



## Course Information Form

This Course Information Form provides the definitive record of the designated course

### General Course Information

Course Title	Computer Security and Forensics Computer Security and Forensics (with Professional Practice Year)
Qualification	BSc (Hons)
FHEQ Level	Level 6
Intermediate Qualification(s)	None
Awarding Institution	University of Bedfordshire
Location of Delivery	AA – University Square Campus
Mode(s) of Study and Duration	Full-time over 3 years Full-time with Professional Practice Year over 4 years Part-time pathway typically over 6 years
Professional, Statutory or Regulatory Body (PSRB) accreditation or endorsement	None
UCAS Course Code	G400
External Benchmarking	QAA Subject Benchmark Statement Computing. QAA FHEQ level descriptors.
Entry Month(s)	September and February

### Why study this course

This BSc (Hons) course focuses on the whole of the security life cycle covering the identification of risks and threats, securing of systems, testing of security measures and responses required if security measures failure. The breadth of the course offers graduates a wide range of possible careers in Cyber Security.

The practical element of the courses focuses on the techniques used in industry and provides graduates essential experience that will help employment opportunities.

During the course there are various related industry visits and talks by practitioners from industry to give students insight into the working practices used within the industry.

## Educational Aims

Computer-based crime is on the increase and around the world, government agencies, businesses and individuals are under constant threat.

The impact of an attack can be huge, and the demand for people who can harden computer systems and improve their security is growing.

This course is designed for students who want to specialise in computer forensics by investigating incidents and providing evidence for the police and courts.

You will focus on network security, systems hardening, the process of gathering evidence and analysing captured data, and the legal requirements for those who work in this area.

## Course Structure

The Units which make up the course (including the Professional Practice Year as applicable) are:

Unit Code	Level	Credits	Unit Name	Core or option
CIS018-1	4	30	Fundamentals of Computer Studies	Core
CIS017-1	4	30	Computer Systems Structure	Core
CIS016-1	4	30	Principles of Programming	Core
CIS020-1	4	30	Introduction to Software Development	Core
CIS015-2	5	30	Networking	Core
CIS098-2	5	30	Operational Information Security Management	Core
CIS019-2	5	30	Security Testing and Forensic Investigation	Core
CIS022-2	5	30	Wireless Communications and Networking	Core
CIS097-2	-	0	Professional Practice Year (Computer Science and Technology)	Option
CIS013-3	6	30	Research Methodologies and Emerging Technologies	Core
CIS009-3	6	30	Incidence Response	Core
CIS015-3	6	30	Social and Professional Project Management	Core
CIS017-3	6	30	Undergraduate Project	Core

## Course-Specific Regulations

N/A

**Additional Course Costs**

N/A

**Entry requirements**

University of Bedfordshire standard entry requirements apply.

**Graduate Impact Statements**

The course has been designed to develop graduates who are able to:

- Exhibit an advanced understanding of methods, concepts and technologies within the core area of Computer Security such as Incident Response, Security Testing, Forensic Investigation, Wireless Networks amongst others.
- Contribute specialist expertise productively to a multi-specialist development team working from software design to implementation and deployment.
- Learn and use new ideas and techniques as they appear within an evolving industry.

**Course Learning Outcomes**

LO1: Provide students with general knowledge and skills in computing and information system

LO2: Analyse and evaluate computer security problems in a range of contexts and to choose and implement appropriate solutions

LO3: Demonstrate skills that allow them to develop and implement security countermeasures

LO4: Demonstrate skills in project management in relation to the delivery of projects within the constraints of client critical success factors

LO5: Express, interpret and critically discuss issues concerning the law and professional ethics in the context of computer security

LO6: Demonstrate investigative skills in the area of computer security through completion of substantial assignments, presentations and case studies

LO7: Apply skills in rational argument, objective interpretation of evidence, judgement, decision making and planning and analysis of complex computer security problems.

LO8: Apply skills and knowledge by preparing for industrial certification

LO9: Identify, use and communicate relevant information in an ethical manner.

In order to qualify for the award of BSc (Hons) Computer Science and Software Engineering (with Professional Practice year) students will need to meet all of the outcomes above and:

LO10: Demonstrate knowledge and analytical understanding of professional practice by successfully completing an approved period of approved work place practice.

