

Year 1: Trimester 1

Digital Technology in Organisations & Society (15 credits)

Brief Summary: Businesses today operate in a dynamic, complex and highly integrated digital environment. This unit will challenge students to critically evaluate the impact of digital technology on contemporary businesses and their wider community. The unit will cover issues from the perspective of a simple business to the global business community touching on topics such as ethics and legal issues.

Indicative Content: The topics of the unit will include the following: Overview of contemporary digital technologies and their integration into business processes, business-technology alignment, phenomenon of digital transformation and its implications for businesses, organisation's culture and digital technologies, societal and environmental implications of digital technologies, Freeman's Stakeholder theory, Elkington's Triple Bottom Line, etc. and ethical and legal issues of digital technologies.

Introduction to Programming (30 credits)

Brief Summary: This unit introduces computer programming in a high-level programming language, developing your skills in problem-solving, program design, solution implementation and testing. You will learn fundamental programming principles, and how you can combine standard techniques to solve simple problems using computer software. You will gain practical experience in developing software using industry-standard programming tools in a variety of scenarios.

Indicative Content: The unit will introduce the basics of computer programming, using a contemporary programming language (e.g., Java/Python/C#). Students will use an industry-standard development environment and associated tools to create programs that help solve simple problems. The unit will introduce students to fundamental programming techniques (e.g., use of variables, data types, sequencing, selection, and iteration), along with basic techniques for structuring programmes (e.g., functions, classes, object orientation). Students will complete a variety of practical exercises providing experience of problem solving, software design, implementation, testing and debugging.

Year 1: Trimester 2

Database Fundamentals (15 credits)

Brief Summary: This unit introduces learners to the use of the relational model to structure data for efficient storage and retrieval. Learners will gain practical experience in the construction and usage of databases in an industry-standard database management system.

Indicative Content: Understanding the relational model and the client/server model for databases; interacting with relational databases using SQL DML and DDL; designing relational databases and communicating designs using techniques such as ERDs and normalisation.

Introduction to Business Systems (30 credits)

Brief Summary: The unit introduces the role of information systems in organisations, giving students the opportunity to analyse organisational requirements and develop suitable information system solutions.

Indicative Content: Organisational design and the role information systems play in managing common organisational issues. The principles of information systems and the need for good systems design. Systems development: identifying the need for a new or enhanced system; analysing the requirements of the system and generating initial designs to match requirements; justifying suitable methodologies to aid in the development and implementation of an information system.

Year 1: Trimester 3

Tailored off-the-job activity such as core masterclasses, enrichment activities, carbon literacy, EDI, PREVENT, careers, etc.

Year 2: Trimester 1

IT Project Management (30 Credits)

Brief Summary: This unit examines the management of technology projects, looking in depth at the various processes which constitute technology development lifecycles. You will learn how the analysis, modelling, specification, design, implementation, testing, and maintenance of systems are commonly shaped into specialised project management methodologies. You will gain experience in managing projects using recognised methodologies, whilst presenting your work to both technical and non-technical audiences.

Indicative Content: In addition to taught content on a selection of contemporary project management methodologies and the techniques of which they comprise, a sizeable portion of the unit will be dedicated to practical project work. Students will be provided with a brief and will be invited to complete their project using their choice of project management methodology and reflecting the theory of the taught sessions. The unit will also dedicate taught session time to providing individual support and formative feedback to students as they work through their chosen project. Upon completion, students will report on how they applied chosen project management theory and methodologies to a scenario, and this will form the basis of their assessment.

Computer Networks and Security (15 credits)

Brief Summary: This unit introduces the core principles underpinning the design of both internal corporate computer networks and the wider internet. You will study the architecture of wired and wireless computer networks, how network traffic is directed from its source to its destination, and

how the internet is structured and managed. You will also learn the core principles of computer security including common risks and threats, along with ways to mitigate them.

Indicative Content: The unit will cover physical network topology for both wired and wireless networks, introducing TCP/IP networking, IP addresses, routing, and the Domain Name System. Students will undertake practical tasks working with sockets and connections, IP addresses and DNS records.

Students will learn of common security properties (e.g., Confidentiality, Integrity, Availability) and risks (e.g., Disclosure, Alteration, Denial). Using case studies of computer security incidents, students will learn common classes of security threat (e.g., Insider Attack, Malware), common classes of security vulnerability (e.g., Injection, Overflow) and common approaches to mitigating them (e.g., Access Control, Encryption, Firewalls).

Year 2: Trimester 2

Emerging Technologies (15 credits)

Brief Summary: As the technologies enter the Fourth Industrial Revolution (4IR), businesses wanting to succeed in the competitive global market must engage with emerging digital technologies. In this unit, students will learn to analyse emerging trends and developments (cloud computing, wireless technologies, mobile, consumer devices, Radio Frequency ID, wearable computing, virtual and augmented reality, remote servicing and delivery, 3D printing, AI, etc.) There will be a strong focus on the elements of Human Factors and how these technologies impact organisations and their stakeholders.

Indicative Content: Current market trends in new emerging technologies, products and services, digital disruption and market innovation, opportunities and challenges of emerging technology disruptors in various business sectors and human impacts, approaches to analysing businesses to identify opportunities to innovate and leverage competitive advantage through emerging technologies and real-world case studies, disruptors and novel business models.

Customer Lifecycle Management (30 credits)

Brief Summary: Examine the principles and practices of acquiring, converting, and retaining customers to improve business performance.

