MODULE DESCRIPTIONS

ACCOUNTING 1

This module introduces students to the basic principles of accounting. The double- entry principle and accounting equation are addressed. In addition, students are introduced to different types of journal entries, ledger accounts and bank reconciliation statements. Different types of financial statements are also introduced.

BUSINESS LAW AND COMPLIANCE

This module introduces students to the basic principles of commercial law, addressing a broad spectrum of content which includes all modern aspects of the field. First, an overview of the South African Legal System is covered. Second, the basic principles of contracts are presented, and then applied to examples of specific business contracts. Students are familiarised with the concept of agency and different legal business entities. Lastly, the module outlines the concepts of business conduct and compliance.

BUSINESS PROCESS AND TECHNOLOGY INTEGRATION

The efficiency of an organisation's operations is determined by its underlying business processes. A 'business process' is a chain of events, activities, and decisions that ultimately add value to the organisation and its customers. Business Process Management (BPM) can reduce costs and increase revenue by streamlining business operations, often through the incorporation of digital technologies.

Typical BPM activities include defining an organisation's current process architecture; modelling existing processes and their associated business rules; analysing process strengths and weaknesses and developing appropriate quality assurance criteria; identifying opportunities to add value to and remove bottlenecks from existing processes; redesigning processes for improved efficiency; and implementing business process management and monitoring systems.

This module outlines the principles that underpin emerging technologies such as the Internet of Things, distributed ledgers, augmented reality and 3D printing. It then explores the application of emerging technologies in fields as diverse as manufacturing, healthcare and e-government, and identifies supporting skills that may need to be developed. Finally, it addresses a number of ethical issues related to the social and business impact of the new technologies, including questions of accessibility, the codifying of ethical standards within algorithms and business processes, and the challenges involved in 'digital regulation'. j

COMPUTATIONAL THINKING AND INTRODUCTION TO PROGRAMMING

Efficient and effective problem solving is a skill that is of benefit to any individual in his/her everyday life. In the field of computing, problem solving as well as familiarity with computer programming concepts, development of computer programs, and the syntax and semantics of programming languages are fundamental to successful software development. This module first introduces computational thinking as a systematic approach to problem solving with the solution expressed in such a way that it can be carried out by a computer. Thereafter, all aspects of programming, from designing an algorithm and coding this algorithm to develop a program, to debugging and executing the program, are covered. The main focus of the module is on the coding aspect, where students will be exposed to the Python programming language, from the basic programming constructs (sequencing, decisions and looping) and data structures (such as simple types and lists) to more advanced constructs (such as the use of functions and recursion) and more complex data structures (such as dictionaries). No prior programming experience is required to complete this module. Students will be taken from first principles to being able to develop a non-trivial Python program. The module will be useful to students from diverse fields by offering a systematic way of approaching problem solving and providing a solid introduction to programming. Having completed this module, students will have a solid foundation of problem solving and programming experience, thereby facilitating the comprehension of the more advanced aspects of programming, including object-oriented design and the use of abstract data structures as taught in later modules.

DATA AND DECISION-MAKING

In this module students will learn the importance of data in the decision-making process. They will be exposed to the fundamentals of decision making and how to assess risk and uncertainty while supporting this with well formulated and appropriate data. Students will further learn how to apply this knowledge as part of a larger project team for highly complex and more specialised decision-making environments where they act as facilitators rather than the actual analysts or decision makers. To achieve the module outcomes, students will learn how to separate empirical quantifiable data (known factors) from uncertain and unverifiable assumptions (unknowns) often required in business decision making. With this separation established, students will be guided in how to apply the known and unknown correctly in order to manage risks associated with the degree of uncertainty. Learning how to assess whether the balance between the known and unknown data components will be achieved through the use of sensitivity analysis and the illustration of the relative impact that the various data points can have on the final decision and ultimately how the final decision will impact the venture over time.

ELECTRONIC COMMERCE AND TECHNOLOGY STARTUPS

This module provides an overview of the drivers and benefits of e-Commerce and describes typical e-Commerce business models. It explores e-Commerce mechanisms, platforms and tools including B2B, B2C and C2C e-commerce, m-commerce and social commerce. Other topics include payment and order fulfilment systems; the use of e-Commerce in government and health systems; security and fraud prevention; web server architectures, hardware and software; legal and tax issues; and the management of e-Commerce implementations.

