Bournemouth University

Faculty of Science and Technology

Programme Specification

Computing Masters Framework

MSc Information Technology
MSc Applied Data Analytics
MSc Cyber Security and Human Factors

November 2018

v3.6-0119

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Faculty of Science and Technology
Bournemouth University
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BASIC FRAMEWORK/PROGRAMME DATA

Originating institution(s)	Bournemouth University
Award(s) and programme title(s)	MSc Information Technology MSc Applied Data Analytics MSc Cyber Security and Human Factors PGDip Information Technology PGDip Applied Data Analytics PGCert Computing
UCAS Programme Code(s)	N/A
External Reference Points(S)	**www.cphc.ac.uk/docs/cphc_masters_april_final.pdf** **http://www.qaa.ac.uk/academicinfrastructure/fheq/EWI/default.asp** QAA Chapter A1: The national level *(incorporating the Framework for Higher Education Qualifications (FHEQ) in England, Wales and Northern Ireland)* QAA Chapter A2: The Subject and Qualification Level *(incorporating Masters Degree Characteristics)* GCHQ Academic Centres of Excellence in Cyber Security Education (ACE-CSEs)
Place(s) of delivery	Talbot Campus Cyber Security and Human Factors programme: units can also be delivered off-campus
Mode(s) of delivery	Full-time/Part-time CPD accredited units for the Cyber Security and Human Factors programme
Credit structure (ECTS (European Credit Transfer Scheme) equivalent credit values shown in brackets)	180 Credits (90 ECTS): Substantially Taught Mode: 120 credits taught units and 60 credits project
Expected start dates	September January

Duration of programme	Full Time For September intakes: 12 months without placement or 24 months with a 12 month placement For January intakes: 18 months without placement or 30 months with a 12 month placement Part Time **IT, ADA**: 24 months **CSHF**:18 – 36 Months (CPD with 3 or more units will be encouraged to enrol on the MSc)
Date of original approval	Computing Framework (2005), Electronics & Networks Framework (2006)
Date of first intake	**IT** September 2012 **ADA** September 2013 **CSHF**: Full time: September 2015. Part time: February 2015 and September 2015
Initial target intake	30 **CSHF**: Part-time: Expected minimum: 10, maximum: 20, optimum: 12 Full-time: Expected minimum: 10, maximum: 20, optimum 12
Placements	**IT/ADA/CSHF** Optional 1 year
Professional accreditations or exemptions	None
Partner institution(s)	N/A
Data and version number of this Framework/Programme Specification	v3.6-0119 November 2018

July 2013
E1213148: Approval of MSc Applied Data Analytics

November 2013
E1314010 E1314011: Approval of Recognition Agreement with Beijing Jiaotong University (BJTU) and **E1314012 E1314013** Approval of Recognition Agreement with Xidian University – recognition with advanced standing:
BSc Business Information Technology
BSc Information Technology Management
BSc Computing
BSc Software Engineering
BSc Computer Networks

May 2014:

DEC 1314 03:
(1) MSc ADA SAS Programming – optional unit made compulsory
(2) Introduction to MSc ADA of an optional Industrial Placement

January 2015:
E1415016 Approval of Cyber Security and Human Factors

January 2016
FST 1516 11 Change to allow units on CSHF to be delivered as CPD units off-campus

June 2016
FST 1516 15, approved 31/05/2016.

January 2017
NM 1617 04

February 2017
FST 1617 03, approved 19/10/16. Previously version 3.2-0916
FST 1617 07, approved 23/02/17. Previously version 3.3-0917

FST 1718 21, approved 17/07/2018. Previously version 3.4-0918
FST 1718 23, approved 20/08/2018. Previously version 3.5-0918

AIMS OF THE DOCUMENT

This section provides details of a number of Master's programmes within a single framework for validation.

In addition to this Volume 2, the Programmes' Specification Document, there are two further documents:

VOLUME 1: Briefing and Resources Document

This document provides the rationale for the proposed framework, information about market research, the Faculty's profile and the programmes' review and development. It also provides general information on: student entry profile, teaching and learning, assessment strategy, employment and arrangement for current students. In addition, the document also provides information on library resources and staff CVs.

VOLUME 3: Unit Specification

This document describes in detail the units which comprise the programmes. It specifies unit aims, intended learning outcomes, assessment, learning and teaching methods and curriculum contents.

This document explains the rationale of the Computing Master Framework. The framework relies on a set of common units taught to all computing master framework students, a set of programme specific units, and final individual project.

These programmes recruit candidates with the appropriate focus on qualifications relevant to their corresponding fields.

This document has three aims, to:

- define the structure of a Master's framework and the award routes within it
- specify all the programme outcomes
- make or give reference to regulations governing all the programmes in the framework

ACADEMIC AND PROFESSIONAL CONTEXTS

Cyber Security Unit (CSU)

The BU Cyber Security Unit business case established this operational capability into the Faculty of Science and Technology in October 2013. The CSU has a fusion of research, knowledge exchange and education. This facility has 3 dedicated laboratories (red, blue and white) for Cyber Security Investigation. Each lab can support 20 students with a host of Cyber defensive and Cyber offensive tool kits.

Software Systems Research Centre (SSRC)

The Software Systems Research Centre focuses on the research, development and application of innovative modelling tools and technologies for software systems. A particular emphasis is upon research that impacts professional practice. The SSRC is one of the most important research centres at the school of design, engineering and computing.

The purpose of the SSRC is and shall be to encourage, foster, contribute to and promote the advancement of software system research in the U.K. The SSRC has an excellent reputation in research and achieved over 290 international publications and over 10 running/finished EU, UK projects. IFIP PRO-VE 2012 working conference is organised by SSRC. Moreover, we have over 30 active researchers for supporting our research activities.

Rationale for the Academic Context

Designing and deploying computing systems is one of the most rapidly expanding areas in IT development. Because every computing system is unique, the precise processes or procedures within each activity are difficult to define. The expansion of the market and the application areas of IT and software systems are rapidly growing especially in the U.K. This is an exciting, fast-changing and rewarding area to be involved with; well-qualified technical professionals in this area are, and will, in the foreseeable future, continue to be in great demand internationally and command substantial rewards.

Over the past decade both information technology and applications have reached such a level of maturity and sophistication that we begin to see a number of quite distinct and specialised application areas emerging. Such areas are enterprise information systems, Web systems, mobile & pervasive technology, and usability design. The programmes in the computing masters framework address a number of areas in the above fields providing both specialist and generalist graduates who are in great demand in the computing industry.

The programmes within the computing Master's framework are closely integrated. Each programme runs concurrently and all have a significant degree of commonality. Although each programme identifies a specialised area, the degree of overlap between the programmes enables graduates to pursue a wide range of career aspirations.

The Framework strengths are threefold:

- A state of art technology,
- Industry-standard hardware and software,
- A qualified, experienced, academic team.

Feedback from ex-students and discussions with industrial partners confirms our belief that there is a demand for graduates who have strong technical skills complemented by relevant academic skills. This is a significant strength and differentiates us from the competition. Working with industry-standard hardware and software ensures that our graduates are desirable employees.

The Software Systems Research Centre's staff possess a wide range of skills that enables them to deliver the programme to a high academic and professional level. The framework team works closely with industry and tries, where possible, to incorporate their recommendations into programme content, resourcing and delivery.

Smart Technology Research Centre (STRC)

Being an active research centre at the Faculty of Science and Technology, the Smart Technology Research Centre (STRC) aims at investigating and developing smart systems and technologies that provide seamless integration of information from various sources for, among others, innovative technology driven services, extraction and intelligent analysis of information from large commercial and scientific databases, reduction of operational costs of industrial processes, analysis of complex systems and for improving of quality of life. In particular, STRC aims at addressing the need for intelligent systems with ability to make decisions and operate in unknown environments taking advantage of increasingly available sensory technologies, availability of huge amounts of data in diverse disciplines and proliferation of a variety of mobile devices with significant computational capacity.

Besides fundamental research, STRC contributes and promotes computational intelligence in different application areas such as telecommunication, industry, airlines, etc. reflected by the number of EU/UK projects, publications and scientific events organised. Currently STRC has 23 active researchers among which a number of academics have long teaching and research.

AIMS OF THE FRAMEWORK / PROGRAMME(S)

The MSc Computing Framework aims are achieved by the provision of a variety of different learning experiences: lectures, seminars/tutorials, practical workshops, directed/guided studies and research. The aim of the framework is to produce rounded professionals with strong technical, creative, and intellectual skills that will serve the computing industries.