**PSRB details**

N/A

**Learning and Teaching**

The overall teaching and learning methodology comprises a solid theoretical exposition accompanied by tutor supported practical activity. This is accomplished by a combination of lectures, tutorials, moderated e-conference discussion and support, and directed practical activity in a suite of dedicated, modern computer laboratories. This is often in a combined lecture, demonstration, practical and assessment all in one session with academic and demonstrator support.

The particular form of support is unit specific, however, all are characterised by tutor support and practical activity.

All the teaching resources are available in a web site – a virtual learning environment that includes references and links, general unit and course information, discussion groups, tests and assessments. This VLE (Virtual Learning Environment) is available outside of the University to enrolled students.

Students entering upon the course will already have some experience of using computers and their operation. Therefore the approach to teaching and learning begins with student centred methods and progresses towards independent learning.

Our teaching is centred upon students, aiming to build their confidence by providing timely and informative feedback under the guidance of their teacher.

Level three enables students, via the mechanism of completion of an individual project spread over 2 semesters designed to demonstrate various in depth skills involved in software engineering project management and the production and testing of a software artefact.

Lectures, often with invited experts and industry leaders, focus on the latest developments and trends in Computing. Other units taken at both level 2 and level 3 are designed to enable students to gain vocationally valid skills and experience by engaging in business projects while gaining academic credit.

Project supervision involves regular tutorial meetings between groups/individuals and their staff supervisor. The project is seen as a guarantee of the Honours nature of students and is seen, both within the University and outside, as an indication of the overall abilities and performance of the student. It is expected that the student will demonstrate their competency over most if not the entirety of the software engineering lifecycle.

## **Assessment**

You are assessed in a variety of ways. The majority of units are assessed through coursework, group and individual projects, portfolios, essays, presentations or exams. You will also produce software artefacts in the area of your specialism. Constant feedback and advice from a supervisory or unit team will be provided to support you in your work.

At level 4 you are assessed on your understanding of the fundamental concepts of Computer Science and its application. You are required to comprehend the basic range of intellectual concepts which form the foundations of the subject and application area, and will be assessed on your ability to articulate such concepts in a coherent manner, in a variety of written assessments/written briefs. For example, there will be time constraint programming assignments as well as multiple choice tests.

At level 5 you are assessed on your ability to apply the basic concepts of the disciplines introduced in level 4 to existing controversies and issues on which there is already a body of research and critical opinion

At level 6 you will be required to demonstrate independent thinking and initiative. This may be in the form of analysing and criticising current approaches and theory within software engineering and programme development. In all cases, you will be expected to show an awareness of the major theories and practices of the discipline. You will progress from well-defined briefs to more open-ended and challenging assessments, which culminate in the honours project – where you will be given freedom to choose your area of work.

**Assessment Map – BSc (Hons) Computer Security and Forensics**

Unit Code	C/O	Semester 1												Semester 2													
		4	5	6	7	8	9	10	11	12	13	14	15	4	5	6	7	8	9	10	11	12	13	14	15		
CIS018-1	c								CW-Port, WR-I				Ex-CB														
CIS020-1	C			CW-ePort									WR-GR														
CIS016-1	C														Ex-CB									PJ-Art			
CIS017-1	C																										
CIS015-2	C									CW-Port		Ex															
CIS098-2	C			EX-PT						WR-Gr																	
CIS022-2	C																WR-G & WR-Lab									EX	
CIS019-2	C																										
CIS097-2	O	Post completion of work experience																									
CIS013-3	C	CW-RW											WR-I														
CIS009-3	C				CW-CS & WR-Gr & PR-Oral							CW-Ess															
CIS015-3	C																					PR-Oral	WR-I				
CIS017-3	C																										

## Developing your employability

Employability is understood widely as encompassing knowledge, skills and a professional attitude which your tutors expect you to display in all your units. All University of Bedfordshire courses aim to help you to be prepared for the world of work. The Careers Service is there to support you throughout the three years of your study. Our curriculum gives you skills that are valuable for a career as a Computer Security and Forensics specialist but it is also relevant for a much wider range of applications.