This module prepares students to participate in the entrepreneurial economy of technology start-ups. It begins with an overview of lean startup principles, including the production of a minimum viable product (MVP) that can be used for market validation. Assuming that the MVP is well-received, an initial startup team will be assembled, based on the skills that will be needed to manage the business and to build, market and distribute the initial product(s). Subsequent topics focus on financing options, registering the business, selecting a law firm and an accountant, and assembling a board of directors. Additional financial and legal issues that are specific to the South African context are discussed, including taxation, labour law and the Consumer Protection Act. Guidelines are provided for selecting hardware, software and operating platforms. Final topics focus on establishing brand awareness, evaluating business value, managing staff and maintaining investor relationships. By the end of this module, students will have acquired a realistic understanding of the challenges associated with technology start-ups, and will be equipped with a set of tools to help them address those challenges.

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FUNDAMENTALS OF INFORMATION TECHNOLOGY

The increased importance and global reach of computing technology in today's society was the basis for the emergence of the information technology discipline. Information Technology is the study of systemic approaches to select, develop, apply, integrate, and administer secure computing technologies to enable users to accomplish their personal, organizational and societal goals. This module provides an overview of the discipline of IT, and how it relates to other computing disciplines. The goal is to help students understand the diverse contexts in which IT is used and the challenges inherent in the diffusion of innovative technology.

HUMAN-CENTRIC DESIGN AND BUSINESS INTELLIGENCE

This module introduces students to key elements of human-centric design, including the use of personas and scenarios; principles for ensuring usability, acceptability and engagement; techniques for eliciting, visualising and evaluating application requirements; the role of metaphors in interaction design; and general guidelines for visual interface design.
The module opens with a discussion of the basic principles of organisational decision-making and the types of data that are generally available in organisations. This is followed by an overview of data warehousing and basic analytic techniques that are commonly used for data exploration. More advanced topics include cluster identification; principal component analysis; association rules and social network analysis; regression analysis; nearest neighbour and anomaly detection; prediction and forecasting techniques; and neural networks. Students will gain hands-on experience in the application of some of these techniques through a series of practical exercises based on case studies with accompanying datasets. Potential risks associated with the use of big data are also discussed. By the end of the module, students will have acquired a solid understanding of how data science can be used to support the strategic objectives of an organisation.

INFORMATION SECURITY FOR IS PRACTITIONERS

The first part of this module provides students with a basic understanding of computer networking concepts and technologies. Thereafter, potential risks are identified that may affect the security of organisational information. Information security issues that are addressed in this module include security threats targeting human users; network security and intrusion detection; security issues affecting software and databases; vulnerability assessment tools; and preventative measures that can be taken to protect the security of organisational information. At the end of the module, students will complete a group project that integrates the knowledge they have acquired during the course of the module.

INFORMATION SYSTEMS DEVELOPMENT PROJECT

In this module, students will be expected to integrate and apply the knowledge and skills they have acquired during their studies towards the Bachelor of Business Information Systems degree. Teams of at most four students each will analyse, design, test and implement a particular software application. Individual project teams will be allowed to follow their preferred development approach and modelling paradigm, as long as this is consistently applied throughout the project. Although project teams are free to choose the type of application they wish to develop, they will be encouraged to select projects that could potentially have a positive societal impact. The final project deliverables must include at least a project proposal ('business case'); project management documentation; a requirements specification document; a design specification document; a test plan including test results; an implementation plan; user documentation; and a post-implementation review report. At the end of the module, each team will be expected to demonstrate a working prototype comprising at least three different use cases and including at least two reports. In addition, a complete set of project documentation must be submitted for summative assessment.

INFORMATION SYSTEMS PROJECT MANAGEMENT

Information Systems development projects are initiated for a variety of reasons, e.g. to address an existing problem, leverage a potential opportunity, support a business merger, or achieve regulatory compliance. The project manager plays a critical role in in achieving project success, by effectively planning, leading and monitoring a project from inception to delivery. In this module, students will learn the key responsibilities of a project manager and the scope of activities that are typically performed by project managers during the different stages of an information systems development project. In doing so, they will familiarise themselves with the methods and tools used to plan project activities and to monitor progress and budgets. They will also learn the importance of maintaining accurate project documentation. Role-playing scenarios will be used to practice relevant communication skills including techniques for conflict resolution. During the module, students will submit several individual and group assignments relating to different aspects of the project manager's job.

