

Details of the welcoming day to which all parents are cordially invited, and the subsequent programme for registration and start of the academic year during which all new first-year students **must** be present, are obtainable from the office of the Director: Student Affairs.

Prescribed books

Lists of prescribed books are not available. The lecturers will supply information regarding prescribed books to students at the commencement of lectures.

Amendment of regulations and fees

The University retains the right to amend the regulations and to change tuition fees without prior notification.

NB: The fees advertised and thus levied in respect of a module or study programme presentation represents a combination of the costs associated with the formal services rendered (for example lectures, practicals, access to laboratories, consumables used in laboratories, etc.) as well as associated overheads such as the provision of library and recreation facilities, security and cleaning services, electricity and water supply, etc. Therefore the fees in respect of a module or study programme presentation cannot simply be reconciled with the visible services that are rendered in respect of such module or study programme.

Leave of absence

If it is impossible for a registered student at the University of Pretoria to continue with his/her studies/research in a specific year, but he/she intends to continue in the following year, the student must apply in writing to the Dean of the relevant faculty for **leave of absence**. The application must include: full names, student number, address, reasons and period for leave of absence, for example the whole year, first semester (January to June) or second semester (July to December), name of supervisor (where applicable), and the student's intentions for the period after his/her leave of absence. However, in accordance with the policy of the University of Pretoria, leave of absence is not granted for more than two years. Any outstanding fees should be paid in full upon the student's return from his/her leave of absence.

GLOSSARY OF TERMS

academic year: The duration of the academic year, which is determined by the University Council.

admissions regulation: A regulation compiled by the Dean concerning the admission of students to a specific school, which includes a provision regarding the selection process.

credit (or **credit value**): A value unit linked to learning activities, calculated in accordance with the SAQA norm of **1 credit = 10 notional hours (learning hours)**. Credits are linked to modules and qualifications.

curriculum: A series of modules which form a programme, grouped together over a specified period of time and in a certain sequence according to the regulations.

examination mark: The mark a student obtains for an examination in a module, including practical examinations where applicable.

extended study programme: A study programme for a degree or diploma that is completed over a longer period than the minimum duration of the particular degree or diploma.

final mark: The mark calculated on the basis of the semester/year mark and the examination mark which a student obtains in a particular module according to a formula that is determined from time to time in the regulations for each module with the proviso that should no semester/year mark be required in a module, the examination mark serves as the final mark.

grade point average based on module credits: an average mark that is calculated by multiplying the final mark achieved in a module with the credit value of that module and then dividing the sum of these values by the total of the credit values of all the modules for which a student was enrolled. The result of these calculations is a weighted average based on module credits.

GS: A combined (final) mark (semester/year mark plus examination mark) of 40%-49%.

learning outcome: The end product of a specified learning process, i.e. the learning result (specific skills) that one intends to achieve at the end of the learning process.

level of a module: The academic level (year) of a module, which is indicated in the module code and which gives an indication of the complexity of the module.

LP: With the lecturer's permission.

TDH: With the head of department's permission.

module: An independent, defined learning unit, designed to result in a specific set of learning outcomes, and which is a component of a programme.

module code: Consists of an equal number of letters and digits, which indicate the name of the module, the year of study, the period of study and the level of the module.

notional hours (learning hours): The notional number of hours students should spend in mastering the learning content of a particular module or programme. The total number of learning hours for a module consists of the time needed for lectures, tutorials and practicals (contact hours), as well as for self-tuition, examination preparation and any other activity required by the study programme. (**notional hours = credits x10**)

NQF: National qualifications framework. This is a national framework in which all SAQA-registered qualifications are listed, arranged on eight levels in accordance with the complexity of the qualification.

programme: This is a comprehensively planned, structured and coherent set of teaching and learning units (modules), designed to attain a specific set of predetermined learning outcomes at a specific level, which culminates in a student being awarded a particular qualification (diploma, degree).

qualification: In outcomes-based education, a qualification is a diploma or a degree which is obtained after attaining the learning outcomes as specified in a coherent learning programme, expressed as an accumulation of credits at specific levels.

SAQA: South African qualifications authority. This body has been established by law and has as its purpose the registration of qualifications, programmes and unit standards, in order to ensure that specific national and international criteria are achieved.

semester/year mark: The mark a student obtains during the course of a semester or a year for tests, class-work, practical work or any other work in a particular module as approved by regulation.

student-centred learning: Teaching and learning methodology, which facilitates the total own responsibility for the learning process. A prerequisite is that lectures, tutorials and practicals be adapted so that active participation by students is always achieved.

syllabus: Summary of the contents of a module.

DEGREES CONFERRED IN THE SCHOOL OF INFORMATION TECHNOLOGY

The Faculty of Engineering, Built Environment and Information Technology comprises three schools namely the School of Engineering, the School for the Built Environment and the School of Information Technology.

The School of Information Technology has three departments, namely the Department of Informatics, the Department of Information Science and the Department of Computer Science. Two faculties offer the degrees that fall under the School of Information Technology. This implies that although the Department of Informatics falls under the School of Information Technology, the degree BCom (Informatics) is conferred by the Faculty of Economic and Management Sciences (see below for further details).

Faculty of Engineering, Built Environment and Information Technology

The following degrees are conferred by the faculty:

- (a) Bachelor of Information Technology [BIT]
- (b) Master of Information Technology [MIT]
- (c) Doctor of Philosophy in Information Technology [PhD (Information Technology)]

Department of Informatics

The following degrees are conferred by the Faculty of Economic and Management Sciences:

- (a) Bachelor of Commerce in Informatics
- (b) Bachelor of Commerce Honours in Informatics
- (c) Master of Commerce in Informatics
- (d) Master of Philosophy in Informatics
- (e) Doctor of Commerce in Informatics
- (f) Doctor of Philosophy in Informatics

Department of Information Science

The following degrees are conferred by the Faculty of Engineering, Built Environment and Information Technology:

- (a) Bachelor of Information Science [BIS]
 - (i) in Information Science
 - (ii) in Multimedia
 - (iii) in Multimedia (Four-year programme)
 - (iv) in Publishing
- (b) Bachelor of Information Science Honours [BISHons]
 - (i) in Information Science
 - (ii) in Multimedia
 - (iii) in Publishing
- (c) Master of Information Science (Research) [MIS]
 - (i) in Library Science
 - (ii) in Information Science
 - (iii) in Multimedia
 - (iv) in Publishing
- (d) Doctor of Philosophy [DPhil]
 - (i) in Library Science
 - (ii) in Information Science
- (e) Doctor of Philosophy [PhD]
 - (i) in Publishing

Department of Computer Science

The following degrees are conferred by the Faculty of Engineering, Built Environment and Information Technology:

- (a) Bachelor of Science Information Technology in Information and Knowledge Systems
- (b) Bachelor of Science Information Technology in Information and Knowledge Systems (Four-year programme)
- (c) Bachelor of Science in Computer Science
- (d) Bachelor of Science Honours in Computer Science
- (e) Master of Science in Computer Science
- (f) Doctor of Philosophy in Computer Science

REGULATIONS

The rules for degrees here published are subject to change and may be amended prior to the commencement of the academic year in 2013.

IT.1 Admission to undergraduate study

General Regulations G.1 to G.15 are applicable to bachelor's degrees.

- (a) In order to register for a first bachelor's degree at the university a candidate should
 - (i) be in possession of a valid National Senior Certificate with admission to degree purposes;
 - (ii) comply with the particular requirements, prescribed in the admission procedures and faculty regulations of the respective faculties and departments, for admission to particular modules and fields of study.
- (b) A candidate, who does not comply with the requirements in G.1.1(a) above, may also be considered for admission, provided that the candidate
 - (i) is in possession of a certificate deemed by the university to be equivalent to any of the certificates mentioned in G.1.1(a);
 - (ii) is a graduate from another tertiary institution or has been granted the status of a graduate of such an institution; or
 - (iii) passes an admissions examination prescribed by the university.
 Abovementioned candidates are requested to contact the relevant faculty for more detail regarding admission requirements.
- (c) Senate may limit the number of students allowed to register for a programme, in which case the Dean concerned may, at his or her discretion, select from the students who qualify for admission those who may be admitted.
- (d) Subject to faculty regulations and the stipulations of General Regulations G.1.3 and G.62, a candidate is admitted to a postgraduate bachelor's degree only if he or she is already in possession of a recognised bachelor's degree.

IT.2 Admission requirements for candidates with a National Senior Certificate

- (a) To be able to gain access to the specific programme, the appropriate combinations of recognised NSC subjects as well as certain levels of achievement in the said subjects are required from prospective students. In this regard the determination of an admission point score (APS) is explained and a summary of the specific requirements, i.e. APS and the specific subjects required is provided.
- (b) Determination of an admission point score (APS)
The calculation is simple and based on a candidate's achievement in six 20-credit recognised subjects by using the NSC ratings, that is the "1 to 7 scale

of achievement". Thus, the highest APS that can be achieved is 42. Life orientation is excluded from the calculation determining the APS required for admission.

Rating code	Rating	Marks %
7	Outstanding achievement	80-100%
6	Meritorious achievement	70-79%
5	Substantial achievement	60-69%
4	Adequate achievement	50-59%
3	Moderate achievement	40-49%
2	Elementary achievement	30-39%
1	Not achieved	0-29%

- (c) Preliminary admission is based on the results obtained in the final Grade 11 examination. Final admission is based on Grade 12 results.
Please note: The final Grade 12 results will be the determining factor with regard to admission.
- (d) Alternative admission channels
 Candidates with an APS lower than required, could be considered for admission to the faculty if they meet the additional assessment criteria specified by the faculty from time to time. Preference will, however, be given to students who comply with the regular admission requirements of the faculty.
- (e) Admission requirements for specific degree programmes:
 (a) A valid National Senior Certificate with admission to degree purposes.
 (b) The following minimum subject and level requirements for 2013:

School of Information Technology – minimum requirements				
Degree	APS	Group A		Group B
		Two languages	Mathematics	3 Other subjects
BIT	30	Comply with NSC minimum requirements; ADDITIONALLY one of these languages must be Afrikaans OR English at level 5 (60-69%).	5 (60-69%)	Any three subjects
BCom: (Informatics)	30	Comply with NSC minimum requirements; ADDITIONALLY one of these languages must be Afrikaans OR English at level 4 (50-59%).	5 (60-69%)	A combination of applicable NSC subjects for admission to degree studies
BSc (Computer Science)	30	Comply with NSC minimum requirements; ADDITIONALLY one of these languages must be Afrikaans OR English at level 5 (60-69%).	5 (60-69%)	Any three subjects

BSc IT (Information and Knowledge Systems)	30	Comply with NSC minimum requirements; ADDITIONALLY one of these languages must be Afrikaans OR English at level 4 (50-59%).	5 (60-69%)	Any three subjects
BIS (Multimedia)	30	Comply with NSC minimum requirements; ADDITIONALLY one of these languages must be Afrikaans OR English at level 4 (50-59%).	5(60-69%)	Any three subjects
Should a candidate obtain an APS from 25 to 29, the compulsory Institutional Proficiency Test must be written. Consideration for admission will be based on the results of the Institutional Proficiency Test and providing the quotas regarding student numbers have not been reached.				

Degree	APS	Group A		Group B
		Two languages	Mathematics	3 Other subjects
BSc IT (Information and Knowledge Systems) (Four-year programme)	22	Comply with NSC minimum requirements; ADDITIONALLY one of these languages must be Afrikaans OR English at level 4 (50-59%)	4 (50-59%) or 3 (40-49%) provided a 4 (50-59%) is obtained in Physical Sciences	Any three subjects
BIS (Multimedia) (Four-year programme)	22	Comply with NSC minimum requirements; ADDITIONALLY one of these languages must be Afrikaans OR English at level 4 (50-59%)	3 (40-49%)	Any three subjects
Degree	APS	Group A	Group B	
		Two languages	Mathematics or Mathematical Literacy	3 Other subjects
BIS (Information Science)	28	Comply with NSC minimum requirements; ADDITIONALLY one of these languages must be Afrikaans OR English at level 4 (50-59%)	3 (40-49%) or **	Any three subjects
		** If Informatics is selected as a subject at first-year level, an achievement rating of 5 (60-69%) must be obtained for Mathematics.		
BIS (Publishing)	28	Comply with NSC minimum requirements; ADDITIONALLY one of these languages must be Afrikaans OR English at level 5 (60-69%).	3 (40-49%)	Any three subjects
Should a candidate obtain an APS from 25 to 27, the compulsory Institutional Proficiency Test must be written. Consideration for admission will be based on the results of the Institutional Proficiency Test and providing the quotas regarding student numbers have not been reached.				

IT.3 Requirements for specific modules

A candidate who has:

- (a) passed the Grade 12 examination in Mathematics with at least 50% will be admitted to WTW 134, WTW 115 and WTW 152, and 60% for WTW 114, WTW 126, WTW 158 and WTW 161 in Mathematics and to WST 111 etc. or obtained at least 3 (40-49%) for Mathematics in Grade 12, will be admitted to WTW 133 and WTW 143
- (b) ¹obtained at least 4 (50-59%) in Mathematics in the Grade 12 examination, or at least 50% in both Statistics 113, 123, will be admitted to Informatics 112; Economics 113, 123 and 120; ² obtained at least 5 (60-69%) in Mathematics, or obtained at least 4 (50 – 59%) in Mathematics and has passed WTW 133 and WTW 143, will be admitted to Informatics 153, 154, 163, 164.
- (c) not passed at least three Computer science modules at second-year level, will not be permitted to register for the Computer science modules at third-year level, unless special permission has been granted by the Head of Department.

Please note:

- (i) The Grade 12 examination refers to the National Senior Certificate examination.
- (ii) A student who takes a module presented by another faculty or department must take note of the admission requirements of such module, subminimum required in examination papers and supplementary examinations.

IT.4 Registration for a specific year

A student registers for all the modules he or she intends taking in that specific year (quarter modules, first and second-semester modules and year modules) at the beginning of an academic year. Changes to a curriculum at the beginning of the second semester may be made only with the approval of the Dean.

IT.5 Minimum study period

The minimum period of study for the degree is indicated at the relevant degree programme. Students registering for a three-year degree, must complete the degree in a maximum of five years. Students registering for a four-year degree, must complete the degree in a maximum of six years.

IT.6 Promotion requirements

6.1 General

- (a) A student must pass all the modules of the first year of study, before he or she is permitted to register for any module of the third year of study. Module prerequisites remain applicable. Exceptions to this rule will be considered by the relevant Head of Department and the Dean.
- (b) A student must pass all the modules of the second year of study, before he or she is permitted to register for any module of the fourth year of study (in the case of a four-year degree). Module prerequisites remain applicable. Exceptions to this rule will be considered by the relevant Head of Department and the Dean.
- (c) A new first-year student, who has failed in all the prescribed modules of the programme at the end of the first semester, will not be permitted to proceed to the second semester in the School of Information Technology.
- (d) A student who has not passed at least 70% of the core credits of the current year of study after the November examinations will not be re-admitted to the School of Information Technology.

- (e) Students who fail a module for a second time, forfeit the privilege of registering for any modules of an advanced year of study.
- (f) Students whose academic progress is not acceptable can be suspended from further studies.

6.2 Procedure: Exclusion from and re-admission to further studies

- (a) A student who is excluded from further studies in terms of the stipulations of the abovementioned regulations, will be notified in writing by the Dean or admissions committee of the School of Information Technology at the end of the relevant semester.
- (b) A student who has been excluded from further studies may apply in writing to the admissions committee of the School of Information Technology on level 6 in the Engineering building I for re-admission.
- (c) Written applications for re-admission to the second semester must be submitted at least 7 days before lectures resume for the second semester.
- (d) Written applications for re-admission to the new academic year must be submitted before 12 January.
- (e) Late applications will be accepted only in exceptional circumstances after approval by the Dean.
- (f) Should a student not be re-admitted to further studies by the admissions committee of the School of Information Technology, he/she will be informed in writing.
- (g) A student who is not re-admitted by the admissions committee of the School of Information Technology, has the right to appeal to the Appeals Committee: Admissions in the Administration building, room 3-13.
- (h) Any decision taken by the Appeals Committee: Admissions is final.
- (i) Should the student be re-admitted by the Admissions Committee, strict conditions will be set which the student must comply with in order to proceed with his/her studies.
- (j) A student, who is repeating his or her year, may be permitted by the Dean, on recommendation of the relevant head(s) of department, to register for modules of the following year of study in addition to the outstanding modules he or she has failed, providing that he or she complies with the prerequisites of these modules and no timetable clashes occur. In no semester may the total credits for which a student registers, exceed the normal number of credits per semester by more than 16 credits, except with special permission from the relevant Head of Department.

IT.7 Change of field of study

Transfer from one field of study to another may only take place with the Dean's approval, after consultation with the relevant Head of Department.

IT.8 Registration for modules

- (a) Final dates are set for the change of modules (cancellation or addition) for each academic year. These dates are available from the student administration offices. Students may change the modules they are registered for only with the approval of the Dean and within the first two weeks after commencement of the module.
- (b) A student may not register for a module of a subsequent year if a timetable clash occurs with a module of a previous year which has not yet been passed and which is prescribed for his or her field of study, unless exemption is obtained from class attendance in the latter module.

- (c) Should a student register for modules of the second semester at the beginning of a year of study, and it becomes evident at the end of the first semester that he or she does not comply with the prerequisites of the second semester modules, the registration of such modules will be cancelled. It is also the student's responsibility to ensure at the beginning of the second semester that the cancellation has been brought about.

IT.9 Module credits for unregistered students

There are students who attend lectures, write tests and examinations and in this manner earn "marks", but who have neither registered for modules nor registered as students. These marks will not be communicated to any student before he/she has provided proof of enrolment. A student cannot obtain any credits in a specific academic year for a module "passed" in this manner during a previous academic year and for which he/she was not registered. This arrangement applies even where the student is prepared to pay the tuition fees.

IT.10 Academic information management

Academic information management (AIM 101) is offered as a compulsory module in the first semester. For students on the Extended Programme, Academic information management is compulsory in both the first semester and second semester (AIM 111 and AIM 121).

IT.11 Academic literacy

It is expected from all first year students who wish to register with the University to meet a certain level of academic literacy.

Students register in the School for Information Technology for ALL 110/VAG 110 if they achieved the following NSC symbol in Grade 12:

- English/Afrikaans Home Language: 4(50-59%) or lower, or
- English First Additional Language: 5(60-69%) or lower.

IT.12 Examinations

12.1 Examinations, projects and research reports

- (a) An examination in a module may be written and/or oral. Projects and research reports are prepared and examined as stipulated in the study guide of the module, in accordance with the regulations and procedures as described in 12.2 below.
- (b) The examinations for modules of the first semester are held in May/June, while all other examinations (third and fourth-quarter modules, second-semester modules and year modules) are held in October/November.

12.2 Examination admission

A minimum semester/year mark of 40% is required in order to be admitted to the final examination in a specific module, with the exception of a first-semester module at first-year level where a minimum semester mark of 30% is required for admission to the final examination. In addition, all other examination admission requirements, applicable to the relevant module, must have been met.

12.3 Pass requirements

Refer also to General Regulations G.10.2, G.11.1(a) and G.12.2.2

- (a) In order to pass a module, a student must obtain an examination mark of at least 40% and a final mark of at least 50% except if stated otherwise in the study guide. A student passes a module with distinction if a final mark of at least 75% is obtained. The final mark is compiled from the semester/year mark and the examination mark.

- (b) Calculation of the final mark: The semester/year mark must account for no less than 40% and no more than 60% of the final mark, with the exception of modules such as design and research projects and research reports, as well as in modules where the development of general skills is the primary learning activity, where appropriate alternative norms are determined individually by schools or departments. The specific details and/or formula for the calculation of the final mark are set out in the study guide of each module.
- (c) Calculation of the semester/year mark: The semester/year mark is compiled from formative assessment of learning activities such as assignments, presentations, practicals and group projects, as well as from class tests and semester tests. For each module the specific formula for the calculation of the semester/year mark is determined by the lecturer(s) responsible for the presentation of the module and the details are set out in the study guide. Refer also to General Regulation G.11.1(b).
- (d) In some modules specific requirements in respect of certain components of the semester/year mark may be set in order for a student to pass the module (for example that satisfactory performance in and attendance of practical classes are required). Thus, even if a pass mark is obtained in the module, a pass is not granted unless these requirements are met. For such modules these specific requirements are set out in the study guide.
- (e) A student must comply with the subminimum requirements in subdivisions of certain modules. For such modules these specific requirements are set out in the study guide of the module.
- (f) A student may be promoted (exempted from the examination) in certain modules should a specified semester/year mark (minimum 65%) be obtained. For such modules these specific requirements are set out in the study guide of the module. Refer also to General Regulation G.10.3.

12.4 Ancillary examinations

Refer to General Regulation G.12.3.

12.5 Supplementary examinations

Refer to General Regulation G.12.4.

In the School of Information Technology all supplementary examinations are considered and granted in accordance with the stipulations of General Regulation G.12.4, except that the semester mark is taken into account when the final mark is calculated and in accordance with the faculty regulations of the faculty in which the module is offered. The only exception to this rule is in the case of first-year modules at first-semester level, where the semester mark is not considered, and where the supplementary examination mark is taken as the final mark, with the provision that the maximum final mark awarded may be no more than 50%. Special supplementary examinations will not be arranged for students who were not able to write the supplementary examinations during scheduled times, as provided in the examinations timetable.

12.6 Special examinations (including the aegrotat)

Refer to General Regulation G.12.5.

- (a) A medical certificate will not be accepted where it states that a student appeared ill or declared him/herself unfit to write the examination.
- (b) The doctor must be consulted on or before the date on which the examination was scheduled.

12.7 Other special examinations

Refer also to General Regulation G.12.6.

- (a) The Dean may, on the recommendation of the Head of Department concerned, grant a special examination in a module to a student who failed that module in the final year of study, and consequently does not comply with degree requirements. A student may at most, be admitted to either one special examination in a year module or two special examinations in semester modules or four special examinations in quarter modules.
- (b) To be taken into consideration for a special examination, a student should have obtained a minimum final mark of 40% and should also have complied with all other examination admission requirements which are applicable to the relevant module.
- (c) A student must apply in writing to the Dean before consideration will be given to admission to a special examination. The Head of Department decides when the special examination will take place and may prescribe work that must be satisfactorily completed before a student may write the examination.
- (d) During calculation of the final mark the semester mark is retained and the final mark is calculated as the weighted average of the special examination mark and the semester mark, in accordance with the formula as published in the study guide of the specific module. The candidate should also comply with the subminimum requirements. The highest final mark that may be awarded is 50%.
- (e) If a test or examination clash occurs between modules within the prescribed curriculum, an adjustment of the test date and/or time will only be considered if the student completes an official application form at the department's administration office and submits a copy and supporting documentation to the relevant lecturer at least seven (7) days prior to the scheduled test. A module from a higher year level receives preference to that of a lower year level within the prescribed curriculum.

12.8 Re-marking of examination scripts

Refer to General Regulation G.14.

IT.13 Degree with distinction (undergraduate)

A degree in the School of IT is conferred with distinction on a student who did not repeat any module of his/her final year, obtained a weighted average of at least 75% in all the prescribed modules for the final year, provided that a subminimum of 65% is obtained in each of these modules and provided that the degree is completed in the prescribed minimum period of time. Ad hoc cases will be considered by the Dean, in consultation with the head of the relevant department.

IT.13.1 Module information

XYZ 151: Prerequisite. Before a student is admitted to module, XYZ 163, he or she must pass the prerequisite module(s) XYZ 151, unless one of the following indications is used:

		Minimum requirement
()	Code in brackets: (XYZ 151)	Examination admission
GS	Code followed by GS: XYZ 151GS	Combined final mark of 40%-49%

Deviations from these requirements may be permitted only with the approval of the Dean, after consultation with the relevant head(s) of department(s).

CURRICULA OF THE INFORMATION TECHNOLOGY PROGRAMMES

IT.14 Bachelor of Information Technology [BIT] (Code 02130082)

This degree is conferred by the Faculty of Engineering, Built Environment and Information Technology.

Programme organiser:

Dr M Matthee, Information Technology building, Room 5-58,
Tel: 012 420 3365, email: machdel.matthee@up.ac.za

Admission requirements for candidates with a National Senior Certificate

To obtain admission to this degree programme, a candidate should have obtained the following:

- a valid National Senior Certificate with admission for degree purposes; and
- a minimum APS of 30 in the final Grade 12 examinations; and
- compliance with the NSC minimum requirements; additionally one of these languages must be Afrikaans or English at level 5 (60%-69%); and
- at least level 5 (60-69%) in Mathematics.

Curriculum

The list of required modules is given below in a proposed study programme. The degree is awarded upon successful completion of a minimum of 673 credits, of which 182 are required at first-year level, 154 at second-year level, 186 at third-year level, and 151 at fourth-year level.

Requirements for promotion to the following year of study

Also consult General 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.
 - Fourth year of study after obtaining at least 70% of credits of the third year of study.
- The degree is conferred when all prescribed modules have been passed.

(a) First year of study (182 credits)

Code	Module	Prerequisites	Credits	Period
AIM 101	Academic information management 101		6	S1
See Reg IT.11. Students who are deemed to be at risk of their level of academic literacy are compelled to take the following two modules: Note: *Credits for ALL/VAG 110 will not form part of the minimum credit requirement for a programme.				
ALL/VAG 110	Academic literacy		6*	S1
ALL 121	Academic literacy for Information Technology		6	S2
Students who are deemed NOT to be at risk of their level of academic literacy are compelled to take the following module:				
ALL 121	Academic literacy for Information Technology		6	S2
COS 132	Imperative programming		16	S1

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COS 110	Program design: Introduction	COS 153 or COS 131 or COS 132 and Maths level 5 or WTW 133	16	S2
COS 121	Software modelling	COS 153 or COS 131 or COS 132	16	S2
COS 151	Introduction to Computer science		8	S1
ERA 284	Computer architecture	COS 153GS or COS 131GS or COS 132GS	16	S2
OBS 114	Business management		10	S1
FRK 111	Financial accounting		10	S1
FRK 122	Financial accounting	FRK 111GS	12	S2
INF 153	Informatics	Par IT.3(b) ²	5	S1
INF 163	Informatics	INF 153	5	S2
INL 110	Information science: Introduction to Information science		12	S1
WTW 115	Discrete structures	Par 1.2 – Natural Sciences (Maths level 4)	8	S1
WTW 114	Calculus	Par 1.2 – Natural Sciences (Maths level 5)	16	S1
WTW 126	Linear algebra	Par 1.2 – Natural Sciences (Maths level 5)	8	S2
FIL 120	Philosophy		12	S2

(b) Second year of study (154 credits)

Code	Module	Prerequisites	Credits	Period
COS 212	Data structures and algorithms	COS 110	16	S1
COS 222	Operating systems	COS 153 or COS 131 or COS 132	16	S2
COS 216	Netcentric computer systems	COS 110	16	S1
INF 214	Informatics	AIM 101	14	S1
INF 271	Informatics	AIM 101, INF 163 and INF 164 Reg 1.2(g)	14	Year
INF 272	Informatics	AIM 101, INF 163, and INF 164 Reg 1.2(g)	14	Year
IMY 210	Multimedia: Advanced mark-up languages (1)	Departmental selection	16	S1
IMY 220	Multimedia: Advanced mark-up languages (2)	IMY 210	16	S2
WTW 285	Discrete structures	WTW 115	12	S2
At least one of the following:				
INL 210 or	Information science: Information seeking and retrieval	AIM 101 or AIM 111 and 121	20	S1
INL 240	Information science: Social and ethical impact		20	S1

(c) Third year of study (minimum 186 credits)

Code	Module	Prerequisites	Credits	Period
COS 301 or INF 370 or IMY 300	Software engineering or Information systems project or Multimedia project	COS110 and 121 INF 225 and INF 261 and INF 271 and INF 272 Departmental selection	27 30 45	Year Year Year
INF 324	Informatics	INF 225, 261, 271 and 272	15	S2
INF 315	Informatics	LP	15	S1
INF 354	Informatics	INF 225, 261, 271 272	15	S1
INL 310	Information science: Information organisation		30	S1
INL 320	Information science: Information and knowledge management		30	S2
At least three of the following:				
COS 314	Artificial intelligence	COS 131 or COS 110	18	S1
COS 326	Database systems	INF 214 or TDH	18	S2
COS 333	Programming languages	COS 110	18	S2
COS 341	Compiler construction	COS 212	18	S1
COS 330	Computer security and ethics	COS 110	18	S2
COS 344	Computer graphics	COS 110 and WTW 126	18	S1
COS 332	Computer networks	COS 216	18	S1

(d) Fourth year of study (151 credits)

Code	Module	Prerequisites	Credits
SIT 700	Industry-based learning		52
BER 310	Business law		16
JCP 202	Community-based project		8
Five modules (minimum 75 credits) of the following with a maximum of four modules from one department: Note that a student who wishes to continue with an MSc(Computer Science) or MCom(Informatics) or MIS(Information Science) should take four of the five honours modules from that specific department.			75
Information Science			
	Choice of honours modules in consultation with the programme organiser		15 each
Informatics			
	Choice of honours modules in consultation with the programme organiser		15 each
Computer science			
	Choice of honours modules in consultation with the programme organiser		20 each

POSTGRADUATE PROGRAMMES IN INFORMATION TECHNOLOGY

Consult General Regulations G.30 to G.62

**IT.15 Master of Information Technology (Coursework)
[MIT] (Code 02250082)**

Also consult General Regulations G.30 to G.44 and G.57 to G.62

Programme organiser:

Prof C de Villiers, Information Technology Building, Room 5-71,
Tel: 012 420 3798, e-mail: carina.devilliers@up.ac.za

This degree programme is presented in English only.