The full-time delivery of MSc IT, MSc ADA and MSc CSHF comprise two teaching semesters followed by an optional placement experience combined with a literature review dissertation. The intended delivery pattern is that units are delivered in semesters, aiming for an average of 3 contact hours per week. Teaching is informed by research, enabling students to become up-to-date with the latest developments in their areas of study. Covering theoretical principles, the ability to apply these principles and to achieve effective practical solutions to non-trivial problems is paramount. Considerable emphasis is placed upon the integration within the programme and the development of transferable professional skills in a global context.

The part-time element (and any CPD modules) of the MSc CSHF programme will be designed to deliver no more than two thirds of the credits (in a single academic year) of an equivalent full-time programme. For example, where our full-time postgraduate MSc CSHF programme delivers 180 credits in an academic year, the part-time equivalent should not exceed 120 credits, hence a minimum of 18 months to complete.

Award of PgDip
Those students who successfully complete all Units except Individual Master Project may be considered for the award of PgDip instead of MSc.

Award of PgCert
Those students who do not successfully complete all Units (but complete at least 60 credits) may be considered for the PgCert instead of MSc.

The PgDip programme enables students to upgrade previous knowledge in terms of their academic standard without the practical placement and final dissertations. This may be more suited for those with academic intentions but who do not wish to apply their knowledge in any of the placement settings.

Currently there are benchmarking standards for taught Master's degrees in computing[1] as well as the National Framework for Higher Education Qualifications[2] which indicates the levels appropriate for Masters programmes. The intended learning outcomes (ILOs) have been set at level 7 based upon these two levels.

Our philosophy is to promote creative use of technology, encourage interdisciplinary study, and provide a common platform for the synthesis and a synergy of computer science subjects. This is reflected in both framework programmes by the introduction of common units, by promoting subject related units and individual projects.

MSc Information Technology programme provides a route into Information Technology for graduates with limited training in this discipline. This could be candidates with some experience of but no formal qualification in Information Technology, or simply those with first degrees in subjects other than Information Technology (this could be related titles such as Electronic Engineering) who wish to extend their work field into IT. The programme offers social science and the economy graduates who will be ready to contribute to business computing, key added value to the global economy. The related units are:

[1] www.cphc.ac.uk/docs/cphc_masters_april_final.pdf
[2] http://www.qaa.ac.uk/academicinfrastructure/fheq/EWNI/default.asp

- Database Design & Development
- IT Management
- Process Oriented Requirements Engineering
- Research Methods & Professional Issues
- Usability Engineering
- Web Systems
- Individual Project

MSc Applied Data Analytics aims to equip students with skills to gain competitive advantage based on analytical insight into the business, scientific and organisations' data. This programme is cross disciplinary with a broad range of application areas. Graduates will be able to work as data analysts, consultants, business intelligence experts, data managers or progress to research in intelligent data analysis related R&D programmes. The MSc units will be research informed and delivered by the research active academics taking part in high profile projects funded, among others, by European Union and UK Research Councils and partners such as British Telecommunication, Lufthansa Systems, Evonik Industries, Screwfix Direct or NHS. Master students on this programme will have an opportunity to be involved in such research projects as part of their studies. The relate units are:

- Advanced Data Management
- Analytics for Data Stream
- Big Data and Cloud Computing
- Business Intelligence
- Data Mining & Analytic Technologies
- Research Methods & Professional Issues
- SAS Programming
- Web Mining and Analytics
- Individual Project

MSc Cyber Security and Human Factors (CSHF) programme provides a route into Information Assurance, Human Factors, Cyber Psychology and Cyber security for graduates with limited training in this discipline. Below is the CSU Level 7 MSc CSHF module availability to students enrolled on an approved and assessed courses and those available for purchased CPD. Assessed CPD students will enrol and be taught as part-time Students. They will be required to enrol on the MSc Programme on completion of 2x Level 7 modules and they intend to take further Level 7 courses. At present the CSU will offer 4 Level 7 modules. No online support is envisaged, but may be purchased via separate contract. Non-assessed CPD courses will be negotiated by individual business cases and separate commercial contracts.

MSCSHF Units	Availability			
	Full-Time	Part-Time	Assessed CPD	CPD
Human Factors	Yes	Yes	Yes	Yes
Cyber Security	Yes	Yes	Yes	Yes
Research Methods & Professional Issues	Yes	Yes	No	No
Information Assurance	Yes	Yes	Yes	Yes
Cyber Psychology	Yes	Yes	Yes	Yes
Individual Masters Project	Yes	Yes	No	No
Security Event and Incident Mgt	Yes	Yes	Yes	No
Enterprise Digital Forensics	Yes	Yes	Yes	No
Security by Design	Yes	Yes	Yes	No

MSc Information Technology

This programme provides a route into Information Technology for graduates with limited training in this discipline. This could be candidates with some experience of but no formal qualification in Information Technology, or simply those with first degrees in subjects other than Information Technology (this could be related titles such as Electronic Engineering) who wish to extend their work field into IT. The programme offers social science and the economy graduates who will be ready to contribute to business computing, key added value to the global economy.

Aims of the Programme

Large software systems need to reflect the business processes that they support. Indeed, for many organisations their software infrastructure actually forms a core part of their business function. Hence, it is vital for those developing such systems to understand how the business process and strategy shapes the development of IT applications. The Information Technology programme exposes graduates to all of these aspects of modern business systems. Instead of focussing on traditional software development, greater emphasis is given to the development of business systems such as web systems and database systems.

This programme is distinctive in that it provides students without previous IT qualifications the opportunity to become information technologists, providing a 'fast-track' into the business computing profession.

This programme provides students without previous computing qualifications the opportunity to move into business system development. It is also distinctive in producing graduates who are able to understand the business perspective, create a systems view of business system development, and who can also implement such systems.

The primary aim of this programme is the development of Master's level graduates who have

- a critical understanding of business methods and management concepts required for support large business process systems;
- a critical understanding in creating cutting-edge business analytics applications and originality in the application of knowledge and skills to create IT solutions to real-world design problems;
- technical skills and competencies to work across data, operations, analytics, processes, technology & architecture of different industries and segments, such as healthcare, hospitality, transportation and banking;
- research skills in areas such as literature reviews, critical analysis of research findings, project proposals, planning, experiment design and analysis, and dissemination.

Programme Intended Learning Outcomes

Graduates from this programme will possess the technical skills and competencies to work as intermediaries between business analysts and software engineers. The intellectual skills developed are those of business systems analysts, requirements engineers, systems analysts and project managers.

They are expected to become lifelong learners, taking on the challenge of the rapid rate of change and emergence of new knowledge in both business and computing.

A. Subject Knowledge and Understanding

This programme provides opportunities for students to develop and demonstrate knowledge and understanding, as follows:

A1. The systems development process: analysis, specification, design and implementation of business systems.
A2. Data representation, access and manipulation in web-based applications.
A3. Database systems, their design, implementation and use.
A4. The professional responsibilities of computing personnel.
A5. The management of the software development process and the team-based nature of software project development.
A6. The impact of business processes upon the development of business systems.
A7. Develop and demonstrate strategic issues relating to business and enterprise.

Learning and Teaching Methods and Strategies

Learning is facilitated through an interactive, cooperative process between the student, his or her peers, and staff. The importance of independent research to consolidate and broaden the knowledge and understanding is emphasised to the student throughout. Learning includes group discussion, reflective writing and oral presentations. The process culminates in a significant piece of research, guided by supervisor, but student led and managed.

Outcomes A1 to A7 are all themes endemic to the entire programme, and these are supported through a combination of lectures and seminar/workshops. Additional support is provided by means of group project work, which emphasises the team-based nature of system development and brings together business goals (A5 and A6), methods (A2), management (A1 and A4), and implementation themes (A3).

Assessment

For the programme as a whole, assessment of subject knowledge and understanding is through unseen examinations, case studies, individual reports, and oral presentations.

B. Intellectual Skills

This programme provides opportunities for students to develop and demonstrate skills, as follows:

B1. Critical thinking, problem-solving and decision-making to solve complex business problems.
B2. Critical evaluation of business processes, computing solutions and the relationships among them.
B3. Design of systems to support business needs, synthesising processes, components and methods.
B4. Originality and creativity in applying Information Technology knowledge to solve business systems problems.
B5. Professional judgement to balance risks, costs, benefits, reliability, usability and aesthetics.
B6. Critical evaluation of current research.
B7. Formulate, plan, execute and report on a project involving original design in a structured and disciplined manner.
B8. Communication of project outcomes to professional and academic standards.

