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SIM Global Education

University of Wollongong, Australia

ACCY122 – Accounting Principles

This subject introduces students to the principles of a double-entry accounting system to identify, classify, process, record and present accounting information. Students use accounting software to record business transactions, process accounting information and prepare financial statements. The subject introduces the role of ethics and professional judgement, in the context of an evolving business environment.

ACCY112 – Accounting In Organisations

The subject advances understanding of accounting in organisations. The subject introduces accounting for complex equity structures, and develops the theoretical and technical aspects of accounting for assets and the protection of assets through internal controls. Accounting for the past and future is examined through the introduction of cost structures and their application in solving fundamental business problems using cost-volume profit analysis. The application of budgets is explored.

COMM121 – Statistics for Business

The aim of the subject is to introduce students to quantitative techniques and their application to the business world with an emphasis on the decision-making process. The main focus of the subject is business statistics and topics will include descriptive statistics, probability, sampling, confidence intervals, hypothesis testing, elementary correlation, regression analysis and time series forecasting. Students are also introduced to the use of computer programs for estimation and analysis to improve business decision-making.

CSCI203 - Algorithms and Data Structures

Approaches to analysing algorithm complexity, introduced in first year subjects, will be reviewed. The use of abstract data types as a design technique, and their implementation in solutions to problems, will form a large part of the subject. The concept of efficient code and ways to measure efficiency (both empirically, by timings, and theoretically) will be studied.

CSCI218 - Foundations of Artificial Intelligence

This subject presents the foundations of artificial intelligence (AI). It introduces the history of AI, its evolution, and the recent development. Also, it presents the representative topics selected from the important areas in the field of AI. For each of these topics, this subject introduces the fundamental concepts, classic methods, and important applications. This subject concludes with a summary of the present of AI and its future trends. By providing the fundamental knowledge of AI, this subject helps students to gain the basic idea of this important field, paving their way to study more advanced AI techniques.

CSCI235 - Database Systems

This subject investigates the major areas of modern database systems: 1. Design and programming of relational databases 2. Design and programming of semistructured databases (XML native database systems) 3. Design and programming of distributed database systems (NoSQL database systems) 4. Concurrency control and data recovery in database systems. The following topics are included: Introduction to conceptual modelling; Principles of relational database model; Processing relational databases with Structured Query Language (SQL) and its procedural extension (PL/SQL); Principles of semistructured database model; Processing of semistructured databases with XQuery and XPath; Design and implementation of distributed database systems; normalisation of relational databases; Transaction management and recovery in database systems.

CSCI236 - 3D Modelling and Animation

This subject provides students with a hands-on introduction to the use of computers for developing models of three-dimensional objects and viewing them in 3D as still images and animations. Topics covered include basic modelling primitives, from polygons to spline surfaces; tools to modify simple objects; surfacing concepts such as textures and bump maps; basic lighting of scenes; the animation process including key frames, articulated structures, camera movement and morphing; lighting effects such as volumetrics and radiosity. The subject uses the industry standard software package LightWave.

CSCI251 – Advanced Programming

The subject develops a thorough understanding of programming features, which are implemented in the C++ programming language. It comprises of four main components, namely procedural-based, object-based, object-oriented and generic programming. The subject addresses topics including memory management issues and dynamic memory allocation; classes; STL sequential and associative containers; operator overloading; advanced features in object-oriented programming; C++ RTTI; templates and exception handling; the latest C++ features (e.g. C++11 and C++14 standards).

CSCI262 - System Security

The subject covers some fundamental computer security technologies in the following aspects: (1) Operating system security such as physical security, file protections, system abuses, attacks and protections; (2) Database security including data integrity, data recover, data encryption/ decryption, access control, and authentication; (3) Mobile code security including malicious logic, host and mobile code protection, mobile agents' security. (4) Intrusion detection; (5) Security policies; (6) Security management and risk analysis.

CSCI316 - Big Data Mining Techniques and Implementation

The subject considers the problems related to data mining techniques and implementation in a Big Data environment. The topics include data pre-processing techniques, pattern, association and correlation discovery; classification and clustering; stream and real-time processing techniques; and post-processing techniques like outlier detection, as well as

statistical, proximity, and clustering based approaches. Laboratory classes and hands-on programming exercises related to these topics will provide the students with the abilities to design and implement Big Data algorithms and to use already existing software libraries. The subject also addresses the problems of scalability, selection of appropriate implementation techniques, and performance aspects when mining Big Data.