(a) **Admission**

- (i) Subject to the stipulations of Gen. Reg. G.1.3, G.30 and G.62, an appropriate honours or bachelor's degree is a requirement for admission; and
- (ii) A pass mark in Mathematics at grade 12 level or another qualification in Mathematics, Statistics or Mathematical Statistics, which the Chairperson of the School of Information Technology considers to be sufficient; and
- (iii) Sufficient appropriate practical experience in the technology field in the opinion of the Chairperson of the School of Information Technology.
- (iv) The Chairperson of the School of Information Technology may impose additional requirements for admission. In particular, this will apply to candidates with insufficient academic background in Information Technology.
- (v) Selection of candidates will take place.
- (vi) The result of the selection is final and no correspondence will be entered into.

(b) **Duration**

A minimum of two years part-time study. The MIT degree must be completed in a maximum of three years. A student will have to apply with the Dean of the Faculty of Engineering, Built Environment and Information Technology if he/she needs more than three years to complete the degree.

(c) **Conferment of the degree**

The Master's degree in Information Technology is conferred on a student who successfully completes the following:

Mini-dissertation	90 credits
Core modules	90 credits
Total:	180 credits

(d) **Pass requirements**

A minimum semester mark of 40% is required in order to be admitted to the final examinations in all the prescribed modules of the degree. A final mark of 50% is required to pass all coursework modules and the mini-dissertation.

(e) **Discontinuation of studies**

The Dean may, on the recommendation of the admissions committee, cancel the studies of a student who fails more than one module. A module may only be repeated once.

(f) **Degree with distinction**

The degree is conferred with distinction on students who have obtained at least 75% for the mini-dissertation and a minimum of 75% weighted average final mark for the coursework modules.

(g) Curriculum

The curriculum is determined in consultation with the programme organizer,

IT.16 Doctor of Philosophy in Information Technology [PhD (Information Technology)] (Code 02260593)
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Also consult General Regulations G.45 to G.62.

- (a) Subject to the stipulations of Regulations G.45 and G.62, no candidate is admitted to doctoral studies unless he/she holds an appropriate master's degree.
- (b) Unless the Dean, on the recommendation of the chairperson of the school, decides otherwise, the PhD degree is conferred on the basis of a thesis and an examination on the thesis.
- (c) Unless Senate, on the recommendation of the supervisor, decides otherwise, a student, before or on submission of a thesis, must submit proof of submission of an article to an accredited journal, to the Head: Student Administration. The draft or submitted article, as the case may be, should be based on the research that the student has conducted for the thesis and be approved by the supervisor if the supervisor is not a co-author. The supervisor shall be responsible for ensuring that the paper is taken through all the processes of revision and resubmission, as may be necessary. Conferment of the degree may be made subject to compliance with the stipulations of this regulation.
- (d) The student must provide proof by means of his or her work, thesis and examination of advanced original research and/or creative work which makes a real and substantial contribution to the relevant field of research.

IT.17 BCom in Informatics [BCom (Informatics)] (Code 07130172)

The Faculty of Economic and Management Sciences confers this degree.

Informatics studies the application and use of the computer and information systems within the organisation. Our students' strength lies in their broad background of the economic and management sciences, which implies that the world of business is nothing sinister to them. The use of information technology by organisations is growing exponentially and new, more complex and challenging applications are explored and developed on a daily basis. It has the benefit that, in addition to the work of informatics specialists being extremely interesting, there will only be a very small chance that they will ever be without work.

The Informatics specialist has the knowledge to analyse the information needs of organisations, be that businesses, government departments, non-profit organisations or any other group where information is crucial. They not only analyse the needs but then address those needs by designing and implementing information systems. Information systems nowadays refer to computer-based systems (including mobile applications) which store and manipulate data such that people can understand, use, interpret and make decisions based on the information.

The BCom (Informatics) programme at UP is the only degree in South Africa that is internationally accredited by the Accreditation Board for Engineering and Technology (ABET) of the USA.

Package coordinator

Prof C de Villiers, IT 5-71, Tel: 012 420 3798, e-mail: carina.devilliers@.up.ac.za

Admission requirements for candidates with a National Senior Certificate

To obtain admission to this degree programme, a candidate should have obtained the following:

- (a) a valid National Senior Certificate with admission for degree purposes; and
- (b) a minimum APS of 30 in the final Grade 12 examinations; and
- (c) compliance with the NSC minimum requirements; additionally one of these languages must be Afrikaans or English at level 4 (50%-59%); and
- (d) at least level 5 (60-69%) in Mathematics; and
- (e) at least level 4 (50-59%) in Life orientation (excluded when calculating the APS)

Total credits required: 408 (411)**

	Year level 1	Year level 2	Year level 3
	Credits	Credits	Credits
Fundamental modules	12	10	0
Core modules	131	103 (106)**	80
Elective modules	0	32	40*
Total	143	145 (148)**	120

***Only two 14-week modules, or the equivalent thereof, that are not preceded by the 100- and 200-level modules, may be offered (followed) for degree purposes.** In other words, at least four 14-week modules must be offered on 300-level that are preceded by the 100- and 200-level except for the modules offered on 200- and 300- level only.

****** If Financial accounting 211 and 221 (FRK 211 and 221) are chosen, INF 281 (3 additional credits) is compulsory.

Learning programme

YEAR LEVEL:		1	2	3
Fundamental modules (compulsory)				
AIM	Academic information management 101	101		
BPE	Business ethics		251 (O3)	
See Reg IT.11. Students who are deemed to be at risk of their level of academic literacy are compelled to take the following two modules: Note: *Credits for ALL/VAG 110 will not form part of the minimum credit requirement for a programme.				
ALL/VAG	Academic literacy	110*		
Students who are deemed NOT to be at risk of their level of academic literacy are compelled to take the following module:				
ALL	Academic literacy for Information Technology	121		
Core modules (Compulsory)				
INF	Informatics ^{(1); (2)}	112 153, 163, 154, 164	214, 261 225, 271, 272	301 ⁽³⁾
FRK	Financial accounting ⁽⁴⁾	111, 121/122		
EKN	Economics	110, 120		
BER	Business law		210, 220	
STK	Statistics	110, 120		
OBS	Business management	114, 124		
KOB	Communication management	184		
WTW	Discrete structures	115		
JCP	Community-based project			202

Elective modules				
OBS	Business management		210, 220	310, 320
FRK	Financial accounting ⁽⁵⁾		211, 221	311, 321
BEL	Taxation		200 ⁽⁶⁾	300
INF	Informatics ⁽⁷⁾		281	
STK	Statistics		210, 220	310, 320
IOK	Internal auditing ⁽⁵⁾		211, 221	311, 321
KOB	Communication management		210, 220	310, 320
FBS	Financial management		212, 222	
BEM	Marketing management ⁽⁸⁾	110, 122 ⁽⁹⁾	212, 224	From 2014 311, 321

Elective modules can only be taken if they can be accommodated in the class, test and examination timetables.

Note: See regulation C.2 in the yearbook of the Faculty of Economic and Management Sciences for prerequisites of all modules.

- (1) Prerequisites for modules:
Year level 1: INF 112 (see IT.3(b), INF 153 and INF 154 (see IT.3(b)), INF 163 (INF 153), INF 164 (INF 154);
Year level 2: INF 214 and INF 225 (AIM 101 or AIM 111 and AIM 121), INF 261 (INF 214), INF 271 and INF 272 (AIM 101 or AIM 111 and AIM 121, INF 163, INF 164);
Year level 3: INF 301 (INF 214, 225, 261, 271, 272).
- (2) In addition to the provisions of the footnote⁽¹⁾ above, a student who does not fulfil the Mathematics requirement for admission, but is nevertheless interested in a BCom: (Informatics) degree, should register for the BCom (Code 07130221) and pass Pre-calculus 133 (WTW 133) and Calculus 143 (WTW 143) and the fundamental modules SIT 133 and SIT 143 as extra modules. He or she may then apply for permission to change to the second year of the BCom(Informatics) programme. Students who have passed Informatics 112, may, if their academic performance merits it, be allowed by the Dean, on the recommendation of the Head of Department, to register simultaneously for Informatics 153, 154, 163, 164 and 271, 272.
- (3) Specialisation module INF 301 is a module that combines INF 315, INF 324, INF 354 and INF 370. Students register for all these modules, but receive a calculated percentage for INF 301.
- (4) FRK 122 is a terminating module. If FRK 122 is selected, a candidate will not be able to continue with Accounting at the 200 and 300 level. Also note that FRK 121 may be a prerequisite for a number of other modules and it is the responsibility of the candidate to ensure that he/she makes the appropriate choice between FRK 121 and 122.
- (5) To be able to apply for the BComHons: Internal Auditing degree, Financial Accounting 211, 221, 311 and 321 must be chosen as extra modules.
- (6) Taxation 220 (BEL 220) is compulsory on the 200-level, if Financial accounting (FRK 311, 321) is chosen as a major.
- (7) Informatics 281 (INF 281) is compulsory at 200-level, if Financial accounting (FRK 311 and 321) is chosen.
- (8) If these modules are chosen as part of the electives in the second and third year, the first-year modules will have to be included as extra modules.
- (9) Prerequisite for BEM 122: BEM 110GS.

II. HONOURS DEGREES

See General Regulations G.16 to G.29.

IT.18 Bachelor of Commerce Honours [BComHons]

(a) **General**

The Dean has the right of authorisation regarding matters not provided for in the General Regulations or in the faculty regulations.

(b) **Requirements for admission**

- (i) Subject to the stipulations of General Regulations G.1.3 and G.62, a candidate is not admitted to the study for the BComHons degree unless he/she is in possession of a BCom degree.
- (ii) Preparatory work for the honours degree, as determined by each Head of Department, with an assessment thereof, is compulsory for all candidates. Candidates can be exempted from this requirement if they pass an exemption assessment as determined by the head of the department concerned.
- (iii) A candidate may be refused admission to an honours degree by the Head of Department if he or she does not comply with the level of competence required in the subject as determined by the department – with the proviso that a candidate, who fails to comply with the level of competence required, may be admitted if additional study assignments, as agreed upon, are completed and/or examinations are written.
- (iv) A candidate, who is refused admission to an honours degree, may request that the Dean reconsiders his or her application for admission in terms of the set procedures.
- (v) The Head of Department concerned may set additional admission requirements.
- (vi) In respect of all BComHons fields of specialisation:
 - Mathematics at Grade 12 level or another qualification in mathematics, statistics or mathematical statistics deemed adequate by the Head of Department.
 - Adequate knowledge of management, financial and economic sciences as well as statistics as determined by the head of the department concerned in consultation with the Dean.

(c) **Field of study**

BComHons

Informatics (07240172)

(d) **Duration of study**

Subject to the provisions of General Regulation G.18.3, a full-time student must complete his or her studies for an honours degree within two academic years (four semesters) and an after-hours student within three academic years (six semesters) after first registration for the degree. However, the Dean may, on the recommendation of the Head of Department concerned, extend the period of study in both cases by a maximum of two semesters. A student who does not qualify for the degree within three years (six semesters) or four years (eight semesters) respectively after first registration, must repeat the prescribed modules.

(e) **Curricula**

- (i) A student compiles his/her curriculum in consultation with the Head of Department concerned.

- (ii) Details of modules, credit values and syllabi are available, on request, from the relevant Head of Department.
- (f) **Examination**
- (i) The subminimum required in the examination in each module is 50%, except in modules presented by the departments of Accounting, Auditing, Marketing and Communication Management, Business Management, Statistics, Financial Management, Taxation, Tourism Management and School of Public Management and Administration where a subminimum of 40% must be obtained. However, all departments set a final mark of at least 50% as the pass mark for a module.
A minimum pass mark of 50% is required for a research report.
 - (ii) Subject to the provisions of General Regulation G.26, a head of a department determines, in consultation with the Dean:
 - (aa) when the honours examinations in his/her department will take place, provided that:
 - (1) honours examinations which do not take place before the end of the academic year, must take place not later than 11 January of the following year, and all examination results must be submitted to student administration by 15 January;
 - (2) honours examinations which do not take place before the end of the first semester, may take place not later than 15 July, and all examination results must be submitted to student administration on or before 19 July;
 - (bb) whether a student will be admitted to a supplementary examination: provided that a supplementary examination is granted only once in a maximum of two prescribed semester modules or in one year module.
- NB:** For the purposes of this stipulation, the phrase "may not sit for an examination more than twice in the same subject" as it appears in General Regulation G.18.2, implies that a student may not be admitted to an examination in a module, including a supplementary examination, more than three times.
- (cc) the manner in which research reports are prepared and examined in his/her department.
- NB:** Full details are published in each department's postgraduate information brochure that is available from the head of the department concerned. The minimum pass mark for a research report is 50%. The stipulations regarding pass requirements for dissertations in General Regulation G.12.2. apply with the necessary changes to research reports.
- (iii) Subject to the provisions of General Regulation G.12.2 (2.1.3), the subminimum required in subdivisions of modules is published in the postgraduate information brochure that is available from the Head of Department concerned.
 - (iv) To obtain the degree with distinction, a student must obtain an average of at least 75% in the prescribed modules.

III. MASTER'S DEGREES

See General Regulations G.30 to G.44 and G.57 to G.62.

The Dean has the right of authorisation regarding matters not provided for in the General Regulations or the faculty regulations.

IT.19 Master of Commerce [MCom]

(a) **Requirements for admission**

- (i) Subject to the provisions of General Regulations G.1.3 and G.62, the related BHons degree is a requirement for admission to master's degree study.
- (ii) The requirement of an exemption assessment on preparatory work, as determined by the head of the department concerned, should be met.
- (iii) Adequate knowledge of management, financial and economic sciences as well as statistics as determined by the head of the department concerned in consultation with the Dean.
- (iv) The Head of Department concerned may set additional admission requirements.
- (v) For MCom degrees, Mathematics at Grade 12 level or another qualification in Mathematics, Statistics or Mathematical statistics deemed adequate by the Head of Department.

(b) **Field of study**

MCom degree

Informatics (07250172)	Dissertation
(07250173)	Coursework

(c) **Duration of study**

The degree programme must be completed within four years after the first registration for the degree, provided that the Dean may, in exceptional cases, and on the recommendation of the Head of Department concerned, approve a fixed limited extension of the period of study.

(d) **Dissertations, curricula and module credits**

- (i) A dissertation must be submitted on a topic from the field of study chosen for the honours degree. However, the Dean may, on the recommendation of the Head of Department concerned, approve the substitution of the required dissertation by the successful completion of a prescribed number of module credits and a mini-dissertation.
- (ii) Information regarding modules, credits and syllabi are available, on request, from the head of the department concerned.

(e) **Pass requirements**

- (i) The minimum pass mark for both a dissertation and a mini-dissertation is at least 50%. The provisions regarding pass requirements for dissertations, contained in General Regulation G.60.2.1.2(a), apply with the necessary changes to mini-dissertations.
- (ii) A pass mark of at least 50% is required in the examination of each module.
- (iii) In order to obtain the degree with distinction, at least 75% must be obtained for the dissertation or an average of at least 75% in the examinations and for the mini-dissertation.

DEGREE PROGRAMMES IN INFORMATION SCIENCE

IT.20 Bachelor of Information Science [BIS]

Programme manager

Prof TJD Bothma, IT 6-73, Tel: 012 420 2293, email: theo.bothma@up.ac.za

Enquiries

Mrs J Geertsema, email: joukje.geertsema@up.ac.za

Duration of study

Students registering for a three-year degree, must complete the degree in a maximum of five years. Students registering for a four-year degree, must complete the degree in a maximum of six years.

IT.20.1 BIS in Information Science (Code 12131004)

The increasing amount of information available and growing information needs have necessitated the training of information intermediaries to effectively facilitate the bringing together of users and the information they require. This package focuses on the use of information technology and the processing of information products and is designed to train students in the management, retrieval and organisation of information, as well as to teach them how to add value to, package and distribute information. Students will also have the opportunity to develop knowledge and skills in the management of one of the most important resources of enterprises – information and knowledge.

Two or three specialisation options are available, depending on the electives chosen.

Package organiser

Dr N Sewdass, IT 6-52, Tel: 012 420 4209, email: nisha.sewdass@up.ac.za

Admission requirements for candidates with a National Senior Certificate

To obtain admission to this degree programme, a candidate should have obtained the following:

- a valid National Senior Certificate with admission for degree purposes; and
- a minimum APS of 28 in the final Grade 12 examinations; and
- compliance with the NSC minimum requirements; additionally one of these languages must be Afrikaans or English at level 4 (50%-59%); and
- at least level 3 (40-49%) in Mathematics or Mathematical literacy; and
- if Informatics is elected as an elective subject on first-year level, a minimum of at least level 5 (60-69%) in Mathematics is required.

Minimum credits required: 415-438*	Year-level 1	Year-level 2	Year-level 3	Total
Fundamental modules	12	8	0	20
Core modules	68	92	75	235
Elective modules	30	60-63*	70-90*	160-183*
Total	110	160-163*	145-165*	415-438*

Note:

*Because credits are not calculated in the same way in all faculties, students should ensure note that the total number of credits required for this package is at least 415-438 depending on the choice of elective modules.

FIRST YEAR OF STUDY				
Code	Module	Prerequisites	Credits	Period
Fundamental modules (12 credits)				
AIM 101	Academic information management 101		6	S1
See Reg IT.11. Students who are deemed to be at risk of their level of academic literacy are compelled to take the following two modules: Note: *Credits for ALL/VAG 110 will not form part of the minimum credit requirement for a programme.				
ALL/VAG 110	Academic literacy		6*	S1
ALL 121	Academic literacy for Information Technology		6	S2

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Students who are deemed NOT to be at risk of their level of academic literacy are compelled to take the following module:				
ALL 121	Academic literacy for Information Technology		6	S2
Core modules (68 credits)				
INL 110	Information science: Introduction to information science		12	S1
INL 120	Information science: Organisation and representation of information		12	S2
INL 130	Information science: Personal information management		12	S1
INL 140	Information science: Information and communication technology		12	S2
OBS 114	Business management		10	S1
OBS 124	Business management	(OBS 114)	10	S2
Elective modules (30 credits*)				
Select one group in consultation with the package organiser.				
Group A* (30 credits)				
Code	Module	Prerequisites	Credits	Period
INF 112	Informatics	IT.3(b) ¹	10	S1
INF 153	Informatics	IT.3(b) ²	5	S1
INF 154	Informatics	IT.3(b) ²	5	S1
INF 163	Informatics	INF 153	5	S2
INF 164	Informatics	INF 154	5	S2
Note:				
¹ A candidate who has obtained at least 4 (50-59%) in Mathematics in the Grade 12 examination, or at least 50% in both WTW 133 and WTW 143 will be admitted to Informatics 112;				
² A candidate who has obtained at least 5 (60-69%) in Mathematics, or has passed WTW 133 and WTW 143, will be admitted to Informatics 153, 154, 163, 164.				
OR				
Group B (30 credits*)				
Code	Module	Prerequisites	Credits	Period
At least 30 credits* from any module(s) at year-level 1. Choose modules in consultation with package organiser.			30*	
Note:				
*Because credits are not calculated in the same way in all faculties, students should take note that the total number of credits required for Group B must be at least 30.				
SECOND YEAR OF STUDY				
Code	Module	Prerequisites	Credits	Period
Fundamental module (8 credits)				
JCP 202	Community-based project		8	^
Note:				
^ Consult the department at the beginning of the year				
Core modules (92 credits*)				
INL 210	Information science: Information seeking and retrieval	AIM 101 or AIM 111 and AIM 121	20	S1
INL 220	Information science: Representation and organisation	INL 210 or LP	20	S2
INL 240	Information science: Social and ethical impact		20	S1

Select one of the following subjects in consultation with the package organiser:				
OBS 210 and	Business management	OBS 114 or OBS 124 with admission to examination in the other	16	S1
OBS 220 or	Business management	OBS 114 or OBS 124 with admission to examination in the other	16	S2
KOB 210 and	Communication management		16	S1
KOB 220	Communication management	KOB 210GS	16	S2
Elective modules (60-63 credits*)				
Select one group in consultation with the package organiser.				
Note:				
*Because credits are not calculated in the same way in all faculties, students should take note that the total number of credits required for Group A is at least 63 and for Group B at least 60.				
Group A^ (63 credits*)				
Code	Module	Prerequisites	Credits	Period
INF 214	Informatics	AIM 101	14	S1
INF 261	Informatics	INF 214	7	S2
INF 225	Informatics	AIM 101	14	S2
INF 271	Informatics	AIM 101 INF 163, 164	14	Year
INF 272	Informatics	AIM 101 and INF 163 and 164	14	Year
Note:				
^Prerequisite for INF is at least level 5 (60-69%) in Mathematics in the Grade 12 examination or WTW 101 or (WTW 133 and WTW 143) as well as the module prerequisites.				
OR				
Group B (60 credits*)				
Code	Module	Prerequisites	Credits	Period
INL 230	Information science: User studies and dissemination		20	S1
INL 260	Information science: Economics and politics of information		20	S2
INL 270	Information science: Indigenous knowledge and communication		20	S2
THIRD YEAR OF STUDY				
Code	Module	Prerequisites	Credits	Period
Core modules (75 credits*)				
INL 310	Information science: Information organisation		30	S1
INL 320	Information science: Information and knowledge management		30	S2
INL 370	Information science: Experiential learning project		15	Year

Elective modules (minimum of 70-90 credits*)				
Select one group in consultation with the package organiser.				
Note:				
*Because credits are not calculated in the same way in all faculties, students should take note that the total number of credits required for Group A is at least 70 and 90 for Groups B and C.				
Group A (70 credits*)				
Code	Module	Prerequisites	Credits	Period
INF 315	Informatics	LP	15	S1
INF 324	Informatics	INF 225, 261, 271 and 272	15	S2
And At least 40 credits for Business management or Entrepreneurship or Communication management at year-level 3.			40	
OR				
Group B (90 credits*)				
INL 340	Information science: Digital repositories		30	S2
INL 360	Information science: Socio-political aspects of information in a global context		30	S1
INL 380	Information Science: Competitive intelligence		30	S2
OR				
Group C (90 credits*)				
INF 315	Informatics	LP	15	S1
INF 324	Informatics	INF 261, 262, 271 and 272	15	S2
And At least 60 credits from Group B.			60	
IT.20.2 BIS in Multimedia (Code 12131005)				

Modern information technology offers the possibility of information products being designed and created comprising various types of media over and above the traditional text medium. Information technology therefore results in the convergence of various previously separate traditional media. There is not a single discipline that handles the combination of information products. The multimedia qualification in the department of Information science addresses this shortcoming. Any type of institution in all economic spheres, including government, may profit from a multimedia approach to information design, organisation and retrieval.

Multimedia documents include text, graphics, sound, video and animation. The purpose of this qualification is to enable students to understand the necessary concepts to build multimedia products and maintain the products. This programme is therefore a combination of theory and practice. The explosion of the web, as well as the exponential growth and power of information technology, requires the introduction of this degree following international trends.

Package manager

Prof TJD Bothma, IT 6-73, Tel: 012 420 2293, email: theo.bothma@up.ac.za

Package organiser

Mr Koos de Beer, IT 6-61, Tel: 012 420 2833, email: koos.debeer@up.ac.za

Enquiries

Mrs J Geertsema, email: joukje.geertsema@up.ac.za

Admission requirements for candidates with a National Senior Certificate

To obtain admission to this degree programme, a candidate should have obtained the following:

- a valid National Senior Certificate with admission for degree purposes; and
- a minimum APS of 30 in the final Grade 12 examinations; and
- compliance with the NSC minimum requirements; additionally one of these languages must be Afrikaans or English at level 4 (50%-59%); and
- at least level 5 (60-69%) in Mathematics.

Minimum credits required: 469	Year-level 1	Year-level 2	Year-level 3	Total
Fundamental modules	12	8	0	20
Core modules	116	136	105	357
Other compulsory modules	32	24		56
Elective modules			36	36
Total	160	168	141	469

FIRST YEAR OF STUDY				
Code	Module	Prerequisites	Credits	Period
Fundamental modules (12 credits)				
AIM 101	Academic information management		6	S1
See Reg IT.11. Students who are deemed to be at risk of their level of academic literacy are compelled to take the following two modules: Note: *Credits for ALL/VAG 110 will not form part of the minimum credit requirement for a programme.				
ALL/VAG 110	Academic literacy		6*	S1
ALL 121	Academic literacy for Information Technology		6	S2
Students who are deemed NOT to be at risk of their level of academic literacy are compelled to take the following module:				
ALL 121	Academic literacy for Information Technology		6	S2
Core modules (116 credits)				
IMY 110	Multimedia: Mark-up languages	Departmental selection	12	S1
IMY 120	Multimedia: Multimedia for the web	IMY 110	12	S2
INL 110	Information science: Introduction to Information science		12	S1
INL 120	Information science: Organisation and representation of information		12	S2
INL 140	Information science: Information and communication technology		12	S2
COS 132	Imperative programming		16	S1
COS 110	Program design: Introduction	COS 153 or COS 131 or COS 132 and Maths level 5 or WTW 133	16	S2
COS 151	Introduction to computer science		8	S1
COS 121	Software modelling	COS 153 or COS 131 or COS 132	16	S2

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Other compulsory modules (32 credits)				
ERA 284	Computer architecture	COS 153GS or COS 131GS or COS 132GS	16	S2
VIO 102	Visual design	Mathematics 5 or WTW 114 or WTW 133 and WTW 143	16	Year
SECOND YEAR OF STUDY				
Code	Module	Prerequisites	Credits	Period
Fundamental module (8 credits)				
JCP 202	Community-based project		8	^
Note: ^ Consult the department at the beginning of the year.				
Core modules (136 credits)				
IMY 210	Multimedia: Advanced mark-up languages (1)	Departmental selection	16	S1
IMY 211	Multimedia: Multimedia and hypermedia theory	Departmental selection	20	S1
IMY 220	Multimedia: Advanced mark-up languages (2)	IMY 210	16	S2
PUB 210	Publishing: Copy-editing		20	S1
COS 212	Data structures and algorithms	COS 110	16	S1
COS 216	Netcentric computer systems	COS 110	16	S1
COS 222	Operating systems	COS 153 or COS 131 or 132	16	S2
COS 226	Concurrent systems	COS 153 or COS 131 or 132	16	S2
Other compulsory modules (24-credits)				
VIO 202	Visual design	VIO 102	24	Year
THIRD YEAR OF STUDY				
Code	Module	Prerequisites	Credits	Period
Core modules (105 credits)				
IMY 300	Multimedia: Project	Departmental selection	45	Year
IMY 310	Multimedia: Human-computer interaction	Departmental selection	30	S1
IMY 320	Multimedia: Trends	Departmental selection	30	S2
Elective modules (at least 36 credits*)				
Select at least two ^ of the following semester modules:				
COS 301	Software engineering	COS 110 and COS 121	27	Year
COS 314	Artificial intelligence	COS 131 or COS 110	18	S1*
COS 332	Computer networks	COS 216	18	S1*
COS 333	Programming languages	COS 110	18	S2*
COS 341	Compiler construction	COS 212	18	S1*
COS 330	Computer security and ethics	COS 110	18	S2*
COS 326	Database systems	INF 214 or TDH	18	S2*
COS 344	Computer graphics	COS 110 and WTW 126	18	S1*

Note:

The semester in which these modules are offered may vary from year to year. Students who wish to continue with a BScHons (CS) should consult the Computer Science department for the correct admission requirements to the degree. COS 301 and three COS electives are compulsory admission requirements for BScHons (CS).

**IT.20.3 BIS in Multimedia (Four-year programme)
(Code 12131008)**
Package manager

Prof TJD Bothma IT 6-73, Tel: 012 420 2293, email: theo.bothma@up.ac.za

Package organiser

Mr Koos de Beer, IT 6--61, Tel: 012 420 2833, email: koos.debeer@up.ac.za

Enquiries

Mrs J Geertsema, email: joukje.geertsema@up.ac.za

If a student does not comply with the admission requirements for the BIS Multimedia degree, he or she may be admitted to the Four-year programme if the following admission requirements are met:

Admission requirements for candidates with a National Senior Certificate

To obtain admission to this degree programme, a candidate should have obtained the following:

- a valid National Senior Certificate with admission for degree purposes; and
- a minimum APS of 22 in the final Grade 12 examinations; and
- compliance with the NSC minimum requirements; additionally one of these languages must be Afrikaans or English at level 4 (50%-59%); and
- at least level 3 (40-49%) in Mathematics; and
- Institutional Proficiency Test* (National Benchmark Test - NBT).

* **Note:** Consideration for admission will be based on the above and the results of the compulsory Institutional Proficiency Test (NBT) and providing the quotas regarding student numbers have not been reached.