Learning and Teaching Methods and Strategies

Guided reading and development will involve the student in the critical appraisal of academic papers and software tools and applications. In self managed study, the student will reinforce own learning through review of the material, and by exploration of the topic further, through searching for and appraising additional academic sources. Appropriate practical exercises will enable the student to apply theory and reflect on the experience. The Project challenges the

student to apply the learning of research methods in support of the development process, to carry out a systematic development drawing on their own initiative and originality, and to critically appraise their own process and product.

Assessment

Outcomes B1 through B6 will be assessed through unseen examinations, case-study work and individual reports. Outcomes B7 and B8 will be assessed predominantly through the Project. Outcome B6 will be assessed through the Research Methods unit and the Project, but also within some seminar work in other units.

C. Subject Specific Skills

This programme provides opportunities for students to develop and demonstrate skills, as follows:

C1. Establish the requirements of business systems with analysis of existing business processes.
C2. Specify, design and implement web and database applications to meet business goals.
C3. Conduct strategic external analysis to formulate business strategy.

Learning and Teaching Methods and Strategies

The subject specific skills are realised mainly through lectures, seminars and workshops.

Assessment

For the programme as a whole, assessment of practical skills is through work submitted and individual reports.

D. Transferable Skills

This programme provides opportunities for students to develop and demonstrate skills, as follows:

D1. Demonstrate problem solving skills and the application of knowledge across the discipline areas.

D2. Gather, select, and analyse a range of experimental and fieldwork data and present professionally using appropriate media.

D3. Distil, synthesise and critically analyse alternative approaches and methodologies to problems and research results reported in literature and elsewhere.

D4. Demonstrate initiative, self-direction and exercise personal responsibility for management of own learning.

D5. Work autonomously and become reflective learners.

D6. Communicate effectively and confidentially to appropriate professional and academic standards.

Learning and Teaching Methods and Strategies

Transferable skills are acquired through a variety of forms: face-to-face sessions where each may include a mix of delivery modes: lecture, seminar, tutorial, and workshop, guided reading and development, and self-managed study. Students are encouraged to share their academic and industrial expertise with their peers, to enrich the learning process. Regular feedback on assignments allows the students to refine and develop their understanding.

The independent learning element will be partly directed by the unit lecturer with regard to recommended reading (text books, articles and research papers) and tutorial problems to be tackled.

Assessment

Learning outcomes D1-D6 will be assessed through coursework assessments and the Individual Masters Project.

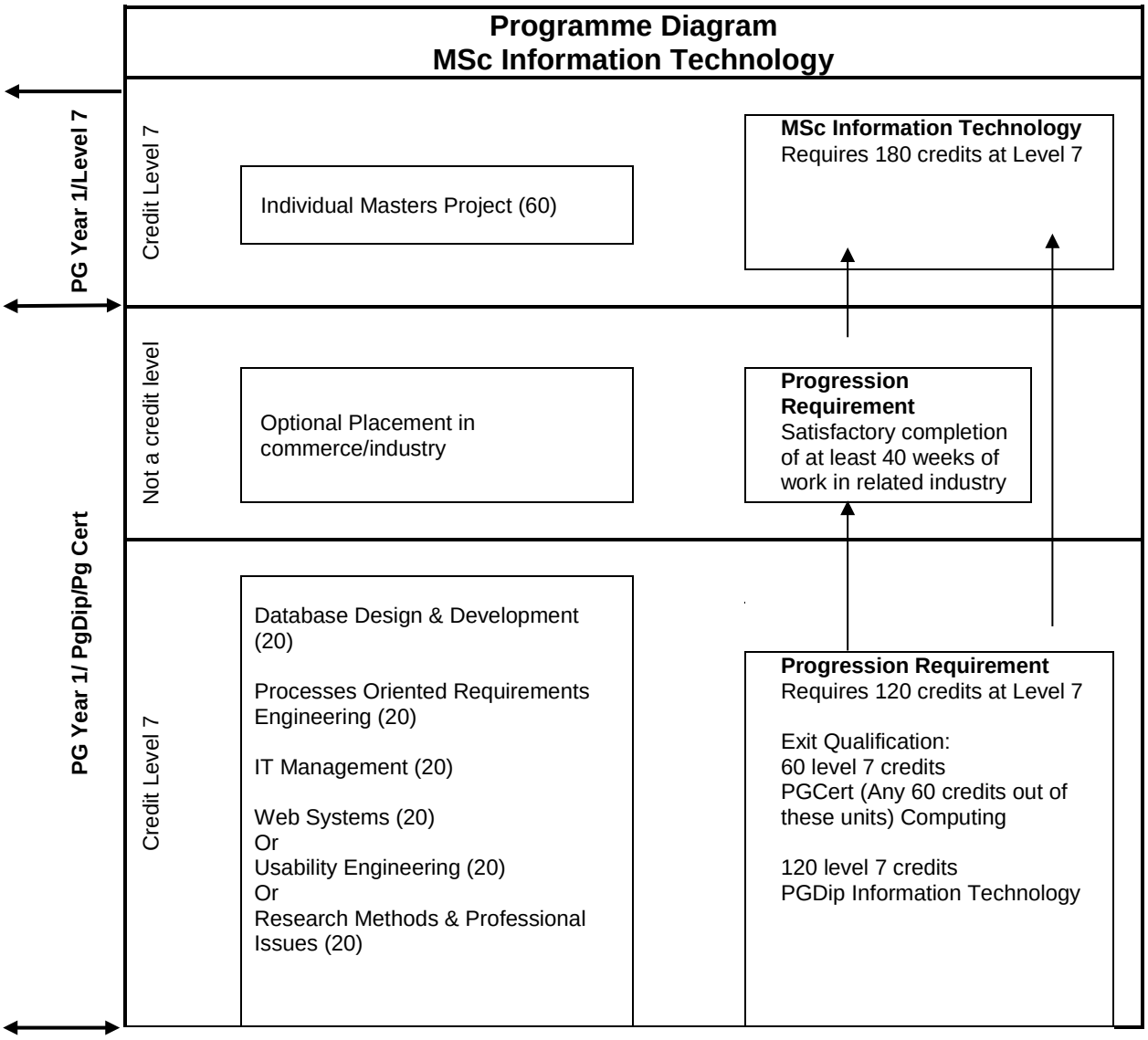
MSc Information Technology Skills Matrix

Units	Programme Intended Learning Outcomes																							
	A 1	**A 2**	**A 3**	**A 4**	**A 5**	**A 6**	**A 7**	**B 1**	**B 2**	**B 3**	**B 4**	**B 5**	**B 6**	**B 7**	**B 8**	**C 1**	**C 2**	**C 3**	**D 1**	**D 2**	**D 3**	**D 4**	**D 5**	**D 6**
Process Oriented Requirements Engineering	x			x		x	x	x	x	x	x	x	x			x	x	x	x	X	x	x	x	x
Database Design & Development	x	x	x	x				X	X	x	x	x	x			x	x		x	x	x	x	x	x
IT Management	x			x	x			X			X		x					X	x	x	x	x	x	x
Web Systems	X	X		X		X	X	X	X	X	X		X				X		X	X	X	X	X	X
Usability Engineering	X			X		x	x	x	x	X	X	X	X						x	x	x	x	x	x
Research Methods & Professional Issues				X				X					x	x	x					x	x	x	x	x
Individual Masters Project	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	x	x	x	x	x	x

A - Subject Knowledge & Understanding	**C – Subject Specific Skills**
1. The systems development process: analysis, specification, design and implementation of business systems. 2. Data representation, access and manipulation in web-based applications. 3. Database systems, their design, implementation and use. 4. The professional responsibilities of computing personnel. 5. The management of the software development process and the team-based nature of software project development. 6. The impact of business processes upon the development of business systems. 7. Develop and demonstrate strategic issues relating to business and enterprise.	1. Establish the requirements of business systems with analysis of existing business processes. 2. Specify, design and implement web and database applications to meet business goals. 3. Conduct strategic external analysis to formulate business strategy.

