Anglia Ruskin University

Course Title	Hours	Course Description	Literature Used
Database Design and Implementation	100	Databases is identified as a specific area of study within the 2007 QAA Computing benchmark. Computer science and information science are mostly all about data. A database management system is a way to store data in a way that makes it easier to retrieve, update, search and delete. Databases is a specialist field in its own domain leading to careers such as Database Designer, Database Developer and Database Administrator. Moreover, it is a part and parcel for many other job roles e.g. Software Engineer, Game Developer, Full-stack Web Developer and Back-end Developer. You will not only learn the specialist skills to design and implement a database, but also practice soft skills such as time management, presentation, teamwork, and collaboration.	Database processing fundamentals, design, and implementation. Global edition. Kroenke, David M. Database Systems: practical approach to design, implementation, and management, Sixth edition, Global edition Thomas M.,Connolly; Carolyn,Begg
System Modelling	100	A software engineering life cycle explores software development processes including requirements analysis, modelling and design, code implementation and design patterns and testing and maintenance. When studying the subject, you will gain a theoretical understanding and practical experience of the life-cycle of software applications by learning how to apply software engineering principles to the development of a software system. You will look into the difference between the Waterfall and Agile methodologies and use the latter for project management including learning about the cost drivers that can influence projects. In addition you will apply the knowledge gained in earlier modules to model and design a system by using a range of UML diagrams and you will learn about architectural design including the application of design patterns. Both the automated and manual testing are discussed and you will have to demonstrate the ability to use both of them. You will build on your employability skills by working in a team to develop a complete and robust software system including coordinating the work among team members using a distributed-version control system.	Systems Modeling and Computer Simulation; Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development
Computer Network Principles	150	Modern networks continue to evolve to keep pace with the changing way	

		organizations carry out their daily business. Users now expect instant access to company resources from anywhere and at any time. These resources not only include traditional data but also video and voice. There is also an increasing need for collaboration technologies that allow real-time sharing of resources between multiple remote individuals as though they were at the same physical location. The global Internet is a collection of networks, termed Autonomous Systems (AS), that are linked together via high-speed communication links provided by telecommunication organisations. Your studies will focus on the key concepts and protocols of network routing. We will cover basic routing and switching concepts, including static and default routing, Virtual Local Area Networks (VLANs), and inter-VLANs routing. Dynamic protocols such as RIP and OSPF will be discussed and explored. Network security using Access Control Lists will be introduced and the wider issues of network and Internet security considered. You will study in classes which contain a mixture of theory, delivered through a series of lectures, and practical implementations, delivered through a series of guided laboratory exercises. In the lab sessions you will gain a deep understanding of routing and switching concepts and acquire hands-on-skills using advanced network simulation tools that comply with industry standard router platforms. As part of studying this module you will be able to access on-line materials including the Cisco Networking Academy online curriculum and access specialist laboratory resources.	Routing Protocols Companion Guide Publisher: Cisco Press Routing and switching essentials. Companion guide Cisco Networking Academy Program, associated with work. Publisher: Cisco Press 2011
Group Design Project	150	Group Design Project is designed to prepare our students for a complex, challenging and changing future. These interdisciplinary modules provide the opportunity to further broaden your perspectives, develop your intellectual flexibility and creativity. You will work with others from different disciplines to enable you to reflect critically on the limitations of a single discipline to solve wider societal concerns. You will be supported to create meaningful connections across disciplines to apply new knowledge to tackle complex problems and key challenges. Group Design Project is designed	

		to grow your confidence, seek and maximise opportunities to realise your potential to give you a distinctive edge and enhance your success in the workplace.	
Interaction and Usability	100		Designing Interfaces: Patterns for Effective Interaction Design (Paperback) by Jenifer Tidwell Universal Principles of Design: 100 Ways to Enhance Usability, Influence Perception, Increase Appeal, Make Better Design Decisions Lean UX: Applying Lean Principles to Improve User Experience by Jeff Gothelf
Object Oriented C++	150	Object oriented C++ aims to provide help you understand and use the basic programming constructs of C/C++ Manipulate various C/C++ datatypes, such as arrays, strings, and pointers. Isolate and fix common errors in C++ programs. Use memory appropriately, including proper allocation/deallocation procedures.	The C++ Programming Language. By Bjarne Stroustrup C++ Concurrency In Action: By Anthony Williams
Emerging Technology	100	I cant retrieve the description for this.	Can Emerging Technologies Make a Difference in Development? Edited By Rachel A. Parker, Richard P. Appelbaum. Gartner Hype Cycle Emerging Technologies for the Classroom: A Learning Sciences Perspective
Professional Issues: Computing and Society	150	Professional Issues: Computing and Society aims to provide you an understanding of the issues, opportunities and problems which have arisen as a result of the computerisation of wide areas of human activity. It is designed to enhance advanced computer reflective thinking in both computer science specialists and others, and is a key part of the programme of professional development for computer	Icon for type book Pandora's box: social and professional issues of the information age Andrew,Adams; Rachel,McCrindle Professional issues in information technology, Second edition