Minimum credits required: 533	Year-level 1	Year-level 2	Year-level 3	Year-level 4	Total
Fundamental modules	24		8		32
Core modules	64	104	136	105	409
Elective modules				36	36
Other compulsory modules		32	24		56
Total	88	136	168	141	533

FIRST YEAR OF STUDY				
Code	Module	Prerequisites	Credits	Period
Fundamental modules (24 credits)				
AIM 111	Academic information management		4	S1
AIM 121	Academic information management		4	S2
LST 133	Language, life and study skills 1		8	S1
LST 143	Language, life and study skills 2	LST 133	8	S2

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Core modules (64 credits)				
COS 133	Introduction to programming 1		8	S1
COS 143	Introduction to programming 2	COS 133	8	S2
INL 133	Information science: Introduction to information science 1		8	S1
INL 143	Information science Introduction to information science 2		8	S2
SIT 133	Information technology orientation		8	S1
SIT 143	Information technology orientation (continuation)	SIT 133	8	S2
WTW 133	Pre-calculus		8	S1
WTW 143	Calculus	WTW 133	8	S2
SECOND YEAR OF STUDY				
Code	Module	Prerequisites	Credits	Period
Core modules (104 credits)				
COS 110	Program design: Introduction	COS 153 or 131 or 132 and Maths level 5 or WTW 133	16	S2
COS 121	Software modelling	COS 153 or COS 131 or COS 132	16	S2
COS 153	Introduction to programming 3	COS 143	8	S1
IMY 110	Multimedia: Mark-up languages	Departmental selection	12	S1
IMY 120	Multimedia: Multimedia for the web	IMY 110	12	S2
INL 120	Information science: Organisation and representation of information		12	S2
INL 140	Information science: Information and communication technology		12	S2
SIT 153	Introduction to computing	SIT 143	8	S1
WTW 153	Calculus	WTW 143	8	S1
Other compulsory module (32 credits)				
ERA 284	Computer architecture	COS 153GS or COS 131GS or COS 132GS	16	S2
VIO 102	Visual design	Mathematics 5 or WTW 114 or WTW 133 and WTW 143	16	Year
THIRD YEAR OF STUDY				
Code	Module	Prerequisites	Credits	Period
Fundamental module (8 credits)				
JCP 202	Community-based project		8	^
Note:				
^ Consult the department at the beginning of the year.				
Core modules (136 credits)				
IMY 210	Multimedia: Advanced mark-up languages (1)	Departmental selection	16	S1
IMY 211	Multimedia: Multimedia and hypermedia theory	Departmental selection	20	S1

IMY 220	Multimedia: Advanced mark-up languages (2)	IMY 210	16	S2
PUB 210	Publishing: Copy-editing		20	S1
COS 212	Data structures and algorithms	COS 110	16	S1
COS 216	Netcentric computer systems	COS 110	16	S1
COS 222	Operating systems	COS 153 or COS 131 or COS 132	16	S2
COS 226	Concurrent systems	COS 153 or COS 131 or COS 132	16	S2
Other compulsory module (24 credits)				
VIO 202	Visual design	VIO 102	24	Year
FOURTH YEAR OF STUDY				
Code	Module	Prerequisites	Credits	Period
Core modules (105 credits)				
IMY 300	Multimedia: Project	Departmental selection	45	Year
IMY 310	Multimedia: Human-computer interaction	Departmental selection	30	S1
IMY 320	Multimedia: Trends	Departmental selection	30	S2
Elective modules (36 credits*)				
Select at least two ^ of the following semester modules:				
COS 301	Software engineering	COS 110 and COS 121	27	Year
COS 314	Artificial intelligence	COS 131 or COS 110	18	S1*
COS 326	Database systems	INF 214 or TDH	18	S2*
COS 332	Computer networks	COS 216	18	S1*
COS 330	Computer security and ethics	COS 110	18	S2*
COS 333	Programming languages	COS 110	18	S2*
COS 341	Compiler construction	COS 212	18	S1*
COS 344	Computer graphics	COS 110 and WTW 126	18	S1*
Note: The semester in which these modules are offered may vary from year to year. Students who wish to continue with a BScHons (CS) should consult the Computer Science department for the correct admission requirements to the degree. COS 301 and three electives are compulsory admission requirements for BScHons (CS).				

Please note the following transitional measures

If outstanding	Register for the following
CIL 111	AIM 111 – presented on Mamelodi Campus or AIM 101 – presented on Hatfield Campus
CIL 121	AIM 121 – presented on Mamelodi Campus or AIM 101 – presented on Hatfield Campus
EOT 110 / EOT 162	LST 133 (sem 1) – presented on Mamelodi Campus, or ALL/VAG 110 / ALL 121 – presented on Hatfield Campus
EOT 120 / EOT 164	LST 143 (sem 1) – presented on Mamelodi Campus, or ALL/VAG 110 / ALL 121 – presented on Hatfield Campus

INL 110	INL 133 (sem 1) and INL 143 (sem 2) – presented on Mamelodi Campus, or INL 110 (sem 1) – presented on Hatfield Campus
COS 130	COS 133 (sem 1) and COS 143 (sem 2) – only presented on Mamelodi Campus
WTW 133	WTW 133 – only presented on Mamelodi Campus
WTW 143	WTW 143 – only presented on Mamelodi Campus
SIT 110	SIT 133 – only presented on Mamelodi Campus
SIT 120	SIT 143 – only presented on Mamelodi Campus
COS 135	COS 153 – only presented on Hatfield Campus
COS 151	May register for COS 151 in a subsequent year or register for SIT 153

IT.20.4 BIS in Publishing (Code 12131006)
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This package contextualises the South African publishing industry, with specific application to book publishing and corporate publishing. The objectives are to equip students with background knowledge on the industry, role players and trends, as well as with specific skills linked to the publishing value chain. These skills include: the commissioning of manuscripts aimed at specific markets; the management of the design, reproduction and printing phase; copy-editing and proofreading; financial and marketing management. Students are empowered to act as responsible information intermediaries who can add value to publications during the various phases of the publishing process.

Package organiser

Ms EH le Roux, IT 6-34, Tel: 012 420 2426, email: beth.leroux@up.ac.za

Admission requirements for candidates with a National Senior Certificate

To obtain admission to this degree programme, a candidate should have obtained the following:

- (a) a valid National Senior Certificate with admission for degree purposes; and
- (b) a minimum APS of 28 in the final Grade 12 examinations; and
- (c) compliance with the NSC minimum requirements; additionally one of these languages must be Afrikaans or English at level 5 (60%-69%); and
- (d) at least level 3 (40-49%) in Mathematics or Mathematical literacy.

Minimum credits required: 438	Year-level 1	Year-level 2	Year-level 3	Total
Fundamental modules	36	8	0	44
Core modules	80	100	120	300
Elective modules	24	40	30	94
Total	140	148	150	438

FIRST YEAR OF STUDY				
Code	Module	Prerequisites	Credits	Period
Fundamental modules (36 credits)				
AIM 101	Academic information management 101		6	S1
ENG 118	English for specific purposes		12	S1
VKK 111	Visual culture studies		12	S1
See Reg IT.11. Students who are deemed to be at risk of their level of academic literacy are compelled to take the following two modules:				

Note: *Credits for ALL/VAG 110 will not form part of the minimum credit requirement for a programme.				
ALL/VAG 110	Academic literacy		6*	S1
ALL 121	Academic literacy for Information Technology		6	S2
Students who are deemed NOT to be at risk of their level of academic literacy are compelled to take the following module:				
ALL 121	Academic literacy for Information Technology		6	S2
Core modules (80 credits)				
INL 110	Information science: Introduction to information science		12	S1
INL 130	Information science: Personal information management		12	S1
INL 140	Information science: Information and communication technology		12	S2
PUB 120	Publishing: The book publishing environment		12	S2
VKK 123	Visual culture studies		12	S2
BEM 110	Fundamentals of marketing management and marketing instruments		10	S1
BEM 122	Marketing applications	BEM 110GS	10	S2
Elective modules (24 credits)				
<ul style="list-style-type: none"> • Select a language up to year-level 3, from one of the language module groups, e.g. Afrikaans, English, German, French or an African language in consultation with the package organiser. A language for beginners may not be selected. • Select modules to the level of 24 credits on year-level 1 of the selected language. Refer to Regulations and Syllabi, 2013, Faculty of Humanities for information regarding the language modules. 				
SECOND YEAR OF STUDY				
Code	Module	Prerequisites	Credits	Period
Fundamental module (8 credits)				
JCP 202	Community-based project		8	^
Note: ^ Consult the department at the beginning of the year.				
Core modules (100 credits)				
INL 240	Information science: Social and ethical impact		20	S1
PUB 210	Publishing: Copy-editing		20	S1
PUB 220	Publishing: The visual and production dimensions of publishing		20	S2
LCC 220	Text design		20	S2
VKK 222	Visual communication: Type, image and applications		20	S1
Elective modules (40 credits)				
<ul style="list-style-type: none"> • Continue with the same language as selected on year-level 1 up to year-level 3. • Select modules to the value of 40 credits on year-level 2 of the selected language. • Refer to Regulations and Syllabi, 2013, Faculty of Humanities for information regarding the language modules. 				

THIRD YEAR OF STUDY				
Code	Module	Prerequisites	Credits	Period
Core modules (120 credits)				
PUB 310	Publishing: Publishing in the digital environment		30	S1
PUB 311	Publishing: Commissioning		30	S1
PUB 320	Publishing: Management in the publishing environment		30	S2
PUB 321	Publishing: Publishing in the magazine and corporate environment		30	S2
Elective modules (30 credits*)				
<ul style="list-style-type: none"> • Continue with the same language on year-level 3 as selected on year-levels 1 and 2. • Select modules to the value of 30 credits on year-level 3 of the selected language. • Students who wish to continue with language studies at postgraduate level should consult the specific department for the selection of their modules and may possibly have to select additional modules. • Refer to Regulations and Syllabi, 2013, Faculty of Humanities for information regarding the language modules. 				

POSTGRADUATE PROGRAMMES IN INFORMATION SCIENCE

IT.21 Bachelor of Information Science Honours [BIS Hons]

Consult General Regulations G.16 to G.29.

Programme manager:

Prof TJD Bothma, IT 6-73, Tel: 012 420 2293, email: theo.bothma@up.ac.za

Duration of study

Subject to the provisions of General Regulation G.18.3, a full-time student must complete his or her studies for an honours degree within two academic years (four semesters) and an after-hours student within three academic years (six semesters) after first registration for the degree. However, the Dean may, on the recommendation of the Head of Department concerned, extend the period of study in both cases by a maximum of two semesters.

IT.21.1 BIS Hons in Information Science (Code 12240003)

Package organiser

Dr C Penzhorn, IT 6-61, Tel: 012 420 2920, email: cecilia.penzhorn@up.ac.za

Admission requirements

- BIS in Information Science, Information and Knowledge Management, Library Science or an equivalent degree.
- A minimum average of 60% in the undergraduate studies.

Minimum credits required: 120				NQF Level 7			
Fundamental modules	45	Research	0	Core modules	30	Elective modules	45

Fundamental modules (45 credits)		Credits	Sem
INY 711	Research methodology	15	1
INY 734	Research report (Closed module)	30	Year
Core modules (30 credits)			
INY 713	Information and knowledge management (I)	15	1
INY 714	Organisation, retrieval and seeking of information	15	*
Elective modules (45 credits)			
Select any three modules of the following in collaboration with the package organiser. (A maximum of two modules may also be selected from the other departments in the School of Information Technology.)			
INY 715	Information ethics	15	*
INY 716	Information and knowledge management (II) (Prerequisite: INY 713)	15	2
INY 717	Information retrieval	15	*
INY 722	Information society	15	*
INY 726	Competitive intelligence (I)	15	1
INY 727	Competitive intelligence (II) (Prerequisite: INY 726)	15	2
INY 730	Information communication	15	*

Note:

*The semester in which the module is offered may vary from year to year. Please see the departmental website.

IT.21.2 BISHons in Multimedia (Code 12240004)
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Programme manager

Mr Kosie Eloff, IT 6-63, Tel: 012 420 4681, email: kosie.elloff@up.ac.za

Admission requirements

- BIS in Multimedia.
- A minimum average of 60% in the undergraduate studies.

Minimum credits required: 120				NQF Level 7			
Fundamental modules	15	Research	0	Core modules	45	Elective modules	60

Fundamental modules (15 credits)		
INY 711	Research methodology	15
Core modules (45 credits)		
IMY 772	Hypermedia and mark-up languages	15
IMY 761	Applied multimedia	30
Elective modules (60 credits)		
Select any four modules of the following in collaboration with the package organiser. (A maximum of two modules may also be selected from the other departments in the School of Information Technology.)		
IMY 771	Multimedia trends	15
IMY 773	Multimedia technology	15
IMY 774	Virtual environments	15
IMY 777	Animation theory and practice	15
IMY 779	Human-computer interaction	15

IT.21.3 BIS Hons in Publishing (Code 12240005)

Package organiser

Ms EH le Roux, IT 6-34, Tel : 012 420 2426, email: beth.leroux@up.ac

Admission requirements

- BIS in Publishing or any related package or equivalent degree;
- A minimum average of 65% in the undergraduate studies.

Minimum credits required: 160				NQF Level 7			
Fundamental modules	15	Research	0	Core modules	75	Elective modules	30

Fundamental modules (15 credits)		
INY 711	Research methodology	15
Core modules (75 credits)		
PUB 722	Publishing management: Management and finances	15
PUB 723	Publishing management: Organisation and processes	15
PUB 724	The publishing environment: Developments and trends in the South African book industry	15
PUB 725	The publishing environment: Global developments and trends in book publishing	15
PUB 728	Editorial Practice: Advanced copy-editing and editorial project management	15
Elective modules (30 credits)		
Select the following two modules or any other relevant modules in collaboration with the package organiser.		
PUB 712	Advanced e-publishing	15
PUB 729	Editorial practice: List building and acquisition of rights	15

IT.22 Master of Information Science [MIS] Master of Arts [MA] (Research)

Consult General Regulations G.30 to G.44 and G.57 to G.62

Programme managers

Prof TJD Bothma, IT 6-73, Tel: 012 420 2293, email: theo.bothma@up.ac.za

Prof A Dick, IT 6-72, Tel: 012 420 2294, email: archie.dick@up.ac.za

Admission requirements

BIS and BISHons specialising in any of the specific packages for:

1. Library Science
2. Information Science
3. Multimedia
4. Publishing
5. **or** any equivalent honours degree.

Duration of study

The degree programme must be completed within four years after the first registration for the degree, provided that the Dean may, in exceptional cases, and on the recommendation of the Head of Department concerned, approve a fixed limited extension of the period of study.

IT.22.1	MIS in Library Science (Research) [MIS (Library Science)] (Code: 12254001)	
	BIB 890 Dissertation: Library science	180 credits
IT.22.2	MIS in Information Science (Research) [MIS (Information Science)] (Code 12254003)	
	INL 890 Dissertation: Information science	180 credits
IT.22.3	MIS in Multimedia (Research) [MIS (Multimedia)] (Code 12254005)	
	IMY 890 Dissertation: Multimedia	180 credits
IT.22.4	MIS in Publishing (Research) [MIS (Publishing)] (Code 12254007)	
	PUB 890 Dissertation: Publishing	180 credits

IT.23 Doctor of Philosophy [DPhil, PhD] (Research)

Consult General Regulations G.45 to G.62

Programme managers

Prof TJD Bothma, IT 6-73, Tel: 012 420 2293, email: theo.bothma@up.ac.za

Prof A Dick, IT 6-72, Tel: 012 420 2294, email: archie.dick@up.ac.za

Admission requirements

1. MIS (Library Science)
2. MIS (Information Science)
3. MIS (Multimedia)
4. MIS (Publishing)
5. MIS (Development Communication)
6. **or** an equivalent master's degree

IT.23.1	DPhil in Library Science [DPhil (Library Science)] (Code 12264003)	
BIB 990	Thesis: Library science	360 credits
BIB 900	Examination/justification of thesis	360 credits
IT.23.2	DPhil in Information Science [DPhil (Information science)] (Code 12264002)	
INL 990	Thesis: Information science	360 credits
INL 900	Examination/justification of thesis	360 credits
IT.23.3	PhD in Publishing [PhD (Publishing)] (Code 12264004)	
PUB 990	Thesis: Publishing	360 credits
PUB 900	Examination/justification of thesis	80 credits

DEPARTMENT OF COMPUTER SCIENCE**IT.24 Bachelor of Science in Computer Science
[BSc (Computer Science)](Code 12134000)****Admission requirements for the degree Bachelor of Science (Computer Science)
(Code 12134000)****Admission requirements for candidates with a National Senior Certificate:**

To obtain admission to this degree programme, a candidate should have obtained the following:

- a valid National Senior Certificate with admission for degree purposes; and
- a minimum APS of 30 in the final Grade 12 examinations; and
- compliance with the NSC minimum requirements; additionally one of these languages must be Afrikaans or English at level 5(60-69%); and
- at least level 5 (60-69%) in Mathematics.

Note that additional admission requirements may result from certain elective groups.

Candidates who do not comply with these requirements are advised to register for BSc IT or BSc IT (Four-year programme), depending on whether they comply with the admission requirements for these programmes.

Requirements for promotion to the following year of study:

Refer to School of Information Technology Regulation IT.6 and IT.3(c).

Curriculum

The curriculum for the BSc CS degree programme comprises of fundamental, core and elective modules in each study year. The degree is awarded after a minimum of 472 credits have been obtained successfully. The following minimum credit requirements apply to the different study year levels:

	Year-level 1	Year-level 2	Year-level 3
Fundamental modules	12	8	0
Core modules	96	134	81
Elective modules	78 (over year 1 and year 2)		63

Curriculum

FUNDAMENTAL MODULES				
Code	Module	Prerequisites	Credits	Period
Year-level 1 (12 credits)				
AIM 101	Academic information management		6	S1
See Reg IT.11. Students who are deemed to be at risk of their level of academic literacy are compelled to take the following two modules:				
Note: *Credits for ALL/VAG 110 will not form part of the minimum credit requirement for a programme.				
ALL/VAG 110	Academic literacy		6*	S1
ALL 121	Academic literacy for Information Technology		6	S2
Students who are deemed NOT to be at risk of their level of academic literacy are compelled to take the following module:				
ALL 121	Academic literacy for Information Technology		6	S2

Year-level 2 (8 credits)				
JCP 202	Community-based project		8	Year
CORE MODULES				
Code	Module	Prerequisites	Credits	Period
Year-level 1 (96 credits)				
COS 110	Program design: Introduction	COS 153 or COS 131 or 132 and Maths level 5 or WTW 133	16	S2
COS 121	Software modelling	COS 153 or COS 131 or 132	16	S2
COS 132	Imperative programming		16	S1
COS 151	Introduction to computer science		8	S1
WTW 114	Calculus	Par 1.2 – Natural sciences (Maths level 5)	16	S1
WTW 115	Discrete structures	Par 1.2 – Natural sciences (Maths level 4)	8	S1
WTW 126	Linear algebra	Par 1.2 – Natural sciences (Maths level 5)	8	S2
WTW 128	Calculus	WTW 114GS	8	S2
Year-level 2 (134 credits)				
Code	Module	Prerequisites	Credits	Period
COS 212	Data structures and algorithms	COS 110	16	S1
COS 222	Operating systems	COS 153 or COS 131 or COS 132	16	S2
COS 226	Concurrent systems	COS 153 or COS 131 or COS 132	16	S2
COS 216	Netcentric computer systems	COS 110	16	S1
ERA 284	Computer architecture	COS 153GS or COS 131GS or COS 132GS	16	S2
INF 214	Informatics	AIM 101	14	S1
INL 240	Information science: social and ethical impact		20	S1
WTW 152	Mathematical modelling	Par 1.2 – Natural sciences (Maths level 4)	8	S1
WTW 285	Discrete structures	WTW 115	12	S2
Year-level 3 (81 credits)				
Code	Module	Prerequisites	Credits	Period
COS 301	Software engineering	COS 110 and COS 121	27	Year
COS 330	Computer security and ethics	COS 110	18	S2
COS 332	Computer networks	COS 216	18	S1
COS 333	Programming languages	COS 110	18	S2
ELECTIVE MODULES				
Code	Module	Prerequisites	Credits	Period
Year-level 1 and Year-level 2 (at least 78 credits)				
Statistics (at least 26 credits)				
<i>A choice between Mathematical statistics or Statistics subject to the Grade 12 Mathematics level</i>				

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WST 111	Mathematical statistics	Maths level 5	16	S1
WST 121	Mathematical statistics	WST 111GS	16	S2
OR				
STK 110	Statistics	Maths level 5	13	S1
STK 120	Statistics	STK 110GS	13	S2
Science (32 credits)				
<i>Students with Physical science level 4 in Grade 12 can choose between Physics, Chemistry or Biological sciences.</i>				
Physics				
PHY 114	First course in physics	Refer to Regulation 1.2	16	S1
PHY 124	First course in physics	WTW 114 GS and PHY 114 GS	16	S2
OR				
Chemistry				
CMY 117	General chemistry	Physical science level 4, Maths level 4	16	S1
CMY 127	General chemistry	CMY 117GS	16	S2
OR				
Biological sciences				
MLB 111	Molecular and cell biology	Physical science level 4, Maths level 4	16	S1
BOT 161	Plant biology	MLB 111GS	8	S2
MBY 161	Introduction to microbiology	MLB 111GS	8	S2
OR				
<i>Students who did not take Physical science in Grade 12 are compelled to take Geology</i>				
GLY 155	Introductory geology	Refer to Regulation 1.2 (Natural Science)	16	S1
GLY 161	Historical geology	GLY 151GS and GLY 152GS	8	Q4
GLY 162	Environmental and hazard geology	Refer to Regulation 1.2 (Natural Science)	8	Q3
Other (at least 20 credits)				
<i>At least 20 credits from the faculties of Humanities or Economic and Management Sciences for which the student has the prerequisites in his first or second year.</i>				
Year-level 2				
<i>Additional electives from second year modules in order to satisfy third-year module prerequisites</i>				
Year-level 3 (at least 63 credits)				
At least 63 credits on third year level from the following modules (students must comply with prerequisites):				
Computer science				
Information science				
Mathematics				
Mathematical statistics				
Physics				
Chemistry				

IT.25 Bachelor of Science Information Technology in Information and Knowledge Systems [BSc IT (Information and Knowledge Systems)] (Code 12133211)

Admission requirements for the degree BSc IT (Information and Knowledge Systems):

Admission requirements for candidates with a National Senior Certificate:

To obtain admission to this degree programme, a candidate should have obtained the following:

- (a) a valid National Senior Certificate with admission for degree purposes; and
- (b) a minimum APS of 30 in the final Grade 12 examinations; and
- (c) compliance with the NSC minimum requirements; additionally one of these languages must be Afrikaans or English at level 4(50-59%); and
- (d) at least level 5 (60-69%) in Mathematics.

Note that additional admission requirements may result from certain elective groups. Candidates who do not comply with these requirements are advised to register for BSc IT (Four-year programme) if they comply with the admission requirements for the programme.

Requirements for promotion to the following year of study:

Refer to School of Information Technology Regulation IT.6 and IT.3(c).

Curriculum

The curriculum for the BSc IT (Information and Knowledge Systems) degree programme comprises of fundamental, core and elective modules in each study year. The degree is awarded after a minimum of 468 credits have been obtained successfully. The following minimum credit requirements apply to the different study year levels:

	Year-level 1	Year-level 2	Year-level 3
Fundamental modules	12	8	0
Core modules	80	126	111
Elective modules	According to Elective group: min 131		

Curriculum

FUNDAMENTAL MODULES				
Code	Module	Prerequisite	Credits	Period
Year-level 1 (12 credits)				
AIM 101	Academic information management		6	S1
See Reg IT.11. Students who are deemed to be at risk of their level of academic literacy are compelled to take the following two modules: Note: *Credits for ALL/VAG 110 will not form part of the minimum credit requirement for a programme.				
ALL/VAG 110	Academic literacy		6*	S1
ALL 121	Academic literacy for Information Technology		6	S2
Students who are deemed NOT to be at risk of their level of academic literacy are compelled to take the following module:				
ALL 121	Academic literacy for Information Technology		6	S2

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Year-level 2 (8 credits)				
JCP 202	Community-based project		8	Year
CORE MODULES				
Code	Module	Prerequisites	Credits	Period
Year-level 1 (80 credits)				
COS 110	Program design: Introduction	COS 153 or COS 131 or COS 1GS and Maths level 5 or WTW 133	16	S2
COS 121	Software modelling	COS 153 or COS 131 or COS 132	16	S2
COS 132	Imperative programming		16	S1
COS 151	Introduction to computer science		8	S1
WTW 115	Discrete structures	Par 1.2 – Natural sciences (Maths level 4)	8	S1
Either WTW 114 (Mathematics level 5) or WTW 134 (Mathematics level 4) Students wishing to follow the Applied mathematics, Bioinformatics, GIS, IT and Music or Operational research groups must take WTW 114.				
WTW 134	Calculus	Par 1.2 – Natural sciences (Maths level 4)	16	S1
OR				
WTW 114	Calculus	Par 1.2 – Natural sciences (Maths level 5)	16	S1
Year-level 2 (126 credits)				
Code	Module	Prerequisites	Credits	Period
COS 212	Data structures and algorithms	COS 110	16	S1
COS 222	Operating systems	COS153 or COS 131 or COS 132	16	S2
COS 226	Concurrent systems	COS153 or COS 131 or COS 132	16	S2
COS 216	Netcentric computer systems	COS 110	16	S1
ERA 284	Computer architecture	COS 153GS or COS 131GS or COS 132GS	16	S2
INF 214	Informatics	AIM 101	14	S1
INL 240	Information science: Social and ethical impact		20	S1
WTW 285	Discrete structures	WTW 115	12	S2
Year-level 3 (111 credits)				
Code	Module	Prerequisites	Credits	Period
COS 301	Software engineering	COS 110 and COS 121	27	Year
COS 330	Computer security and ethics	COS 110	18	S2
COS 332	Computer networks	COS 216	18	S1
COS 333	Programming languages	COS 110	18	S2
IMY 310	Multimedia: Human- computer interaction	Requires departmental selection	30	S1

ELECTIVE MODULES				
Select one of the following elective groups:				
Applied Mathematics elective group				
Code	Module	Prerequisites	Credits	Period
Year-level 1 (56 credits)				
WST 111	Mathematical statistics	Mathematics level 5	16	S1
WST 121	Mathematical statistics	WST 111GS	16	S2
WTW 123	Numerical analysis	WTW 114GS	8	S2
WTW 126	Linear algebra	Par 1.2 - Natural sciences (Maths level 5)	8	S2
WTW 128	Calculus	WTW 114GS	8	S2
Year-level 2 (72 credits)				
WST 211	Mathematical statistics	WST 111 and 121; WTW 114GS and WTW 126GS and WTW 128GS	24	S1
WST 221	Mathematical statistics	WST 211GS	24	S2
WTW 211	Linear algebra	WTW 126	12	S1
WTW 218	Calculus	WTW 114, WTW 128 and WTW 126	12	S1
Year-level 3 (54 credits)				
WTW 354	Financial engineering	WST 211 and WTW 211 and WTW 218	18	S1
WTW 383	Numerical analysis	WTW 114 and WTW 128 and WTW 211	18	S2
WTW 389	Geometry	WTW 211	18	S2

Bioinformatics elective group				
Code	Module	Prerequisites	Credits	Period
Year-level 1 (64 credits)				
BME 120	Biometry	STK 113 and STK 123 or Maths level 4	16	S2
BOT 161	Plant biology	MLB 111GS	8	S2
GTS 161	Introduction to genetics	MLB 111GS	8	S2
MBY 161	Introduction to microbiology	MLB 111GS	8	S2
MLB 111	Molecular and cell biology	Physical science level 4 and Maths level 4	16	S1
WTW 126	Linear algebra	Par 1.2 – Natural sciences, Maths level 5	8	S2
Year-level 2 (48 credits)				
GTS 251	Molecular genetics	GTS 161GS	12	S1
GTS 261	Genetic diversity and evolution	GTS 251GS	12	S2
MBY 251	Bacteriology	MBY 161GS	12	S1
MBY 261	Mycology	MBY 161	12	S2

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Year-level 3 (54 credits)				
*BIF 311	Bioinformatics	WTW 114 and BME 120 and GTS 251 or LP	18	S1
*Note: Module will no longer be presented from 2014 . An alternative module will be available from 2014 .				
Choice of either				
COS 314	Artificial intelligence	COS 110 or COS 131	18	S1
COS 344	Computer graphics	COS 110 and WTW 126	18	S1
OR				
GTS 354	Genome evolution and phylogenetics	GTS 251GS and GTS 261GS	18	S1
GTS 367	Population and evolutionary genetics	GTS 251GS and GTS 261GS or TDH	18	S2
OR				
GTS 354	Genome evolution and phylogenetics	GTS 251GS and GTS 261GS	18	S1
BTC 361	Plant genetics and crop biotechnology	GTS 251GS and GTS 261GS	18	S2

Geographical Information Systems elective group				
Code	Module	Prerequisite	Credits	Period
Year-level 1 (44 credits)				
GGY 156	Aspects of human geography		8	O2
ENV 101	Introduction to environmental sciences		8	O1
GGY 166	Southern African global geomorphology		8	O3
GMC 110	Cartography		12	S1
WTW 126	Linear algebra	Par 1.2 - Natural sciences, Maths level 5	8	S2
Year-level 2 (40 credits)				
GGY 283	Introductory GIS		12	S1
GIS 220	Geographical data analysis		12	S2
GMA 220	Remote Sensing		16	S1
Year-level 3 (84 credits)				
COS 326	Database systems	INF 214 or LP	18	S2
COS 344	Computer graphics	COS 110 and WTW 126	18	S1
GIS 310	Geographical information systems	GGY 283 or GIS 221	24	S1
GIS 320	Spatial analysis	GIS 310 or LP	24	S2

IT and Enterprises elective group				
Code	Module	Prerequisite	Credits	Period
Year-level 1 (53 credits)				
BEM 110	Marketing management		10	S1
BEM 122	Marketing applications	BEM 110GS	10	S2
OBS 114	Business management		10	S1
OBS 124	Business management	(OBS 114)	10	S2
STK 110	Statistics	Maths level 5	13	S1

Year-level 2 (38 credits)				
BPE 251	Business ethics		6	O2-4
OBS 210	Logistics management	OBS 114 or OBS 124GS with admission to examination in the other	16	S1
OBS 220	Project management	OBS 114 or OBS 124 with admission to examination in the other	16	S2
Year-level 3 (40 credits)				
<i>One of the following combinations to be taken</i>				
OBS 311	Entrepreneurship	OBS 114	20	S1
OBS 321	Entrepreneurship	OBS 311GS	20	S2
OR				
OBS 315	e-Business	OBS 114 or OBS 124 with admission to the examination in the other	20	S1
and OBS 325	and e-Commerce		20	S2
OR				
OBS 359	International business management	OBS 114 or OBS 124 with admission to the examination in the other	20	S1
and OBS 369	and International financial management	Admission to the examination in OBS 359	20	S2
OR				
OBS 310	Human resource management	OBS 114 or OBS 124 with admission to the examination in the other	20	S1
and OBS 320	and Business management		20	S2