CSCI319 - Distributed Systems and Cloud Computing

This subject introduces basic concepts underlying modern distributed system and cloud computing system design. The subject provides some experience in the implementation of distributed system and cloud computing system components. A particular focus of this subject is on scalability, transparency, and design principles underlying distributed and cloud computing systems. Topics covered include: inter-process communications, multi-threaded servers, remote-procedure-calls, synchronous and asynchronous RPC, client server systems, distributed system architectures, messaging and transactional systems, peer-to-peer, cluster, and grid technologies, virtualization and fault tolerance, synchronization, security, naming, synchronization, replication, and consistency; supporting systems such as NFS, and DNS, with some practical exposure to real world distributed systems, design of distributed file services or distributed web based services, and cloud computing systems.

CSCI322 – Systems Administration

This subject will cover the practical and theoretical aspects of system administration. The various resource areas which have to be managed will be discussed and examined, and the possible methods of monitoring and controlling them in various systems will be investigated. The features unique to both single processor and networked systems will be investigated.

CSCI323 – Modern Artificial Intelligence

This subject introduces students to the advanced theories, algorithms and applications in the modern development of AI. For each topic covered, its important concepts and principles will be presented to help students gain an essential understanding. Advanced approaches, methods and algorithms will be introduced to show how artificial intelligence is realised. State-of-the-art applications, tools, and platforms will be demonstrated and analysed to connect theories with practices. This subject will equip students with advanced knowledge of modern AI and enhance their skills to appropriately choose and apply AI techniques to resolve practical problems.

CSCI336 – Interactive Computer Graphics

Introduction to computer representation of lines and points; mathematical models; transformations in 2 and 3 dimensions; homogenous coordinate systems; fill algorithms; solid modelling; hidden line and surface algorithms; lighting models; and current trends

CSCI356 – Game Engine Essentials

This subject will introduce fundamental concepts and techniques required in the development of games and game engines. Game engine components that will be examined include rendering, collision and physics, artificial intelligence among others. The design and development of these components will be illustrated using appropriate software and application programming interfaces. Among others, topics covered in this subject will include game loops and time management, handling input, cameras, particles, collision detection, rigid-body dynamics, terrain, path-finding, and state machines.

CSCI361 - Cryptography and Secure Applications

This subject develops the skills and knowledge necessary to identify and address security problems in a variety of simple communication models. Topics covered include: Classical cryptology, Modern secret key cryptography including block (DES, AES) and stream ciphers (RC4), security properties (authentication, integrity, confidentiality, availability), public key cryptography (knapsacks, RSA, Rabin, Elgamal), digital signatures (RSA, DSS, Elgamal) , hashing (birthday paradox, Merkle-Damgard construction), MACS's, Key management (PKI, certificates, key establishment/exchange/transport, Diffie-Hellman), Identification protocols, Privacy preserving (mix-nets), Secret sharing. Applications studied include some of: email security, SET, E-payment, E-voting, Fair exchange.

CSCI366 – Mobile Multimedia

The subject will introduce the acquisition, representation, compression, transportation/communication and consumption of multimedia data including, images, video and audio. The treatment will be general and cover commonly used acquisition devices including digital still and video cameras, audio microphones; colour representation techniques for images and video; modern compression techniques for compact representation (JPEG, JPEG2000, H.264/AVC, MPEG4,); RTSP, etc. The subject will include a laboratory component where students design and implement simple applications of multimedia including computer games.

CSCI368 - Network Security

This subject provides a survey of network security technologies, and explores them in practice. This includes but is not limited to, network-based threats, security failure in cryptographic and network protocols, authentication servers, certificates and public-key infrastructures, security provisions in communication protocols and standards, electronic mail security, firewalls and intrusion detection systems.

CSCI369 – Ethical Hacking

This subject introduces the use of hacking skills for defensive purposes. The subject develops critical thinking and troubleshooting skills. It aims to re-purpose tools and resources to acquire more out of them in order to discover entirely new things, which will be useful for other purposes. It develops the students ability to think outside the box and learn new skills. The subject prepares students for the ethical hacking certification.