B - Intellectual Skills	D - Transferable Skills
1. Critical thinking, problem-solving and decision-making to solve complex business problems. 2. Critical evaluation of business processes, computing solutions and the relationships among them. 3. Design of systems to support business needs, synthesising processes, components and methods. 4. Originality and creativity in applying Information Technology knowledge to solve business systems problems. 5. Professional judgement to balance risks, costs, benefits, reliability, usability and aesthetics. 6. Critical evaluation of current research. 7. Formulate, plan, execute and report on a project involving original design in a structured and disciplined manner. 8. Communication of project outcomes to professional and academic standards.	1. Demonstrate problem solving skills and the application of knowledge across the discipline areas. 2. Gather, select, and analyse a range of experimental and fieldwork data and present professionally using appropriate media. 3. Distil, synthesise and critically analyse alternative approaches and methodologies to problems and research results reported in literature and elsewhere. 4. Demonstrate initiative, self-direction and exercise personal responsibility for management of own learning. 5. Work autonomously and become reflective learners. 6. Communicate effectively and confidentially to appropriate professional and academic standards.

Programme Diagram



MSc Applied Data Analytics

The MSc Applied Data Analytics aims will be achieved by the provision of a variety of different learning experiences: lectures, seminars/tutorials, practical workshops, directed/guided studies and research. The aim of the framework is to produce rounded professionals with strong technical, creative, and intellectual skills that will serve the economic intelligence, data analytics industry and intelligent management in different economic sectors.

The MSc ADA comprises two teaching semesters followed by an optional placement experience combined with a project-based dissertation. The intended delivery pattern is for the units to be delivered in semesters, aiming for an average of 3 contact hours per week. Since teaching within ADA is informed by latest research, the students have an opportunity to become up-to-date with the latest developments in their areas of study. Covering theoretical principles, the ability to apply these principles and to achieve effective practical solutions to non-trivial problems is paramount. Considerable emphasis is placed upon the integration within the programme and the development of transferable professional skills in a global context especially through knowledge transfer from SAS institute.

The optional units will only run if they are viable in terms of attendance.

Award of PGDip
Those students who successfully complete all 4 core units and 2 chosen optional units (120 credits) will be considered for the award of the PGDip.

Award of PGCert
Those students who successfully complete any 3 units (60 credits) will be considered for the award of the PGCert.

Award of SAS Certificate
Those students who successfully complete the SAS Programming Unit and are interested in the SAS Certificate Exam have the possibility at their personal initiative to pass a special exam[3] organised by SAS following their standards. Note that the SAS certificate is neither part of the SAS programming unit assessment nor part of the Master programme as a whole.

The SAS Programming Unit, which will be under the lead of a BU staff member, allows students to get familiar with SAS Institute products and to learn additional knowledge in data analytics. Moreover, it gives the students an option to be placed or even employed by a company which uses SAS tools.

Currently there are benchmarking standards for taught Master's degrees in computing[4] as well as the National Framework for Higher Education Qualifications[5] which indicates the levels appropriate for Masters programmes. The intended learning outcomes (ILOs) have been set at level 7 based upon these two levels.

At the heart, MSc ADA will prepare students to work and gain experience dealing with large, complex data analytics problems, data analytics tools, and to apply data analytics to real-world situations or domains such as industrial processes, biomedical settings, etc. In particular, this MSc offers students the opportunity to learn about the latest developments in the field of data analytics. The cooperation with SAS Institute is very valuable in this regard and is intended to be an additional stimulation for the students to appreciate the potential of the programme, especially being close to a big player like SAS Institute as well as familiarising with the data analytics technologies and products on the market. The students

[3] http://support.sas.com/certify/creds/ap.html#t4
[4] www.cphc.ac.uk/docs/cphc_masters_april_final.pdf
[5] http://www.qaa.ac.uk/academicinfrastructure/fheq/EWNI/default.asp

are therefore expected to improve their analytical skills and their problem-solving capabilities in the field of data analytics.

Data Analytics is a process of analysing raw data with the aim of discovering interesting patterns and providing insights into the information hidden in the data for making better decisions. The analysis involves developing models and theories that capture the essence of the informational contents of the data. Analytics implies a number of disciplines such as mathematics, statistics, artificial intelligence, computer science, machine learning, soft computing, etc.

The MSc programme consists of a number of units, each concerned with a particular topic of data analytics. The mandatory units furnish the students with the basic knowledge so that common basis is attained before advanced courses are delivered in the second semester such as Business Intelligence, Web Mining and Analytics, Analytics for Data Streams, Big Data and Cloud Computing.

These units comprehend exploratory data analysis as well as confirmatory data analysis so that students get a full insight into the problems of data analytics. Clearly, data analytics goes beyond data mining in the sense that it focuses not only on discovering hidden knowledge, but also inference and reasoning about the data and the knowledge discovered.

Aims of the programme

As outlined earlier, the MSc ADA aims to furnish students with knowledge of methods and processes that enable them to analyse, devise and deploy data analytics solutions for real-world problems. In particular, the Maste'rs programme emphasises different facets of exploratory and confirmatory data analysis techniques and processes in different contexts ranging from industrial setting to Web technologies. Students learn about the recent advances in data analytics and the tools readily available to perform analytics and are foremost expected to enhance their aptitude for data-driven decision making. The programme equips students with methodological thinking, research disposition and communication skills in addition to the analytical skills.

This programme is intended for candidates who aspire to work as data analyst and providers of analytics services to various types of consumers and consultancy professionals. Moreover, this programme can also lead to a follow up in the PhD track.

The primary aim of this programme is the development of Master's level graduates who will have:

- The ability and confidence to apply their knowledge and analytical and practical skills to real-world data analytics applications;
- A deep understanding of data analytics methods, processes and selected applications;
- A clear picture of the explorative and confirmatory data analysis technologies;
- A practical experience using different DA tools in particular SAS software;
- Research skills in areas such as literature reviews, critical analysis of research findings, project proposals, planning, experiment design and analysis, and dissemination.

Programme Intended Learning Outcomes

The units of the Master programme will run as lectures combined with practical sessions. The general assessment methodology, on the other hand, consists of two types of assessments: theoretical and practical. As to the former, different options may be considered understanding questions, writing survey papers/reports, and presentations. The latter can also take different forms like practical problems to solve or mini-projects to develop including simulations. For

each unit of the Master's programme a combination of theoretical and practical assessment elements is considered.

This Level 7 programme provides opportunities for students to develop and demonstrate knowledge, understanding, and skills.

A. Subject Knowledge and Understanding

This programme provides opportunities for students to develop and demonstrate:

D1. Understanding of the process of data processing

D2. Knowledge about the state-of-the-art techniques and software tools for data analytics

D3. Capability of analysis and choice of appropriate software solution to real-world analytics problems

D4. Development of new algorithms tailored to the problem and application at hand

D5. Acquiring knowledge of methodological development of data analytics projects

D6. Capturing the trends of data analytics and the research avenues of analytics technologies

D7. Knowledge of development frameworks and libraries

D8. Knowledge of potential applications in various management, financial, biomedical, marketing and industrial

Learning and Teaching Strategies and Methods

Core knowledge and understanding is acquired through lectures, seminars, tutorials, workshops, and independent learning. Students are expected to undertake independent reading and to relate the concepts introduced in different units. Regular feedback on assignments allows students to refine and develop their understanding of the subject matter.

Assessment Strategies and Methods

The core knowledge and understanding are assessed through appropriately structured coursework reports, presentations and traditional examination (A1 to A8).

B. Intellectual Skills

This programme provides opportunities for students to develop and demonstrate skills, as follows:

B1. Critical thinking, problem solving and decision making to solve real-world data analytics problems

B2. Formulate, plan, execute and report on a data analytics project involving original contributions in a structured and disciplined manner

B3. Critical evaluation and justification of alternative approaches to solutions development

B4. Analysis and synthesis of information relevant to the development of data analytics solutions

B5. Selection and application of different techniques to synthesise solutions

B6. Effective conduct of research and critical evaluation of different methodologies

B7. Communication of findings to professional and academic standards

Learning and Teaching Methods and Strategies

Guided reading and development will involve the student in the critical appraisal of academic papers or hardware implementations. Each unit of the programme will involve extensive in-class discussion and debate. In addition, in most of the units, real-world applications (mini-projects) will be presented where students will have the opportunity to go from the specifications to the implementation levels, including design, selection of methods, evaluation and analysis.

Assessment Strategies and Methods

Whether via coursework or examination, the focus of the assessment of learning outcomes B1 to B7, will be on the analysis of complex, real-world problems, where the student is required to define the problem space, and then synthesise appropriate solutions. Outcomes B2 to B7 are assessed through laboratory-based coursework and the Individual Masters Project.

C. Subject Specific Skills

C1. Capacity to model real-world data analytics applications

C2. Ability to select appropriate methods and tools for solving problems

C3. Ability to develop novel solutions to complex analytics problems

C4. Ability to analyse the adequacy of existing solutions to given problems and their reengineering

Learning and Teaching Methods and Strategies

Subject specific skills are developed through the learning and teaching methods outlined above. Each taught unit of the programme involves extensive in class discussions and the opportunity in most units to deal with real world problems in various domains. In particular, students will be given as much hands-on exposure to devise their own algorithms and to make use of existing technologies and software packages.