IT and Law elective group				
Code	Module	Prerequisite	Credits	Period
Year-level 1 (44 credits)				
KRG 110	Commercial law		10	S1
KRG 120	Commercial law	KRG 110	10	S2
KRM 110	Criminology		12	S1
KRM 120	Criminology	KRM 110	12	S2
Year-level 2 (72 credits)				
KRG 200	Commercial law	KRG 120	32	Year
KRM 210	Criminology	KRM 110, 120	20	S1
KRM 220	Criminology	KRM 110, 120	20	S2
Year-level 3 (70 credits)				
KRM 310	Criminology	KRM 110 and KRM 220	30	S1
KRM 320	Criminology	KRM 210, 220 and KRM 310	30	S2
KUB 420	Cyber law	The Head of Department may set prerequisites	10	S2

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IT and Music elective group				
Code	Module	Prerequisite	Credits	Period
Year-level 1 (41 credits)				
MPE 170	Music education	Closed - requires departmental selection	15	Year
IMG 110	Introduction to history of music	Closed - requires departmental selection	10	Year
WTW 126	Linear algebra	Par 1.2 - Natural sciences, Maths level 5	8	S2
WTW 128	Calculus	WTW 114GS	8	S2
Year-level 2 (42 credits)				
IMG 210	Introduction to history of music	Closed - requires departmental selection	15	Year
MCS 302	Music (Capita selecta)	Closed - requires departmental selection	15	Year
WTW 218	Calculus	WTW 114, WTW 128, and WTW 126	12	S1
Year-level 3 (68 credits)				
COS	Any other third year COS module		18	
MCS 402	Music (Capita selecta)	Closed - requires departmental selection	50	Year

Operational research elective group				
Code	Module	Prerequisite	Credits	Period
Year-level 1 (64 credits)				
FRK 111	Financial accounting		10	S1
FRK 122	Financial accounting	FRK 111 GS	12	S2
STK 110	Statistics	Maths level 5	13	S1
STK 120	Statistics	STK 110GS	13	S2
WTW 126	Linear algebra	Par 1.2 - Natural sciences, Maths level 5	8	S2
WTW 128	Calculus	WTW 114GS	8	S2
Year-level 2 (28 credits)				
BES 220	Engineering statistics	WTW 161 and WTW 168	16	S2
WTW 211	Linear algebra	WTW 126	12	S1
Year-level 3 (68 credits)				
BAN 313	Industrial analysis		16	S1
BOZ 312	Operational research		16	S1
COS 314	Artificial intelligence	COS 110 or COS 131	18	S1
WTW 383	Numerical analysis	WTW 114, WTW 128 and WTW 211	18	S2

Philosophy elective group				
Code	Module	Prerequisite	Credits	Period
Year-level 1 (36 credits)				
FIL 110	Philosophy		12	S1
FIL 120	Philosophy		12	S2
SLK 120	Psychology		12	S2

Year-level 2 (64 credits)				
FIL 210	Philosophy		12	S1
FIL 220	Philosophy		12	S2
SLK 210	Psychology	SLK 110, 120GS	20	S1
SLK 220	Psychology	SLK 110, 120GS and recommended RES 210	20	S2
Year-level 3 (60 credits)				
FIL 310	Philosophy	FIL 210	30	S1
FIL 320	Philosophy	FIL 210	30	S2

Psychology elective group				
Code	Module	Prerequisite	Credits	Period
Year-level 1 (48 credits)				
KRM 110	Criminology		12	S1
KRM 120	Criminology	KRM 110,	12	S2
SLK 110	Psychology		12	S1
SLK 120	Psychology		12	S2
Year-level 2 (80 credits)				
KRM 210	Criminology		20	S1
KRM 220	Criminology	KRM 210	20	S2
SLK 210	Psychology	SLK 110 and SLK 120GS	20	S1
SLK 220	Psychology	SLK 110, 120GS and recommended RES 210	20	S2
Year-level 3 (60 credits)				
SLK 310	Psychology	SLK 210GS and SLK 220GS and recommended RES 361	30	S1
SLK 320	Psychology	SLK 310GS	30	S2

Software development group				
Code	Module	Prerequisites	Credits	Period
Year-level 1 (46 credits)				
INF 153	Informatics	IT.3(b) ²	5	S1
INF 154	Informatics	IT.3(b) ²	5	S1
INF 163	Informatics	INF 153	5	S2
INF 164	Informatics	INF 154	5	S2
STK 110	Statistics	Maths level 4	13	S1
STK 120	Statistics	STK 110GS	13	S2
Year-level 2 (53 credits)				
INF 261	Informatics	INF 214	7	S2
INF 272	Informatics	AIM 101 and INF 163 and INF 164	14	Year
IMY 210	Multimedia: Advanced markup languages (1)	Requires departmental selection	16	S1
IMY 220	Multimedia: Advanced markup languages (2)	Requires departmental selection	16	S2
Year-level 3 (33 credits)				
COS 326	Database systems	INF 214 or TDH	18	S2
INF 354	Informatics	INF 261 and INF 225 and INF 271 and INF 272	15	S1

IT.26 Bachelor of Science Information Technology in Information and Knowledge Systems [BSc IT (Information and Knowledge Systems)](Four-year programme) (Code 12133212)
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Admission requirements for the Four-year programme of the degree BSc IT (Information and Knowledge Systems)

Admission requirements for candidates with a National Senior Certificate:

To obtain admission to this degree programme, a candidate should have obtained the following:

- a valid National Senior Certificate with admission for degree purposes; and
- a minimum APS of 22 in the final Grade 12 examinations; and
- compliance with the NSC minimum requirements; additionally one of these languages must be Afrikaans or English at level 4(50-59%); and
- at least level 4 (50-59%) in Mathematics or level 3 (40-49%) in Mathematics provided at least a level 4 is obtained for Physical Science; and
- Institutional Proficiency Test* (National Benchmark Test - NBT).

* **Note:** Consideration for admission will be based on the above and the results of the compulsory Institutional Proficiency Test (NBT) and providing the quotas regarding student numbers have not been reached.

Requirements for promotion to the following year of study:

Refer to School of Information Technology regulation IT.6 and IT.3(c).

The curriculum of BSc IT (Information and Knowledge Systems) (Four-year programme) consists of fundamental, core and elective modules in each year of study. The degree is awarded upon successful completion of at least 513 credits as specified in the curriculum given below.

Curriculum

FIRST YEAR OF STUDY (at least 88 credits)				
Code	Module	Prerequisite	Credits	Period
Fundamental modules (24 credits)				
AIM 111	Academic information management		4	S1
AIM 121	Academic information management		4	S2
LST 133	Language, life and study skills 1		8	S1
LST 143	Language, life and study skills 2	LST 133	8	S2
Core modules (64 credits)				
COS 133	Introduction to programming 1		8	S1
COS 143	Introduction to programming 2	COS 133	8	S2
SIT 133	Information technology orientation		8	S1
SIT 143	Information technology orientation (continuation)	SIT 133	8	S2
WTW 133	Pre-calculus		8	S1
WTW 143	Calculus	WTW 133	8	S2
Choice of either				
MLB 133 and MLB 143	Molecular and cell biology		8	S1
	Molecular and cell biology or	MLB 133	8	S2

OR				
CMY 133 and CMY 143	Chemistry Chemistry		8 8	S1 S2
OR				
PHY 133 and PHY 143	Physics Physics		8 8	S1 S2
OR				
WST 133 and WST 143	Mathematical Statistics Mathematical Statistics		8 8	S1 S2
SECOND YEAR OF STUDY (96 credits)				
Code	Module	Prerequisites	Credits	Period
Fundamental modules (8 credits)				
JCP 202	Community-based project		8	Year
Core modules (88 credits)				
COS 110	Program design: Introduction	COS 153 or COS 131 or 132 and Maths level 5 or WTW 133	16	S2
COS 121	Software modelling	COS 153 or COS 131 or 132	16	S2
COS 153	Introduction to programming 3	COS 143	8	S1
ERA 284	Computer architecture	COS 153GS or COS 131GS or COS 132GS	16	S2
SIT 153	Introduction to computing	SIT 143	8	S1
WTW 115	Discrete structures	Par.1.2 Natural science (Maths level 4)	8	S1
WTW 153	Calculus	WTW 143	8	S1
Choice following on from the choice made in the first year				
CMY 154	Chemistry 154	CMY 143	8	S1
PHY 153	Physics 153	PHY 143	8	S1
MLB 153	Molecular and cell biology 153	MLB 143	8	S1
WST 153	Mathematical Statistics 153	WST 143	8	S1
Modules, chosen in consultation with the Department of Computer Science, to comply with the second year module requirements of the BSc (CS) and BSc IT degree programmes for the BSc IT 4 year programme				

THIRD AND FOURTH YEARS OF STUDY

The curriculum for study years 3 and 4 of the degree programme follow the curriculum as specified by years 2 and 3 of the BSc (CS) and BSc IT three-year programmes according to the choices the student made in consultation with the department in year 2 of the BSc IT four-year programme.

POSTGRADUATE PROGRAMMES IN COMPUTER SCIENCE

Details regarding postgraduate modules are available at www.cs.up.ac.za.

IT.27 Bachelor of Science Honours in Computer Science [BScHons (Computer Science)] (Code12244000)

This degree programme is offered in English only.

Consult General Regulations G.16 to G.29

(a) **Admission**

Subject to the stipulations of General Regulations G.1.3, G.16 and G.62, a BSc degree, majoring in Computer Science from a South African university (or equivalent) with an average of 60% over all third-year computer science modules, is required for admission to this degree programme. Students from outside South Africa need to obtain a certificate from the South African Qualifications Authority (SAQA) before admission will be considered. The Head of Department may prescribe additional conditions for admission.

(b) **Minimum duration of study**

A student is required to complete his/her studies within one year (full-time) or within two years (part-time). However, the Dean, on the recommendation of the Head of Department, may approve a stipulated limited extension of this period.

(c) **Pass requirements**

In calculating marks, General Regulation G.12.2 is applicable. However, a student is required to obtain at least 50% in an examination in a module where no semester or year mark is required. In those cases where a year mark or semester mark is available, a subminimum of 40% must be obtained in the examination.

(d) **Examinations**

The Dean may, on the recommendation of the admissions committee, cancel the studies of a student who fails more than one module in an academic year. A module may only be repeated once. No supplementary examinations are granted at postgraduate level.

(e) **Degree with distinction**

The BScHons degree is awarded with distinction to a candidate who obtains a weighted average of at least 75% in all the prescribed modules and who did not fail any module.

(f) **Conferment of degree**

The degree is conferred on a student who successfully completes at least 120 credits of coursework in Computer Science at honours level.

(g) Curriculum

Minimum credits required		120	
Core modules (30 credits)			
COS 700	Research report	30	Year
Elective modules (90 credits)			
Select any six modules from the following (one module can be selected from outside the Department of Computer Science, subject to the approval of the programme manager, and provided that there are no lecture and exam clashes with Computer Science modules). Note that some of the elective modules might not be presented each year. Consult the departmental website for the list of modules presented in the current year			
COS 710	Artificial intelligence I	15	S1
COS 711	Artificial intelligence II	15	S2
COS 720	Computer and information security I	15	S1
COS 721	Computer and information security II	15	S2
COS 730	Software engineering I	15	S1
COS 731	Software engineering II	15	S2
COS 740	Formal aspects of computing I	15	S1
COS 741	Formal aspects of computing II	15	S2
COS 750	Educational software development	15	Consult department
COS 781	Data mining	15	Consult department
COS 782	Generic programming	15	Consult department
COS 783	Digital forensics and investigations	15	Consult department
COS 784	Computer networks	15	Consult department
COS 785	Computer graphics	15	Consult department
COS 786	Parallel and distributed computing	15	Consult department
COS 787	Spatial databases	15	Consult department
COS 788	Information hiding	15	Consult department
COS 790	Special topics I	15	Consult department
COS 791	Special topics II	15	Consult department

IT.28 Master of Science in Computer Science [MSc (Computer Science)] (Research) (Code 12255000)
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Consult General Regulations G.30 to G.44 and G.57 to G.62.

(a) Admission

Subject to the stipulations of General Regulations G.1.3, G.30 and G.62, an appropriate BScHons or equivalent degree is required for admission. In addition, to be considered for admission, an average of 65% should have been obtained for the modules passed for the honours degree. The Dean, on the recommendation of the supervisor and the Head of Department, may approve additional requirements and conditions.

(b) Conferment of degree

The MSc degree is conferred on grounds of a dissertation and such additional postgraduate coursework as may be prescribed. A student works under the guidance of a supervisor and is expected to identify and complete a research project. The research results are to be fully reported in an MSc dissertation.

(c) **Degree with distinction**

The MSc degree is conferred with distinction on candidates who obtain a final average mark of at least 75%.

(d) **Progress requirements**

If the supervisor affirms that a candidate has progressed satisfactorily, registration may be renewed for the second year (full-time) or for the second to fourth year (part-time). Re-registration thereafter will only take place if a written motivation from the candidate, supported by the Head of Department is submitted to the student administration offices.

(e) **Duration**

Consult General Regulation G.32.4 regarding the maximum period of registration allowed.

(f) **Curriculum**

A student is required to demonstrate, by means of a dissertation, the ability to plan, institute and execute a scientific investigation.

(g) **Article for publication**

Unless Senate, on the recommendation of the supervisor, decides otherwise, a student, before or on submission of a dissertation, must submit proof of submission of an article by an accredited journal to the Head: Student administration.

The draft or submitted article, as the case may be, should be based on the research that the student has conducted for the dissertation/thesis and be approved by the supervisor if the supervisor is not a co-author.

The supervisor shall be responsible for ensuring that the paper is taken through all the processes of revision and resubmission, as may be necessary. Conferment of the degree may be made subject to compliance with the stipulations of this regulation.

Also consult General Regulation G.61.

IT.29 Doctor of Philosophy in Computer Science [PhD (Computer Science)] (Code 12266000)
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Consult General Regulations G.45 to G.62

(a) **Admission**

Subject to the stipulations of General Regulations G.1.3, G.45 and G.62, admission to doctoral studies requires that the candidate should have obtained at least 75% for a master's degree in computer science.

(b) **Curriculum**

The department offers a research-based PhD degree. The student works under guidance of a supervisor and is expected to identify and complete a research project. The research results are to be fully reported in a PhD thesis.

(c) **Conferment of degree**

Unless otherwise decided by the Dean, on the recommendation of the supervisor, the PhD(Computer Science) degree is awarded on the basis of a thesis and an examination on the thesis.

(d) **Article for publication**

Unless Senate, on the recommendation of the supervisor, decides otherwise, a student, before or on submission of a thesis, must submit proof of submission of an article by an accredited journal to the Head: Student Administration.

The draft or submitted article, as the case may be, should be based on the research that the student has conducted for the dissertation/thesis and be approved by the supervisor if the supervisor if the supervisor is not a co-author.

The supervisor shall be responsible for ensuring that the paper is taken through all the processes of revision and resubmission, as may be necessary. Conferment of the degree may be made subject to compliance with the stipulations of this regulation.

(e) **Pass requirements**

The thesis and examination thereof should prove that the candidate has carried out advanced original research and/or creative work, which make a real and substantial contribution to the discipline of computer science.

Alphabetical list of modules in the School of Information Technology

= Concurrent registration
() = Examination admission
dpw = discussions per week
GS = combined (final) mark (semester/year mark plus examination mark) of at least 40% - 49%
hpw = hours per week
LP = Lecturer's permission
lpw = lectures per week
ppw = practicals per week
spw = seminars per week
TDH = Permission by head of department
tpw = tutorials per week

AIM 101 Academic information management 101

Academic organisation: School of Information Technology

Contact time: 2ppw

Period of presentation: Semester 1 or Semester 2

Language of tuition: Both Eng and Afr

Credits: 6

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.

AIM 111 Academic information management 111

Academic organisation: School of Information Technology

Contact time: 2ppw

Period of presentation: Semester 1

Language of tuition: Both Eng and Afr

Credits: 4

Module content:

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

AIM 121 Academic information management 121

Academic organisation: School of Information Technology

Contact time: 2ppw

Period of presentation: Semester 2

Language of tuition: Both Eng and Afr

Credits: 4

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.

COS 110 Program design: Introduction 110**Academic organisation:** Computer Science**Prerequisite:** COS 153 or COS 131 or COS 132 and level 5 (60-69%) Mathematics or WTW 133**Contact time:** 4 lpw 1 ppw**Period of presentation:** Semester 2**Language of tuition:** Both Afr and Eng**Credits:** 16**Module content:**

The focus is on object-oriented (OO) programming. Concepts including inheritance and multiple inheritances, polymorphism, operator overloading, memory management (static and dynamic binding), interfaces, encapsulation, reuse, etc. will be covered in the module. The module teaches sound program design with the emphasis on modular code, leading to well structured, robust and documented programs. A modern OO programming language is used as the vehicle to develop these skills. The module will introduce the student to basic data structures, lists, stacks and queues.

COS 121 Software modelling 121**Academic organisation:** Computer Science**Prerequisite:** COS 153 or COS 131 or COS 132**Contact time:** 4 lpw 1 ppw**Period of presentation:** Semester 2**Language of tuition:** Both Afr and Eng**Credits:** 16**Module content:**

The module will introduce the concepts of model-driven analysis and design as a mechanism to develop and evaluate complex software systems. Systems will be decomposed into known entities, such as design patterns, classes, relationships, execution loops and process flow, in order to model the semantic aspects of the system in terms of structure and behaviour. An appropriate tool will be used to support the software modelling. The role of the software model in the enterprise will be highlighted. Students who successfully complete this module will be able to conceptualise and analyse problems and abstract a solution.

COS 131 Introduction to programming 131**Academic organisation:** Computer Science**Contact time:** 4 lpw 1 ppw**Period of presentation:** Semester 1**Language of tuition:** Both Afr and Eng**Credits:** 16**Module content:**

*Note: All students not registered for programmes in the School of IT need to enrol for this module.

The aim of this module is to acquire a sound knowledge of basic computer programming concepts and an introductory knowledge of data structures. The theory of these concepts, as well as design methodologies, will be investigated. Understanding rather than memorising is emphasised in order to stimulate creative thinking and the development of innovative skills amongst students in the field of computer programming. The C programming language is used to implement these concepts. At the end of the module a short introduction to object-oriented programming using C++ will be given. After completing this module, a student should be able to design and write structured, efficient programs using the C programming language, be familiar with the basic data structures, pointers and file processing, and have an introductory knowledge of advanced data structures and object-orientation.

COS 132 Imperative programming 132

Academic organisation: Computer Science

Prerequisite: APS of 30 and level 5 (60-69%) Mathematics

Contact time: 3 lpw 1 tpw 1 ppw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 16

Module content:

*Note: All students registered for degrees within the School of IT, excluding the two four year programmes, BIS (Information Science) and BIS (Publishing), need to enrol for this module.

This module introduces imperative computer programming, which is a fundamental building block of computer science. The process of constructing a program for solving a given problem, of editing it, compiling (both manually and automatically), running and debugging it, is covered from the beginning. The aim is to master the elements of a programming language and be able to put them together in order to construct programs using types, control structures, arrays, functions and libraries. An introduction to object orientation will be given. After completing this module, the student should understand the fundamental elements of a program, the importance of good program design and userfriendly interfaces. Students should be able to conduct basic program analysis and write complete elementary programs.

COS 133 Introduction to programming 1

Academic organisation: Computer Science

Prerequisite: As for the BSc IT Four-year programme

Contact time: 2 lpw 2 ppw 2 dpw Foundation Course

Period of presentation: Semester 1

Language of tuition: English

Credits: 8

Module content:

This module introduces imperative computer programming, which is a fundamental building block of computer science. The process of constructing a program for solving a given problem, of editing it, compiling (both manually and automatically), running and debugging it, is covered from the beginning. The aim is to master the elements of a programming language, and be able to put them together in order to construct programs using types, control structures and arrays

COS 143 Introduction to programming 2

Academic organisation: Computer Science

Prerequisite: COS 133

Contact time: 2 lpw 2 ppw 2 dpw Foundation Course

Period of presentation: Semester 2

Language of instruction: English

Credits: 8

Module content:

This module follows on from the previous module and introduces the concepts of functions, memory management and libraries in the imperative programming paradigm. An introduction to object orientation will be given. After completing this module and the module prerequisite, the student should understand the fundamental elements of a program, the importance of good program design and userfriendly interfaces. Students should be able to conduct basic program analysis and write complete elementary programs.

COS 151 Introduction to computer science 151**Academic organisation:** Computer Science**Contact time:** 2 lpw 1 ppw**Period of presentation:** Semester 1**Language of tuition:** Both Afr and Eng**Credits:** 8**Module content:**

This module introduces concepts and terminology related to the computer science discipline. Topics covered include the history of computing, machine level representation of data, Boolean logic and gates, basic computer systems organisation, algorithms and complexity and automata theory. The module also introduces some of the subdisciplines of computer science, such as computer networks, database systems, compilers, information security and intelligent systems.

COS 153 Introduction to programming 3**Academic organisation:** Computer Science**Prerequisite:** COS 143**Contact time:** 2 lpw 2 ppw 2 dpw Foundation Course**Period of presentation:** Semester 2**Language of instruction:** English**Credits:** 8**Module content:**

The module follows a practical programming approach. It will consolidate fundamental prior problem solving and programming knowledge.

COS 212 Data structures and algorithms 212**Academic organisation:** Computer Science**Prerequisite:** COS 110**Contact time:** 4 lpw 1 ppw**Period of presentation:** Semester 1**Language of tuition:** Both Afr and Eng**Credits:** 16**Module content:**

Data abstraction is a fundamental concept in the design and implementation of correct and efficient software. In prior modules, students are introduced to the basic data structures of lists, stacks and queues. This module continues with advanced data structures such as trees, hash tables, heaps and graphs, and goes into depth with the algorithms needed to manipulate them efficiently. Classical algorithms for sorting, searching, traversing, packing and game playing are included, with an emphasis on comparative implementations and efficiency. At the end of this module, students will be able to identify and recognise all the classical data structures; implement them in different ways; know how to measure the efficiency of implementations and algorithms; and have further developed their programming skills, especially with recursion and polymorphism.

COS 216 Netcentric computer systems 216**Academic organisation:** Computer Science**Prerequisite:** COS 110**Contact time:** 4 lpw 1 ppw**Period of presentation:** Semester 1**Language of tuition:** Both Afr and Eng**Credits:** 16**Module content:**

This module introduces the principles of netcentric computing that can be applied to the WWW and internet as well as to distributed applications. After completing this module, a student will have gained, as outcomes, knowledge of how to integrate various

programming and web-based technologies. Particular outcomes include gaining knowledge on the concepts of client and server side programming, web-based applications, port and socket interaction, writing programmes that require remote function calls and achieving database connectivity using remote SQL calls. The supporting technologies of mark-up languages like HTML and scripting languages like JavaScript are also studied. In order to practically demonstrate that a student has reached these outcomes, students will be required to use, integrate and maintain the necessary software and hardware by completing a number of smaller practical assignments whereafter integrating all these technologies into a comprehensive and practical netcentric programming project is required.

COS 222 Operating systems 222

Academic organisation: Computer Science

Prerequisite: COS 153 or COS 131 or COS 132

Contact time: 4 lpw 1 ppw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 16

Module content:

Fundamental concepts of modern operating systems in terms of their structure and the mechanisms they use are studied in this module. After completing this module, students will have gained, as outcomes, knowledge of real time, multimedia and multiple processor systems, as these will be defined and analysed. In addition, students will have gained knowledge on modern design issues of process management, deadlock and concurrency control, memory management, input/output management, file systems and operating system security. In order to experience a hands-on approach to the knowledge students would have gained from studying the abovementioned concepts; students will have produced a number of practical implementations of these concepts using the Windows and Linux operating systems.

COS 226 Concurrent systems 226

Academic organisation: Computer Science

Prerequisite: COS 153 or COS 131 or COS 132

Contact time: 4 lpw 1 ppw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 16

Module content:

Computer science courses mostly deal with sequential programs. This module looks at the fundamentals of concurrency; what it means, how it can be exploited, and what facilities are available to determine program correctness. Concurrent systems are designed, analysed and implemented.

COS 301 Software engineering 301

Academic organisation: Computer Science

Prerequisite: COS 110 and COS 121

Contact time: 2 lpw 1 ppw

Period of presentation: Year

Language of tuition: English

Credits: 27

Module content:

The module exposes students to problems associated with software development on an industrial scale. Overall goals of the module are: to become familiar with the latest trends in software engineering; to understand the software engineering process and to appreciate its complexity; to be exposed to a variety of methodologies for tackling

different stages of the software lifecycle; to understand and apply the concepts of systems administration and maintenance; to complete the development of a fairly large object orientation-based software product. The focus of the module is on a project that lasts the whole year. The project is completed in groups of approximately four (4) students and teaches students to take responsibility for a variety of roles within a group, and to understand the different requirements for these; to experience the advantages and problems of working in a group; professionalism with regards to particularly colleagues and clients. After the successful completion of this module, the student will be able to: understand the psychology of a client; work in groups; and have an appreciation for planning, designing, implementing and maintaining large projects. These qualities should place the students in a position in which they are able to handle software development in the corporate environment.

COS 314 Artificial intelligence 314

Academic organisation: Computer Science

Prerequisite: COS 131 or COS 110

Contact time: 2 lpw 1 ppw

Period of presentation: Semester 1

Language of tuition: English

Credits: 18

Module content:

The main objective of this module is to introduce a selection of topics from artificial intelligence (AI), and to provide the student with the background to implement AI techniques for solving complex problems. This module will cover topics from classical AI, as well as more recent AI paradigms. These topics include: search methods, game playing, knowledge representation and reasoning, machine learning, neural networks, genetic algorithms, artificial life, planning methods, and intelligent agents. In the practical part of this module, students will get experience in implementing

- (1) game trees and evolving game-playing agents;
- (2) a neural network and applying it to solve a real-world problem; and
- (3) a genetic algorithm and applying it to solve a real-world problem.

COS 326 Database systems 326

Academic organisation: Computer Science

Prerequisite: INF 214 or TDH

Contact time: 2 lpw 1 ppw

Period of presentation: Semester 2

Language of tuition: English

Credits: 18

Module content:

This module builds on a prior introductory module on database technology and provides more advanced theoretical and practical study material.

COS 330 Computer security and ethics 330

Academic organisation: Computer Science

Prerequisite: COS 110

Contact time: 2 lpw 1 ppw

Period of presentation: Semester 2

Language of tuition: English

Credits: 18

Module content:

This module develops an appreciation of the fundamentals and design principles for information assurance and security. Students will develop a clear understanding of the basic information security services and mechanisms, enabling them to design and evaluate the integration of solutions into the user application environment. Emphasis will

be placed on services such as authorisation and confidentiality. Students will acquire knowledge and skills of Security Models such as the Bell-LaPadula, Harrison-Ruzzo Ullman and Chinese Wall Model. Students will develop a detailed understanding of the confidentiality service by focusing on cryptology and the practical implementation thereof. The student will be introduced to professional and philosophical ethics. At the end of the module students will be able to engage in a debate regarding the impact (local and global) of computers on individuals, organisations and society. The professionalism of IT staff will be discussed against national and international codes of practices such as those of the CSSA, ACM and IEEE.

COS 332 Computer networks 332

Academic organisation: Computer Science

Prerequisite: COS 216

Contact time: 2 lpw 1 ppw

Period of presentation: Semester 1

Language of tuition: English

Credits: 18

Module content:

The objective of this module is to acquaint the student with the terminology of communication systems and to establish a thorough understanding of exactly how data is transferred in such communication networks, as well as applications that can be found in such environments. The study material includes: concepts and terminology, the hierarchy of protocols according to the OSI and TCP/IP models, protocols on the data level, physical level and network level as well as higher level protocols. The practical component of the module involves programming TCP/IP sockets using a high level language. The emphasis throughout is on the technical aspects underlying the operation of networks, rather than the application of networks.

COS 333 Programming languages 333

Academic organisation: Computer Science

Prerequisite: COS 110

Contact time: 2 lpw 1 ppw

Period of presentation: Semester 2

Language of tuition: English

Credits: 18

Module content:

Programming languages are the backbone for software development. Each language has its own different syntax and semantics, but there are many common concepts that can be studied and then illustrated through the languages. The module concentrates on issues of object orientation, including delegation, iteration and polymorphism. It surveys how languages provide the basic building blocks for data and control, as well as exception handling and concurrency. At the end of the module, students will be able to appreciate the rich history behind programming languages, leading to independent principles that evolve over time. They will be skilled at using a variety of programming languages, including new paradigms such as functional, logical and scripting, and will know how to learn a new language with ease. From this experience, they will be able to apply evaluation criteria for choosing an appropriate programming language in a given scenario.

COS 341 Compiler construction 341

Academic organisation: Computer Science

Prerequisite: COS 212

Contact time: 2 lpw 1 ppw

Period of presentation: Semester 1

Language of tuition: English

Credits: 18

Module content:

This module will introduce the student to the fundamentals of compiler construction. These include: the structural difference between a high-level and a von-Neumann language, the meaning of syntax and semantics and what semantics-preserving correctness means; the concepts of regular expressions, finite automata, context-free grammars in the context of programming languages; the need to construct parse-trees for given programmes; the application of data structures and algorithms for the purpose of code-analysis, code-optimisation and register-allocation; and the limits of code-analysis in terms of undecideability and the halting problem.