CSCI388 - Virtual and Augmented Reality

This subject explores concepts and principles underlying virtual reality and augmented reality applications for various platforms. The subject will introduce students to theories and techniques required to gain an understanding of virtual and augmented reality technologies, which will allow students to devise solutions for these interactive technologies. The subject will also provide students with practical hands-on experience in designing and developing virtual and augmented reality applications using appropriate hardware and software.

CSIT110 - Fundamental Programming with Python

This subject uses Python language to introduce students with fundamental programming concepts such as procedural programming, variable, data type, array, recursive function, conditional expression, selection statement, repeating instruction. This subject also develops student skills in the design and implementation of well-structured algorithms to a range of mathematical problems.

CSIT113 - Problem Solving

This subject introduces the analysis of problems and the strategies used to manage them, primarily in the context of computing. Problem classification is introduced, as are formal and informal approaches to problem solving. The importance of method and method classification for problem solving strategies is motivated, and the need to compare and analyse strategies is justified. Introductory tools for the analysis of strategies are covered. Appropriate representations for problem solving are explored.

CSIT114 - System Analysis

This subject provides an introduction to different techniques and technologies for understanding and specifying what a computer based information system should accomplish. It examines the complementary roles of systems analysts, clients and users in a system development life cycle. Students will learn different fact-finding techniques to elicit system requirements and how to develop business models, data and process models, and object models representing a system. Students will also make use of a Computer Aided Software Engineering (CASE) tool to build those models that capture the specifications of a system.

CSIT115 - Data Management and Security

The subject investigates three major areas of modern data management systems: data modelling, data processing, and data security. The goal of the subject is to learn the fundamental concepts in data management including conceptual modelling, the relational data model, processing of relational data with Structured Query Language (SQL), enforcing the concepts of data confidentiality, integrity, and availability data management systems. The subject develops the skills in the design, implementation, processing, and security of data management systems. The subject covers the following topics in data security: discretionary access control, user management, enforcing data security and integrity. The subject also explains the important ethical issues associated with responsible disclosure, responsibility, liability, security weaknesses, and privacy in data management systems.

CSIT121 - Object Oriented Design and Programming

The aims of this subject are to consolidate and extend student's knowledge and skills in structured programming and to develop their understanding and practice of object oriented programming. To achieve this aim the subject will provide students with an opportunity to develop further programming skills and good coding style; develop skills in using the object oriented concepts of encapsulation, inheritance, polymorphism, access control, overloading and messaging; develop and display competency in the design and implementation of object oriented programs to solve business problems.

CSIT123– Computing and Cyber Security Fundamentals

This subject aims to equip students with an understanding of fundamental computing knowledge. In addition, the subject aims to introduce students to key cyber security concepts and principles. To achieve these aims, topics covered in this subject include fundamental computing content such as the history of computing and the evolution of technology; concepts in information processing, computer architecture, and operating systems; and cyber security topics including forms of attack, detection, and prevention, cyber security policy and risk assessment.

CSIT127– Networks and Communications

This subject introduces students to the fundamentals of data communications and computer networks. Topics covered include: different types of data and the history of data communications; signals; modulation and multiplexing, switching and routing, network architectures: LANs, WANs and the Internet; Internet services and protocols; and emerging topics. The subject explains computer networking models that interconnect diverse communication systems, including the ISO reference model and the TCP/IP protocol Suite.

CSIT128 - Introduction to Web Technology

This subject introduces students to fundamental web technologies that underlie the World Wide Web and its commercial applications. Topics include an overview of internet communications, an introduction to the web-browser/web-server client-server systems, HTML5/CSS/XHTML/XML markup languages, web forms and client side scripting. Students will build working web-sites with dynamic content. The subject explains the differences between client-side and server-side Web development, and demonstrates how to build simple applications using scripting and other tools. The subject also covers current Web “standards” and future W3C recommendations.

CSIT214 - IT Project Management

The primary aim of this subject is to acquaint students with the methodologies and processes associated with the task of managing information technology and software development projects. Topics may include: stakeholder and impact analysis, setting project objectives and conflict resolution, project planning and the selection of appropriate project approaches, software project effort estimation, cost-benefit analysis, activity planning and scheduling, risk management, contract management, quality assurance, professional and ethical responsibilities, and case studies.