Assessment Strategies and Methods

Outcomes C1 to C4 are assessed through structured reports, presentations and the production of algorithmic and software solutions to proposed real-world problems.

D. Transferable Skills

This programme provides opportunities for students to develop and demonstrate skills, as follows:

D1. Demonstrate problem solving skills and the application of knowledge across the discipline areas

D2. Gather, select, and analyse a range of data and present professionally using appropriate media

D3. Distil, synthesise, and critically analyse alternative approaches and methodologies to problems and research results reported in literature and elsewhere

D4. Demonstrate initiative, self-direction and exercise personal responsibility for management of own learning

D5. Work autonomously and become reflective learners

D6. Communicate effectively and confidentially to appropriate professional and academic standards

Learning and Teaching Methods and Strategies

Transferable skills are acquired through a variety of forms: face-to-face sessions where each may include a mix of delivery modes: lecture, seminar, tutorial, and workshop. Students are encouraged to share their academic and industrial expertise with their peers, to enrich the learning process. Regular feedback on assignments allows the students to refine and develop their understanding.

The independent learning element will be partly directed by the unit lecturer with regard to recommended reading (text books, articles and research papers) and tutorial problems to be tackled.

Assessment

Learning outcomes D1-D6 will be assessed through coursework assessments and the Individual Masters Project.

MSc ADA Matrix

Units	A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D1	D2	D3	D4	D5	D6
Research Methods & Professional Issues					X		X		X	X			X	X	X	X	X	X	X	X	X	X	X	X	X
Data Mining & Analytic Technologies	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Advanced Data Management	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SAS Programming	X	X		X	X		X		X	X			X			X	X				X			X	
Business Intelligence	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Web Mining and Analytics	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Analytics for Data Streams	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Big Data and Cloud Computing	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Individual Masters Project	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X

A - Subject Knowledge and Understanding

A1. Understanding of the process of data processing
A2. Knowledge about the state-of-the-art techniques and software tools for data analytics
A3. Capability of analysis and choice of appropriate software solution to real-world analytics problems
A4. Development of new algorithms tailored to the problem and application at hand
A5. Acquiring knowledge of methodological development of data analytics projects
A6. Capturing the trends of data analytics and the research avenues of analytics technologies
A7. Knowledge of development frameworks and libraries
A8. Knowledge of potential applications in various management, financial, biomedical, marketing and industrial

B - Intellectual Skills

B1. Critical thinking, problem solving and decision making to solve real-world data analytics problems
B2. Formulate, plan, execute and report on a data analytics project involving original contributions in a structured and disciplined manner
B3. Critical evaluation and justification of alternative approaches to solutions development
B4. Analysis and synthesis of information relevant to the development of data analytics solutions
B5. Selection and application of different techniques to synthesise solutions
B6. Effective conduct of research and critical evaluation of different methodologies
B7. Communication of findings to professional and academic standards

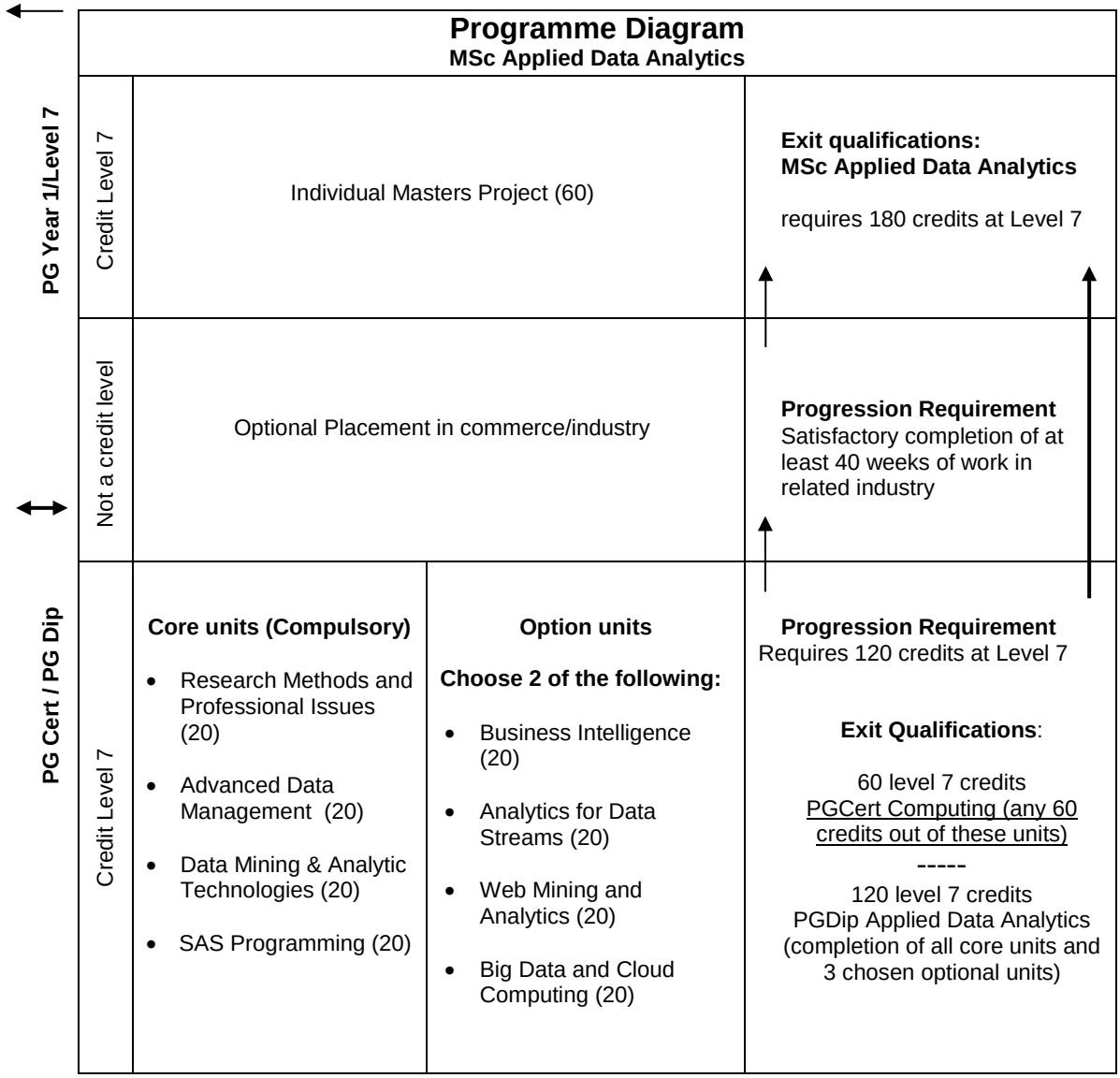
C - Subject-specific / Practical Skills

C1. Capacity to conduct analysis to formulate needs in real-world data analytics applications
C2. Ability to select appropriate methods and tools for solving problems
C3. Ability to develop novel solutions to complex analytics problems
C4. Ability to analyse the adequacy of existing solutions to given problems and their reengineering

D - Transferable Skills

D1. Demonstrate problem solving skills and the application of knowledge across the discipline areas
D2. Gather, select, and analyse a range of data and present professionally using appropriate media
D3. Distil, synthesise and critically analyse alternative approaches and methodologies to problems and research results reported in literature and elsewhere
D4. Demonstrate initiative, self-direction and exercise personal responsibility for management of own learning
D5. Work autonomously and become reflective learners
D6. Communicate effectively and confidentially to appropriate professional and academic standards

Programme Diagram



MSc CYBER SECURITY AND HUMAN FACTORS

Cyberspace is a vast, complex and still evolving community that presents enterprise, industry and governments with ongoing security management challenges, as it grows on an exponential scale.

The security of data is fundamental to any business, and IT professionals are increasingly aware of the complexities involved in protecting information, assets, knowledge and intellect. As cyberspace stores more and more information, specialists in security who are ahead of the game will become a critical element in reducing risk.