After successful completion of the module, the student will have an understanding of the importance of compilers and will understand how to implement a compiler, in terms of its components, the scanner, parser, type checker and code-generator for a given grammar.

COS 344 Computer graphics 344

Academic organisation: Computer Science

Prerequisite: COS 110 and WTW 126

Contact time: 2 lpw 1 ppw

Period of presentation: Semester 1

Language of tuition: English

Credits: 18

Module content:

The aim of this module is to acquire a sound knowledge of the basic theory of interactive computer graphics and basic computer graphics programming techniques. The theory will cover graphics systems and models, graphics programming, input and interaction, geometric objects and transformations, viewing in 3D, shading, rendering techniques, and introduce advanced concepts, such as object-oriented computer graphics and discrete techniques. The module includes a practical component that enables students to apply and test their knowledge in computer graphics. The OpenGL graphics library and the C programming language will be used for this purpose.

ERA 284 Computer architecture 284

Academic organisation: School of Engineering

Prerequisite: COS 153 GS or COS 131 GS or COS 132 GS

Contact time: 3 lpw 1 ppw 1 dpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 16

Module content:

The aim of this module is to gain a deeper understanding of computers by studying their underlying components. The CPU is studied in great detail, covering design decisions such as CISC/RISC architectures, paging and pipelining. Cache, memory and bus architectures will also be scrutinized. IO architectures will be covered (i.e. polling vs. interrupt driven or DMA). Topics such as parallel processing (SIMD) are also touched. A brief review of number systems, combinatorial circuits, and sequential circuits (latches, counters, etc.). To illustrate many of the concepts in practice, the practicals will cover an assembly language. This will cover topics like interrupts, IO and video memory.

IMY 110 Multimedia 110

Academic organisation: Information Science

Prerequisite: Departmental selection

Contact time: 2 lpw 2 ppw

Period of presentation: Semester 1

Language of tuition: English

Credits: 12

Module content:

*Closed – requires departmental selection. Open to BIT, BSc:IT and BSc CS students. Mark-up Languages. This module explores the role of mark-up languages in the information environment; the difference between the logical structure and the appearance of documents; the study of HTML, CSS and XHTML; the building of websites and basic information architecture.

IMY 120 Multimedia 120

Academic organisation: Information Science

Prerequisite: IMY 110

Contact time: 2 lpw 2 ppw

Period of presentation: Semester 2

Language of tuition: English

Credits: 12

Module content:

*Closed – requires departmental selection.

Multimedia for the Web. This module introduces the process of creating and editing images, animation, basic interactive content, and sound for the web using multimedia authoring tools, such as Adobe Photoshop, Adobe Flash (with basic ActionScript), and Adobe Audition.

IMY 210 Multimedia 210

Academic organisation: Information Science

Prerequisite: IMY 110 or equivalent HTML knowledge

Contact time: 2 ppw 2 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 16

Module content:

*Closed – requires departmental selection.

Advanced Markup Languages. This module investigates XML and its related technologies (such as XSLT, XPath, XSL-FO, DTD, XML Schema, and namespaces) as a vital part of the web development process.

IMY 211 Multimedia 211

Academic organisation: Information Science

Contact time: 3 ppw 3 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 20

Module content:

*Closed - requires departmental selection.

Multimedia and hypermedia theory. This module offers the opportunity to make a thorough study of the theory and applications of multimedia and hypermedia. This includes: multimedia products, multimedia authoring tools, hypermedia databases, digital publications on the World Wide Web, New Media, as well as information architecture, websites and the social realities and impact of the World Wide Web.

IMY 220 Multimedia 220

Academic organisation: Information Science

Prerequisite: IMY 210

Contact time: 2 ppw 2 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 16

Module content:

*Closed - requires departmental selection.

Advanced Markup Languages 2 – This module assumes knowledge of dynamic scripts and basic web based technologies such as PHP as well as the use of relational databases like MySQL. The module explores the interplay between scripting languages, databases, and current industry standard web technologies, from both the server-side and client-side perspectives. The module has a focus on developing hands-on practical skills.

IMY 300 Multimedia: Project 300

Academic organisation: Information Science

Contact time: 2 lpw 1 ppw

Period of presentation: Year

Language of tuition: English

Credits: 45

Module content:

*Closed – requires departmental selection.

The module enables students to combine all their knowledge gained throughout their studies to create a functional game. The course consists of extensive game design theory teaching. The students create a game by following an iterative design process, extensive documentation and in depth play testing and usability testing. The final product is a creative, innovative and complete game.

IMY 310 Multimedia 310

Academic organisation: Information Science

Contact time: 3 ppw 3 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 30

Module content:

*Closed - requires departmental selection.

Human-computer Interaction. This module involves a study of human-computer interaction and human-information interaction; humans as computer and information users; and the ethical aspects relating to the creation of multimedia information products. A detailed study of the role, composition and functioning of an interface, underlying principles in the design and evaluation of interfaces, will also be undertaken.

IMY 320 Multimedia 320

Academic organisation: Information Science

Contact time: 3 ppw 3 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 30

Module content:

*Closed - requires departmental selection.

Trends. This module deals with technical aspects of multimedia hardware and software, digital video and audio formats and compression; and version management. A detailed study of the latest developments in mark-up languages and related technologies will also be undertaken.

INL 110 Information science 110

Academic organisation: Information Science

Contact time: 1 ppw 3 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 12

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.

INL 120 Information science 120

Academic organisation: Information Science

Contact time: 3 lpw 1 ppw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 12

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.

INL 130 Information science 130

Academic organisation: Information Science

Contact time: 1 ppw 3 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 12

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.

INL 133 Information science 133

Academic organisation: Information Science

Contact time: 1 ppw 3 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 8

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; information for development as well as the evolution of the information society.

INL 140 Information science 140**Academic organisation:** Information Science**Contact time:** 1 ppw 3 lpw**Period of presentation:** Semester 2**Language of tuition:** Both Afr and Eng**Credits:** 12**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.

INL 143 Information science 143**Academic organisation:** Information Science**Contact time:** 1 ppw 3 lpw**Period of presentation:** Semester 2**Language of tuition:** English**Credits:** 8**Module content:**

This module discusses the communication of information. Key concepts that will be discussed include the following: the process of human communication; analyses of the communication process; levels of communications; dimensions of communication; functions of communication as well as the various contexts of communication.

INL 210 Information science 210**Academic organisation:** Information Science**Prerequisites:** AIM 101 or AIM 111 and 121**Contact time:** 3 lpw 3 ppw**Period of presentation:** Semester 1**Language of tuition:** Both Afr and Eng**Credits:** 20**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.

INL 220 Information science 220**Academic organisation:** Information Science**Prerequisite:** INL 210 or LP**Contact time:** 3 lpw 3 ppw**Period of presentation:** Semester 2**Language of tuition:** Both Afr and Eng**Credits:** 20**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).

INL 230 Information science 230

Academic organisation: Information Science

Contact time: 3 ppw 3 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

User studies and dissemination. This module focuses on the individual as seeker, user, reader and communicator of information. Various user groups are identified and their information use and communication patterns and requirements are analysed and investigated. This module covers methods of service provision to facilitate and enhance the use and dissemination of information in accordance with the user's needs.

INL 240 Information science 240

Academic organisation: Information Science

Contact time: 3 ppw 3 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

Social and ethical impact. This module examines moral and legal regulation practices related to information in print and digital environments. Different ethical theories are identified and applied to privacy, access to information, information poverty and censorship. The interpretation and enforcement of rules and regulations are discussed.

INL 260 Information science 260

Academic organisation: Information Science

Contact time: 3 lpw 3 ppw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

Economics and politics of information. This module examines the economics and politics of information, with a special emphasis on South Africa's information sector. It aims to promote an understanding of the market and non-market qualities of information, and their consequences for the production, distribution and marketing of information goods and services. The ways in which information access and expression are regulated and the use of ICTs in crime and corruption is also addressed.

INL 270 Information science 270

Academic organisation: Information Science

Contact time: 3 lpw 3 ppw

Period of presentation: Semester 2

Language of tuition: English

Credits: 20

Module content:

Indigenous knowledge and communication. This module focuses on the role and function of Indigenous Knowledge (IK) in the information and knowledge society. Various categories and contexts of IK are explored within international and local perspectives. Issues pertaining to access and communication of IK, inter alia through Information and Communication Technology (ICT), are addressed in order to ensure sustainable development.

INL 310 Information science: Information organisation 310

Academic organisation: Information Science

Contact time: 3 ppw 3 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 30

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.

INL 320 Information science: Information and knowledge management 320

Academic organisation: Information Science

Contact time: 3 ppw 3 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 30

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.

INL 340 Information science: Digital repositories 340

Academic organisation: Information Science

Contact time: 3 lpw 3 ppw

Period of presentation: Semester 2

Language of tuition: English

Credits: 30

Module content:

This module deals with the construction and management of digital repositories. It also addresses the characteristics of the digital repository in a rapidly changing technological world and a challenging information society. Core aspects include: system design, relationships to hybrid libraries, digital collections and rights management, standards, virtual referencing and the development and evaluation of digital repositories.

INL 360 Information science: Socio-political aspects of information in global context 360

Academic organisation: Information Science

Contact time: 3 lpw 3 ppw

Period of presentation: Semester 1

Language of tuition: English

Credits: 30

Module content:

This module examines aspects of the information and knowledge society within local, regional and international contexts. A special focus of the module is the interaction and exchange of data, information and knowledge from communities' local knowledge system with data, information and knowledge from the global knowledge system. The module discusses the growth and role of information and communication technologies (ICTs), and their implications for development.

INL 370 Information science 370

Academic organisation: Information Science

Contact time: 1 lpw 2 ppw

Period of presentation: Year

Language of tuition: Both Afr and Eng

Credits: 15

Module content:

Experiential learning project. This module takes the form of a project and experiential training in co-operation with industry.

INL 380 Information science: Competitive intelligence 380

Academic organisation: Information Science

Contact time: 3 lpw 2 ppw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 30

Module content:

This module provides an overview of Competitive Intelligence (CI) and focuses on the needs for CI in organisations. The ways in which organisations compete and the benefits that CI can bring to these organisations will also be covered. The growing need for CI among South African organisations will also be examined. Practical examples and case studies will be used to highlight the value of CI in organisations.

JCP 202 Community-based project 202

Academic organisation: Informatics

Contact time: 1 other per week

Period of presentation: Year

Language of tuition: Both Afr and Eng

Credits: 8

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

PUB 120 Publishing 120

Academic organisation: Information Science

Contact time: 3 lpw 1 ppw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 12

Module content:

*Closed - requires departmental selection.

The Book Publishing Environment. This module provides a basic introduction to the book publishing environment. The following aspects are highlighted: the concept "publishing"; different publishing industries and environments; contexts of book publishing; the publishing value chain; processes, tasks and role-players involved in book publishing; different sectors of the book publishing industry; different types of publishing houses; external role-players; initiatives; strategies; current trends and issues.

PUB 210 Publishing 210

Academic organisation: Information Science

Contact time: 3 lpw 3 ppw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

*Closed - requires departmental selection.

Copy-editing. This module offers an introduction to copy-editing as a phase in the publishing process. Topics covered are the role of the copy-editor in the publishing value chain; the levels of editing; the responsibilities of the copy-editor towards the manuscript, the author and the publishing house; the responsibilities and skills of the proof-reader; typical problems in texts; proof-reading and copy-editing symbols and the mark-up of texts; as well as legal and ethical aspects of editing. Learners are also equipped with practical skills in proofreading and copy-editing both digital and print-based texts.

PUB 220 Publishing 220

Academic organisation: Information Science

Contact time: 3 lpw 3 ppw

Period of presentation: Semester 2

Language of tuition: English

Credits: 20

Module content:

*Closed - requires departmental selection.

The Visual and Production Dimensions of Publishing. This module offers a theoretical positioning of graphic design, reproduction and printing within the publishing process, as well as practical applications thereof. The following topics are addressed in the theoretical positioning: graphic design practice; the historical development of the relationship between reproduction and printing innovations and graphic design styles; the use of visual elements in publications; the management role of the editor in this phase.

During the practical component learners are introduced to selected applications of DTP software and the practical aspects of the production phase.

PUB 310 Publishing 310

Academic organisation: Information Science

Contact time: 3 ppw 3 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 30

Module content:

*Closed - requires departmental selection.

Publishing in the Digital Environment. The first part of this module focuses on the study of publications in the digital environment. Differences between paper-based and digital texts are studied. Publication formats in the digital arena are discussed by focusing on topics such as multimedia, hyper fiction, e-books, etc., as well as distribution channels such as intranets and portals. The influence of the digital environment on publications

and publication processes is the main focus of the second part, focusing on understanding the nature and management of the e-publishing environment and digital publishing technologies such as HTML, SGML, XML and PDF.

PUB 311 Publishing 311

Academic organisation: Information Science

Contact time: 3 ppw 3 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 30

Module content:

*Closed - requires departmental selection.

Commissioning. This module offers an introduction to the commissioning phase of the book publishing process. The process of manuscript commissioning is studied within the dual contexts of the South African publishing environment and the internal environment of the publishing house.

Topics covered include: market research; list building; the management of both the manuscript development and production phases; costing a project; scheduling and contracts. Learners demonstrate their understanding of commissioning through case studies, role-plays and the creation of a manuscript proposal.

PUB 320 Publishing 320

Academic organisation: Information Science

Contact time: 3 lpw 3 ppw

Period of presentation: Semester 2

Language of tuition: English

Credits: 30

Module content:

*Closed - requires departmental selection.

Management in the Publishing Environment. This module offers an introduction to publishing as a business. Topics covered include business models in the publishing industry, the organisational structures of publishing houses, and the application of marketing in a publishing context.

PUB 321 Publishing 321

Academic organisation: Information Science

Contact time: 3 ppw 3 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 30

Module content:

*Closed - requires departmental selection.

Publishing in the Magazine and Corporate Environment. This module offers an introduction to the publishing value chain as applied to magazines and corporate publications; the magazine and corporate publishing environment (including kinds of magazines and corporate publications, readership, market segmentation); commissioning writing for magazines and corporate publications; production processes; sales and marketing; and distribution.

SIT 133 Information technology orientation 1

Academic organisation: School of Information Technology

Prerequisite: As for the BSc IT and BIS MM Four-year programmes

Contact time: 2 lpw 1 ppw Foundation Module

Period of presentation: Semester 1

Language of tuition: English

Credits: 8

Module content:

This module provides academic support and development within the context of Information Technology. The module will help guide students with regards to communication skills, study methodologies and values. Students will specifically be exposed to different study methods in order for them to develop their own, critical thinking, time management and prioritisation, taking of notes, and the use of references and the citation thereof. Additionally, the module will expose students to Information Technology and its influences.

SIT 143 Information technology orientation 2

Academic organisation: School of Information Technology

Prerequisite: SIT 133

Contact time: 2 lpw 1 ppw Foundation Module

Period of presentation: Semester 2

Language of tuition: English

Credits: 8

Module content:

Continuation of the SIT 133 module.

SIT 153 Introduction to Computing

Academic organisation: School of Information Technology

Prerequisite: SIT 143

Contact time: 2 lpw 1 ppw Foundation Module

Period of presentation: Semester 1

Language of tuition: English

Credits: 8

Module content:

This module introduces concepts and terminology related to computing. Topics covered include the history of computing, machine level data representation, Boolean logic and gates, basic computer systems organisation and algorithms. The module also introduces some of the subdisciplines of computing, such as computer networks, information management, information security and intelligent systems.

POSTGRADUATE

BIB 890 Dissertation: Library science 890

Academic organisation: Information Science

Period of presentation: Year

Language of tuition: English

Credits: 180

BIB 900 Library science: Examination 900

Academic organisation: Information Science

Period of presentation: Year

Language of tuition: Both Afr and Eng

Credits: 360

BIB 990 Thesis: Library science 990

Academic organisation: Information Science

Period of presentation: Year

Language of tuition: Both Afr and Eng

Credits: 360

COS 700 Research project 700

Academic organisation: Computer Science

Contact time: 2 lpw (Semester 1)

Period of presentation: Year

Language of tuition: English

Credits: 30

Module content:

This module requires the student to conduct independent research under supervision of a staff member on a topic agreed upon by the student and staff member. The module consists of two parts: Research methods and the project. During the first semester, formal lectures will be presented on best research practices (10 credits). The project (20 credits) involves application of the taught research methods to complete a research project. The project serves as an opportunity for the student to explore one of the department's areas of research in greater depth. The end product may be a new piece of software, a model or an algorithm, or an extension of these. It could be an experimental, or theoretical piece of reasoning. The final outcome of the project is a technical report.

COS 710 Artificial intelligence I 710

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 15

Module content:

This module focuses on two Computational Intelligence paradigms, namely Evolutionary Computation and Swarm Intelligence. Within the Evolutionary Computation paradigm, algorithmic models of Darwinian evolution will be studied, including genetic algorithms, genetic programming, evolutionary strategies, evolutionary programming, differential evolution, cultural algorithms and co-evolution. Within the Swarm Intelligence paradigm algorithm models of social organisms found in nature will be studied, including ant algorithms and particle swarm optimisation. These algorithms will mostly be studied in the context of complex optimisation problems, including multi-objective optimisation, dynamic environments, constraints, and finding multiple solutions. Prior knowledge assumed include good programming skills and an undergraduate module in Calculus.

COS 711 Artificial intelligence II 711

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 15

Module content:

This module focuses on three Computational Intelligence paradigms, namely Artificial Neural Networks, Artificial Immune Systems, and Fuzzy Systems. Within the Artificial Neural Networks paradigm algorithmic models of neural learning will be studied, including supervised, unsupervised, and reinforcement learning. Aspects that influence the performance of artificial neural networks will be studied in depth. Within the Artificial Immune Systems paradigm algorithm models of different views of the human biological immune system will be studied, including negative selection, clonal selection, network theory and danger theory models. The Fuzzy Systems paradigm include models of reasoning with uncertainty, specifically fuzzy logic and rough sets. Prior knowledge assumed include good programming skills and an undergraduate module in calculus

COS 720 Computer and information security I 720

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 15

Module content:

This module focuses on state-of-the-art security topics that are current and relevant to industry. The curriculum for the module is determined annually to reflect the current research directions as pursued by the information and Computer Security Architectures (ICSA) research group. The main topics include, but are not limited to: Applied security, including operating system security, secure coding, and cryptography; Trust and trust management systems; Privacy and privacy-enhanced technologies; Social Engineering. Students will be challenged to contribute innovative research ideas in the field of Computer Security by completing a number of mini-projects such as writing research papers and writing software programmes.

COS 721 Computer and information security II 721

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 15

Module content:

This module focuses on state-of-the-art information security topics that are current and relevant to industry. The curriculum for this module is annually determined to reflect the current research directions as pursued by the Information and Computer Security Architectures (ICSA) research group. The main topics include, but are not limited to: Information security management, including policies, standards and procedures; Risk management; Privacy; Ethics; Legal issues in Information Security; Information security services and technologies. Students will be challenged to contribute innovative research ideas in the field of Information Security Management by completing a number of mini projects such as writing research papers and writing software programmes.

COS 730 Software engineering I 730

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester

Language of tuition: English

Credits: 15

Module content:

This module covers various perspectives of Software Engineering theory and practices. It provides an overview of both the challenges in contemporary software engineering (such as scale, complexity and urgency) and the recommended practices for overcoming these challenges. It will familiarise students with both the historical and current theories about activities for the design, development, deployment and ongoing operation of software. It will show how these activities aim to be predictable, repeatable, robust, value-producing, and how they aim to meet the specified requirements for the intended system users. It will also emphasise that standardisation and reuse can be important factors in successfully engineering software. The module assumes prior knowledge about Software Engineering at the level of an introductory/undergraduate module.

COS 731 Software engineering II 731

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 15

Module content:

This module discusses software architecture, including the representation of designs, definitions, styles and patterns of architecture. Its themes include model-driven

architecture, formal modelling and analysis, and architectural description languages. The module will show that the architecture of a software system is determined by the collection of significant design decisions made early on in the development of that system – decisions concerning the components comprising the system, repeating-patterns of system-wide aspects, and the platforms on which the system will be built. It will discuss how, once these decisions are made and subsequently followed, they end up profoundly affecting the development, deployment, use and ongoing enhancement of that system. The module assumes that the student is familiar with software development lifecycle concepts, and that she/he has been part of at least one significant software development effort. Additional background will be provided to those who have not completed COS 730

COS 740 Formal aspects of computing I 740

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 15

Module content:

The focus of this module is on a formal approach to deriving algorithms, known as “correctness by construction”. It relies on Dijkstra’s guarded command language (GCL) for specifying the derived algorithms. The requirements of an algorithm are initially stated in terms of a pre- and a post-condition, specified in first order predicate logic. Strategies are given for progressively refining these specifications to GCL notation which can, in turn, easily be translated into a conventional programming language. The surprising power of the method will be demonstrated. Not only are algorithms guaranteed to be correct (in the same sense that the proof of a mathematical theorem is guaranteed to be correct); they frequently turn out to be remarkably efficient. In the early part of the module, a number of well-known algorithms (such as linear and binary search, raising a number to an integer power, finding the approximate log of a number, etc) will be derived in order to become thoroughly familiar with the approach. Later various intermediate level algorithms will be derived (such as simple raster drawing algorithms, pattern matching algorithms, finding the longest string of a certain type, an algorithm to solve the majority voting problem, etc). Finally, the method will be used to derive state-of-the-art algorithms to minimize finite automata and to construct formal concept lattices. The theory necessary to understand these topics will be provided. The value-objectives of the module are: to develop an appreciation that theory can be effectively deployed to solve practical problems; to value the elegance of the algorithmic solutions; and to value a correctness-by-construction mindset over one that is content with debugging into correctness. A basic understanding is assumed of first order predicate logic, as well as competency in mathematical reasoning.

COS 741 Formal aspects of computing II 741

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 15

Module content:

The status of Computer Science, including software science, as a proper “science” is closely related with our ability to construct accurate and precise models of the structures and processes of computational systems. The precision of these models is closely related with our ability to express them in formal notations with mathematical rigour, such that it also becomes possible to reason formally about relevant and interesting properties

of these models. Examples of such interesting properties are logical consistency (i.e. absence of inherent contradictions), or safety properties such as deadlock freeness. This module focuses on formal languages and techniques which are suitable for such purposes. Of particular importance are process algebras with which systems of parallel and concurrent computation can be formally described. Other suitable formalisms may be discussed as well, such that the contents of this module may slightly vary from year to year.

COS 750 Educational software development 750

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 1 or Semester 2

Language of tuition: English

Credits: 15

Module content:

This module provides the foundation to evaluate and develop educational software. It will introduce didactic principles applicable to the discipline of Computer Science. Using these principles, educational software, such as tools for teaching programming, on-line testing software, and adaptive software to name a few, can be evaluated and developed. Computer Science topics of interest are: programming environments, persistence of information and knowledge, knowledge representation etc.

COS 781 Data mining 781

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 1 or Semester 2

Language of tuition: English

Credits: 15

Module content:

Data mining is the extraction of novel knowledge, or hidden patterns, from large data bases. The focus of this course is on how the computational intelligence techniques (such as evolutionary algorithms, swarm algorithms and neural networks) can be used for knowledge extraction. In addition, traditional machine learning techniques (such as decision trees and rule induction) will be covered. The pre-processing of data in preparation for data mining algorithms, as well as the post-processing of results after data mining, will be discussed. Exploratory data analysis and statistical data mining methods are also investigated. Finally, some attention will be given to more modern problems, such as the extraction of hidden knowledge from unstructured data, such as text and images. It is highly recommended that students do COS 710 and COS 711, as knowledge of these modules are assumed.

COS 782 Generic programming 782

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 1 or Semester 2

Language of tuition: English

Credits: 15

Module content:

This module introduces the concepts of generic programming in order to generate code at compile-time. Of particular interest is the automatic generation of design pattern implementations at compile-time for use at run-time. To this end, design patterns and compile-time programming techniques such as: basic compile-time programming constructs, object allocation, generalised functors, smart pointer and multi-methods are discussed in detail and applied to design patterns.

COS 783 Digital forensics and investigations 783

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 1 or Semester 2

Language of tuition: English

Credits: 15

Module content:

This module will teach the basic theoretical concepts of digital forensic investigations. This module is designed to prepare a student for a wide range of people including, but not limited to, law enforcers, crime investigators and people responsible for internal incident investigations in larger organisations. Digital forensics is a relatively new and upcoming field. It is a field that is not well known by most organisations and therefore, such organisations are ill-informed about the digital forensic processes required to conduct a successful digital forensic investigation. The large number of digital devices used to commit crimes or other related incidents, such as fraud and corruption, proved motivation for this module in order to investigate and combat these incidents successfully. The main topics covered, but not limited to, include: An introduction to Digital Forensics; Digital forensic processes; Hardware forensics; Digital forensics tools (software forensics); Forensic readiness; A digital forensics laboratory/facility; Network forensics; Live forensics; Professionalism and ethics in digital forensics; Cyber forensics; Cyber law. Students will be challenged to contribute innovative research ideas in the field of Digital Forensics by completing a number of mini projects such as writing research papers and writing software programmes.

COS 784 Computer networks 784

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 1 or Semester 2

Language of tuition: English

Credits: 15

Module content:

This module covers computer networking principles and the operation of the TCP/IP protocol suite. The module includes studying the operation of relevant protocols, administration of network services, troubleshooting, as well as network design issues and challenges. Prior knowledge is assumed on basic data communications principles, the ISO OSI reference model, and the basic operation of protocols in the TCP/IP protocol suite.

COS 785 Computer graphics 785

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 1 or Semester 2

Language of tuition: English

Credits: 15

Module content:

This module is intended as an advanced module in real-time computer graphics and shader programming. The module includes the following topics: Advanced texture mapping, curves and curved surfaces, shadow mapping, skeletal animation, particle systems, ray tracing and collision detection. The module assumes prior knowledge of introductory graphics as presented in an undergraduate module and a working knowledge of linear algebra and calculus.

COS 786 Parallel and distributed computing 786**Academic organisation:** Computer Science**Contact time:** 2 lpw**Period of presentation:** Semester 1 or Semester 2**Language of tuition:** English**Credits:** 15**Module content:**

Computational science relies on the analysis of often complex models, for its empirical data and analyses typically involve an enormous amount of calculations. Parallel computing is one means of reducing the time needed to complete such calculations. This module will examine the kinds of problems that lend themselves to parallel computation and the methods for implementing programmes to solve such problems. The aim of the module is to provide a background for parallel and distributed computing as well as practical knowledge of the implementation of computational experiments.

COS 787 Spatial databases 787**Academic organisation:** Computer Science**Contact time:** 2 lpw**Period of presentation:** Semester 1 or Semester 2**Language of tuition:** English**Credits:** 15**Module content:**

This module covers the major themes of spatial databases with application to geographic information systems (GIS), i.e. systems concerning data with an implicit or explicit reference to a location relative to the earth. Topics covered include an introduction to spatial databases and spatial data management systems, representation of geographic data, spatial data modelling, computational geometry, spatial data indexing, query processing and spatial data standards. For Computer Science students the module is an introduction to the ever increasing application field of geographics information systems (GIS), and for Geoinformatics students the module provides insight into the Computer Science foundations of the field.

COS 788 Information hiding 788**Academic organisation:** Computer Science**Contact time:** 2 lpw**Period of presentation:** Semester 1 or Semester 2**Language of tuition:** English**Credits:** 15**Module content:**

Information hiding is a category of computer security that focuses on embedding information in digital objects. Information, such as digital signatures, are sometimes embedded in objects to indicate ownership or origin – a technology that is called watermarking. Alternatively information is sometimes hidden in digital objects to facilitate invisible or inaudible communication – called steganography. Steganography focuses on the confidentiality of information, while watermarking is used to protect intellectual property. This module covers the techniques and algorithms used in both technologies to embed information in objects with minimal perceptual and audible changes to the objects. The module also provides a brief overview of different multimedia formats, such as image, audio and video, in order to understand their potential and limitations in the field of information hiding. Potential attacks on information hiding systems are also investigated.

COS 790 Special topics I 790

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 1 or Semester 2

Language of tuition: English

Credits: 15

Module content:

From time to time, the department presents lectures on special topics within Computer Science. This module will be used to present such special topics.

COS 791 Special topics II 791

Academic organisation: Computer Science

Contact time: 2 lpw

Period of presentation: Semester 1 or Semester 2

Language of tuition: English

Credits: 15

Module content:

From time to time, the department presents lectures on special topics within Computer Science. This module will be used to present such special topics.

IMY 761 Applied multimedia 761

Academic organisation: Information Science

Contact time: 2 lpw

Period of presentation: Year

Language of tuition: English

Credits: 30

Module content:

*Closed module

Development and production of a multimedia product; product life-cycle management and documentation; the student submits a proposal which is evaluated and if approved, produces a working multimedia product.

IMY 771 Multimedia trends 771

Academic organisation: Information Science

Contact time: 1 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 15

Module content:

History of multimedia ideas and technology; current trends in multimedia, latest technologies and future trends of multimedia.

IMY 772 Hypermedia and mark-up languages 772

Academic organisation: Information Science

Contact time: 1 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 15

Module content:

A study of hypermedia systems, specifically adaptive hypermedia systems, as well as data modelling, storage and retrieval, database structures and metadata. A study of different mark-up languages and their role in multimedia products with the emphasis on data structuring, hyper linking theories and models.

IMY 773 Multimedia technology 773

Academic organisation: Information Science

Contact time: 1 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 15

Module content:

In this module students will research and discuss a current topic which can change from year to year. The topic for a specific year can be obtained from the departmental website. The topic is related to the creative use of Multimedia Technologies. An understanding of the current multimedia trends is required together with the knowledge of its usage.