CSIT226 - Human Computer Interaction

The subject provides students with an understanding of Human Computer Interaction (HCI) principles and practices, and how to apply them in the context of developing usable interactive computer applications and systems. The subject also emphasises the importance of taking into account contextual, organisational, and social factors in the design of computer systems. Students will be taken through the analysis, design, development, and evaluation of user interfaces. They will acquire hands-on design skills through an interaction design project. The subject will cover topics including user-centred design, the development process, prototyping, usability testing, measuring and evaluating the user experience and accessibility.

CSIT242 – Mobile Application Development

The proposed subject provides students with knowledge for mobile application design, development, implementation and deployment. The students will examine different mobile platforms and learn how to use different tools for mobile application development. The subject includes issues such as mobile interface design and data persistence. Students will develop technical skills necessary to develop applications using several languages, frameworks and tools.

CSIT302 – Cybersecurity

Cybersecurity is a global issue that knows no boundaries and affects national security, businesses and individuals alike. Students in this subject will be introduced to the broad area of cybersecurity in conjunction with issues related to cybersecurity. Among others, topics covered in this subject will include cyber threats and attacks, mobile security threats and malware, cloud security, security testing, digital forensics, cybercrime, and trusted computing.

CSIT314 – Software Development Methodologies

The subject introduces to students modern methodologies for software development. Topics may include software development life cycle activities, the role of software process models, different types of evolutionary models, Unified Process and UML, agile principles of software development, Dynamic Systems Development Method (DSDM), Scrum and extreme programming, test driven software development, the Capability Maturity Model Integration (CMMI), software engineering knowledge management, software architecture, and emerging trends in software development processes.

CSIT321 – Project

This subject is the capstone project for students in Computer Science and Information Technology it aims to provide students with: practical experience in complete systems development. The projects connect groups of students with supervisors and clients that are facing an ICT-based problem for which the students are required to find innovative and creative solutions. Working in groups, students design, implement, and document a system. This involves: project planning and scheduling, seminars and individual presentations, group coordination, research of proposed application domain, use of design methodologies, design documentation, coding, module and system integration, testing, verification, and implementation. Teams will meet weekly with supervisors to discuss progress and problems.

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CSIT328 - Web Security

The web, also known as World Wide Web (WWW), is now one of the essential Internet services. However, as web services become versatile, the number of web vulnerabilities has increased dramatically. In this subject, students will gain insight into the latest web threats. They will also learn the fundamentals of web security and understand the technical aspects of web defence.

CSIT375 – Artificial Intelligence for Cybersecurity

Artificial Intelligence (AI) has emerged as a popular solution for building smarter and safer security systems. AI assists in keeping pace with cyberattacks by predicting and detecting suspicious network activities and automating incident analysis. In this subject, students learn how AI techniques are used to prevent cyberattacks and detect threats and network anomalies, in conjunction with issues related to cybersecurity. Students will gain practical experience in developing strong cybersecurity defences using AI. Topics covered in this subject include fundamental AI techniques for cybersecurity, machine learning-based malware detection, automatic intrusion detection, and securing data with machine learning.

ECON100 – Economic Essentials for Business

This subject introduces students to essential macroeconomic and microeconomic ideas, models and reasoning. This economic knowledge is used to explore important questions such as, is economics a value free science?, do individuals behave rationally?, how and why do market structures vary across different industries and why is this knowledge important?, do markets ever fail, and if so, why?, what are some causes and implications of inflation and unemployment?, how do monetary and financial systems operate?, and how do governments typically respond to domestic macroeconomic volatility? While these questions will not be fully answered in this introductory subject, policy challenges and case studies will be used to demonstrate the importance of basic economic reasoning if sensible answers to economic and social challenges are to be found, and to stimulate greater awareness of economic approaches to the analysis of contemporary social issues.

ECON251 – Industry and Trade in Asia

This subject studies the neo-classical, structuralist and culturalist views on industrialisation in Asia using country specific examples. It examines and applies trade and industry policies, economic integration, investment flows and the international monetary system. It further explores the ‘East Asian Model’ and its application by other countries in the region. The causes of extraordinary growth and meltdown in Asian countries are analysed. The recent challenges in the region and the strategies to overcome the main challenges are emphasised.