Bournemouth University's MSc Cyber Security and Human Factors has been developed in response to the needs of the computing and security sectors of the UK and EU. Graduates from this course will be equipped with technical know-how to protect and prevent, and the ability to assess risk and manage incidents

Aims of the Programme

MSc Cyber Security and Human Factors (CSHF) programme provides a route into Information Assurance, Human Factors, Cyber Psychology and Cyber security for graduates with limited training in this discipline. This could be candidates with some experience of but no formal qualification in Information Security, or simply those with first degrees in subjects other than Computer Science or Information Technology (this could be related titles such as Electronic Engineering, Digital Forensics and Psychology) who wish to extend their work field into Cyber Security. The programme offers social science and the economy graduates who will be ready to contribute to business computing, key added value to the global economy.

Large assured and often complex socio-technical systems need to reflect the business processes that they support. Indeed, for many organisations their socio-technical infrastructure actually forms a core part of their business function. Hence, it is vital for those developing and managing such systems to understand how the corporate strategy, business process, Human-Computer Interfaces and Cyber Threat Landscape shapes the development of socio-technical system of systems. The Cyber Security and Human Factor programme exposes graduates to all of these aspects of modern business systems, management of security events and incidents. Instead of focussing on traditional Computer Sciences, greater emphasis is given to the development of architecture for interactive Human-Cyber systems and their enterprise information systems.

This programme is distinctive in that it provides students without previous Cyber Security qualifications the opportunity to become security practitioners, providing a 'fast-track' into the business security profession.

This programme provides students without previous computing qualifications the opportunity to move into business security development and security management. It is also distinctive in producing graduates who are able to understand the business perspective, create assured systems view of socio-technical system development, and who can also implement such systems.

The primary aim of this programme is the development of Master's level graduates who have

- a critical understanding of assurance methods, human factors and cyber psychology practices and security management concepts required for support business process systems;

- a critical understanding in creating cutting-edge business risk analytics, interoperability of cross-domain solutions and originality in the application of knowledge and skills to create and manage security events to real-world design problems;

- technical skills and competencies to work across data (clear, encrypted or transformed), secure information management, assured knowledge exchange, digital analytics, processes, technology and architecture of different industries and segments, such as defence, healthcare, hospitality, transportation and banking;

- research skills in areas such as literature reviews, critical analysis of research findings, project proposals, planning, experiment design and analysis, and dissemination.

Programme Intended Learning Outcomes

The intellectual skills developed are those of cyber security analysts, human factors experts, security practitioners, cybercrime investigators, cyber system developers, cyber psychologist and project managers. They are expected to become lifelong learners, taking on the challenge of the rapid rate of change and emergence of new knowledge in both business and cyber security.

A. Subject Knowledge and Understanding

This programme provides opportunities for students to develop and demonstrate knowledge and understanding, as follows:

A1. The cyber security development lifecycle: analysis, specification, design and implementation of socio-technical systems.
A2. Critically appraising security risk and sustaining business continuity.
A3. Critically review the benefits of adopting Human Factors approaches in addressing socio-technical problems.
A4. Evaluate the alignment of information assurance architecture to a business process.
A5. Elucidate and evaluate the factors pertinent to Cyber Security and Cyber Psychology.
A6. Demonstrate critical understanding of methodology, research planning, and experiment design and analysis techniques.
A7. Acquire knowledge and understanding appropriate to subject area and the ability to handle inconsistency in the problem domain and produce a viable solution.

Learning and Teaching Methods and Strategies

Core knowledge and understanding is acquired through lectures, seminars, tutorials, and independent learning. Students are expected to undertake independent reading and to relate the concepts introduced in different units. Regular feedback on assignments allows students to refine and develop their understanding of the subject matter.

Assessment

The core knowledge and understanding is assessed through appropriately structured coursework reports, case studies and presentations. Typically, intended learning outcomes will be assessed by coursework assessment which usually involves a 5000 word report. As mentioned before video conferencing facilities, Skype presentations, and virtual classroom tools to communicate online will be used to manage assessments.

B. Intellectual Skills

This programme provides opportunities for students to develop and demonstrate skills, as follows:

B1. Critical thinking, problem-solving and decision-making to solve complex security problems.
B2. Critical evaluation of cyber security processes, human factors and the relationships among them.
B3. Design of socio-technical systems to support secure business needs, synthesising processes, components and methods.
B4. Originality and creativity in applying cyber security and human factors knowledge to solve business systems problems.
B5. Professional judgement to balance risks, costs, benefits, reliability, assurance and protection.
B6. Critical evaluation of current research.
B7. Formulate, plan, execute and report on a project involving original design in a structured and disciplined manner.
B8. Communication of project outcomes to professional and academic standards.

Learning and Teaching Methods and Strategies

Guided reading and development will involve the student in the critical appraisal of academic papers and software tools and applications. In self managed study, the student will reinforce own learning through review of the material, and by exploration of the topic further, through searching for and appraising additional academic sources. Appropriate practical exercises will enable the student to apply theory and reflect on the experience. The Project challenges the student to apply the learning of research methods in support of the development process, to carry out a systematic development drawing on their own initiative and originality, and to critically appraise their own process and product.

Assessment

Outcomes B1 through B6 will be assessed through case-study work, group and individual reports. Outcomes B7 and B8 will be assessed predominantly through the Project. Outcome B6 will be assessed through the Research Methods unit and the Project, but also within some seminar work in other units.

C. Subject Specific Skills

This programme provides opportunities for students to develop and demonstrate skills, as follows:

C1. Establish the cyber security and human factors requirements of socio-technical systems with analysis of existing best practices and management of risk.
C2. Specify, design, model, implement and assess security architecture, patterns and systems.
C3. Conduct strategic and operational analysis, audit and management to formulate a security strategy, policies and governance.
C4. Determine, establish, test and maintain political, economic, socio-technical, environmental and legal factors to sustain an assured enterprise and applied methodologies.
C5. Capable of managing or investigating an information security incident across all System of Systems.

Learning and Teaching Methods and Strategies

The subject specific skills are realised mainly through lectures, seminars and workshops.

Assessment

For the programme as a whole, assessment of practical skills is through work submitted and individual reports.

D. Transferable Skills

This programme provides opportunities for students to develop and demonstrate skills, as follows:

D1. Demonstrate problem solving skills and the application of knowledge across the discipline areas.

D2. Gather, select, and analyse a range of experimental and fieldwork data and present professionally using appropriate media.

D3. Distil, synthesise and critically analyse alternative approaches and methodologies to problems and research results reported in literature and elsewhere.

D4. Demonstrate initiative, self-direction and exercise personal responsibility for management of own learning.

D5. Work autonomously and become reflective learners.

D6. Communicate effectively and confidentially to appropriate professional and academic standards.

Learning and Teaching Methods and Strategies

Transferable skills are acquired through a variety of forms: face-to-face sessions where each may include a mix of delivery modes: lecture, seminar, online tutorial, and workshop, guided reading and development, and self-managed study. Students are encouraged to share their academic and industrial expertise with their peers, to enrich the learning process. Regular feedback on assignments allows the students to refine and develop their understanding.

The independent learning element will be partly directed by the unit lecturer with regard to recommended reading (text books, articles and research papers) and tutorial problems to be tackled.

Assessment

Learning outcomes D1-D6 will be assessed through coursework assessments and the Individual Masters Project.

MSc Cyber Security and Human Factors Skills Matrix

Units	Programme Intended Learning Outcomes																									
	A 1	**A 2**	**A 3**	**A 4**	**A 5**	**A 6**	**A 7**	**B 1**	**B 2**	**B 3**	**B 4**	**B 5**	**B 6**	**B 7**	**B 8**	**C 1**	**C 2**	**C 3**	**C 4**	**C 5**	**D 1**	**D 2**	**D 3**	**D 4**	**D 5**	**D 6**
Cyber Security	x	x		x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x
Human Factors		x	x		x	x	x	x	x	x	x		x		x	x		x	x		x	x	x	x	x	x
Cyber Psychology			x		x	x	x	x	x	x	x		x		x	x		x	x		x	x	x	x	x	x
Information Assurance	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x
Security Event and Incident Management	x	x			x	x	x	x			x	x	x	x	x		x	x	x	x	x	x	x	x	x	x
Enterprise Digital Forensics	x	x			x	x	x	x				x	x	x	x		x	x	x	x	x	x	x	x	x	x
Security by Design	x		x		x	x	x	x		x	x	x	x	x	x		x	x	x		x	x	x	x	x	x
Research Methods & Professional Issues						x	x	x	x			x	x		x			x	x		x	x	x	x	x	x
Individual Masters Project	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Psychology of Software Development	x	x	x		x		x	x	x	x	x	x	x			x	x	x	x		x	x	x	x	x	x