IMY 774 Virtual environments 774

Academic organisation: Information Science

Contact time: 1 ppw 1 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 15

Module content:

This module exposes students to virtual environments, ranging from fully immersive virtual reality to online virtual worlds. Starting with the notion of reality and how it is simulated, students learn about hardware, software and human factors associated with the creation and exploration of virtual environments. Students are also exposed to VE platforms and techniques, which they use to create a virtual world.

IMY 777 Animation theory and practice 777

Academic organisation: Information Science

Contact time: 1 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 15

Module content:

This module provides an overview of the historic and current principles and practice of natural motion animation. Different animation techniques are covered, such as stop motion, traditional animation, and 3D animation. The student receives an opportunity to create an animated short film using a technique of their choice.

IMY 779 Human-computer interaction 779

Academic organisation: Information Science

Contact time: 1 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 15

Module content:

In this module, students are exposed to research topics and methodologies within the HCI discipline. Students then apply their understanding by proposing and delivering a research paper.

IMY 890 Dissertation: Multimedia 890

Academic organisation: Information Science

Period of presentation: Year

Language of tuition: English

Credits: 180

IMY 900 Examination: Multimedia 900

Academic organisation: Information Science

Period of presentation: Year

Language of tuition: Both Afr and Eng

Credits: 360

IMY 990 Thesis: Multimedia 990

Academic organisation: Information Science

Period of presentation: Year

Language of tuition: Both Afr and Eng

Credits: 360

INL 890 Dissertation: Information science 890

Academic organisation: Information Science

Period of presentation: Year

Language of tuition: English

Credits: 180

INL 895 Mini-dissertation: Information science 895

Academic organisation: Information Science

Period of presentation: Year

Language of tuition: English

Credits: 90

INL 900 Examination: Information science 900

Academic organisation: Information Science

Period of presentation: Year

Language of tuition: Both Afr and Eng

Credits: 360

INL 990 Thesis: Information science 990

Academic organisation: Information Science

Period of presentation: Year

Language of tuition: Both Afr and Eng

Credits: 360

INY 711 Research methodology 711

Academic organisation: Information Science

Contact time: 2 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 15

Module content:

Research methodology and the application thereof to resolve research problems and to create new knowledge, is a valued advantage to any student. The module is compiled with the following objectives in mind: to instruct the student in the basic principles of research and to avail them the opportunity to execute research projects in a professional manner. Students are guided from the selection of a problem to the presentation of a complete research report with practical suggestions based on a solid theoretical framework.

INY 713 Information and knowledge management (I) 713

Academic organisation: Information Science

Contact time: 2 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 15

Module content:

This module consists of two main sections. A theoretical framework of information and knowledge management will be addressed in section one. Section two covers the enablers of information and knowledge management. These include: leadership, corporate culture, organisational learning, strategy, laws and policies, measurement and information technology.

INY 714 Organisation, retrieval and seeking of information 714

Academic organisation: Information Science

Contact time: 2 lpw

Period of presentation: Semester 1 or 2

Language of tuition: English

Credits: 15

Module content:

Information retrieval covers the problems relating to the effective storage, access, and searching of information required by individuals. This module will introduce students to the theory and operative requirements of information organisation and retrieval and the evaluation of information retrieval systems, as well as information seeking behaviour.

INY 715 Information ethics 715

Academic organisation: Information Science

Contact time: 2 lpw

Period of presentation: Semester 1 or 2

Language of tuition: English

Credits: 15

Module content:

This module focuses on the main moral issues pertaining to information and ICT, globalisation, privacy and knowledge flow. It covers amongst others the following fields: cyber warfare and terrorism; information philosophy; information security; privacy and the right to information; digital identity management; cyber law; globalisation and the impact on society.

INY 716 Information and knowledge management (II) 716

Academic organisation: Information Science

Prerequisite: INY 713

Contact time: 2 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 15

Module content:

This module offers the student the opportunity to become conversant with various knowledge management programmes as well as the development, implementation and evaluation of knowledge management strategies. Knowledge representation and the development of an Intranet will be covered. New key issues in the field of knowledge management conclude this module.

INY 717 Information retrieval 717

Academic organisation: Information Science

Contact time: 2 lpw

Period of presentation: Semester 1 or 2

Language of tuition: English

Credits: 15

Module content:

"Information is continuing to grow exponentially, diversifying into many forms and media. In this complex labyrinth there is a definite need for increased effort aimed at tailoring IR performance to user demands" (Ingwersen, 1992).

In this module students will study information retrieval from a systems perspective, but with the human user in mind. Best-match and Boolean systems will be studied in some detail, focussing on the different aspects of human and machine relevance. Information seeking behaviour studies that can support the enhancement of IR performance will also be covered.

INY 722 Information society 722

Academic organisation: Information Science

Contact time: 1 lpw

Period of presentation: Semester 1 or 2

Language of tuition: English

Credits: 15

Module content:

This module evaluates approaches to and concepts of the information/knowledge society. It questions the origins and political motives for the promotion of an information/knowledge society, and examines a number of relevant themes in the literature.

INY 726 Competitive intelligence (I) 726

Academic organisation: Information Science

Contact time: 2 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 15

Module content:

Establishing an effective competitive intelligence programme is an integral part of every enterprise that wants to survive in the new millennium. This module focuses on the competitive nature of the business environment, the aim of competitive intelligence, Porter's Competitive Forces Model, the distinction between competitive intelligence and industrial espionage, the intelligence process as well as the tools and techniques for the development and implementation of a competitive intelligence programme.

INY 727 Competitive intelligence (II) 727

Academic organisation: Information Science

Prerequisite: INY 726

Contact time: 2 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 15

Module content:

Competitive intelligence (CI) provides the decision maker with analysed information about the competitive environment, aimed at satisfying decision-making needs. This module focuses on the role of analysis in the intelligence cycle, applying analysis techniques to a case study, CI and corporate governance, the setting up of a CI capability in an organisation and the problems facing CI professionals in South Africa.

INY 730 Information communication 730

Academic organisation: Information Science

Contact time: 2 lpw

Period of presentation: Semester 1 or Semester 2

Language of tuition: English

Credits: 15

Module content:

Informed by the participatory approach to communication this module reflects in depth on methods for the effective communication of information. In order to achieve this, the nature on information within the context on Information Science will be investigated. Thereafter, communication media will be identified and discussed and students will learn how to create a target audience profile to determine the appropriate media and content for the dissemination of information.

Information and communication technologies (ICTs) and the communication of information will be investigated along with literacy and media literacy. The communication of information will form a central focus of this module. Therefore the role

of traditional, interpersonal, as well as modern media will be addressed. The processes of creating meaningful and effective messages for the communication of information as well as intercultural communication will also be addressed.

INY 734 Research report 734

Academic organisation: Information Science

Period of presentation: Year

Language of tuition: English

Credits: 30

Module content:

*Closed module.

Students are expected to write a research report (5 000-7 000 words) (10 000-12 000 words) on a topic to be selected in collaboration with the lecturers.

MIT 835 Information and knowledge management 835

Academic organisation: Information Science

Contact time: 16 contact hours per semester

Period of presentation: Semester 1

Language of tuition: English

Credits: 9

MIT 840 Mini-dissertation 840

Academic organisation: School of Information Technology

Period of presentation: Year

Language of tuition: English

Credits: 90

Module content:

The mini-dissertation is an individual report of independent research under the guidance of a supervisor.

MIT 841 Organisational behaviour and management 841

Academic organisation: Information Science

Period of presentation: Semester 1

Language of tuition: English

Credits: 8

MIT 842 Computer science in perspective 842

Academic organisation: Computer Science

Contact time: 16 contact hours per semester

Period of presentation: Semester 1

Language of tuition: English

Credits: 5

MIT 843 Information in perspective 843

Academic organisation: Information Science

Contact time: 16 contact hours per semester

Period of presentation: Semester 1

Language of tuition: English

Credits: 5

MIT 844 Strategic ICT management 844

Academic organisation: Informatics

Contact time: 16 contact hours per semester

Period of presentation: Semester 1

Language of tuition: English

Credits: 9

MIT 850 Life-cycle and maturity models for IT 850

Academic organisation: Computer Science

Contact time: 16 contact hours per semester

Period of presentation: Semester 2

Language of tuition: English

Credits: 9

MIT 851 Digital economy 851

Academic organisation: Informatics
Contact time: 16 contact hours per semester
Period of presentation: Semester 2
Language of tuition: English

Credits: 9

MIT 852 ICT project management 852

Academic organisation: Informatics
Contact time: 16 contact hours per semester
Period of presentation: Semester 2
Language of tuition: English

Credits: 9

MIT 853 Corporate IT systems 853

Academic organisation: Computer Science
Contact time: 16 contact hours per semester
Period of presentation: Semester 2
Language of tuition: English

Credits: 9

MIT 860 ICT infrastructure management 860

Academic organisation: Computer Science
Contact time: 16 contact hours per semester
Period of presentation: Semester 1
Language of tuition: English

Credits: 9

MIT 862 IT research 862

Academic organisation: School of Information Technology
Contact time: 16 contact hours per semester
Period of presentation: Semester 2
Language of tuition: English
Module content:

*Attendance module only
Research methodologies applicable to the IT field as preparation for the mini-dissertation. (This module is a compulsory requirement for admission to MIT 840.)

MIT 863 Capita selecta 863

Academic organisation: Informatics
Contact time: 16 contact hours per semester
Period of presentation: Semester 1 or Semester 2
Language of tuition: English

Credits: 12

MIT 864 IT financial management 864

Academic organisation: Informatics
Contact time: 16 contact hours per semester
Period of presentation: Semester 1
Language of tuition: English

Credits: 9

MIT 865 Web trends in the library 865

Academic organisation: School of Information Technology
Contact time: 1 lpw
Period of presentation: Semester 1
Language of tuition: English

Credits: 9

Module content:

Social networking and other Web 2.0 tools offer a wealth of opportunities for the design and delivery of new and innovative resources and services in libraries. This module provides an understanding of the basics of Web 2.0 and instruction in the practical implementation of various Web 2.0 tools and technologies. Students will furthermore be instructed on the specific uses and applications of these Web 2.0 tools in the library environment.

MIT 866 Digital repositories 866

Academic organisation: School of Information Technology

Contact time: 1 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 9

Module content:

This module aims to address a series of topics applicable to the development and implementation of digital repositories, with the emphasis on repositories in an academic context. The course presents the opportunity to acquire a wide spectrum of knowledge covering the necessary core concepts and technologies, the processes involved in the establishment and running of repositories, and of evaluating various approaches and aspects. This will provide information professionals with a sound foundation for offering quality information services in the digital environment.

MIT 867 The knowledge society and international librarianship 867

Academic organisation: Information Science

Contact time: 1 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 9

Module content:

This module evaluates concepts and approaches to the study of the Knowledge Society from the perspective of LIS professionals in Africa. It also examines contemporary challenges, trends, and issues in globalisation for international and regional library services development, such as Open Access initiatives, the internationalisation of LIS education, and international employment, as well as issues related to the freedom of access to information and freedom of expression.

MIT 868 Facilitating information retrieval and information use 868

Academic organisation: Information Science

Contact time: 1 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 9

Module content:

The module intends to enable managers of library and information services to manage opportunities to ensure optimal access to electronic information resources and the use of information in their specific contexts and with support of the latest ICTs.

MIT 869 IT systems in libraries 869

Academic organisation: Information Science

Contact time: 1 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 9

Module content:

The course investigates typical large IT systems that a typical medium to large library will need to manage. The themes covered are: OPACS, Enterprise Resource Management (ERP) systems, including HR (human resource) management systems; Open Source Software; IT Security policies; Customer Relationship Management (CRM) systems.

MIT 872 Knowledge management 872

Academic organisation: Information Science

Contact time: 1 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 9

Module content:

The aim of this module is to provide an overview of the fundamental concepts and theories of knowledge management. Participants will be introduced to tools and techniques relevant to knowledge sharing, retention and dissemination. Attention will also be paid to planning and implementing a knowledge management initiative, with special focus on the academic library environment.

MIT 873 Network technologies 873

Academic organisation: Information Science

Period of presentation: Semester 1 or Semester 2

Language of tuition: English

Credits: 6

Module content:

The purpose of the module is to provide students with an introduction to different types of networks and network management, including the different technologies available such as broadband and wireless. The course focuses on fundamentals and general principles rather than technical details. Current broadband initiatives in Africa and the influence this will have of the working environment of information professionals will also be addressed.

MIT 874 Computer science in perspective 874

Academic organisation: Information Science

Period of presentation: Semester 1

Language of tuition: English

Credits: 6

Module content:

The aim of this module is to serve as an introduction to the basic concepts of computing. Algorithms will be explored on different levels of abstraction; this will include some basic modeling of algorithms and code using UML; understanding the nature of programming and how to work with programmers. We will also be exploring some relevant topics in Computer Science such as computer security (hacking etc.), artificial intelligence, computer-supported collaborative work (CSCW) and software engineering.

MIT 875 Organisational behaviour and leadership 875

Academic organisation: Information Science

Period of presentation: Semester 1

Language of tuition: English

Credits: 6

Module content:

This module is designed to give students an understanding of how organisations and leadership in organisations work, and how to manage yourself and others in an organisational environment. The module follows a sequence of "individuals, groups and teams". Individuals include the student's own perspective, how to determine your own strengths and weaknesses, how to tailor-make your environment to capitalise on your strengths and compensate for your weaknesses. Under "groups" we consider how groups form, and how they function. Aspects such as conflict management, as well as group dynamics are considered.

MIT 876 Strategic ICT management 876**Academic organisation:** Informatics**Period of presentation:** Semester 1**Language of tuition:** English**Credits:** 6**Module content:**

An overall theme of the module is that ICT is a strategic enabler and the management of ICT is a responsibility of not only ICT specialists and ICT managers, but also ICT-knowledgeable business managers. As a departure point the context for studying the management of information and communication technology in the new economy or e-World is analysed. The primary objective is to increase student awareness and understanding of how ICT can be used as a strategic resource in an ever-changing business environment, with specific reference to libraries.

MIT 877 ICT project management 877**Academic organisation:** Information Science**Period of presentation:** Semester 2**Language of tuition:** English**Credits:** 6**Module content:**

This course is designed to put IT project management in the context of library, business and general management. It is not intended to teach students the fundamentals of project management, nor will it go into more depth in the discipline of project management than graduate courses on the subject. It is assumed that students already know the basics of project management and that being a project manager is not their ultimate career aspirations, but that they may have project managers reporting to them.

MIT 878 IT financial management 878**Academic organisation:** Informatics**Period of presentation:** Semester 1**Language of tuition:** English**Credits:** 6**Module content:**

This module gives an overview of the financial management responsibilities of the ICT manager in a library; clarification of what financial management means to the ICT manager; discussion of various financial concepts which the ICT manager will encounter, e.g. accounting concepts, IS audit and control, total cost of ownership, etc. It also provides clarification of functions which the ICT manager will be required to perform, e.g. budgeting, asset management, etc.

PIT 900 Information technology 900**Academic organisation:** School of Information Technology**Period of presentation:** Year**Language of tuition:** Both Afr and Eng**Credits:** 360**PUB 712 Advanced e-publishing 712****Academic organisation:** Information Science**Contact time:** 3 dpw**Period of presentation:** Semester 2**Language of tuition:** English**Credits:** 15**Module content:**

The aim of this module is to further familiarize students with the development, economics and delivery of electronic publications. Students develop strong e-production skills through hands-on implementation of publication workflows for various electronic publications. Students also implement a business plan for the distribution and marketing of these publications.

PUB 722 Publishing management: Management and finance 722

Academic organisation: Information Science

Contact time: 1 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 15

Module content:

This module focuses on the theory and practice of publishing management. Issues addressed include the following: personal skills; general management skills; financial skills; new product development; costing; editorial issues.

PUB 723 Publishing management: Organisation and processes 723

Academic organisation: Information Science

Contact time: 1 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 15

Module content:

This module focuses on the theory and practice of publishing management. Issues addressed include the following: human resources; legal skills; project management; sales and marketing; communication skills; logistics; leadership.

PUB 724 The publishing environment: Developments and trends in the South African book industry 724

Academic organisation: Information Science

Contact time: 1 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 15

Module content:

This module is research-based. The focus is on developments and trends impacting on the value chain and supply chain of the local book industry. The overall objective of the module is to generate research that can contribute to information on the shape and size of this cultural industry.

PUB 725 The publishing environment: Global developments and trends in book publishing 725

Academic organisation: Information Science

Contact time: 1 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 15

Module content:

This module is research-based. The focus is on global developments and trends impacting on book publishing as a cultural industry. The research parameters will be determined yearly by a selection of relevant global practices impacting on local developments and trends.

PUB 728 Editorial practice: Advanced copy-editing and editorial project management 728

Academic organisation: Information Science

Contact time: 2 lpw

Period of presentation: Semester 1 and Semester 2

Language of tuition: English

Credits: 15

Module content:

One of the central role players in the publishing value chain is the copy-editor, whose tasks range from copy-editing and proofreading manuscripts, to developing budgets and schedules, and managing entire publishing projects through production. This module builds on students' knowledge of and skills in editorial practice, including advanced copyediting, editorial and production project management. The module also focuses on theory of editorial practice, including editorial approaches and policies.

PUB 729 Editorial practice: List building and acquisition of rights 729

Academic organisation: Information Science

Contact time: 2 lpw

Period of presentation: Semester 1 and Semester 2

Language of tuition: English

Credits: 15

Module content:

At the heart of the publishing value chain lies the commissioning editor or publisher, whose tasks range from commissioning new titles and nurturing authors, through to managing entire publishing lists and making rights acquisitions. This module builds on students' knowledge of and skills in commissioning and acquisitions, with a particular focus on strategic and financial aspects of publishing list building, and acquisition policies and procedures.

PUB 890 Dissertation: Publishing 890

Academic organisation: Information Science

Period of presentation: Year

Language of tuition: English

Credits: 180

Module content:

A comprehensive report on an aspect of Publishing.

PUB 900 Examination: Publishing 900

Academic organisation: Information Science

Period of presentation: Year

Language of tuition: Both Afr and Eng

Credits: 80

Module content:

Justification of thesis/examination on thesis.

PUB 990 Thesis: Publishing 990

Academic organisation: Information Science

Period of presentation: Year

Language of tuition: Both Afr and Eng

Credits: 360

Module content:

A comprehensive and advanced report on an approved project. Expert, highly specialised and interdisciplinary research within Publishing.

RKW 800 Computer science 800

Academic organisation: Computer Science

Period of presentation: Year

Language of tuition: English

Credits: 120

RKW 890 Dissertation: Computer science 890

Academic organisation: Computer Science

Period of presentation: Year

Language of tuition: English

Credits: 180

RKW 990 Thesis: Computer science 990

Academic organisation: Computer Science

Period of presentation: Year

Language of tuition: English

Credits: 360

SIT 990 Thesis: Information technology 990

Academic organisation: School of Information Technology

Period of presentation: Year

Language of tuition: Both Afr and Eng

Credits: 360

List of Service modules for the School of Information Technology

Alphabetical list of modules offered by the Faculty of Law

BER 310 Business law 310**Academic organisation:** Mercantile Law**Contact time:** 4 lpw**Period of presentation:** Semester 1**Language of tuition:** Both Afr and Eng**Credits:** 16**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.

KRG 110 Commercial law 110**Academic organisation:** Mercantile Law**Contact time:** 2 lpw 1 tpw**Period of presentation:** Semester 1**Language of tuition:** Both Afr and Eng**Credits:** 10**Module content:**

General introduction.

General principles of the law of contract: introduction to the law of contract; consensus; contractual capacity; legality and physical possibility of performance; formalities; parties to the contract; conditions and related legal concepts; special terms and the interpretation of contracts; breach of contract and the termination of the contractual relationship.

KRG 120 Commercial law 120**Academic organisation:** Mercantile Law**Prerequisite:** examination entrance to KRG 110**Contact time:** 2 lpw 1 tpw**Period of presentation:** Semester 2**Language of tuition:** Both Afr and Eng**Credits:** 10**Module content:**

Law of purchase and sale; law of lease; credit agreements; law of agency; law of security.

KRG 200 Commercial law 200**Academic organisation:** Mercantile Law**Prerequisite:** KRG 120**Contact time:** 3 lpw**Period of presentation:** Year**Language of tuition:** Both Afr and Eng**Credits:** 24**Module content:**

Company law, law concerning close corporations, law of partnerships, labour law, law of arbitration and transport, law of insurance, law concerning negotiable documents, law of insolvency, law of succession and trusts.

KUB 420 Information and communications technology law 420

Academic organisation: Mercantile Law

Contact time: 5 ppw

Period of presentation: Semester 2

Language of tuition: Double Medium

Credits: 10

Module content:

*For LLB

- (a) Introduction to the study of information and communications technology law:
 - The place of information and communications technology law in the legal system
 - The nature and scope of information and communications technology law
 - Sources of information and communications technology law
 - Inception and influence of the Internet
- (b) Regulation of the Internet
 - National/International
 - Jurisdiction
- (c) Aspects of intellectual property law and the Internet
- (d) E-commerce activities and the Internet:
 - Aspects of jurisdiction and signing of contracts
 - Data protection and encryption
 - Liability of Internet service providers
- (e) Advertising and the Internet
- (f) Criminal liability in information and communications technology law
- (g) Constitutional aspects in information and communications technology law:
 - The right to privacy/freedom of expression/information

Alphabetical list of modules offered by the Faculty of Economic and Management Sciences

BEM 110 Marketing management 110

Academic organisation: Marketing Management

Contact time: 3lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 10

Module content:

Principles of marketing management and marketing instruments, customer centricity, the process of marketing management, market segmentation, positioning and marketing information systems, environmental analysis, identification of target markets, value creation, positioning strategies, consumer behaviour, relationship marketing, relationship intention, application of product, price, marketing communication and distribution strategies.

BEM 122 Marketing applications 122

Academic organisation: Marketing Management

Prerequisite: BEM 110 GS

Contact time: 3 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 10

Module content:

E-marketing, services marketing, not-for-profit marketing, business-to-business marketing, retailing, global marketing.

BME 120 Biometry 120**Academic organisation:** Statistics**Prerequisite:** At least 4 (50-59%) in Mathematics in the Grade 12 examination, or at least 50% in both Statistics 113, 123**Contact time:** 1 ppw 4 lpw**Period of presentation:** Semester 2**Language of tuition:** Both Afr and Eng**Credits:** 16**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.

FRK 111 Financial accounting 111**Academic organisation:** Accounting**Contact time:** 4 lpw**Period of presentation:** Semester 1**Language of tuition:** Both Afr and Eng**Credits:** 10**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.

FRK 122 Financial accounting 122**Academic organisation:** Accounting**Prerequisite:** FRK 111 GS or FRK 133, FRK 143**Contact time:** 4 lpw**Period of presentation:** Semester 2**Language of tuition:** Both Afr and Eng**Credits:** 12**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.

INF 112 Informatics 112**Academic organisation:** Informatics**Prerequisite:** Refer to Regulation 1.2(e); or STK 113 60%, STK 123 60% or STK 110**Contact time:** 1 ppw 2 lpw**Period of presentation:** Semester 1**Language of tuition:** Both Afr and Eng**Credits:** 10

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.

INF 153 Informatics 153

Academic organisation: Informatics

Prerequisite: Refer to Regulation 1.2(f)

Contact time: 2 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 5

Module content:

General systems theory, creative problem solving, soft systems methodology.

INF 154 Informatics 154

Academic organisation: Informatics

Prerequisite: Refer to Regulation 1.2(f)

Contact time: 1 lpw 2 ppw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 5

Module content:

Introduction to programming.

INF 163 Informatics 163

Academic organisation: Informatics

Prerequisite: INF 153; Regulation 1.2(f)

Contact time: 2 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 5

Module content:

The systems analyst, systems development building blocks, systems development, systems analysis methods, process modelling.

INF 164 Informatics 164

Academic organisation: Informatics

Prerequisite: INF 154; Regulation 1.2(f); AIM 101 or AIM 111 and AIM 121

Contact time: 1 lpw 2 ppw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 5

Module content:

Advanced programming, use of a computer-aided software engineering tool.

INF 214 Informatics 214

Academic organisation: Informatics

Prerequisite: AIM 101 or AIM 111 and AIM 121

Contact time: 2 ppw 3 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 14

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.

INF 225 Informatics 225

Academic organisation: Informatics

Prerequisite: INF 163 and INF 164; AIM 101 or AIM 111 and AIM 121

Contact time: 1 lpw 1 ppw 2 dpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 14

Module content:

An overview of systems infrastructure and integration.

INF 261 Informatics 261

Academic organisation: Informatics

Prerequisite: INF 214

Contact time: 1 lpw 1 ppw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 7

Module content:

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

INF 271 Informatics 271

Academic organisation: Informatics

Prerequisite: AIM 101 or AIM 111 and AIM 121

Contact time: 1 lpw 1 ppw 2 dpw

Period of presentation: Year

Language of tuition: Both Afr and Eng

Credits: 14

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.

INF 272 Informatics 272

Academic organisation: Informatics

Prerequisite: INF 163 and INF 164; Regulation IT.3(g)

Contact time: 1 dpw 2 ppw 5 web-based periods per week

Period of presentation: Year

Language of tuition: Both Afr and Eng

Credits: 14

Module content:

Use of computer-aided development tools; advanced programming.

INF 315 Informatics 315

Academic organisation: Informatics

Prerequisite: INF 261, INF 225, INF 271 and INF 272

Contact time: 1 dpw 2 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 15

Module content:

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

INF 324 Informatics 324

Academic organisation: Informatics

Prerequisite: INF 261, INF 225, INF 271 and INF 272

Contact time: 1 dpw 3 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 15

Module content:

Information systems in organisations, social and ethical responsibilities, the role of the Informatician. IT end-user relationships; IT management.

INF 354 Informatics 354

Academic organisation: Informatics

Prerequisite: INF 261, INF 225, INF 271 and INF 272

Contact time: 2 lpw 2 ppw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 15

Module content:

Advanced programming.

INF 370 Informatics 370

Academic organisation: Informatics

Prerequisite: INF 261, INF 225, INF 271 and INF 272

Contact time: 2 lpw 2 ppw

Period of presentation: Year

Language of tuition: Both Afr and Eng

Credits: 30

Module content:

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

KOB 210 Communication management 210

Academic organisation: Communication Management

Contact time: 3 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 16

Module content:

Management communication

Based on the paradigm of Integrated Communication (IC), this module covers management communication theory, leadership and supervisory communication, as well as the management of change and transformation through communication. Management communication in the global arena focuses on the dynamics and celebration of diversity and intercultural relations. Managers should take cognisance of the importance of development communication in both a business and community context. The importance of ethical considerations in managerial and leadership communication is emphasised. After explaining quantitative and qualitative research designs, appropriate communication research techniques are explored.

KOB 220 Communication management 220

Academic organisation: Communication Management

Prerequisite: KOB 210 GS

Contact time: 1 web-based period per week 3 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 16

Module content:

Organisational communication management

Through the utilisation of organisational communication management theories, a study is made of group and team communication, with specific emphasis on facilitation, negotiation and innovation. Knowledge management, internal communication, culture and organisational climate are core components of the complex dynamics of the sharing of meaning within the organisation. The function of strategic communication is emphasised throughout. Ethical considerations in organisational communication management are also stressed and appropriate research techniques are presented.

OBS 114 Business management 114

Academic organisation: Business Management

Contact time: 3 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 10

Module content:

Introduction to business management as a science; the environment in which the enterprise operates; the field of business, the mission and goals of an enterprise; management and entrepreneurship. The choice of a form of enterprise; the choice of products and/or services; profit and cost planning for different sizes of operating units; the choice of location; the nature of production processes and the layout of the plant or operating unit.

Introduction to and overview of general management, especially regarding the five management tasks: strategic management; contemporary developments and management issues; financial management; marketing and public relations. Introduction to and overview of the value chain model; management of the input; management of the purchasing function; management of the transformation process with specific reference to production and operations management; human resources management and information management; corporate governance and black economic empowerment (BEE).

OBS 124 Business management 124

Academic organisation: Business Management

Prerequisite: Admission to the examination in OBS 114

Contact time: 3 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 10

Module content:

The nature and development of entrepreneurship; the individual entrepreneur and characteristics of South African entrepreneurs. Looking at the window of opportunity. Getting started (business start up). Exploring different routes to entrepreneurship: entering a family business, buying a franchise, home-based business and the business buyout. This semester also covers how entrepreneurs can network and find support in their environments. Case studies of successful entrepreneurs - also South African entrepreneurs - are studied.

OBS 210 Business management 210

Academic organisation: Business Management

Prerequisite: OBS 114 or 124 with admission to the examination in the other

Contact time: 3 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 16

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.

OBS 220 Business management 220

Academic organisation: Business Management

Prerequisite: OBS 114 or 124 with admission to the examination in the other

Contact time: 3 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 16

Module content:

Project management: 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.

OBS 310 Business management 310

Academic organisation: Business Management

Prerequisite: OBS 114 or 124 with admission to the examination in the other

Contact time: 3 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

Human resource management and development

The environment in which human resource management takes place; job analysis; strategic human resource planning; equal employment opportunities; planning and management of training; development and careers; functioning in a global environment. 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.

OBS 311 Entrepreneurship 311

Academic organisation: Business Management

Prerequisite: OBS 114

Contact time: 3 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

*General service module available as elective for other degree programmes.
 Characteristics and description of entrepreneurship; the entrepreneurial process; identification of opportunities; new business opportunities; the entrepreneurial manager and the entrepreneurial team. The small business enabling environment; management of growth and development of a small business and the compilation of a business plan.

OBS 315 E-business 315

Academic organisation: Business Management

Prerequisite: OBS 114 or 124 with admission to the examination in the other

Contact time: 3 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

*BCom (Informatics) students are not allowed to take OBS 315 and OBS 325 as elective modules for degree purposes.