INTRODUCTION TO BUSINESS ANALYSIS AND TECHNICAL COMMUNICATION

Business analysts investigate the challenges that are being faced by organisations, identify feasible technology-based options for addressing those challenges, specify an appropriate solution, and evaluate the expected impact of that solution. The first half of this module is intended to develop students' understanding of what a business analyst does, the skills that a business analyst requires, and the range of activities that are commonly performed by business analysts. Role-playing scenarios are used to illustrate typical interactions between different project stakeholders. The second half of the module familiarises students with technical documents that are typically created by business analysts, with a particular focus on project documentation. At the end of the module, teams of 2 or 3 students each will be required to write a simple project proposal for a mobile app. Each team will also deliver a short presentation describing the app they selected and reflecting on their experience of the analysis and documentation processes.

INTRODUCTION TO BUSINESS MANAGEMENT

This module Introduction to Business Management introduces the student to the fundamental principles of management and the essential skills and competencies for effective management. The student will be exposed to the primary management tasks: planning, organising, leading and controlling. Supporting management tasks, such as communication, motivation and delegation, are also covered. The student is introduced to how these management competencies and tasks are applied across management functions; notably, operations, financial, marketing and human resources management. The focus of assessment will be on practical application of tasks such as planning and organising.

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INDUCTION TO BUSINESS STUDIES

In this induction module, students are provided with the skills and knowledge required to be successful in entry-level business degree studies. Making the most of the online learning environment is central to success in degree studies and students are exposed to the requirements, practices and techniques that will help them to succeed. The Preparing for studying online component is aimed at introducing the student to STADIO and the BCom degree, the online learning environment and assisting the student to plan his/her studies and time effectively to ensure successful completion of his/her studies.
The Academic reading and writing component expose students to good reading techniques, guides them through the writing process, and helps them to write effective academic essays. The Study skills component is aimed at providing students with basic information and techniques on how to improve their study skills from preparation to the exams. The module concludes with the Numeracy component that focuses on essential business numeracy skills required for business studies.

INTRODUCTION TO DATABASES

Information and raw data are the life blood of the various computing disciplines, either for their use in creating a solution to a given problem, or for storing after having been generated by information systems and other computational applications. As such algorithms for the efficient and effective collection, transformation, storage, access and updating of data, as well as for the representation, organization and presentation of the resulting information, constitute vital knowledge for computing professionals. Relational databases, which rely on the use of structured tables to store data, have traditionally been used for data storage. However, with the ever-increasing volume of data needed to be processed and stored by information systems, non-traditional, unstructured alternatives have recently become more popular. The main aim of this module is to introduce students to the theoretical concepts of databases as well as provide practical experience in designing and extracting information from both relational and semi-structured databases. This module introduces fundamental database concepts related to the design and creation of relational databases, as well as the extraction of information in the form of query building using SQL (structured query language). Also covered in the module are considerations of transactional processing and security of databases as well as an introduction to non-relational database models using XML to apply the theoretical concepts in semi-structured databases. Having completed this module, students will be able to manipulate a variety of databases, as well as design, implement and manage a database system.

IT GOVERNANCE, RISK AND CONTINUITY

The module opens by reviewing the principles and practices contained in the Technology and Information Governance section of the King IV report, and the ISO/IEC 38500 standard for IT governance. Students are then introduced to relevant frameworks that support IT Governance implementation and management, including the Control Objectives for Information and Related Technology framework (COBIT), the Open Group Architecture Framework (TOGAF), Capability Maturity Model Integration (CMMI), and the IT Infrastructure Library (ITIL). Thereafter, the module explores key challenges and success factors related to IT governance, presents a set of criteria that can be used to evaluate information technology governance within an organisation, and provides examples of best practices in the governance of digital transformation initiatives.
Business continuity planning encompasses the identification and documentation of critical business functions; the evaluation and ranking of internal and external risks based on their likelihood of occurrence and severity of impact; evacuation and communication plans; and the implementation of measures intended to limit the impact of a disaster (including regular backups of software and data). The disaster recovery plan includes issues such as ensuring the safety of buildings and the provision of utility services, but with a key focus on the restoration of IT systems and software, data recovery procedures, and system testing. This module also considers the role of the planning team; relevant business policies and manuals; and business insurance options.