The final year unit 'Social and Professional Project Management' in particular requires you to work in a team so as to apply a current project management methodology that embraces all of these knowledge areas in an integrated way while going through the stages of planning, execution and project control; you will work as part of a team, take responsibility and make autonomous decisions that impact on the project team performance.

In addition and somewhat complementary the honours project fosters independent and autonomous study: you learn to take up the responsibility of conducting your project, typically derived from your own ideas, in collaboration with a dedicated member of the teaching staff as project supervisor.

Students who register for the degree with professional practice year will additionally attend a series of workshops and activities related to securing a suitable placement and compulsory briefings at the end of year 2 to ensure that all legal requirements for health and safety, safeguarding etc. training have been met,.

This will be explained more fully in your professional practice handbook once you have registered with the Careers and Employability Service's Student Development and Awards Team in your first year. If you will be working with children and/or vulnerable people you will be required to have a DBS check and undertake Safeguarding and Prevent training.

## After Graduation

### Career:

Graduates of this degree will be able to go into any of the following positions

- Network Security Specialists
- Incident Response Specialists
- Computer Forensics
- Network/Systems Engineering
- Systems/Internet/Network Administration
- Network/Information Systems Managers
- System Administrators
- Penetration Testers and Legal enforcement

and many other computing related positions

### Further study:

MSc in a Computer Security, Computer Forensics or any other related topic  
MPhil / PhD

## Additional Information

Several units allow students to use work and feedback from the first assessment to perform best in the second.

All units benefit from weekly practical sessions or supervisor meetings that provide a constant learner-teacher interaction process which also serves to reflect on learning styles.

The honours project includes a 'contextual report' (Assignment 1 of CIS013-3) which is formative in nature and provides an opportunity of structured feedback on the approach taken by the students for their honours project.

## Student Support during the course

At institutional level, the university has in place a range of easily accessible support structures for new and existing students.

The Student Information Desk (SiD, <http://beds.ac.uk/sid>) offers confidential advice on all aspects of academic study. It provides information about other areas of university-wide student support such as extenuating circumstances, housing, health, counselling, study support, special needs and disability advice, and careers service. The Study Hub provides workshops and one to one support for academic skills.

The university chaplaincy runs regular meetings, social events and trips. The Student Union provides additional support and activities.

Course specific support is also in place. First year students receive a comprehensive induction in the week prior to the commencement of the academic year. In addition to this, course co-ordinators will meet with their student groups to explain the course structure and other issues relating to the student experience. These introductions will give you outlines of your course and units, a description of the ways you will be encouraged to develop your knowledge and skills, and signpost resources and materials to assist the process of your learning and success. An important part of this induction is the training to use BREO (Bedfordshire Resources for Education Online). BREO is your personalized virtual learning environment that contains lecture notes, links for online assignment submissions, staff contact details, links to central student services and much more. We expect that you use BREO regularly, and that you use your university email where we send you updates about all aspects of your course which need your attention.

All students will be allocated a personal tutor when they join the course. This academic will be responsible of monitoring your academic progress throughout your first year and beyond, and will help you with any academic or personal issues that might come up. The personal tutor is your consistent point of contact for support and guidance, but will on occasion refer you to other university staff for specific issues.

Further support is provided by lecturers who have office hours and by the course administration team. Students may be required, at the discretion of the course coordinator, to undergo diagnostic testing for academic English language abilities, and may further be required, at the course coordinator's discretion, to participate in academic English support workshops or classes laid on by the University.

Our PAL (Peer Assisted Learning) scheme will provide additional support to new students from students at levels 5 and 6.

## Additional Course costs

N/A

## Course Equality Impact Assessment

Question	Y/N	Anticipatory adjustments/actions
The promotion of the course is open and inclusive in terms of language, images and location?	Y	
Are there any aspects of the curriculum that might present difficulties for disabled students? For example, skills and practical tests, use of equipment, use of e-learning, placements, field trips etc.	Y	This course makes intensive use of computing equipment (desktop or laptop computers) and so if you have difficulty accessing these you should discuss this with the Disability Advice Team in conjunction with the course team at the outset to ensure that appropriate support is in place.