Introduction to electronic business: An introduction to the field of electronic business in which the implications of electronic business on the enterprise and existing business models are dealt with. Some business applications concerning aspects of e-law are also dealt with.

OBS 320 Business management 320

Academic organisation: Business Management

Prerequisite: OBS 114 or 124 with admission to the examination in the other

Contact time: 3 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

Strategic management analysis and formulation

Basic concepts; formulation of mission; policy and objectives; external evaluation of the business environment; internal evaluation of the enterprise; including intellectual assets; the formulation and development of a strategic plan.

Strategic management implementation

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.

OBS 321 Entrepreneurship 321

Academic organisation: Business Management

Prerequisite: Admission to the examination in OBS 311

Contact time: 3 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

*General service module available as elective module for other degree programmes.

Performance motivation: development of positive motives; role models; determining of the level of achievement motivation; reinforcement of the need for performance motivation; strategies and action plans. Creativity, innovation, need for achievement, entrepreneurial role models and the development of risk propensity.

OBS 325 E-commerce 325

Academic organisation: Business Management

Prerequisite: OBS 114 or 124 with admission to the examination in the other

Contact time: 3 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

*BCom (Informatics) students are not allowed to take OBS 315 and OBS 325 as elective modules for degree purposes.

Introduction to electronic commerce: An introduction to the domain of electronic commerce in which the implications of online trading on the enterprise and existing business models are studied. Strategic positioning of the enterprise via electronic commerce activities will be introduced. Some business applications concerning e-law with regard to e-commerce are also dealt with.

OBS 359 International business management 359

Academic organisation: Business Management

Prerequisite: OBS 114 or OBS 124 with admission to the examination in the other

Contact time: 2 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 20

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.

STK 110 Statistics 110

Academic organisation: Statistics

Prerequisite: 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

Contact time: 3 lpw 1 ppw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 13

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). Identification, use, evaluation and interpretation of statistical computer packages and statistical techniques.

This module is also presented as an anti-semester bilingual module.

STK 120 Statistics 120

Academic organisation: Statistics

Prerequisite: STK 110 GS or both STK 113 GS and STK 123 GS or both WST 133 and WST 143

Contact time: 1 ppw 3 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 13

Module content:

Multivariate statistics:

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: drafting, matrices, solving, application. Optimisation; linear functions (two and more independent variables), non-linear functions (one and two independent variables). Marginal and total functions. Stochastic and deterministic variables in statistical and economic context: producers' and consumers' surplus, distribution functions, probability distributions, probability density functions. Identification, use, evaluation, interpretation of statistical computer packages and statistical techniques. This module is also presented as an anti-semester bilingual module.

WST 111 Mathematical statistics 111

Academic organisation: Statistics

Prerequisite: At least 5 (60-69%) in Mathematics in the Grade 12 examination

Contact time: 1 ppw 4 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 16

Module content:

Characterisation of a set of measurements: Graphical and numerical methods. Random sampling. Probability theory. Discrete and continuous random variables. Probability distributions. Generating functions and moments.

WST 121 Mathematical statistics 121

Academic organisation: Statistics

Prerequisite: WST 111 GS

Contact time: 1 ppw 4 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 16

Module content:

Sampling distributions and the central limit theorem. Statistical inference: Point and interval estimation. Hypothesis testing with applications in one and two-sample cases. Introductory methods for: Linear regression and correlation, analysis of variance, categorical data analysis and non-parametric statistics. Identification, use, evaluation and interpretation of statistical computer packages and statistical techniques.

WST 133 Mathematical statistics 133

Academic organisation: Statistics

Prerequisite: At least 3 (40-49%) in Mathematics in the Grade 12 examination; BSc and BCom numeric stream students must take WTW 133 concurrently. BCom non-numeric stream students must take WTW 183 concurrently

Contact time: 4 lpw 1 dpw 1 ppw Foundation Course

Period of presentation: Semester 1

Language of tuition: English

Credits: 8

Module content:

Descriptive statistics – Univariate:

The role of Statistics, various types of data. Sampling, probability and non-probability sampling techniques and the collection of data. Frequency, relative and cumulative distributions and graphical representations. Additional concepts relating to data processing: sigma notation, factorial notation, sequences and series. Descriptive measures of location, dispersion and symmetry. Exploratory data analysis.

Probability:

Introductory probability theory and applications. Set theory and probability laws. Introduction to random variables. Assigning probabilities, probability distributions, expected value and variance in general. Specific discrete probability distributions (Uniform, Binomial).

Identification, use, evaluation and interpretation of statistical computer packages and statistical techniques.

WST 143 Mathematical statistics 143

Academic organisation: Statistics

Prerequisite: BSc and BCom numeric stream students: WST 133 and WTW 133 and must be taken concurrently with WTW 143, or BCom non-numeric stream students: WST 133 and WTW 183

Contact time: 4 lpw 1 dpw 1 ppw Foundation Course

Period of presentation: Semester 2

Language of tuition: English

Credits: 8

Module content:

Probability and inference:

Probability theory and theoretical distributions for continuous random variables (Uniform, Normal and t). Sampling distributions (means and proportions). Estimation theory and hypothesis testing of sampling averages and proportions (one- and two-sample cases).

Optimisation techniques with economic applications:

Applications of differentiation in statistic and economic related problems. Integration and Integration by parts. Applications of integration in statistic and economic related problems. Systems of equations in equilibrium. The area under a curve and applications of definite integrals in Statistics and Economics.

Identification, use, evaluation and interpretation of statistical computer packages and statistical techniques.

WST 153 Mathematical statistics 153

Academic organisation: Statistics

Prerequisite: WST 133 and WST 143 and WTW 143. Must be taken concurrently with WTW 153

Contact time: 1 ppw 4 lpw 1 dpw Foundation Course

Period of presentation: Semester 1

Language of tuition: English

Credits: 8

Module content:

Probability distributions:

Introductory distribution theory and special statistical distributions (Binomial, Geometric, Hypergeometric, Poisson, Uniform, Normal, Gamma). Generating functions and moments. Bivariate probability distributions.

Identification, use, evaluation and interpretation of statistical computer packages and statistical techniques.

WST 211 Mathematical statistics 211**Academic organisation:** Statistics**Prerequisite:** WST 111, WST 121, WTW 114 GS, WTW 126 GS and WTW 128 GS**Contact time:** 2 ppw 4 lpw**Period of presentation:** Semester 1**Language of tuition:** Both Afr and Eng**Credits:** 24**Module content:**

Set theory. Probability measure functions. Random variables. Distribution functions. Probability mass functions. Density functions. Expected values. Moments. Moment generating functions. Special probability distributions: Bernoulli, binomial, hypergeometric, geometric, negative binomial, Poisson, Poisson process, discrete uniform, uniform, gamma exponential, Weibull, Pareto, normal. Joint distributions: Multinomial, extended hypergeometric, joint continuous distributions. Marginal distributions. Independent random variables. Conditional distributions. Covariance, correlation. Conditional expected values. Transformation of random variables: Convolution formula. Order statistics. Stochastic convergence: Convergence in distribution. Central limit theorem. Practical applications. Practical statistical modelling and analysis using statistical computer packages and the interpretation of the output.

WST 221 Mathematical statistics 221**Academic organisation:** Statistics**Prerequisite:** WST 211 GS**Contact time:** 2 ppw 4 lpw**Period of presentation:** Semester 2**Language of tuition:** Both Afr and Eng**Credits:** 24**Module content:**

Stochastic convergence: Asymptotic normal distributions, convergence in probability. Statistics and sampling distributions: Chi-squared distribution. Distribution of the sample mean and sample variance for random samples from a normal population. T-distribution. F-distribution. Beta distribution. Point estimation: Method of moments. Maximum likelihood estimation. Unbiased estimators. Uniform minimum variance unbiased estimators. Cramer-Rao inequality. Efficiency. Consistency. Asymptotic relative efficiency.

Bayes estimators. Sufficient statistics. Completeness. The exponential class. Confidence intervals. Test of statistical hypotheses. Reliability and survival distributions. Practical applications. Practical statistical modelling and analysis using statistical computer packages and the interpretation of the output.

Alphabetical list of modules offered by the Faculty of Natural and Agricultural Sciences
BIF 311 Bioinformatics 311**Academic organisation:** Biochemistry**Prerequisite:** WTW114 OR WTW134 and BME120 and GTS251 or TDH**Contact time:** 1 ppw 2 lpw**Period of presentation:** Semester 1**Language of tuition:** English**Credits:** 18**Module content:**

Concepts in biological sequence analysis. Biological data structures. Deriving and using scoring matrices. Theory and application of sequence alignment algorithms. Nucleic acid

feature analysis and prediction methods. Protein feature analysis and prediction methods. Pattern recognition. Protein structure prediction concepts and methods. Intermolecular interaction and biological pathway analysis. Introductory microarray data analysis. Phylogenomics. Common algorithms in bioinformatics. Introductory statistics for bioinformatics. Programming for bioinformatics.

BOT 161 Plant biology 161

Academic organisation: Botany

Prerequisite: MLB 111 GS

Contact time: 2 lpw fortnightly practicals

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 8

Module content:

Basic plant structure and function; introductory plant taxonomy and plant systematics; principles of plant molecular biology and biotechnology; adaptation of plants to stress; medicinal compounds from plants; basic principles of plant ecology and their application in natural resource management.

CMY 117 General chemistry 117

Academic organisation: Chemistry

Prerequisite: Refer to Regulation 1.2

Contact time: 1 ppw 4 lpw

Period of presentation: Semester 1

Language of tuition: Double Medium

Credits: 16

Module content:

Theory: General introduction to inorganic and analytical chemistry. Nomenclature of inorganic ions and compounds, stoichiometric calculations concerning chemical reactions, redox reactions, solubilities, atomic structure, periodicity. Inorganic and physical chemistry. Molecular structure and chemical bonding using the VSEPR models. Chemical equilibrium, acids and bases, buffers, precipitation.

CMY 127 General chemistry 127

Academic organisation: Chemistry

Prerequisite: Natural and Agricultural Sciences students: CMY 117 GS

Health Sciences students: none

Contact time: 1 ppw 4 lpw

Period of presentation: Semester 2

Language of tuition: Double Medium

Credits: 16

Module content:

Theory: General physical-analytical chemistry: Physical behaviour of gases, liquids and solids, intermolecular forces, solutions: Organic chemistry: Structure (bonding), nomenclature, isomerism, introductory stereochemistry, introduction to chemical reactions and chemical properties of organic compounds and biological compounds, i.e. carbohydrates, lipids and aminoacids. Practical: Molecular structure (model building), synthesis and properties of simple organic compounds.

CMY 133 Chemistry 133

Academic organisation: Chemistry

Prerequisite: As for BSc Four-year programme

Contact time: 2 lpw 3 dpw Fortnightly practicals Foundation course

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 8

Module content:

The field of Chemistry – an overview; Mathematics in Chemistry; atomic theory: historical overview; atoms, molecules and ions; relative atomic mass; electronic structure of atoms; the periodic table; periodicity; chemical bonding.

CMY 143 Chemistry 143

Academic organisation: Chemistry

Prerequisite: CMY 133

Contact time: 2 lpw 3 dpw Fortnightly practicals Foundation course

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 8

Module content:

Bonding and molecular geometry: VSEPR theory; bonding and organic compounds (structural formulas, classification and nomenclature); matter and its properties; mole concept; reaction stoichiometry; reactions in aqueous solutions: precipitation, acid base and redox.

CMY 154 Chemistry 154

Academic organisation: Chemistry

Contact time: 3 lpw 2 tpw Fortnightly practicals Foundation course

Period of presentation: Semester 1

Language of tuition: English

Credits:

Module content:

Chemical equilibrium; acid and base equilibria; applications of aqueous equilibria: buffers and solubility; Introduction to electrochemistry; introduction to thermochemistry and thermodynamics; Introduction to electrochemistryorganic chemistry: hybridisation, isomers (structural, geometrical and conformational), reactions (substitution, addition and elimination), introduction to reaction mechanisms.

ENV 101 Introduction to environmental sciences 101

Academic organisation: Geography, Geoinformatics and Meteorology

Contact time: 3 lpw

Period of presentation: Quarter 1

Language of tuition: English

Credits: 8

Module content:

Introducing the basic concepts and interrelationships required to understand the complexity of natural environmental problems, physical and human environment, human induced environmental problems, the ways in which the natural environment affects human society and biodiversity, an introduction to major environmental issues in Southern Africa and sustainable development in the context of environmental issues.

GGY 156 Aspects of human geography 156

Academic organisation: Geography, Geoinformatics and Meteorology

Contact time: 3 lpw 1 tpw

Period of presentation: Quarter 2

Language of tuition: English

Credits: 6

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.

GGY 166 Southern African geomorphology 166

Academic organisation: Geography, Geoinformatics and Meteorology

Contact time: 4 lpw

Period of presentation: Quarter 3

Language of tuition: English

Credits: 8

Module content:

Investigating southern African landscapes and placing them in a theoretical and global context. The geomorphological evolution of southern Africa. Introduction to the concepts of Geomorphology and its relationships with other physical sciences (e.g. meteorology, climatology, geology, hydrology and biology). The processes and controls of landform and landscape evolution. Tutorial exercises cover basic techniques of geomorphological analysis, and topical issues in Geomorphology.

GGY 283 Introductory geographic information systems 283

Academic organisation: Geography, Geoinformatics and Meteorology

Contact time: 2 lpw 1 ppw

Period of presentation: Semester 1

Language of tuition: English

Credits: 12

Module content:

*This is a closed module, only available to students studying [BT&RP] (12132022), [BSc(Arch)] (12132002), [BSc(LArch)] (12132004), BSc Meteorology (02133312), BSc Geoinformatics (02133383), BSc Environmental Science (02133361), BSc Earth Sciences (02133012), BSc Geography (02133385), BEd Further Education and Training (General) (09133040), BSecEdSci (02135001), BA (01130001) or as approved by the Head of Department. The content of this module is the same as GIS 221 and students are not allowed to earn credits for both GGY 283 and GIS 221. 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.

GIS 220 Geographic data analysis 220

Academic organisation: Geography, Geoinformatics and Meteorology

Contact time: 1 ppw 3 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 12

Module content:

The nature of geographical data and measurement. 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.

GIS 310 Geographic information systems 310

Academic organisation: Geography, Geoinformatics and Meteorology

Prerequisite: GGY 283 or GIS 221

Contact time: 1 ppw 3 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 24

Module content:

Advanced theory and practice of Geographic Information Systems; GIS applications; design and implementation of GIS applications.

GIS 320 Spatial analysis 320

Academic organisation: Geography, Geoinformatics and Meteorology

Prerequisite: GIS 310 or TDH

Contact time: 1 ppw 3 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 24

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.

GLY 155 Introduction to geology 155

Academic organisation: Geology

Prerequisite: Refer to Regulation 1.2

Contact time: 4 lpw 1 ppw

Period of presentation: Semester 1

Language of tuition: English

Credits: 16

Module content:

Solar system; structure of solid matter; minerals and rocks; introduction to symmetry and crystallography; important minerals and solid solutions; rock cycle; classification of rocks. External geological processes (gravity, water, wind, sea, ice) and their products (including geomorphology). Internal structure of the earth. The dynamic earth – volcanism, earthquakes, mountain building – the theory of plate tectonics. Geological processes (magmatism, metamorphism, sedimentology, structural geology) in a plate tectonic context. Geological maps and mineral and rock specimens.

GLY 161 Historical geology 161

Academic organisation: Geology

Prerequisite: GLY 151 GS and GLY 152 GS

Contact time: 1 ppw 4 lpw

Period of presentation: Quarter 4

Language of tuition: English

Credits: 8

Module content:

Principles of stratigraphy and stratigraphic nomenclature; geological dating and international and South African time scales; Africa framework and tectonic elements of South Africa; introduction to depositional environments. Overview of the historical geology of South Africa, from the Archaean to the present: major stratigraphic units, intrusions and tectonic/metamorphic events - their rock types, fossil contents, genesis and economic commodities. Principles of palaeontology and short description of major fossil groups: fossil forms, ecology and geological meaning. Geological maps and profiles; rock samples.

GLY 162 Environmental and hazard geology 162

Academic organisation: Geology

Prerequisite: Refer to Regulation 1.2

Contact time: 4 lpw 1 ppw

Period of presentation: Quarter 3

Language of tuition: English

Credits: 8

Module content:

Hazardous exogenic and endogenic geological processes and their influence on the human environment; impact of human activities on the geological environment; natural resource utilisation including materials for construction; natural and mine-induced seismicity; waste disposal; groundwater and environmental pollution. Geological maps; geological profiles; rock specimens; fossil specimens.

GMA 220 Remote sensing 220

Academic organisation: Geography, Geoinformatics and Meteorology

Contact time: 1 ppw 3 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 16

Module content:

This module will provide a thorough introduction to the basic scientific principles involved in remote sensing, and some of the applications to studies of the Earth's surface. This includes examining the basic physics of electromagnetic radiation and the complex interactions of radiation with the surface and atmosphere (i.e. spectral signatures). In addition, basic concepts of photogrammetry will be discussed. The theoretical background laid out in the first half of the module will provide the tools for examining various remote sensing applications using data obtained in different parts of the electromagnetic spectrum. The applications will include uses of satellite remote sensing data for mapping and monitoring vegetation, soils and minerals, snow and ice, water resources and quality, and urban landscapes. The laboratory section will include hands-on experience with various satellite image data sets.

GMC 110 Cartography 110

Academic organisation: Geography, Geoinformatics and Meteorology

Contact time: 1 ppw 3 lpw

Period of presentation: Semester 1

Language of tuition: Double Medium

Credits: 12

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).

GTS 161 Introductory genetics 161

Academic organisation: Genetics

Prerequisite: MLB 111 GS

Contact time: 2 lpw fortnightly practicals

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 8

Module content:

Chromosomes and cell division. Principles of Mendelian inheritance: locus and alleles, dominance interactions and epistasis. Probability studies. Sex determination and sex linked traits. Pedigree analysis. Extranuclear inheritance. Genetic linkage and chromosome mapping. Chromosome variation.

GTS 251 Molecular genetics 251

Academic organisation: Genetics

Prerequisite: GTS 161 GS

Contact time: 2 lpw fortnightly practicals

Period of presentation: Semester 1

Language of tuition: English

Credits: 12

Module content:

Chemical nature of DNA Replication, Transcription, RNA processing and translation. Control of gene expression in prokaryotes and eukaryotes. Recombinant DNA technology and its applications in gene analysis and manipulation.

GTS 261 Genetic diversity and evolution 261

Academic organisation: Genetics

Prerequisite: GTS 251 GS

Contact time: 2 lpw fortnightly practicals

Period of presentation: Semester 2

Language of tuition: English

Credits: 12

Module content:

Chromosome structure and transposable elements. Mutation and DNA repair. Genomics and proteomics. Organelle genomes. Introduction to genetic analysis of populations; allele and genotypic frequencies, Hardy Weinberg Law, its extensions and implications for different mating systems. Introduction to quantitative and evolutionary genetics.

GTS 354 Genome evolution and phylogenetics 354

Academic organisation: Genetics

Prerequisite: GTS 251 GS and GTS 261 GS

Contact time: 2 lpw 1ppw

Period of presentation: Semester 1

Language of tuition: English

Credits: 18

Module content:

Mechanisms involved in the evolution of genomes. Comparison of the molecular organisation of viral, archaea, eubacterial and eukaryotic genomes. Genome project design, DNA sequencing methods and annotation. Molecular evolution, Phylogenetic inference methods. Applications of phylogenetics and contemporary genome research.

GTS 366 Plant genetics and biotechnology 366

Academic organisation: Genetics

Prerequisite: GTS 251 GS and GTS 261 GS or TDH and GTS 351 and GTS 352 are recommended

Contact time: 1 ppw 2 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 18

Module content:

Plant genetic resources and genetic systems. Plant genome organisation and evolution. Control of gene expression in plants: cis and trans regulation, mRNA stability, gene silencing and RNA signaling, regulation of cytoplasmic genes, light/dark regulation, hormonal control and signal transduction during defense. Protein processing. Developmental genetics: seed/embryo development, control of vascular development and flowering. Genetics of male sterility and self-incompatibility. Plant biotechnology, tissue and cell cultures, plant transformation and regeneration.

GTS 367 Population and evolutionary genetics 367

Academic organisation: Genetics

Prerequisite: GTS 251 GS and GTS 261 GS or TDH

Contact time: 2 lpw 1 ppw

Period of presentation: Semester 2

Language of tuition: English

Credits: 18

Module content:

Genetic and phenotypic variation. Organisation of genetic variation. Random genetic drift. Mutation and neutral theory. Darwinian selection. Inbreeding, population subdivision and migration. Evolutionary quantitative genetics. Population genomics. Human population genetics. Levels of selection and individuality. Arms races and irreversibility. Complexity. Applied evolution.

LST 133 Language, life and study skills 133

Academic organisation: Natural and Agricultural Sciences Dean's Office

Prerequisite: As for Four-year programme

Contact time: 1 lpw 3 dpw Foundation Course

Period of presentation: Semester 1

Language of tuition: English

Credits: 8

Module content:

In this module students use different information and time management strategies, build academic vocabulary, revise basic grammar concepts and dictionary skills, examine learning styles, memory and note-taking techniques, practise academic reading skills and explore basic research and referencing techniques, learn how to use discourse markers and construct definitions, and are introduced to paragraph writing. The work is set in the context of the students' field of study.

LST 143 Language, life and study skills 133

Academic organisation: Natural and Agricultural Sciences Dean's Office

Prerequisite: LST 133

Contact time: 1 lpw 3 dpw Foundation Course

Period of presentation: Semester 2

Language of tuition: English

Credits: 8

Module content:

In this module students learn how to interpret and use visual literacy conventions. Students write more advance paragraphs, and also learn how to structure academic writing, how to refine their use of discourse markers and referencing techniques and how to structure their own academic arguments. Students' writing is expected to be rational, clear and concise. As a final assignment all aspects of the LST 133 and LST 143 modules are combined in a research assignment. In this project, students work in writing teams to produce a chapter on a career and to present an oral presentation of aspects of the chapter. The work is set in the context of the students' field of study.

MBY 161 Introduction to microbiology 161

Academic organisation: Microbiology and Plant Pathology

Prerequisite: MLB 111 GS

Contact time: 1 ppw 2 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 8

Module content:

The module will introduce the student to the field of Microbiology. Basic Microbiological aspects that will be covered include introduction into the diversity of the microbial world

(bacteria, archaea, eukaryotic microorganisms and viruses), basic principles of cell structure and function, microbial nutrition and microbial growth and growth control. Applications in Microbiology will be illustrated by specific examples i.e. bioremediation, animal-microbial symbiosis, plant-microbial symbiosis and the use of microorganisms in industrial microbiology. Wastewater treatment, microbial diseases and food will be introduced using specific examples.

MBY 251 Bacteriology 251

Academic organisation: Microbiology and Plant Pathology

Prerequisite: MBY 161 GS

Contact time: 1 ppw 2 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 12

Module content:

Growth, replication and survival of bacteria, Energy sources, harvesting from light versus oxidation, regulation of catabolic pathways, chemotaxis. Nitrogen metabolism, iron-scavenging. Alternative electron acceptors: denitrification, sulphate reduction, methanogenesis. Bacterial evolution, systematic and genomics. Biodiversity; bacteria occurring in the natural environment (soil, water and air), associated with humans, animals, plants, and those of importance in foods and in the water industry.

MBY 261 Mycology 261

Academic organisation: Microbiology and Plant Pathology

Prerequisite: MBY 161

Contact time: 1 ppw 2 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 12

Module content:

Organisation and molecular architecture of fungal thalli, chemistry of the fungal cell. Mechanisms, quantification, regulation of and chemical and physiological requirements for growth, nutrient acquisition, primary metabolism; secondary metabolism; regulation of metabolism; mating and meiosis; spore development; spore dormancy, dispersal and germination. Classes of antifungal agents, cellular targets for inhibition and killing of cells. Fungi as saprobes in soil, air, plant, aquatic and marine ecosystems; role of fungi as decomposers and in the deterioration of materials; fungi as predators and parasites; mycoses, mycetisms and mycotoxicoses; fungi as symbionts of plants, insects and animals. Applications of fungi in biotechnology.

MLB 111 Molecular and cell biology 111

Academic organisation: Genetics

Prerequisite: Refer to Regulation 1.2

Contact time: 1 ppw 4 lpw

Period of presentation: Semester 1

Language of tuition: Double Medium

Credits: 16

Module content:

Introductory study of the ultra structure, function and composition of representative cells and cell components. General principles of cell metabolism, molecular genetics, cell growth, cell division and differentiation.

MLB 133 Molecular and cell biology 133

Academic organisation: Plant Science

Prerequisite: As for BSc Four-year programme

Contact time: 2 dpw 2 lpw 2 ppw Foundation Course

Period of presentation: Semester 1

Language of tuition: English

Credits: 8

Module content:

The scientific method, the meaning of life, principles of microscopy, introduction to taxonomy and systematics, introductory study of the structure, function and composition of akaryotes, HIV/ Aids, the immune system and other health issues, ecosystems and human interference.

MLB 143 Molecular and cell biology 143

Academic organisation: Plant Science

Prerequisite: MLB 133

Contact time: 2 dpw 2 lpw 2 ppw Foundation Course

Period of presentation: Semester 2

Language of tuition: English

Credits: 8

Module content:

Chemistry of the cell, introduction to the structure, function and composition of prokaryotic and eukaryotic cells, energy and cellular metabolism, photosynthesis

MLB 153 Molecular and cell biology 153

Academic organisation: Genetics

Prerequisite: MLB 143

Contact time: 2 lpw 2 ppw 2 tpw Foundation Course

Period of presentation: Semester 1

Language of tuition: English

Credits: 8

Module content:

Cell growth and cell division, Mendelian and human genetics, principles of molecular genetics, principles of recombinant DNA technology and its application.

PHY 114 First course in physics 114

Academic organisation: Physics

Prerequisite: Refer to Regulation 1.2

Contact time: 1 dpw 4 lpw 1 ppw

Period of presentation: Semester 1

Language of tuition: Double Medium

Credits: 16

Module content:

SI-units. Significant figures. Waves: intensity, superposition, interference, standing waves, resonance, beats, Doppler. Geometrical optics: Reflection, refraction, mirrors, thin lenses, instruments. Physical optics: Young-interference, coherence, diffraction, polarisation. Hydrostatics and dynamics: density, pressure, Archimedes' principle, continuity, Bernoulli. Heat: temperature, specific heat, expansion, heat transfer. Vectors. Kinematics of a point: Relative, projectile, and circular motion. Dynamics: Newton's laws, friction. Work: point masses, gasses (ideal gas law), gravitation, spring, power. Kinetic energy: Conservative forces, gravitation, spring. Conservation of energy. Conservation of momentum. Impulse and collisions. System of particles: Centre of mass, Newton's laws. Rotation: torque, conservation of angular momentum, equilibrium, centre of gravity.

PHY 124 First course in physics 124**Academic organisation:** Physics**Prerequisite:** WTW 114 GS and PHY 114 GS**Contact time:** 1 dpw 4 lpw 1 ppw**Period of presentation:** Semester 2**Language of tuition:** Double Medium**Credits:** 16**Module content:**

Simple harmonic motion and pendulums. Coulomb's law. Electric field: dipoles, Gauss' law. Electric potential. Capacitance. Electric currents: resistance, resistivity, Ohm's law, energy, power, emf, RC-circuits. Magnetic Field: Hall-effect, Bio-Savart. Faraday's and Lenz's laws. Oscillations: LR-circuits. Alternating current: RLC-circuits, power, transformers. Introductory concepts to modern physics. Nuclear physics: Radioactivity.

PHY 133 Physics 133**Academic organisation:** Physics**Prerequisite:** As for BSc Four-year programme**Contact time:** 2 dpw 2 lpw 2 ppw Foundation Course**Period of presentation:** Semester 1**Language of tuition:** English**Credits:** 8**Module content:**

Heat: temperature and scales, the kinetic molecular model, work, energy and heat, calorimetry, specific heat, expansion, heat transfer. Measurements: SI-units, measuring error and uncertainty, (graphs), significant figures, mathematical modelling. Geometrical optics: reflection, refraction, dispersion, mirrors, thin lenses, instruments.

PHY 143 Physics 143**Academic organisation:** Physics**Prerequisite:** PHY 133**Contact time:** 2 dpw 2 lpw 2 ppw Foundation Course**Period of presentation:** Semester 2**Language of tuition:** English**Credits:** 8**Module content:**

Vectors. Kinematics of a point: relative motion, projectile, circular motion. Dynamics: Newton's laws, friction. Work: point masses, ideal gas law, springs, power. Energy: kinetic energy, potential energy, conservative forces, spring, conservation of mechanical energy. Hydrostatics and dynamics: density, pressure, Archimedes' law, continuity, Bernoulli.

PHY 153 Physics 153**Academic organisation:** Physics**Prerequisite:** PHY 143**Contact time:** 2 dpw 2 lpw 2 ppw Foundation Course**Period of presentation:** Semester 1**Language of tuition:** English**Credits:** 8**Module content:**

System of particles: centre of mass, Newton's laws. Rotation: torque, conservation of momentum, impulse and collision, conservation of angular momentum, equilibrium, centre of gravity. Oscillations. Waves: sound, intensity, superposition, interference, standing waves, resonance, beats, Doppler effect. Physical optics: Young-interference, coherence, thin layers, diffraction, gratings, polarisation.

WTW 114 Calculus 114

Academic organisation: Mathematics and Applied Mathematics

Prerequisite: Refer to Regulation 1.2

Contact time: 4 lpw 1 tpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 16

Module content:

*This module serves as preparation for students majoring in Mathematics (including all students who intend to enrol for WTW 218 and WTW 220). Students will not be credited for more than one of the following modules for their degree: WTW 114, WTW 158, WTW 134.