A - Subject Knowledge & Understanding

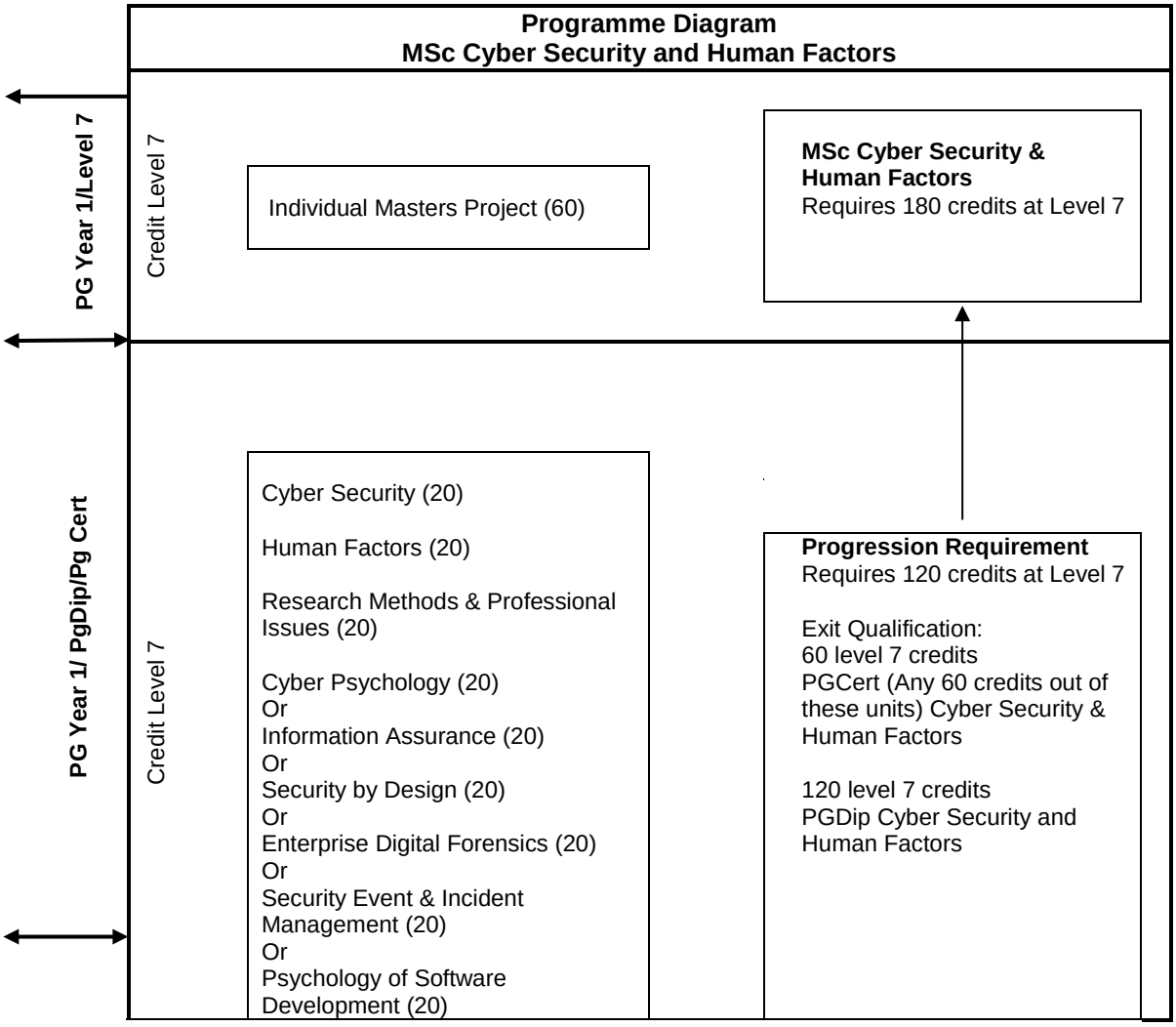
8. The cyber security development lifecycle: analysis, specification, design and implementation of socio-technical systems.
9. Critically appraising security risk and sustaining business continuity.
10. Critically review the benefits of adopting Human Factors approaches in addressing socio-technical problems.
11. Evaluate the alignment of information assurance architecture to a business process.
12. Elucidate and evaluate the factors pertinent to Cyber Security and Cyber Psychology.
13. Demonstrate critical understanding of methodology, research planning, and experiment design and analysis techniques.
14. Acquire knowledge and understanding appropriate to subject area and the ability to handle inconsistency in the problem domain and produce a viable solution.

C – Subject Specific Skills

4. Establish the cyber security and human factors requirements of socio-technical systems with analysis of existing best practices and management of risk.
5. Specify, design, model, implement and assess security architecture, patterns and systems.
6. Conduct strategic and operational analysis, audit and management to formulate a security strategy, policies and governance.
7. Determine, establish, test and maintain political, economic, socio-technical, environmental and legal factors to sustain an assured enterprise and applied methodologies.
8. Capable of managing or investigating an information security incident across all System of Systems.

B - Intellectual Skills	D - Transferable Skills
9. Critical thinking, problem-solving and decision-making to solve complex security problems. 10. Critical evaluation of cyber security processes, human factors and the relationships among them. 11. Design of socio-technical systems to support secure business needs, synthesising processes, components and methods. 12. Originality and creativity in applying cyber security and human factors knowledge to solve business systems problems. 13. Professional judgement to balance risks, costs, benefits, reliability, assurance and protection. 14. Critical evaluation of current research. 15. Formulate, plan, execute and report on a project involving original design in a structured and disciplined manner. 16. Communication of project outcomes to professional and academic standards.	7. Demonstrate problem solving skills and the application of knowledge across the discipline areas. 8. Gather, select, and analyse a range of experimental and fieldwork data and present professionally using appropriate media. 9. Distil, synthesise and critically analyse alternative approaches and methodologies to problems and research results reported in literature and elsewhere. 10. Demonstrate initiative, self-direction and exercise personal responsibility for management of own learning. 11. Work autonomously and become reflective learners. 12. Communicate effectively and confidentially to appropriate professional and academic standards.

Programme Diagram



ADMISSION REGULATIONS

The regulations for this framework are the University's Standard postgraduate Admission Regulations. Applicants for whom English is not their first language must offer evidence of qualifications in written and spoken English. Acceptable qualifications are IELTS (academic) 6 with a writing element of at least 5.5, or direct equivalents.

The programmes are specifically targeting to recruit students who have either recently graduated, wish to extend their knowledge to Masters level, or would like to prepare themselves to undertake PhD research. When considering applicants, their academic profile and relevant experience, as well as their commitment to study are normally considered.

MSc Information Technology is a programme designed for non-computing graduates who wish to develop the skills and expertise required to become leaders in the information systems and IT multi-disciplinary fields. The MSc IT degree is designed such that it is accessible to those without a computing background. We would expect a demonstrable knowledge of and affinity with IT, possibly provided through an interview with a suited academic. Candidates would typically have a numerate or scientific background, and possibly professional experience related to the field.

MSc Applied Data Analytics is for students who have graduated from a computing-related degree and want to increase their knowledge and skills before starting work, or at an early stage in their careers. It focuses on the skills needed to provide successful technical solutions to real-world data analytics problems.

MSc Cyber Security and Human Factors (CSHF) programme provides a route into Information Assurance, Human Factors, Cyber Psychology and Cyber security for graduates with limited training in this discipline. The university has a positive approach to allowing applicants to hold an undergraduate degree or experience of an equivalent nature and would be required to demonstrate a relevant skill set at the point of application. In that:

- Students are normally to have UK 2:2 BSc (Hons) or better degree qualification (or equivalent international qualifications) for enrolment on the Full-Time, Part-Time or Assessed CPD Level 7 Modules. We would prefer 1st Class or 2:1 Honour Students.
- Cyber Security Professionals and those who wish to pursue a career in IA and a related security domain can apply to enrol on the Full-Time, Part-Time or Assessed CPD Level 7 modules if the BUCSU admissions tutor determines their previous experience, training skill qualifications (e.g. CISSP, CISM, etc.) and/or Professional Practice (M.Inst.ISP, FBCS, MIECT, etc.) are deemed to be acceptable as an alternative entry admission.
- It is expected that enrolment to CPD non-assessed modules will only require professional experience and a working knowledge of Information Assurance Competencies[6].
- The marking of Level 7 assessments would take place in accordance with the University's normal marking processes as outlined in *ARPP 6D Marking, Independent Marking and Moderation: Policy and Procedure.*
- Where possible, the admission tutor will interview each applicant prior to enrolment.