Are there any elements of the content of the course that might have an adverse impact on any of the other groups with protected characteristics <sup>1</sup> ?	N	
If the admission process involves interviews, performances or portfolios indicate how you demonstrate fairness and avoid practices that could lead to unlawful discrimination?	n/a	No interviews are part of the admission process.
Confirm that you have considered that the course learning outcomes and Graduate Impact Statements are framed in a non-discriminatory way.	Y	
Confirm that the course handbook makes appropriate reference to the support of disabled students.	Y	

<b>Administrative Information – Faculty completion</b>	
<b>Faculty</b>	CATS
<b>Portfolio</b>	Undergraduate Computer Science and Technology
<b>Department/School</b>	Computer Science and Technology
<b>Course Coordinator</b>	Xiaohua Feng
<b>Trimester pattern of operation</b>	Semester 1 & Semester 2 (October Start); for February start Semester 2 & Semester 3 for Level 4; then Semester 1 & Semester 2 for Level 5 and 6.
<b>PSRB Renewal Date (where recognised)</b>	n/a
<b>Version Number</b>	2/17
<b>Approved by (cf Quality Handbook ch.2)</b>	Periodic Review Panel
<b>Date of approval (dd/mm/yyyy)</b>	9 <sup>th</sup> February 2017
<b>Implementation start-date of this version (plus any identified end-date)</b>	September 2017
<b>Study model type (e.g. study centre)</b>	

**Form completed by:**

**Name:** X. Feng.....

**Date:** 3/11/2016.....

<sup>1</sup> Age, Gender reassignment, Marriage and civil partnership, Pregnancy and maternity, Race, Religion and belief, Sex, Sexual orientation.



**Authorisation on behalf of the Faculty Teaching Quality and Standards Committee (FTQSC)**

**Chair:** .....

**Date:** .....

<b>Course Updates</b>		
<b>Date (dd/mm/yyyy)</b>	<b>Nature of Update</b>	<b>FTQSC Minute Ref:</b>

<b>Administrative Information – Academic Registry completion</b>	
<b>Route code (post approval)</b>	
<b>JACS / HECoS code (KIS)</b>	
<b>SLC code (post approval)</b>	
<b>Qualification aim (based on HESA coding framework)</b>	



## Annexes to the Course Information Form

*These annexes will be used as part of the approval and review process and **peer academics** are the target audience.*

### General course information

<b>Course Title</b>	Computer Security and Forensics Computer Security and Forensics (with Professional Practice Year)
<b>Qualification</b>	BSc (Hons)
<b>Route Code (SITS)</b>	
<b>Faculty</b>	CATS
<b>Department/School/Division</b>	Computer Science and Technology
<b>Version Number</b>	2016/2

### Annex A: Course mapping of unit learning outcomes to course learning outcomes

Unit code	CIS 020-1	CIS 016-1	CIS 017-1	CIS 018-1	CIS 016-2	CIS 098-2	CIS 006-2	CIS 020-2	CIS 013-3	CIS 009-3	CIS 015-3	CIS 017-3	CIS 097-2				
Level	4	4	4	4	5	5	5	5	6	6	6	6	5				
Credits	30	30	30	30	30	30	30	30	30	30	30	30	0				
Core or option	C	C	C	C	C	C	C	C	C	C	C	C	O				
Course Learning Outcome (number)	<i>Insert LO1 and/or LO2 for each unit into cell corresponding to the course learning outcome</i>																
1	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	2	1,2					
2			1,2	1,2	1,2	1,2	1,2	1,2		1,2		1,2					
3					1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2					
4					1,2	1,2	1,2		1,2	1,2	1,2	1,2					
5	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2					
6	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2					
7	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2					
8	2	2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2					
9	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2					
10													1,2				

## Annex B: Named exit or target intermediate qualifications

*This annex should be used when Schools wish to offer intermediate qualifications which sit under the main course qualification as named exit or target awards, rather than unnamed exit/default awards.*

### Section 1: General course information

<b>Intermediate Qualification(s) and titles</b>	<i>Not applicable</i>
<b>Mode(s) of Study and Duration</b>	
<b>Type of Intermediate Qualification(s)</b>	
<b>Route Code(s) (SITS) of Intermediate Qualification(s)</b>	