OBJECT-ORIENTED ANALYSIS

This module will develop students' understanding of the object-oriented approach to information systems development, as well as their ability to apply a variety of object-oriented techniques that are commonly used during the systems analysis phase of a project. The underlying concept of object-oriented analysis is that software systems are modelled as collections of cooperating objects. This approach supports the reuse of common objects, reduces system complexity, and facilitates future maintenance of the developed system. The Unified Modelling Language (UML) will be used to create appropriate visual models (diagrams) that support and enhance communication between analysts, developers and other stakeholders. Students will submit a number of individual assignments during the module to demonstrate their ability to apply object-oriented principles and UML modelling techniques. At the end of the module, students will submit a group project integrating the principles and methods that have been covered.

OBJECT-ORIENTED DESIGN

This module builds on the Object-Oriented Analysis module. In the Object-Oriented Design module, students will develop the knowledge and skills needed to create a detailed and unambiguous design specification for the system components, processes and interactions that together will deliver the functionality required within the final software product. Students will construct a variety of conceptual, logical and physical models as well as supporting text-based artefacts, that together define the architecture of the system, the associations between entities within the system, and the technology-specific composition of the system. Students will also be expected to understand and apply basic principles of good object-oriented design. Students will submit a number of individual practical assignments during the module in order to develop competence in the use of relevant UML modelling techniques. At the end of the module, students will submit a group project integrating the principles and methods that have been covered.

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OBJECT-ORIENTED PROGRAMMING

One of the main competences required for employment in any of the computing disciplines is good programming skills. The object-oriented paradigm is extensively used in industry for developing large information systems. This module aims to impart both the theory and practice of this paradigm and further develop the overall programming skills of the students by introducing a second programming language, Java. Students must have completed the "Computational Thinking and Introduction to Programming" module as prerequisite before attempting this module, which builds on the first principles of programming already covered and focuses on the design and implementation of larger more complex programs though a widely used industry language. In addition to providing the corresponding Java syntax for the constructs previously covered in the Python programming language, this module introduces object-oriented programming concepts, such as encapsulation and information hiding, data objects and inheritance, as well as additional imperative programming concepts and constructs, such as garbage collection and reference types. Practical experience using an object-oriented language is included by way of computer-based programming assignments.

RESEARCH METHODOLOGY

It covers principles, concepts and processes pertaining to academic scientific research. Aspects covered include the features of scientific research, types of research, as well as common aspects in the execution of a research assignment, such as problem identification, motivation of the study, formulating a hypothesis, research objectives, selecting suitable methods, planning and preparing the research action, as well as the gathering of data, and performing analysis and interpretation of results leading to a research report.

SOFTWARE ENGINEERING

Software engineering is the use of an organized and regulated approach for the design, development, testing, documentation and maintenance of software by applying principles from engineering, project management, computer science, programming, cost management and other areas. The Software Engineering module specifically aims to lay a solid foundation in the discipline of developing and maintaining software systems that behave reliably and efficiently, are affordable to develop and maintain, and satisfy all the requirements that customers have defined for them. The student will acquire broad knowledge about the Software Engineering process and the range of methods, tools, and techniques utilised, illustrated by means of a variety of case studies.

STATISTICS

In this module, students will gain a good theoretical and practical understanding of statistical techniques and experimental design as applied to commercial problems. The topics covered in this module address the full breadth of the components of statistics, consisting of descriptive statistics, inferential statistics and statistical modelling.

TECHNOLOGY AND SOCIETY

The cyber world is a world with countless interactions in different forms. Online interaction has become part of our daily routine and it presents a number of challenges to both developers, owners and users. Given the different types of personal and corporate data that can be generated, it is important to establish awareness of possible ethical contraventions in which we can unintentionally participate. The development of new technologies also potentially poses threats to the livelihoods of many. Ethical behaviour by all stakeholders is crucial in sustaining the fair development and implementation of technologies. It is also important to ensure fair online interaction and the sharing of information. This module aims to establish an initial awareness of ethical issues in students as they start their studies in technology. It will assist with understanding the rights of people in the world of technology.

WEB SYSTEMS AND TECHNOLOGIES

With the ever-growing demand for availability of application programmes on the web, and on mobile devices such as smartphones, the inclusion of a module on the development of these applications is essential in an IT programme. The aim of this module is to lay a solid foundation in the discipline of developing application software for the web and for mobile devices. The student will gain a breadth of knowledge about the development platforms and underlying technology, as well as the range of methods, tools, and techniques utilized in developing web applications. The student will also gain experience in developing applications for the web and mobile devices.

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