Functions, limits and continuity. Differential calculus of single variable functions, rate of change, graph sketching, applications. The mean value theorem, the rule of L'Hospital. Definite and indefinite integrals, evaluating definite integrals using anti-derivatives, the substitution rule.

WTW 115 Discrete structures 115

Academic organisation: Mathematics and Applied Mathematics

Prerequisite: Refer to Regulation 1.2

Contact time: 1 tpw 2 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 8

Module content:

Propositional logic: truth tables, logical equivalence, implication, arguments. Mathematical induction and well-ordering principle. Introduction to set theory. Counting techniques: elementary probability, multiplication and addition rules, permutations and combinations, binomial theorem, inclusion-exclusion rule.

WTW 123 Numerical analysis 123

Academic organisation: Mathematics and Applied Mathematics

Prerequisite: WTW 114 GS

Contact time: 1 tpw 2 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 8

Module content:

Non-linear equations, numerical integration, initial value problems for differential equations, systems of linear equations. Algorithms for elementary numerical techniques are derived and implemented in computer programmes. Error estimates and convergence results are treated.

WTW 126 Linear algebra 126

Academic organisation: Mathematics and Applied Mathematics

Prerequisite: Refer to Regulation 1.2

Contact time: 1 tpw 2 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 8

Module content:

*This module serves as preparation for students majoring in Mathematics (including all students who intend to enrol for WTW 211).

Vector algebra with applications, matrix algebra, systems of linear equations, the vector space \mathbb{R}^n , bases, determinants. Mathematical induction. Complex numbers and factorisation of polynomials.

WTW 128 Calculus 128**Academic organisation:** Mathematics and Applied Mathematics**Prerequisite:** WTW 114 GS**Contact time** 2 lpw 1 tpw**Period of presentation:** Semester 2**Language of tuition:** Both Afr and Eng**Credits:** 8**Module content:**

*This module serves as preparation for students majoring in Mathematics (including all students who intend to enrol for WTW 218 and WTW 220).

Integration techniques. Applications of integration. The formal definition of a limit. The fundamental theorem of Calculus and applications. Parametric and polar equations. Vector functions of one variable, quadratic curves. Introduction to functions of several variables and partial derivatives.

WTW 133 Precalculus 133**Academic organisation:** Mathematics and Applied Mathematics**Prerequisite:** As for BSc Four-year programme**Contact time:** 1 ppw 1 tpw 5 lpw Foundation Course**Period of presentation:** Semester 1**Language of tuition:** English**Credits:** 8**Module content:**

Real numbers, elementary set notation, exponents and radicals. Algebraic expressions, fractional expressions, linear and quadratic equations, inequalities. Coordinate geometry: lines, circles. Functions: definition, notation, piecewise defined functions, absolute value, domain and range, graphs, transformations of functions, symmetry, even and odd functions, combining functions, one-to-one functions and inverses, polynomial functions and zeros.

Sequences, summation notation, arithmetic, geometric sequences, infinite geometric series, annuities and instalments. Degrees and radians, unit circle, trigonometric functions, fundamental identities, trigonometric graphs, trigonometric identities, double-angle, half-angle formulae, inverse trigonometric functions, trigonometric equations, applications.

WTW 134 Mathematics 134**Academic organisation:** Mathematics and Applied Mathematics**Prerequisite:** Refer to Regulation 1.2**Contact time:** 1 tpw 4 lpw**Period of presentation:** Semester 1 or Semester 2**Language of tuition:** Both Afr and Eng**Credits:** 16**Module content:**

*Students will not be credited for more than one of the following modules for their degree: WTW 134, WTW 114, WTW 158. WTW 134 does not generally lead to admission to Mathematics at 200 level and is intended for students who require Mathematics at 100 level only. WTW 134 can also be taken in the second semester.

Functions, derivatives, interpretation of the derivative, rules of differentiation, applications of differentiation, integration, interpretation of the definite integral, applications of integration. Discrete probability, matrices, solutions of systems of equations. Markov chains.

WTW 143 Calculus 143

Academic organisation: Mathematics and Applied Mathematics

Prerequisite: WTW 133

Contact time: 1 ppw 1 tpw 4 lpw Foundation Course

Period of presentation: Semester 2

Language of tuition: English

Credits: 8

Module content:

Functions: exponential and logarithmic functions, natural exponential and logarithmic functions, exponential and logarithmic laws, exponential and logarithmic equations, compound interest. Limits: concept of a limit, finding limits numerically and graphically, finding limits algebraically, limit laws without proofs, squeeze theorem without proof, one-sided limits, infinite limits, limits at infinity, vertical, horizontal and slant asymptotes, substitution rule, continuity, laws for continuity without proofs. Differentiation: average and instantaneous change, definition of derivative, differentiation rules without proofs, derivatives of polynomials, chain rule for differentiation, derivatives of trigonometric, exponential and logarithmic functions, applications of differentiation: extreme values, critical numbers, monotone functions, first derivative test, optimisation.

WTW 152 Mathematical modelling 152

Academic organisation: Mathematics and Applied Mathematics

Prerequisite: Refer to Regulation 1.2

Contact time: 1 tpw 2 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 8

Module content:

Introduction to the modelling of dynamical processes using difference equations. Curve fitting. Introduction to linear programming. Matlab programming. Applications to real-life situations in, among others, finance, economics and ecology.

WTW 153 Calculus 153

Academic organisation: Mathematics and Applied Mathematics

Prerequisite: WTW 143

Contact time: 1 ppw 1 tpw 4 lpw Foundation Course

Period of presentation: Semester 1

Language of tuition: English

Credits: 8

Module content:

Rigorous treatment of limits and continuity. Differential calculus of a single variable with proofs and applications. The mean value theorem, the rule of L'Hospital. Upper and lower sums, definite and indefinite integrals, the fundamental theorem of Calculus, the mean value theorem for integrals, integration techniques, with some proofs.

WTW 211 Linear algebra 211

Academic organisation: Mathematics and Applied Mathematics

Prerequisite: WTW 126

Contact time: 1 tpw 2 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 12

Module content:

This is an introduction to linear algebra on R^n . Matrices and linear equations, linear combinations and spans, linear independence, subspaces, basis and dimension, eigenvalues, eigenvectors, similarity and diagonalisation of matrices, linear transformations.

WTW 218 Calculus 218

Academic organisation: Mathematics and Applied Mathematics

Prerequisite: WTW 114, WTW 126 and WTW 128

Contact time: 1 tpw 2 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 12

Module content:

Calculus of multivariable functions, directional derivatives. Extrema and Lagrange multipliers. Multiple integrals, polar, cylindrical and spherical coordinates.

WTW 285 Discrete structures 285

Academic organisation: Mathematics and Applied Mathematics

Prerequisite: WTW 115

Contact time: 1 tpw 2 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 12

Module content:

Setting up and solving recurrence relations. Equivalence and partial order relations. Graphs: paths, cycles, trees, isomorphism. Graph algorithms: Kruskal, Prim, Fleury. Finite state automata.

WTW 354 Financial engineering 354

Academic organisation: Mathematics and Applied Mathematics

Prerequisite: WST 211, WTW 211 and WTW 218

Contact time: 1 tpw 2 lpw

Period of presentation: Semester 1

Language of tuition: Double Medium

Credits: 18

Module content:

Mean variance portfolio theory. Market equilibrium models such as the capital asset pricing model. Factor models and arbitrage pricing theory. Measures of investment risk. Efficient market hypothesis. Stochastic models of security prices.

WTW 383 Numerical analysis 383

Academic organisation: Mathematics and Applied Mathematics

Prerequisite: WTW 114, WTW 128 and WTW 211

Contact time: 1 ppw 2 lpw

Period of presentation: Semester 2

Language of tuition: Double Medium

Credits: 18

Module content:

Direct methods for the numerical solution of systems of linear equations, pivoting strategies. Iterative methods for solving systems of linear equations and eigenvalue problems. Iterative methods for solving systems of nonlinear equations. Introduction to optimization. Algorithms for the considered numerical methods are derived and implemented in computer programmes. Complexity of computation is investigated. Error estimates and convergence results are proved.

WTW 389 Geometry 389

Academic organisation: Mathematics and Applied Mathematics

Prerequisite: WTW 211

Contact time: 1 tpw 2 lpw

Period of presentation: Semester 2

Language of tuition: Double Medium

Credits: 18

Module content:

Axiomatic development of neutral, Euclidean and hyperbolic geometry. Using models of geometries to show that the parallel postulate is independent of the other postulates of Euclid.

Alphabetical list of modules offered by the Faculty of Humanities

UNDERGRADUATE

ALL 110 Academic literacy 110

Academic organisation: Unit for Academic literacy

Contact time: 2 lpw 1 dpw 1 web-based period per week

Period of presentation: Semester 1

Language of tuition: English

Credits: 6

Module content:

By the end of this module students should be able to cope more confidently and competently with a variety of academic texts and the kinds of academic writing they are likely to be asked to do.

ALL 121 Academic literacy for Information Technology 121

Academic organisation: Unit for Academic literacy

Contact time: 2 lpw 2 dpw 1 web-based period per week

Period of presentation: Semester 2

Language of tuition: English

Credits: 6

Module content:

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

BPE 251 Business ethics 251

Academic organisation: Philosophy

Contact time: 2 lpw

Period of presentation: Quarter 2, 3 and 4

Language of tuition: Double Medium

Credits: 10

Module content:

What is meant by business ethics? Is it really necessary? This module attempts to provide adequate answers. Students are guided towards understanding the factors that influence their moral reasoning in the South African context. They are introduced to some of the macro-economical ethical issues that companies have to deal with. In terms of managing ethics in organisations, the focus is on the interface between corporate governance processes and the facilitation of ethical values within the workplace. Various stakeholder interests and the moral obligations these imply are discussed. The module also addresses the most common ethical problems in the workplace, and suggests strategies for managing ethics in organisations.

ENG 118 English for specific purposes 118

Academic organisation: English

Contact time: 2 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 12

Module content:

This module is intended to equip students with a thorough knowledge of English grammar and is particularly useful for those interested in a career in teaching, editing, document design or other forms of language practice.

FIL 110 Philosophy 110

Academic organisation: Philosophy

Contact time: 2 lpw 1 dpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 12

Module content:

Introduction to Philosophy

The two semester modules at first-year level introduce students to the four main subfields of Philosophy, namely epistemology and metaphysics, ethics and political philosophy. This module introduces students to two of these subfields. Students must contact the Department of Philosophy to ascertain which two subfields are covered in each semester as the choice may change from time to time due to availability of teaching staff. Students will become acquainted with the nature of philosophical reflection by exploring a number of classical philosophical themes in each subfield. Throughout the module there is an emphasis on developing those critical thinking, reading and writing skills that are required in Philosophy, while students become acquainted with the power of critique as critical judgment and discernment.

FIL 120 Philosophy 120

Academic organisation: Philosophy

Contact time: 2 lpw 1 dpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 12

Module content:

Introduction to Philosophy

The two semester modules at first-year level introduce students to the four main subfields of Philosophy, namely epistemology and metaphysics, ethics and political philosophy. This module introduces students to two of these subfields. Students must contact the Department of Philosophy to ascertain which two subfields are covered in each semester as the choice may change from time to time due to availability of teaching staff. Students will become acquainted with the nature of philosophical reflection by exploring a number of classical philosophical themes in each subfield. Throughout the module there is an emphasis on developing those critical thinking, reading and writing skills that are required in Philosophy, while students become acquainted with the power of critique as critical judgment and discernment.

FIL 210 Philosophy 210

Academic organisation: Philosophy

Prerequisite: At least one of FIL 110, 120

Contact time: 2 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

Modern and postmodern philosophy

This module offers a concise history of Western thinking from the Renaissance to the late modern (postmodern) era in which we now live. The following are examples of themes that may be explored: the Renaissance, the Reformation, the Scientific

Revolution (Copernicus, Kepler, Galileo, Newton, Bacon, Descartes), the foundations of the modern world view, the triumph of secularism, the paradox of modernity and the changing image of the human (from Copernicus through Freud), the self-critique of the modern mind (Locke, Hume, Kant, Hegel), the epistemology of the Renaissance and Enlightenment (from Descartes to Kant), conflicting streams of culture (temperaments): Enlightenment vs. Romanticism, the significance of Nietzsche, Existentialism and Nihilism, the postmodern mind and its challenges to the contemporary intellectual and cultural milieu the role and impact of science on philosophical thought in the Anglo-American world of the 20th century.

FIL 220 Philosophy 220

Academic organisation: Philosophy

Prerequisite: At least one of FIL 110, 120

Contact time: 2 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

Social and political philosophy

In this module the ways in which human reality is reflected on in practical philosophy, are examined. Both the analytical, interpretative perspective and the normative perspective are covered. This is done with the aid of a selection of key themes and texts from the history of philosophy, but with special attention to their contemporary relevance. Among the themes that may be discussed are justice, power, ideology, culture, the relation between individuals and society, the social contract, judgment, the law, recognition, etc. Among the authors that may be discussed are Plato, Aristotle, Augustine, Aquinas, Machiavelli, Hobbes, Locke, Kant, Hegel, Mill, Sidgwick, Nietzsche, Weber, Mead, Arendt, Habermas, Rawls, Ricoeur, Walzer, Honneth, and others.

FIL 310 Philosophy 310

Academic organisation: Philosophy

Prerequisite: At least three of FIL 110, 120, 210, 220

Contact time: 2 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 30

Module content:

Philosophical anthropology and contemporary metaphysics

This module focuses on the quest to understand the nature of humankind. Themes covered may include: is a human more than the sum total of its properties?; are humans determined by internal and external circumstances or do they have the ability to transcend it?; the relation between spirit, psyche and body- the mind-body problem; the relation between consciousness, self-consciousness and the human unconscious; the question on the meaning of life, the nature of personal identity; the issue of free will.

FIL 320 Philosophy 320

Academic organisation: Philosophy

Prerequisite: All of FIL 110, 120, 210, 220, and 310

Contact time: 2 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 30

Module content:

Philosophical hermeneutics

This module deals with philosophical perspectives on the hermeneutical problem (the problem of understanding and interpretation), with particular attention to contemporary thinkers such as Nietzsche, Heidegger, Gadamer, Ricoeur, Foucault and Derrida.

The focus is on themes such as the following:

- (1) Understanding as an ontological, universal human phenomenon. Within this context, contextualism is defined as the constitutive role of history and language in the process of Understanding, and implies the impossibility of a foundationalist, objectivist understanding of a so-called reality "in itself".
- (2) Refuting the objectivist position does not necessarily imply relativism. Both objectivism and relativism can and should be transcended by moving towards a position of perspectivism, which is further elaborated with reference to Nietzsche and Heidegger.
- (3) Specific problems with regard to text interpretation in the human sciences is dealt with, with special attention to the deconstructive reading of texts (Derrida).

FIL 355 Ethics 355

Academic organisation: Philosophy

Contact time: 2 lpw

Period of presentation: Quarter 3

Language of tuition: English

Credits: 15

Module content:

A general introduction to ethics. Important ethical theories. Applied ethics (issues in e.g. occupational ethics, medical ethics, environmental ethics, public service, etc.)

This module offers a critical introduction to normative moral and political philosophical theories that have been most influential in the social and applied sciences. It deals with the formulation of rules, norms, principles and ideals that regulate such diverse moral and political phenomena as freedom, equality, justice, rights, redistribution, recognition, the individual vs. the community, oppression, power, legitimacy, pluralism and difference, all of which are central to current social debates in South Africa. Examples of theories and theorists that might be dealt with are utilitarianism (Bentham), distributive justice (Rawls), communitarianism (Sandel), discourse ethics and distributive democracy (Habermas), the politics of difference (Young) and multiculturalism. The module provides a critical overview of the key concepts of these theories as well as some of the ways in which they have been employed in the social and applied sciences.

IMG 110 Introduction to history of music 110

Academic organisation: Music

Contact time: 2 lpw

Period of presentation: Year

Language of tuition: Double Medium

Credits: 10

Module content:

*Closed – requires departmental selection

Know and understand the elements of music and apply this to the history of western and African music, both classical and popular.

IMG 210 Introduction to history of music 210

Academic organisation: Music

Contact time: 3 lpw

Period of presentation: Year

Language of tuition: Double Medium

Credits: 15

Module content:

*Closed – requires departmental selection

Know and understand the characteristics of music with special reference to 20th century genres, western and African, classical and popular.

KRM 110 Criminology 110

Academic organisation: Social Work and Criminology

Contact time: 2 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 12

Module content:

Part 1: *Fundamental criminology*

Introduction to criminology, definition of crime, crime tendencies, classical and positivistic explanations of crime.

Part 2: *Violent crime*

A brief analysis of causes, consequences and mechanisms to prevent and reduce violent crime within a South African context. Define violent crime in terms of interpersonal violence, homicide, violent crimes within the criminal justice system and property-related violent crimes.

KRM 120 Criminology 120

Academic organisation: Social Work and Criminology

Prerequisite: KRM 110

Contact time: 2 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 12

Module content:

Part 1: Penology

In Penology attention is given to the criminal justice system to emphasise the importance of using an integrated approach in the handling of offenders. The impact of overpopulation in prisons is critically evaluated. Attention is also given to awaiting trial offenders, the importance of community-based sentences as well as the re-integration of offenders in the community.

Part 2: Crime prevention and control

Responsibilities of the police and the community in crime prevention and control. Primary, secondary and tertiary crime prevention, crime prevention and reduction in South Africa.

KRM 210 Criminology 210

Academic organisation: Social Work and Criminology

Prerequisite: KRM 110,120

Contact time: 2 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

Part 1: Forensic criminalistics

Crime investigation; obtaining information through communication; post-mortem examinations; serological examinations; fingerprints.

Part 2: Youth misbehaviour

Influence of the family, school and peer group; gang behaviour; use of drugs; theoretical explanations, as well as prevention and control of youth misbehaviour.

KRM 220 Criminology 220

Academic organisation: Social Work and Criminology

Prerequisite: KRM 110,120, 210

Contact time: 2 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

Part 1: Victimology

Scope of victimology, contemporary issues in victimology, position of the victim within the criminal justice system, victim-based legislation, restorative justice.

Part 2: Political offences

The state as offender; crime directed at the state; formal and informal suppression; riots; terrorism; assassination; treason.

KRM 310 Criminology 310

Academic organisation: Social Work and Criminology

Prerequisite: KRM 210, 220

Contact time: 2 lpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 30

Module content:

Part 1: Theories of crime

Theories explaining the causes and different aspects of crime.

Part 2: Psychocriminology

Nature of human behaviour; aggression and violence; mentally disordered offenders; sexual offences; bombings, arson, hostage taking.

KRM 320 Criminology 320

Academic organisation: Social Work and Criminology

Prerequisite: KRM 210, 220, 310

Contact time: 2 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 30

Module content:

Part 1: Female crime

Nature and extent of female crime; crimes committed by women; theoretical explanations.

Part 2: Contemporary criminology issues

Contemporary crime phenomena such as hate crimes, road rage, corruption, white-collar crimes, organised crime, ecological crime as well as the problems associated with contemporary crimes (e.g. babies behind bars and HIV/Aids) are addressed. In conjunction with this, attention is given to forensic report writing, preparation of children and youths to testify in court and restorative justice.

MCS 302 Music technology 302

Academic organisation: Music

Contact time: 2 lpw

Period of presentation: Year

Language of tuition: Double Medium

Credits: 15

Module content:

*Closed – requires departmental selection

A foundation of music technology tailored towards the educational needs of the musician.

MPE 170 Music education 170

Academic organisation: Music

Contact time: 2 lpw

Period of presentation: Year

Language of tuition: Double Medium

Credits: 10

Module content:

*Closed – requires departmental selection

Know and understand aspects of world music, entrepreneurship and music technology.

SLK 110 Psychology 110

Academic organisation: Psychology

Contact time: 2 lpw 2 dpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 12

Module content:

This module is a general orientation to psychology. An introduction is given to various theoretical approaches in psychology, and the development of psychology as a science is discussed. Selected themes from everyday life are explored and integrated with psychological principles. This module focuses on major personality theories. An introduction is given to various paradigmatic approaches in Psychology.

SLK 120 Psychology 120

Academic organisation: Psychology

Contact time: 2 lpw 2 d pw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 12

Module content:

This module introduces the student to a basic knowledge and understanding of the biological basis of human behaviour. The module addresses the key concepts and terminology related to the biological subsystem, the rules and principles guiding biological psychology, and identification of the interrelatedness of different biological systems and subsystems. In this module various cognitive processes are studied, including perception, memory, thinking, intelligence and creativity. Illustrations are given of various thinking processes, such as problem solving, critical, analytic and integrative thinking.

SLK 210 Psychology 210

Academic organisation: Psychology

Prerequisite: SLK 110, SLK 120(GS)

Contact time: 2 lpw 2 dpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

In this module human development from conception through adolescence to adulthood is discussed with reference to various psychological theories. Incorporated are the developmental changes related to cognitive, physical, emotional and social functioning of the individual and the context of work in adulthood. Traditional and contemporary theories of human development explaining and describing these stages are studied in order to address the key issues related to both childhood and adulthood.

SLK 220 Psychology 220

Academic organisation: Psychology

Prerequisite: SLK 110, SLK 120(GS) and RES 210 recommended

Contact time: 2 lpw 2 dpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 20

Module content:

This module is a social-psychological perspective on interpersonal and group processes. Themes that are covered include communication, pro-social behaviour, social influence and persuasion, political transformation, violence, and group behaviour.

SLK 310 Psychology 310

Academic organisation: Psychology

Prerequisite: SLK 210(GS), SLK 220(GS)

Contact time: 2 lpw 2 dpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 30

Module content:

Identification of abnormal behaviour in children based on knowledge of normal childhood development; introduction to the study of various models pertaining to abnormal behaviour; understanding and application of basic concepts in child psychopathology. This module also provides an introduction to psychopathology and symptomatology of adult abnormal behaviour. Terminology, definitions of abnormal behaviour, problems in diagnosis, labelling, and myths regarding abnormal behaviour are discussed. Neurosis as a specific mental disorder is studied critically from a multidimensional perspective, including intrapsychic, interpersonal and social-cultural explanations.

SLK 320 Psychology 320

Academic organisation: Psychology

Prerequisite: SLK 310(GS)

Contact time: 2 lpw 2 dpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 30

Module content:

This module deals with a community psychological perspective on human behaviour and psychological interventions and also critically explores the contribution of various perspectives in psychology. The module focuses on themes such as definitions of key concepts, principles and aims of community psychology, and the role of the community psychologist as well as the impact of earlier thought frameworks on contemporary perspectives. The implications of these ideas for practical initiatives focussed on mental health in communities, are discussed.

SOC 110 Sociology 110

Academic organisation: Sociology

Contact time: 3 lpw 1 tpw

Period of presentation: Semester 1

Language of tuition: Both Afr and Eng

Credits: 12

Module content:

Part 1: The individual and society

An introduction to sociology and the sociological paradigm.

Part 2: The sociology of institutions

A focus on the social dynamics of the institutions of society such as the family, the economy, religion, education, the polity and civil society.

SOC 120 Sociology 120

Academic organisation: Sociology

Contact time: 1 tpw 3 lpw

Period of presentation: Semester 2

Language of tuition: Both Afr and Eng

Credits: 12

Module content:

Part 1: Race, class and gender

The nature and dynamics of social inequality. Race, gender and class are the foci of the module. The South African reality in this regard is highlighted.

Part 2: Group dynamics diversity and social identity

Micro sociological theories and methods such as interaction process analysis, social impact analysis, situational analysis and communication flow analysis. The cultural processes of the formation of social identities and diversity will be introduced.

SOC 210 Sociology 210

Academic organisation: Sociology

Prerequisite: SOC 110(GS), SOC 120(GS)/SOC 121(GS)

Contact time: 1 tpw 3 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 20

Module content:

Part 1: Social change, development and globalisation

The study of societal change and development is fundamental to sociological analysis. Moreover the contemporary process of globalisation at a world level impacts on the process of change. This section will review some classical and contemporary debates on issues such as progress, modernisation, development and underdevelopment, dependency, post-development and globalisation.

Part 2: Households, family and gender

This section focuses on theories and issues relevant to the understanding of gender, households and family life at a general level but with a particular emphasis on the Southern African context. This part will address issues such as poverty, survival strategies of rural and urban households, domestic violence and its effects on family life.

SOC 220 Sociology 220

Academic organisation: Sociology

Prerequisite: SOC 110, SOC 120(GS)

Contact time: 1 tpw 3 lpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 20

Module content:

Part 1: Health, aids and society

Any infectious disease, its etiology and epidemiology should be understood in the historical and social context within which it exists. This part focuses on sociological arguments and explanations for the spread of infectious diseases including tuberculosis, malaria and HIV/Aids throughout the world but with particular emphasis on the third world. Students will be introduced to issues concerning health, illness, sexual behaviour, gender and age relations, racism, power and socio-economic inequality, all of which exert important effects on the spread and consequences of disease.

Part 2: Demography and population studies

The substantial increase in world population during the past century compounded key issues faced by contemporary societies. An interplay between demographic processes such as morbidity, mortality, fertility and mobility impact of the size a population and in

turn to an extent is shaped by the structure of a population as well as the cultural context of a society. Concerns such as food security, utilisation of natural resources, environmental impact and unemployment should be considered in conjunction with population processes. An awareness of demographic processes plays a key role in developing population policies and programmes to address key challenges societies face.

SOC 310 Sociology 310

Academic organisation: Sociology

Prerequisite: SOC 120, SOC 210(GS), SOC 220(GS)

Contact time: 1 tpw 3 lpw

Period of presentation: Semester 1

Language of tuition: English

Credits: 30

Module content:

Part 1: Rural and urban sociology

This section offers a sociological frame of reference for the analysis of rural and urban communities, with a specific focus on selected current issues, policies and strategies to address problem areas to manage rural and urban development.

Part 2: The sociology of social movements

Labour, nationalist and peasant movements are argued to have been supplanted by 'new' social movements during the 1960s concerned with gender, the environment, peace issues, and human rights for example. This section will debate the literature on 'old' and 'new' social movements and will assess the sociological character of a number of contemporary and historically relevant movements internationally.

SOC 320 Sociology 320

Academic organisation: Sociology

Prerequisite: SOC 210, SOC 220(GS), RES 320 concurrently recommended

Contact time: 3 lpw 1 tpw

Period of presentation: Semester 2

Language of tuition: English

Credits: 30

Module content:

Part 1: Social theory

Students are taught the work of a number of social theorists such as Marx, Engels, Durkheim, Giddens, Weber, Habermas and Foucault.

Part 2: The sociology of work and industry

The section addresses sociological approaches to the workplace. It will critically assess labour market policy and examine issues such as management practice, employment and unemployment, and discrimination and flexibility in the labour market in South Africa.

VAG 110 Akademiese geletterdheid 110

Academic organisation: Unit for Academic literacy

Contact time: 2 lpw 1 dpw

Period of presentation: Semester 1

Language of tuition: Afrikaans (**English-speaking**

Credits: 6

students enrol for ALL 110)

Module content:

Die volgende aspekte sal in die module aandag geniet: Strategieë om aantekeninge af te neem en opsommings te maak, akademiese woordeskatgebruik, doeltreffende wordeboekgebruik, om begrip te hê van die struktuur en uitbouing van akademiese tekste, leesstrategieë, uitgebreide en kritiese leesvaardighede, inleiding tot akademiese skryfkonvensies/-diskoers.

VIO 102 Visual design (1) 102

Academic organisation: Visual Arts

Prerequisite: 5 for Mathematics or WTW 114 or WTW 133 and 143

Contact time: 1 lpw 1 ppw

Period of presentation: Year

Language of tuition: Double Medium

Credits: 16

Module content:

*Only for students who specialise in BIS Multimedia

Introduction to elements and principles of design, typography and layout. Application of visual principles and techniques. Media characteristics. The design process.

VIO 202 Visual design (2) 202

Academic organisation: Visual Arts

Prerequisite: VIO 102

Contact time: 1 lpw 1 ppw 1 dpw

Period of presentation: Year

Language of tuition: Double Medium

Credits: 24

Module content:

*Requires VIO 102

*Only for students who specialise in BIS Multimedia

Visual analysis and interpretation. Design function and specific applications in the electronic environment. Aesthetic, functional and communicative evaluation of design.

VKK 111 Visual culture studies 111

Academic organisation: Visual Arts

Contact time: 3 lpw

Period of presentation: Semester 1

Language of tuition: Double Medium

Credits: 12

Module content:

Foundations of visual culture

This module introduces art and visual culture theory using a wide range of texts and ideas. The module gives students wide exposure to visual discourses and includes a variety of visual culture examples eg artworks, advertisements. These discourses may include: exploring what visual culture is; modes of analysis; introducing terminology such as ideology and myth; dealing with selected periods from history contextually; introducing cultural icons and themes from popular visual culture.

VKK 123 Visual culture studies 123

Academic organisation: Visual Arts

Contact time: 3 lpw

Period of presentation: Semester 2

Language of tuition: Double Medium

Credits: 12

Module content:

Design history

This module presents a chronology of the history of graphic and industrial design from the Industrial Revolution to the present with the aim of fostering an understanding of how historical events and cultural and ideological trends underpin the visual.

VKK 222 Visual culture studies 222

Academic organisation: Visual Arts

Prerequisite: VKK 123

Contact time: 2 lpw 1 dpw

Period of presentation: Semester 1

Language of tuition: Double Medium

Credits: 20

Module content:

Visual rhetoric and branding

This module highlights and investigates the mediated, rhetorical nature of communication design in various applications of type and image in contemporary design culture. In particular, the nature, construction, use and analysis of visual rhetoric are explored in advertising imagery, comics narrative design, film title sequence design and branding.