ISIT204 - Principles of eBusiness

This subject aims to provide students with an understanding of eBusiness fundamentals. Today most businesses compete in a global environment and a sound strategy for online business is essential to facilitate this. This subject covers key areas of eBusiness, including: business-to-consumer, business-to-business and business-to-government electronic commerce (EC); online business models and electronic payment systems (EPS) and EC technology basics. Standards, regulation and policy, security and social and economic issues will also be considered in the contexts of business Intranets, Extranets and the Internet. The subject also provides an introduction to the 'Patterns for eBusiness' approach to eBusiness analysis and design.

ISIT207 – Frontend Web Programming

The subject provides students with a practical knowledge of web programming concepts and techniques and user interface design techniques used in the creation of dynamic web sites. The subject will provide students with an opportunity to develop an understanding of the principles of client and server-based scripts as well as user-interface constructs. Students will also be able to apply these principles. The subject provides an in-depth look at the object-oriented features of web programming. Students will have exposure to appropriate software development tools to complete a data cycle of input data –store data –output data via the web.

ISIT219 – Knowledge and Information Engineering

This subject explores issues in using IT to support knowledge sharing and reuse. Challenges in representing and sharing knowledge in the context of deploying knowledge systems are studied. Additional challenges in heterogeneous IT environments are also examined. The subject presents systematic approaches for knowledge engineering via a contemporary Web and modern information modelling approach. The appropriate application environments, acquisition tools and representation schemes for content management are examined along with their relationship to contemporary issues in Web technology.

ISIT224 – Management Information Systems

This subject introduces students to an overview of all the major Information Systems found in a typical business covering systems such as finance, HR, payroll, inventory, sales, CRM, SCM and ERP. Students will be introduced to the processes involved in managing information systems in the contemporary business environment. Students will gain an appreciation of the issues surrounding the strategy and planning of information systems; the strategic, tactical and operational roles of the Chief Information Officer (CIO); the alignment between information systems and business; policy and practice; technology diffusion; operational management; major trends impacting information systems management and how to assess the value of information systems.

ISIT306 – Strategic eBusiness Solutions

This subject aims to provide students with an understanding of how to design integrated solutions for eBusiness using a pattern-oriented approach. Enterprises, both large and small, as well as government institutions, are increasingly becoming reliant upon eBusiness infrastructure. Knowing the strategic business and technology principles and practices related to the design process is becoming increasingly important for a given organisation. This subject will cover

business scenarios including electronic data interchange (EDI), supply chain management (SCM), enterprise application integration (EAI), customer relationship management (CRM), sales force automation (SFA); and knowledge management systems (KM).

ISIT307 – Web Server Programming

The subject aims to integrate the previous knowledge which students have gained through subjects on web technologies, web programming and databases to create real-world web applications like shopping carts or advanced form processing systems etc. It also introduces students to open-source programming languages in web development so that they can inexpensively develop sophisticated web applications. Students will become familiar with the integration of programming, databases, web-applications, and structural and object oriented programming.

ISIT312 – Big Data Management

The subject addresses the problems of managing and processing of extremely large data sets in a single-server centralized computing systems and in multi-server clustered and distributed computing systems. The topics related to processing of large data sets in centralized environments include the techniques based on the classical data warehouse technologies such multidimensional data model, data warehouse architecture, data warehouse design both at conceptual and logical levels, and data warehouse processing with appropriate specialised query operations. The topics related to processing of large data sets in distributed environments include the techniques that can be implemented on the clusters of inexpensive computing nodes using MapReduce programming model. The subject introduces the students to the real time analytical processing of large data sets with analytical cluster-based distributed data processing systems. Discussion and hands on exercises related to these topics will equip students to meet the challenges in Big Data environments and appreciate the added challenges of dealing with unstructured data. Students will be presented with opportunities to do hands-on work with appropriate commercial tools.