		scientists and others seeking to embody professional values and approaches in the IT and computing fields. You will be covered by relevant and current topics in Computer Law (e.g. Data Protection; Intellectual Property Law; Computer Misuse) and other social, ethical and legal topics such as considering the causes and effects of systems failures (including but not limited to computer systems failure). Other aspects such as the ethical and professional responsibilities of graduates - particularly those from IT and computing disciplines - will be critically appraised. It is essential to ensure that a professional engineer has an in depth understanding of professional ethics, law and the impact of what they do on society. The knowledge and understanding obtained in this module will prepare you with an in-depth understanding on different legal, ethical, professional and system aspects of your future career particularly in the areas of IT, computer science and engineering.	Frank,Bott Publisher: British Computer Society
Web server Engineering	150	Here I can't retrieve the text here also. The course involved teaching us Linux. The assignment was to build a web hosting service using Linux and host multiple publicly accessible websites with it.	The Linux Command Line A Complete Introduction William Shotts Linux Bible Christopher Negus Linux The Complete Reference Richard Petersen
Final Project	150	The individual Final Project module will allow you to engage in a substantial piece of individual research and/or product development work, focused on a topic relevant to your specific discipline. Your topic may be drawn from a variety of sources including: ARU research groups, previous/current work experience, your company in which you are currently employed, an ARU staff-suggested topic or a topic of your specific interest related to your course discipline. Your project topic will be appraised for suitability to ensure there is sufficient academic challenge and that satisfactory supervision by an academic member of staff is available. Your chosen topic will require you to identify/formulate problems and issues, conduct literature reviews, evaluate information, investigate	

		and adopt suitable development methodologies, determine solutions, develop hardware, software and/or media artefacts as appropriate, process data, and critically appraise and present your findings using a variety of media. Regular meetings with your project supervisor will take place to ensure the project is closely monitored and guided in the right direction. A successful project will increase your employability as employers often place far more emphasis than the credit weighting suggests for this module because it will reflect skills directly applicable to the workplace and real world projects (such as qualities of self-management, planning and organisational skills).	
Information Security	100	Studying this module will give you a rounded introduction to the principles of ethical hacking from both a theoretical and technical perspective. As part of your studies you will be given a contextual setting for ethical hacking by an examination of the issues associated with systems security, cybercrime and the criminal justice system i.e. Computer Misuse Act. Within a mixture of lectures. Demonstrations and practical sessions you will be introduced to the basic principles of ethical hacking and the role ethical hacking plays in providing more secure and robust information to support computer systems and networks (including wireless networks). Will involve being exposed to, and use, the basic tools and techniques of ethical hacking, particularly in regard to penetration testing and systems security within a safe and sandboxed environment. You will be provided with opportunities to develop academic skills in report writing and evidence based demonstrations. By research and application you will develop the skills to manage the particular legal, ethical and professional challenges, facing the Information Security practitioner with particular reference to the criminal justice system in England and Wales and the Computer Misuse Act.	OWASP Testing Guide v4.0 Schneier on security Schneier, Bruce; Schneier, Bruce, 1963- Publisher: Wiley ; Chichester 2008

Distributed Systems	150	The module covers the key principles of low-level distributed programming to manage the communication of data between computers. The language of implementation will be one whose libraries support Socket programming, such as Java, C# or C++. Students will learn how to develop applications that share out, or 'farm' large computing operations to smaller interconnected nodes thus implementing a kind of virtual parallel processing. A variety of practical exercises will illustrate these programming techniques and components in an Intranet environment. Examples of programming language support for some of the more common application and communication network protocols will be covered. Threads and multi-threading is introduced as a technique to manage concurrency and the marshalling of data between processes. ics of a distributed systems guage specific programming network support tworks and UDP sockets TCP socket gramming lication protocols Creating and controlling eads	Concurrent and real-time programming in java threads, RTSJ and RMI Benmammar, Badr; Practical database programming with Java Bai, Ying; Bai, Ying, 1956-. Publisher: Wiley-Blackwell 2011

