Programme Specification

BSc (Hons) Computer Forensics

1. Programme title	**BSc (Hons) Computer Forensics**
2. Awarding institution	Middlesex University
3. Teaching institution	Middlesex University
4. Details of accreditation by professional/statutory/regulatory body	
5. Final qualification	BSc (Hons)
6. Year of validation Year of amendment	
7. Language of study	English
8. Mode of study	FT/SW/PT

9. Criteria for admission to the programme

Student should have equivalent of 220-240 UCAS entry points to gain entry to level 4.

All candidates should possess at least grade C in GCSE Maths and English language, or equivalent.

Mature applicants with relevant work experience are also welcome to apply. For direct

entry to levels 5 & 6 the student is required to pass 120

credits at levels 4 & 5, respectively, and demonstrate the programme

learning outcomes have been met at these levels either with APEL or APCL.

Individual applicants may wish to claim certain number of credits against their learning that may have taken place outside education or through training that is not assessed as part of an education system. Typically these applicants would possess knowledge and skills that may have been acquired at the workplace through practice but may not be supported by formal qualifications.

Applicants may also hold academic, vocational or professional qualifications that may be aligned to certain modules of the programme at an appropriate level. Typically such qualifications are supported by evidence in the form of certification.

Each of these cases is considered individually with the scope to assess whether applicants should be allowed in the programme with specific credit that would count towards the end qualification, to an appropriate point of the programme. As each case is treated individually, applicants should seek support from the programme team towards their application with Accreditation of Prior Experiential Learning (APEL)

or Accreditation of Prior Certificated Learning (APCL).

International students who have not been taught in the English medium must show evidence of proven ability in English such as TOEFL grade 550 or IELTS grade 6.0. The University provides pre-sessional English language courses throughout the year for candidates who do not meet the English requirements.

10. Aims of the programme

The programme aims to provide and prepare students with:

Knowledge of the five stages of a Digital Investigation: Seizure; Acquisition; Preservation; Analysis; and Reporting.

Knowledge and skills relating to a Digital Investigation e.g. handling of evidence and professional practices.

Knowledge of professional practices that form the foundations of Computer Forensics.

Knowledge of the English legal system, legal processes, relevant laws and the regulatory environment related to the handling of digital evidence and forensic investigations.

Generic knowledge of computer and IT e.g. data storage, operating systems, file systems and Computer Networks.
During their final year all graduates are required to demonstrate their cognitive skills, practical skills, self-management skills and knowledge through a one year project accompanied by a dissertation.

11. Programme outcomes

A. Knowledge and understanding	Teaching/learning methods
On completion of this programme the successful student will have knowledge and understanding of: On completion of this programme the successful student will have knowledge and understanding of: Elements of Mathematics, Hexidecimal, binary, Operating Systems, PC Architecture and File Systems. A comprehensive understanding of Network fundamentals, services, design, implementations and troubleshooting. A wide range of digital devices and demonstrate knowledge and understanding via critical analysis of such device leading	Students gain knowledge and understanding through a combination of: • Closely supervised laboratories and various exercises. • Encouragement to raise questions and be open minded to suggestions from other team members when seeking solutions to practical solutions. • Supervised Seminars • Open-ended Practical sessions • Formative and Summative feedback on assignments. • Lab Experimentation • Lectures • Debates • Modelling • Coursework

to a digital investigation report.

Deploy appropriate theory, and a variety of techniques and tools for the detection, investigation, preservation, collection and analysis of digital evidence in forensic investigations.

Basic concepts and fundamentals of design and implementation of systems to support information in an organisation.

Basic concepts and fundamentals of programming in an object- oriented language.

The professional, social, environmental, regulatory and ethical issues related to Digital Investigations.

- Online Discussion Boards
- Guided and Individual Research
- Reading
- Independent Study

Assessment Methods

Students' knowledge and understanding is assessed by a combination of:

Informal group work during Supervised Tutorials, Seminars or Labs.