Indicative Content: Introduce the concept of marketing to provide a theoretical framework from which the principles and practices involved in acquiring, converting, and retaining customers can be examined. Explore Customer Relationship Management (CRM) and understand its importance to improve business performance. Consider the strategic roles for CRM: marketing strategy, sales, and customer service. Understand the importance of customer lifetime value and provide a critical perspective of marketing by examining ethical marketing issues. Examine the facets of customer insight: behavioural targeting, geolocation, psychographic targeting, recency/frequency monetisation, organic marketing, search engine marketing, search engine visibility, and driving traffic.

Year 2: Trimester 3

Tailored off-the-job activity such as core masterclasses, certifications such as AWS Cloud Practitioner Essentials, Green Software, etc..

Year 3: Trimester 1

Business Analytics (15 credits)

Brief Summary: This unit will develop students' analytical skills that are essential to solving business problems; it will equip students with tools and techniques for modelling, analysing, evaluating and solving business problems to enhance business performance.

Indicative Content: The topics of the unit will include the following: Advanced data analytics tools and methods (predictive analytics, regression analytics, machine learning, statistical modelling) and a critical evaluation of business problems and the application of data analytics for performing customer analytics, marketing analytics, human resources analytics, operations analytics, and financial analytics.

Operations Management (30 credits)

Brief Summary: The unit aims to critically evaluate the principles of Operations Management from an academic and practitioner perspective. It will focus on the critical evaluation of the impact of operational strategy on the overall strategic organisational goals and performance.

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Year 3: Trimester 2

Technology Ethics (15 credits)

Brief Summary: The swift advancement in technology has resulted in moral predicaments for companies and presents noteworthy obstacles for governing agencies. This course familiarises students with certain guiding principles concerning business ethics, regulation, security and morality, that impact the decision-making process for both individuals and enterprises with regard to implementing technology.

Indicative Content: The topics of the unit will include the following:

- **Ethics:** The unit provides an introductory understanding of ethical theories that can be utilised to scrutinize and assess the impacts of information systems.
- **Regulations:** This unit introduces the regulatory frameworks that impact the choices made by both individuals and businesses regarding information systems.
- **Sustainability:** This unit introduces key sustainability issues including, long term Vs short term, lifecycle orientation, complexity, stakeholder management, regulatory issues, triple bottom line, circular economy, production resources, moving from liability to responsibility and corporate social responsibility.
- **Security:** This unit introduces security threats organisations are dealing with, their potential impacts of them on the organisations and how they could be managed.

IT Consultancy (30 credits)

Brief Summary: The unit aims to introduce students to the principles of management consultancy, with a focus on Information Systems projects. It will investigate the process of consultancy, with a particular emphasis on the capabilities required throughout the consultancy lifecycle for a successful business and digital transformation.

Indicative Content: Principles of management consultancy: key requirements and capabilities for the different phases of the consultancy lifecycle. Managerial and technical requirements for a successful IS consultancy project. Ethical considerations in the context of IS Consultancy: the role of consultants and their ethical impact on client organisations.

Year 3: Trimester 3

Tailored off-the-job activity such as personal development and preparation for final year.

Year 4

Strategic Information Systems (30 credits)

Brief Summary: The aim of this unit is to critically evaluate organisational strategic needs for Information Systems. It will focus on bridging the area of strategic management and the requirements for effective Information Systems with the purpose of improving firm performance.

Indicative Content: Strategy and strategic planning: a critical evaluation of the different strategy-related approaches and practices in organisations. Sourcing strategies: an in-depth look in to the different IS sourcing strategies and their impact on systems performance. Enterprise Information Systems: a critical evaluation of the implementation and use of enterprise systems, with a specific focus on mitigating the risk of failure of these. A capabilities approach to the use of Information Systems: a critical evaluation of the key capabilities required for capitalising on modern information systems; this includes looking into aspects of knowledge management and digital transformation.

ICT Synoptic Project

Brief Summary: Apprentices will complete a work-based project, appropriate to their role and pathway, that has a significant, specified and quantifiable expected benefit for their employer organisation. This can be, for example, based on a specific problem, recurring issue, or a new idea or opportunity, leading to a new or improved product and/or process.

Indicative Content: Apprentices will scope a project in consultation with both their supervisor, employer and independent assessor that enables them to demonstrate the knowledge, skills and behaviours (KSBs) mapped to their pathway for this unit from the degree apprenticeship standard for the Digital and Technology Solutions Professional (DTSP) Integrated Degree.

The apprentice will then plan, undertake and manage the project process through to its completion and the deliverable of a new product and/or process (which may be recommendations for changes to an existing process where appropriate). They may work as part of a team to complete a project, which could include external or internal support, but the project output must be their own work and reflective of their own role and contribution to this wider teamwork.

Apprentices will be expected to evaluate the significance and benefit of their project to their employer organisation, and hence demonstrate critical awareness of the role of their own work in achieving these benefits. They will therefore record how their achievement of KSBs is demonstrated in their project with a skills mapping to be included in the appendix of the written report.

Reflective Practice for Digital and Technology Solutions Professionals

Brief Summary: Within this unit, learners will reflect on their skills, knowledge and behaviour and identify a gap to address. A portfolio will provide a record of the specific skills and knowledge apprentices have developed and used throughout their degree and provide an opportunity to reflect on their professional development objectives within a report. Learner will complete a training activity to address a gap in their skills and/or knowledge.

Indicative Content: A portfolio will be developed over all 4 years of the degree but only contributions relating to level 6 will be formally assessed within this report. Personal Tutors (PTs) and work mentors will guide apprentices in the development of the portfolio. PTs will review the portfolio from the point of view of its assessment at level 6 and provide formative feedback at set times throughout the degree to guide the apprentice. They will offer advice about developing a well-documented account of the apprentice's development of skills and knowledge and appropriate reflections on their learning and its professional impact. Mentors at work will guide the students from the point of view of documenting their work experience and completion of Personal Development Review objectives.