Cranfield University

Course Title	Hours	Course Description	Literature Used
Accounting	100	The aim of the Accounting and Finance module is to introduce a number of traditional and contemporary accounting approaches that will increase the visibility of financial information and support management decision making.	
Challenges for Leaders Managing People and Change	100	Focus on the formal elements of change – structures, systems, and processes. Understand the complexity of the change issue. Visualise and manage informal networks. Organizations are made up of people interacting with each other, and social relationships are central to enabling effective change. Lead the change. Organizational change requires direction, alignment, and commitment. We help you to set direction	

		by developing a deep understanding of present challenges and transition paths toward potential future states	
Data Analytics and Decision Making	200	Descriptive statistics Distinguish and categorise the different types of data generated by different companies and industries and propose a protocol to process them. Create an efficient data analysis workflow to process a dataset by selecting complementary methods. We submitted a report on the Circularity of Universities in UK and used the knowledge gained in the course to analyze the Universities. Deliver a research project, including identification of research methods, Design a data analysis method appropriate to their chosen research topic, Execute a short project, analyse the outcomes and provide sound recommendations.	
Economics of Organization and Strategy	100	To introduce the concepts and techniques associated with Managerial Economics, i.e. Microeconomics (e.g. market analysis, price theory, rationality) and Macroeconomics (e.g. inflation, exchange rates and interest rates).	
Energy Markets. An Executive Perspective	100	Description Not available. Access to Eve platform not available	
Entrepreneurial Finance for Early-Stage Business	100	The aim of this elective is to make students familiar with the principles of entrepreneurial finance. It provides students with an overview of the different sources of funding available across the entrepreneurial life cycle and equips them with clear guidelines on which type should be adopted at which stage. In particular, debt and equity funding will be covered during class as well as new emerging alternatives such as crowdfunding. Moreover, students will learn a variety of techniques for early-stage business valuation, and how to prepare a term sheet. This is a very practical module, enabling students to assess business plans and develop a funding strategy for an entrepreneurial venture.	

		During and between classes students will be required to research information and complete application exercises.	
Entrepreneurship and New Venture Creation	100	Description Not available. Access to Eve platform not available	
Financial Management	100	Description Not available. Access to Eve platform not available	
Global Macro Economics and Business Environment	100	To introduce the concepts and techniques of Macroeconomics (e.g. inflation, exchange rates and interest rates) in a way which provides a core foundation for later applied financial analysis in a range of other core topics. In the Context of the Financial markets, it is imperative that students be aware of the fundamental principles and concepts pertaining to Economic Theory per se. Studying economics not only does it provide knowledge for making decisions but it also offers a tool with which to approach questions such as the desirability of a particular financial investment opportunity, the benefits and costs of alternative careers, or the likely impacts of public policies.	
International Business Assignment	100	Consult for an International business and develop strategy for them for international expansion. I consulted with Nantsune in Japan.	
Leadership In Action	100	Focus on equipping student to deal with and increasingly engage in complex, cross boundary, adaptive and collaborative work	
Organizational Behavior: Developing Leaders	100	Organisations are run by and for people, and the success or failure of an organisation depends on the people in that organisation. It is rarely an absence of planning that causes organisational difficulties; rather it is the failure of management in understanding and managing complex personal and interpersonal systems that can lead to significant problems. Similarly an acute and critical understanding of these dynamic relationships can lead to profound and enduring success and benefit for the individual, the team, the organisation and wider society. In this module students will be introduced to various aspects of people and organisations. This module combines models, theories and	