Essays

Presentations

On-line quizzes

Coursework

Documentation

Experimentation

Individual and group coursework

Lab exercises

Lab tests

Multiple Choice Questions.

Time Constrained Exercises.

Unseen written examinations.

B. Cognitive (thinking) skills

On completion of this programme the successful student will be able to:

Visualise, conceptualise and synthesize abstract models and/or frameworks of logical and physical structures, and processes that may be relied on in a digital investigation.

Relate the prevention of contamination and spoliation techniques when dealing with digital evidence and the detrimental impact they have on Evidential Integrity, see principles 1 and 3 in [1].

As a third party critically evaluate and analyse a digital investigation report and be able to reproduce results.

Competent use of digital forensic software to analyse digital evidence and produce reports that justify any conclusions.

Teaching/learning methods

Students learn cognitive skills through

- Closely supervised laboratories and various exercises.
- Encouragement to raise questions and be open minded to suggestions from other team members when seeking solutions to practical solutions.
- Supervised Seminars
- Open-ended Practical labs.
- Formative and Summative feedback on assignments.
- Lab Experimentation
- Lectures
- Modelling
- Coursework
- Online Discussion Boards
- Guided and Individual Research
- Reading
- Independent Study

Competent use of Data Acquisition Software to create and verify images made of digital evidence	**Assessment methods** Students' cognitive skills are assessed by a combination of: • Informal group work during Supervised Tutorials, Seminars or Labs. • Essays Presentations • On-line quizzes • Documentation • Experimentation • Individual and group coursework • Lab exercises • Lab tests • Multiple Choice Questions. • Time Constrained Exercises. • *Unseen written examinations.*
C. Practical skills On completion of the programme the successful student will be able to: 1. Develop the ability to: Competency in basic network design and the configuration of infrastructure components for LAN; design and implement a program; and maintain and support systems for facilitating the efficient retrieval and storage of information in organisations 2. Apply appropriate techniques and software for data acquisition of a variety of digital devices, e.g. mobile phones, and generate a report that has evidential integrity. 3. Apply the fundamentals of Digital Forensics and Investigations and through practice the ability to produce contemporaneous notes. 4. Research and present rational and reasoned arguments that address a range of issues relating to forensic computing and the impact of new technologies.	**Teaching/learning methods** Students learn practical skills through • Closely supervised laboratories and various exercises. • Encouragement to raise questions and be open minded to suggestions from other team members when seeking solutions to practical solutions. • Supervised Seminars Open-ended Practical labs. Lab Experimentation Lectures Modelling Coursework Online Discussion Boards Guided and Individual Research Reading Independent Study

5. Apply techniques and deploy software to deliver and satisfy the five stages of a Digital Investigation. .	**Assessment methods** Students' practical skills are assessed by Informal group work during Supervised Tutorials, Seminars or Labs. Essays Presentations On-line quizzes Documentation Experimentation Individual and group coursework Lab exercises Lab tests Multiple Choice Questions. Time Constrained Exercises. Unseen written examinations.

D. Graduate skills
 	
On completion of this programme the successful student will be able to:
 	
Demonstrate effective information retrieval skills from appropriate primary research sources and be able to cite and reference such sources.
 	
The ability to effectively organise workloads for deadlines and other Time Management issues, e.g. punctuality.
 	
Conduct all work undertaken in a professional, ethical and legal manner to the best of one's ability.
 	
Develop an overall knowledge of use of IT Skills in organisations and be able to adapt to new trends in the future.
 	
Prepare for continued professional development and life-long learning in an organisation and be internally motivated by the interest in the subject domain.
 	
    6 .Efficaciously explain complexity to others and effectively Communicate and convey understanding to a range of audiences via different methods, e.g presentations, of a technical nature.
	Teaching/learning methods
	
	Students acquire graduate skills through
	
	Closely supervised laboratories and various exercises.
	