ISIT332 – Business Process Management

Business process management (BPM) combines a process-centric and cross-functional approach to improving how organizations achieve their business goals. A BPM solution makes use of IT to model, automate, manage and optimize business processes to increase productivity. Within this subject students learn important process-centric issues in business system design and implementation. Focus will be placed on both business and technical perspectives of BPM. Topics covered include: Basic business process concepts; Business process modelling; Business process outsourcing; Business process re-engineering; Business process improvement; Workflow and business process automation; Business process management and service-oriented architecture.

MARK101 – Marketing Principles

Marketing is a set of activities and processes for creating, communicating and delivering offerings and facilitating satisfying exchange relationships in a way that delivers value for consumers and society. Organisations need to know how to define and segment a market and how to position themselves strongly by identifying marketing opportunities and problems, and developing products, services, experiences and ideas for chosen target markets more effectively than

their competitors. Marketing is essential for all organisations including manufacturers, wholesalers, retailers, professional services firms including lawyers, accountants and architects, and non-profit institutions including charities and museums. The subject examines the fundamental concepts underpinning the marketing process and theories relevant to the study and practice of marketing. It serves as a foundation for further studies in business by developing an overview of where marketing fits within organisations and what framework marketing provides for enhancing and enabling the conduct of a business.

MATH255 - Mathematics for Computing

This subject provides key mathematical and statistical knowledge and skills for students in both computer science and information technology. The subject is split into two strands, namely Discrete Mathematics and Data Analysis.

In the discrete mathematics strand students will develop basic skills in propositional logic, predicate logic, formal proof, set theory, graph theory, as well as the theory of relations and functions, with a focus on skills required for learning computing. Further, students will study elements of pre-calculus and calculus that support the data analysis strand.

The data analysis strand focuses on knowledge to support analysis in the IT workplace. It begins with a review of fundamental probability, followed by exploratory data analysis for univariate data, leading into correlation and simple linear regression for bivariate data. Study continues with discrete probability distributions including binomial and Poisson; and continuous probability distributions including the normal and exponential. Final topics include sampling distributions, an introduction to confidence intervals and hypothesis testing for means and proportions. These topics will be taught with appropriate statistical computing software.

MGNT102 – Business Communications

This subject introduces the theory and practice of communication in business and in workplaces. It offers knowledge and information on how students can become more effective by becoming culturally sensitive and humane communicators, both personally and professionally, in a range of multimodal environments. It examines and discusses the cultural, organisational and personal contexts and processes of communication, including groups, meetings, interviews, public speaking, presentations and writing. Other issues discussed include interpersonal skills, understandings of non-verbal messages, listening practices and building relationships in business and workplaces.

MGNT110 - Introduction to Management

Wherever organisations exist, a manager's role emerges. Organisations rely on managers and the management function for the efficient and effective running of their operations. This subject will introduce students to the various functions involved in managing, as well as the context of management: the organisation. Students will learn key management theories and concepts including organisational culture, social responsibility and ethics, managing groups, motivating employees, planning, managing human resources and employment relations, strategic management, decision-making, supply chain and operations management, leadership and foundations of management control. Students will learn how the different interests between organisational stakeholders affect various management processes, and the implications of managerial decisions on the internal and external environments.

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MGNT201 – Organisational Behaviour

The subject examines aspects of the social and behavioural sciences that are relevant to understanding human behaviour in work organisations. The focus of the subject ranges from the behaviour and activities of individuals and groups in organisational settings, to understanding complex organisations as a whole.

MGNT206 – Managing Human Resources

This subject is concerned with the concepts, techniques and activities involved in managing the flow of people through work organisations. Emphasis is placed on understanding the techniques of contemporary HRM that can be applied in organisations to facilitate the acquisition and development of staff, to influence positively their job performance, and to manage the processes of staff turnover and retention.

MGNT220 – Organisational Analysis

This subject examines the key theoretical frames that are used to analyse complex organisations. Students are provided with an understanding of theories and concepts that explain how organisational members are affected by organisational structures and environments, human resource flows, politics, and microcultures. Emphasis is placed on frame complementarity and learning how to apply the frames to real organisations.

MGNT311 – Management of Change

This subject deals with management of change in organisations. Topics include: sources of change, resistance to change, coping with change, organisational values, creation of organisational visions and missions, leading organisational change, models of organisational change, creation and change of organisational cultures. Emphasis is placed on the application of theory to case study examples.