		ideas from organisational behaviour, psychology, and sociology in order to provide students with a basic understanding in recognising, understanding and utilising what has been termed the "human factor" in organisations; including ways of conceptualising organisations and how people behave within them. We shall consider the impact of the external environment; and address notions of organisational change. This module is necessarily an introduction; further suggestions of reading and of consequent activities will be provided. It may also be that students will wish to undertake a project in this area; several of the faculty involved will be pleased to discuss this with you.	
Project Management	100	In many organisations, projects are the units of work by which the organisation operates, and value is delivered. In organisations where functional departments dominate the organisational design, strategic and change projects are run across these functions. Currently, there is a heightened emphasis on delivery within both government and industry with a widespread expectation that the approach of managing through projects will provide assurance in such delivery. It is an interesting challenge that this expectation is often not matched by performance. This elective focusses on the following module aims: Develop a robust baseline of knowledge and understanding of the fundamental principles of project management; Introduce key theories, principles, processes, tools and techniques underpinning project management; Raise critical awareness of common methods and other guidance for practical application; You to demonstrate your learning in planning for a simulated project.	
Risk Management: Technology Qualification and	100	Most organisations are already using safety management systems and the aim of the module is to take an in-depth view of their	

Decision Making in Energy Investments		effectiveness. It will include the various methods of safety assurance, plus the concepts of safety culture and resilience across the organisation. A critical review of the varied types of risk assessment will also be included.	
Specialized Energy Consultancy Project	100	The purpose of this module is to provide you with experience of scoping, designing and delivering of a short research project. This requires an understanding of the background literature, as well as relevant analysis techniques. You will need to agree the project scope early on and deliver the project within the two weeks of the module. The module will allow you to draw on the experience and learning from the previous modules. Example topics could include analysis of end-of-life options for an offshore asset.	
Strategic Management	100	Strategic Management is concerned with the direction and scope of the organisation. This involves determining the purpose of the organisation, establishing objectives and formulating strategies to achieve the objectives. It predominantly explores how an organisation positions itself with regard to its changing environment, and in particular its competitors, in order to gain and sustain competitive advantage. This means that strategic management considers how an organization's internal resources and capabilities can be developed to meet the changing demands of customers, in such a way as to achieve the expectations and objectives of its stakeholders.	
Strategic Marketing	100	A crucial competence for general managers is an understanding of marketing strategy: in simple terms, analysing how a marketplace of customers can be divided into segments, which of these segments are key targets for the firm, determining the firm's optimal value proposition for each segment, and what financial and non-financial results can be expected over a planning period of typically 1-3 years. This module teaches Cranfield's world-leading step-by-step process for developing such a marketing strategy and documenting it in a marketing plan. This process has been developed with hundreds of blue-chip companies worldwide	

		over the last 30 years, informed by several Cranfield PhDs on the topic which have studied what works in practice. This planning process is documented in a leading textbook on the topic, McDonald & Wilson's Marketing Plans, which has sold over half a million copies. This book is used as the course text. Students may wish to acquire a copy from the library or through purchase to help bridge from the course to planning for real in their subsequent management roles.	
Strategic Operations Management	100	To provide the participant with an understanding of the Operations Management task and its contribution to organizational competitiveness. Strategic role of operations Process design and layout Managing the process experience Tools and techniques of process improvement Capacity management Inventory management, lean and agile operations Quality management and improvement People in operations Managing product and service innovation.	
Sustainable and Conventional Energy Technologies	100	An understanding of the principles of renewable energy technologies is key to assimilate the technological basis of the systems and applications. The module provides the fundamentals of the renewable energy technologies and their impact on global and national energy system. The purpose of this module is to introduce the basis for assessment of the performances of solar (both PV and CSP), wind, wave and tidal, geothermal as well as hydro-electricity technologies. By the end of the module, you will have a better understanding of the various renewable technologies and will have the opportunity to visit a PV solar plant to see the real dimension of an operational plant. On successful completion of this module you should be able to: Identify the different components and main configuration of the different renewable technologies covered in the module,	

		Articulate the fundamental principles, terminology and key issues related to the most used renewable energy technologies, Critically compare the challenges for the development and operation of the major technologies, including government regulation and policy, Identify gaps in the knowledge and discuss potential opportunities for further development, including technology and economic potential.	
Value Chain of Fuels Production and Energy Conversion	100	Fundamental concepts of fuels, energy and major energy conversion systems and how these relate to Primary and Support Activities within the value chain. Supply and value chains of fossil fuels, bio-based fuels, and renewables The value of carbon capture and storage (CCS). The potential for H2 to disrupt the current energy landscape. Influencing factors (climate change targets, economic, social, and political) Marketing and selling a new fuel or energy conversion technology. How the energy and electricity value chains might change in the future	