	Encouragement to raise questions and be open minded to suggestions from other team members when seeking solutions to practical solutions.
	
	Supervised Seminars
	
	Lectures
	
	Informal group work during Supervised Tutorials, Seminars or Labs.
	
	Modelling
	
	Programming
	
	Presentations
	
	On-line quizzes
	
	On-line Discussion Boards
	
	Guided and Individual Research
	
	Formative and Summative feedback on assignments.
	
	    • Feedback on Coursework; both formative and summative.
	
	    • Dissertation; both summative and formative feedback
	
	    • Completing and documenting Lab exercises and experiments
	
	    • Lab exercises
	
	    • Feedback from Lab tests

	• Suggested Reading
	Assessment methods *Students' graduate skills are assessed by a combination of:* • *Coursework and Project work* • *Unseen examinations* • *Practical laboratory tests* • *Supervised laboratory Exercises* • *Online quizzes* • *Modelling and Programming* • *Group Assignments* • *Writing-up experiments and lab exercises* • *Essays* • *Presentations* • *Lab and Seminar Exercises* • *Multiple Choice Questions.* • *Time Constrained Exercises.* • *Unseen written examinations.* • *Dissertation* .

12. Programme structure (levels, modules, credits and progression requirements)

12. 1 Overall structure of the programme

The programme is studied in four modes:

- Three years full-time; 100% university based

- Four years full-time thick sandwich; after completing years 1 and 2 at university, year 3 is full-time industrial placement then return in fourth year to university. Therefore, 25% industry and 75% university based.

- Four to six years part-time; 100% university based

The programme is undertaken at levels 4, 5 and 6, where a level is equivalent to one year of full-time study. The delivery of each level is completed over 2 terms; Autumn and Winter. Each level is composed of the delivery of four modules each worth 30 credits, totalling 120 credits for each level and thus giving a grand total of 360 credits for the entire programme

12.2 Levels and modules		
Level 4 (1)		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
Students must take all of the following: CCE1030 Introduction to Computer Networks. ITX1300 Introduction to Programming. CSD1200 Information in Organisations. CSD1216 Introduction to Computer Forensics: Professional, Technical and Regulatory.		Students are normally expected to achieve 120 credits at level 4 to progress to level 5.
Level 5 (2)		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS

Students must take all of the following: CSD2216 File Systems Analysis CSD2217 Digital Investigation TX2020 IT Security & Infrastructures ITX2000 Remote Hosts & Webservers		Students are normally expected to achieve 240 credits at levels 4 & 5 to progress to level 6.

Level 6 (3)

COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
Students must take all of the following: CSD3998 Computer Forensics Project CSD3333 Mobile Forensics CSD3334 e-Discovery & Evidence Management	Students must also choose at least 1 from the following: CSD3200 Discovering Datawarehouses. CSD3335 Social Network Analysis and Visual Analytics	Students are required to complete 360 credits to complete the programme and qualify for BSc (hons) Computer Forensics.

12.3 Non-compensatable modules (note statement in 12.2 regarding FHEQ levels)	
Module level	**Module code**
6	Computer Forensics Project

13. Curriculum map

See attached.

14. Information about assessment regulations

- Information on the University's formal assessment regulations, including details of how award classifications are determined, can be found in the University Regulations available online through UniHub.

- Grades are awarded on the standard University scale of 1–20, with Grade 1 being the highest.

- For additional information on assessment and how learning outcomes are assessed please refer to the individual module narratives.

15. Placement opportunities, requirements and support (if applicable)

All Undergraduate students have the opportunity to undertake an Industrial Placement. Industrial Placements are highly encouraged by the School and the University. Placements give students valuable experience which enhances their future career prospects. Students who undertake a placement year normally achieve better results in their final year. Please note the following:

- The placement provides a year's experience as an appropriately paid graduate trainee

- Industrial placement is conditional on the successful completion of all modules at Levels 4 and 5. Students need 240 credits before they are able to embark on an industrial placement

- Obtaining a placement is co-ordinated through the Employability and Careers Centre, and by a dedicated team of placement officers for the School of Science and Technology

- For undergraduate programmes, students wishing to undertake a placement position must register for the placement module.