### Section 2: Qualification unit diet

*One table to be used for each intermediate qualification*

<b>Confirmation of unit diet for:</b>	<i>Not applicable</i>	
The units to achieve the credits required may be taken from any on the overall diet for the main course qualification		<input type="checkbox"/>
A combination of units from a restricted list must be taken to achieve the credits required (specify the list below)		<input type="checkbox"/>
A specific set of units must be taken to achieve the credits required (specify units below)		<input type="checkbox"/>

List of units (if applicable):-
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### Section 3: Course structure and learning outcomes

One table to be used for each intermediate qualification

<b>Intermediate qualification and title</b>					<b>Not applicable</b>									
The Units which make up this course are:					<b>Contributing towards the learning outcomes</b> <i>Insert LO1 and/or LO2 for each unit into cell corresponding to the course learning outcome</i>									
Unit Code	Level	Credits	Unit Name	Core or option	1	2	3	4	5	6	7	8	9	10

## Annex C: Course mapping to FHEQ level descriptor, subject benchmark(s) and professional body or other external reference points

One set of mapping tables to be produced for the course and each named intermediate qualification

<b>Course (or intermediate) qualification and title</b>	BSc (Hons) in Computer Security and Forensics
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FHEQ Descriptor for a higher education qualification	QAA FHEQ level descriptors; October 2014	Course Learning Outcome(s)											
		1	2	3	4	5	6	7	8	9	10		
A systematic understanding of key aspects of their field of study, including acquisition of coherent and detailed knowledge, at least some of which is at, or informed by, the forefront of defined aspects of a discipline.		X	X										
An ability to deploy accurately established techniques of analysis and enquiry within a discipline				X					X	X			
Conceptual understanding that enables the student: <ul style="list-style-type: none"> <li>- to devise and sustain arguments, and/or to solve problems, using ideas and techniques, some of which are at the forefront of a discipline</li> <li>- to describe and comment upon particular aspects of current research, or equivalent advanced scholarship, in the discipline</li> </ul>		X						X					
An appreciation of the uncertainty, ambiguity and limits of knowledge					X								
The ability to manage their own learning, and to make use of scholarly reviews and primary sources (for example, refereed research articles and/or original materials appropriate to the discipline).									X			X	
Typically, holders of the qualification will be able to apply the methods and techniques that they have learned to review, consolidate, extend and apply their knowledge and understanding, and to initiate and carry out projects			X										
Typically, holders of the qualification will be able to critically evaluate arguments, assumptions, abstract concepts and data (that may be						X							

incomplete), to make judgements, and to frame appropriate questions to achieve a solution - or identify a range of solutions - to a problem										
Typically, holders of the qualification will be able to communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.							X			
And holders will have the qualities and transferable skills necessary for employment requiring the exercise of initiative and personal responsibility; decision-making in complex and unpredictable contexts; the learning ability needed to undertake appropriate further training of a professional or equivalent nature.									X	

<b>Subject Benchmark Statement(s)</b>	<i>QAA Subject Benchmark Statement Computing, February 2016</i>	<b>Evidence and/or Course Learning Outcome(s)</b> <i>How the course takes account of relevant subject benchmark statements</i>
i) demonstrate a requisite understanding of the main body of knowledge for their programme of study		LO1, LO2
ii) understand and apply essential concepts, principles and practices of the subject in the context of well-defined scenarios, showing judgement in the selection and application of tools and techniques		LO2
iii) produce work involving problem identification, the analysis, design and development of a system with accompanying documentation, recognising the important relationships between these stages and showing problem solving and evaluation skills drawing on supporting evidence		LO3, LO6
iv) produce small well-constructed programmes to solve well-specified problems		LO3
v) Demonstrate generic skills, an ability to work under guidance and as a team member.		LO7, LO9

vi) identify appropriate practices within a professional, legal and ethical framework and understand the need for continuing professional development.	LO4
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*The format of the following mapping tables may be adjusted.*

<b>Qualification Characteristic</b>	<i>Not applicable</i>	<b>Evidence</b> <i>How the course takes account of relevant qualification characteristics documents</i>

<b>Professional body or other external reference points</b>	<i>Not applicable</i>	<b>Evidence</b> <i>How the course takes account of Professional body or other external reference points</i>