[6] Available at: http://www.apmg-international.com/en/qualifications/cesg/cesg-certified-professional.aspx (accessed 18 January 2015)

ASSESSMENT REGULATIONS

The regulations for this framework are the University's Standard postgraduate Assessment Regulations.

Depending on practical considerations, it is intended that two assessment boards are held. One to follow the delivery of all non-project units, and the second one to consider the projects, and formally recognize possible placements. Note that placement is optional so the project can commence without placements being put to a separate assessment board.
Students are eligible for the interim PGCert Computing award based on any 60 credits of non-project units within the programme.

For the Applied Data Analytics students are eligible for the interim PGCert award upon completion of any 3 units (60 credits) and for PGDip award upon completion of all core units and 3 chosen optional units (120 credits) .

PROGRAMME PROFILES

Date Profile Completed: 10.1.12

Originating Institution(s):	Place(s) of Delivery: Bournemouth University	Framework Title (in full): Computing Masters Framework	Mode(s) of study [1]: Full-time/Part-time
School: Science and Technology		Programme Award and Title: MSc Information Technology	Expected Length of study [2]: FT = 12 – 24 months – September intakes; 18 -30 months – January intakes;
Partner institution: N/A	Programme HESA JACS code: I100	Interim Award and Titles & required credits: 180 Credits PGCert Computing – 60 Level 7 credits PGDip Information Technology – 120 Level 7 credits	PT = 2 years BU Credit Structure & ECTS [3]: 180 credits (90 ECTS)

Unit identification		Cost Centre(s) [4]						Unit Details					Assessment Regs [7]:		
Unit version no.	Unit name	HESA JACS Subject Code	CC 1	%	HESA JACS Subject Code	CC2	%	Prog year [5] FT	Prog year [5] PT	Core / option	No of credits [6]	Level (4,5,6 PgC, PgD, 7)	Assessment [8] Element Weightings [9] Exam 1	C/Work 1	C/Work 2
GEN1041M-1	Database Design & Development	G5	39	100				1	1 or 2	Core	20	7		100%	
CSE1051M-2	Process Oriented Requirements Engineering	G5	39	100				1	1 or 2	Core	20	7		100%	
GEN1043M-1	Usability Engineering	H1	16	100				1	1 or 2	Core	20	7		100%	
GEN1045M-1	Web Systems	G5	39	100				1	1 or 2	Core	20	7		100%	
GEN1042M-1	IT Management	G5	39	100				1	1 or 2	Core	20	7		100%	
GEN1044M-1	Research Methods & Professional Issues	G5	39	100				1	1 or 2	Core	20	7		100%	
GEN1023M-2	Individual Masters Project	G5	39	100				1 or 2	2	Core	60	7		100%	
	Industrial Placement							2	n/a	option	0	7		P/F	

Effective from [10] Prog Year / Month / Year			Contact in School:	Date approved [11]:	Programme Specification version no. [12]:	Placement [13]:
Yr. 1	Sept	2013	Huseyin Dogan 62491	12.8.13	v3.4	Optional (minimal 40 weeks)
Yr. 2						
Yr. 3						
Yr.4						

Name of Professional, Statutory or Regulatory Body (if appropriate) [14]:	Diploma Supplement Statement regarding PRSB accreditation [15]:
N/A	N/A

Date Profile Completed: 8.4.13

Originating Institution(s):	Place(s) of Delivery: Bournemouth University	Framework Title (in full): Computing Masters Framework	Mode(s) of study [1]: Full-time/Part-time
School: Science and Technology		Programme Award and Title: MSc Applied Data Analytics	Expected Length of study [2]: FT = 12 – 24 months – September intakes; 18 -30 months – January intakes;
Partner institution: N/A	Programme HESA JACS code: I270	Interim Award and Titles & required credits: PGCert award: 60 credits PGDip award: 120 credits	PT = 2 years
			BU Credit Structure & ECTS [3]: 180 credits (90 ECTS)

Unit identification		Cost Centre(s) [4]						Unit Details					Assessment Regs [7]:		
Unit version no.	Unit name	HESA JACS Subject Code	CC 1	%	HESA JACS Subject Code	CC2	%	Prog year [5] FT	Prog year [5] PT	Core / option	No of credits [6]	Level (4,5,6, PgC, PgD, 7)	Assessment [8] Element Weightings [9] Exam 1	C/Work 1	C/Work 2
GEN1052M-1	Advanced Data Management	G400	121	100				1	1 or 2	Core	20	7		100%	
GEN1053M-1	Data Mining & Analytic Technologies	I270	121	100				1	1 or 2	Core	20	7	50%	50%	
GEN1047M-1	Business Intelligence	I270	121	100				1	1 or 2	Option	20	7		100%	
GEN1054M-1	Web Mining and Analytics	I270	121	100				1	1 or 2	Option	20	7		100%	
GEN1055M-1	Analytics for Data Streams	I270	121	100				1	1 or 2	Option	20	7	50%	50%	
GEM1056M-1	Big Data and Cloud Computing	I115	121	100				1	1 or 2	Option	20	7		100%	
GEN 1057M-1	SAS Programming	G400	121	100				1	1 or 2	Core	20	7		100%	
GEN1044M-1	Research Methods & Professional Issues	G5	121	100				1	1 or 2	Core	20	7		100%	
GEN1023M-2	Individual Masters Project	G5	121	100				1 or 2	2	Core	60	7		100%	
	Industrial Placement							2	n/a	option	0	7		P/F	

Effective from [10] Prog Year / Month / Year			Contact in School:	Date approved:	Programme Specification version no.	Placement [13]:
Yr. 1	Sept	2014	Huseyin Dogan 62491	May 2014	v3.4	Optional
Yr. 2			Name of Professional, Statutory or Regulatory Body (if appropriate) [14]:		Diploma Supplement Statement regarding PRSB accreditation [15]:	
Yr. 3			N/A		N/A	
Yr.4						

Date Profile Completed: 03.02.14

Originating Institution(s):	Place(s) of Delivery: Bournemouth University	Framework Title (in full): Computing Masters Framework	Mode(s) of study [1]: Full time and part-time
School: Science and Technology Partner institution: N/A	Programme HESA JACS code: I100	Programme Award and Title: MSc Cyber Security and Human Factors Interim Award and Titles & required credits: 180 Credits PGCert Cyber Security and Human Factors – 60 Level 7 credits PGDip Cyber Security and Human Factors – 120 Level 7 credits	Expected Length of study [2]: FT = 12 – 24 months – September intakes; 18 -30 months – January intakes; PT = 18-36 months BU Credit Structure & ECTS [3]: 180 credits (90 ECTS)

Unit identification		Cost Centre(s) [4]						Unit Details					Assessment Regs [7]:		
Unit version no.	Unit name	HESA JACS Subject Code	CC 1	%	HESA JACS Subject Code	CC2	%	Prog year [5] FT	Prog year [5] PT	Core / option	No of credits [6]	Level (4,5,6 PgC, PgD, 7)	Assessment [8] Element Weightings [9]		
													Exam 1	C/Work 1	C/Work 2
	Cyber Security	I120	121	100				1	1 or 2	Core	20	7		100%	
GEN1062M-1	Human Factors	I140	121	100				1	1 or 2	Core	20	7		100%	
	Cyber Psychology	C810	104	100				1	1 or 2	option	20	7		100%	
MS-CEMP-M-0392	Information Assurance	I210	121	100				1	1 or 2	option	20	7		100%	
	Security Event and Incident Management	I160	121	100				1	2 or 3	option	20	7		100%	
	Enterprise Digital Forensics	I250	121	100				1	2 or 3	option	20	7		100%	
	Security by Design	I200	121	100				1	2 or 3	option	20	7		100%	
GEN1044M-1	Research Methods & Professional Issues	G5	121	100				1	1 or 2	Core	20	7		100%	
GEN1023M-2	Individual Masters Project	G5	121	100				1	2 or 3	Core	60	7		100%	
	Psychology of Software Development	I200	121	100				1	2 or 3	option	20	7		100%	

Effective from [10] Prog Year / Month / Year			Contact in School:	Date approved [11]:	Programme Specification version no. [12]:	Placement [13]:
PT Yr. 1	Feb/Sept	2016	Christopher Richardson 666670 and Huseyin Dogan 62491	February 2015	v3.4	Optional
FT Yr. 1	Sept.	2016				

Name of Professional, Statutory or Regulatory Body (if appropriate) [14]:	Diploma Supplement Statement regarding PRSB accreditation [15]:
N/A	N/A