- Each placement will be assigned to an industrial tutor who will visit the student during their placement

- On graduation the degree will be qualified with the term "…with approved industrial experience"

The placement option is not available to direct-entry students in their final year

16. Future careers (if applicable)

All programmes in the School of Science and Technology – their curricula and learning outcomes – have been designed with an emphasis on currency and relevance to future employment. Professional development and employability skills are embedded into teaching, learning and assessment at all levels of the programme.

The majority of graduates are employed in IT posts relevant to the subject area.

Over 20% of students pursue further postgraduate study or research.

Employer links with the School are encouraged in the following ways:- by

inviting practitioners from industry as guest speakers in lectures; through links with companies where students are employed as part of their Industrial placement; through links with alumni, both in the UK and overseas

17. Particular support for learning (if applicable)

The School's Teaching and Learning Strategy is aligned with that of the University as a whole in seeking to develop learner autonomy and resource- based learning. In particular support of the students' learning experience, the following is provided:

- *Students are allocated a personal email account, and secure networked computer storage (the Skydrive) for student's University-related files and documents.*

- *Soft copies of all module handbooks are provided on MyUniHub.*
Extensive web-based learning materials are provided to support learning in all modules.

- *Extensive library facilities are available on and off campus, with e- resources accessible through the MyLibrary page on MyUniHub. Virtual learning is provided via the My Learning pages through MyUniHub. Seminars and workshops by Library and Learning Support staff are embedded into specific modules across all levels of the programme.*

- *Students can access advice and support on a wide range of issues from the UniHelp Desk, and specific one-to-one advice and support from the School's Achievement Officers.*

- *High quality specialist laboratories, equipped with industry standard software and hardware, are provided for formal teaching as well as student self-study.*

- *Past exam papers with solutions and marking schemes for all modules are available for students in module handbooks and at http://unihub.mdx.ac.uk*

- *Research activities of academic staff feed into the teaching programme, which can provide individual students with ad-hoc opportunities to work with academics on some aspects of their research.*

18. JACS code (or other relevant coding system)	
19. Relevant QAA subject benchmark group(s)	Computing

20. Reference points

- Association of Chief Police Officers. Good practice guide to computer-based electronic evidence. 2006.
- QAA Subject Benchmark – Computing.
- QAA Quality Code
- BCS Guidelines.
- ACM Guidelines.
- Middlesex University Regulations

- Middlesex University Quality and Learning Enhancement Handbook
- Middlesex University Policies on Diversity and Equality
- Bloom's Taxonomy

Association of Chief Police Officers. Good practice guide to computer- based electronic evidence. 2006.

QAA Subject Benchmark – Computing.

BCS Guidelines.

ACM Guidelines. Bloom's Taxonomy

21. Other information

Please note programme specifications provide a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve if s/he takes full advantage of the learning opportunities that are provided. More detailed information about the programme can be found in the programme handbook and the University Regulations.

Curriculum map for BSc (hons) Computer Forensics

This section shows the highest level at which programme outcomes are to be achieved by all graduates, and maps programme learning outcomes against the modules in which they are assessed.

Programme learning outcomes

Knowledge and understanding		**Practical skills**	
A1	Elements of Mathematics, Hexidecimal, binary, Operating Systems, PC Architecture and File Systems	C1	Develop the ability to: Competency in basic network design and the configuration of infrastructure components for LAN; design and implement a program; and maintain and support systems for facilitating the efficient retrieval and storage of information in organisations.
A2	A comprehensive understanding of Network fundamentals, services, design, implementations and troubleshooting.	C2	Follow guidelines and behave in a professional manner when completing an investigation.
A3	A wide range of digital devices and demonstrate knowledge and understanding via critical analysis of such device leading to a digital investigation report.	C3	Apply appropriate techniques and software for data acquisition of a variety of digital devices, e.g. mobile phones, and generate a report that has evidential integrity.

A4	Deploy appropriate theory, and a variety of techniques and tools for the detection, investigation, preservation, collection and analysis of digital evidence in forensic investigations.	C4	Apply the fundamentals of Digital Forensics and Investigations and through practice the ability to produce contemporaneous notes.
A5	Basic concepts and fundamentals of design and	C5	Research and present rational and

	implementation of systems to support information in an organisation.		reasoned arguments that address a range of issues relating to forensic computing and the impact of new technologies.
A6	Basic concepts and fundamentals of programming in an object-oriented language.	C6	Apply techniques and deploy software to deliver and satisfy the five stages of a Digital Investigation.
A7	The professional, social, environmental, regulatory and ethical issues related to Digital Investigations.	C7	
Cognitive skills		**Graduate Skills**	
B1	Visualise, conceptualise and synthesize abstract models and/or frameworks of logical and physical structures, and processes that may be relied on in a digital investigation.	D1	Efficaciously explain complexity to others and effectively communicate and convey understanding to a range of audiences via different methods, e.g presentations, of a technical nature.
B2	Relate the prevention of contamination and spoliation techniques when dealing with digital evidence and the detrimental impact they have on Evidential Integrity, see principles 1 and 3 in [1].	D2	Demonstrate effective information retrieval skills from appropriate primary research sources and be able to cite and reference such sources.
B3	As a third party critically evaluate and analyse a digital investigation report and be able to reproduce results.	D3	The ability to effectively organise workloads for deadlines and other Time Management issues, e.g. punctuality.
B4	Form argumentation and justifications from evidential or empirical data to accept or reject any hypotheses made.	D4	Conduct all work undertaken in a professional, ethical and legal manner to the best of one's ability.
B5	Competent use of digital forensic software to analyse digital evidence and produce reports that justify any conclusions.	D5	Develop an overall knowledge of use of IT Skills in organisations and be able to adapt to new trends in the future.

| B6 | Competent use of Data Acquisition Software to create and verify images made of digital evidence | D6 | Prepare for continued professional development and life-long learning in an |

			organisation and be internally motivated by the interest in the subject domain.
B7		D7	

Programme outcomes																											
A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	D6	D7		
Highest level achieved by all graduates																											

Module Title	Module Code and Level	Programme outcomes																									
		A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	D6	D7
Information in Organisations	Introduction to Computer Networks																										

Course	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19
CSD 1200				✓							✓				✓	✓	✓	✓	
CCE 1030		✓									✓					✓	✓	✓	
CSD 1216	✓		✓			✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓
ITX 1300					✓						✓					✓	✓	✓	

Introduction to Computer Forensics:

Introduction to Programming

Course	Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
File Systems Analysis	CSD 2216	✓			✓				✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓		✓	✓		
Digital Investigation	CSD 2217			✓	✓			✓	✓	✓	✓		✓	✓		✓	✓	✓		✓	✓		✓	✓		
IT Security and Infrastructure	ITX 2020		✓			✓			✓				✓		✓	✓	✓		✓	✓	✓		✓	✓	✓	
Remote Hosts and Webservers	ITX 2000	✓				✓	✓						✓		✓				✓	✓			✓	✓	✓	
Computer Forensics Project	CSD 3998										✓	✓							✓	✓	✓	✓	✓	✓		✓
Mobile Forensics	CSD 3333			✓	✓			✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		
e-Discovery & evidence Management	CSD 3334				✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓			✓	✓		✓	✓	✓	
Social Network Analysis and Visual Analytics	CSD 3335	✓		✓					✓			✓	✓			✓				✓	✓		✓	✓	✓	
Discovering Datawarehouses	CSD 3200	✓				✓							✓		✓					✓			✓	✓	✓	