

# UNIVERSITY OF EAST LONDON

## PROFESSIONAL DOCTORATE PROGRAMME SPECIFICATION

### Professional Doctorate in Information Security.

**This programme is only offered at: UEL Campus**

<b>Final award</b>	Professional Doctorate in Information Security. (D.ProfDoc)
<b>Intermediate awards available</b>	Postgraduate Certificate in Information Security Postgraduate Diploma in Information Security
<b>Mode of Delivery</b>	UEL on Campus
<b>Details of professional body accreditation</b>	N/A
<b>Relevant QAA Benchmark statements</b>	N/A
<b>UEL Academic School</b>	School of Architecture, Computing & Engineering
<b>Date specification last updated</b>	September 2016

## The summary - Programme advertising leaflet

### Programme content

The Programme aims to develop research-based practice for professionals working within the Information Security area. As a result of the rapid growth in both the availability of global information structures (e.g. internet) and the number of users, information security professionals are facing major challenges to provide services that are accessible and yet safe. Keeping business channels flexible and easy to use whilst guarding against the e-criminal is an on-going project. However, the many challenges inherent in cybersecurity workforce management, due largely to the relative newness and complexity of the field. Lack of clarity and consistency is still the norm, from job role definitions, to competency models, to training, education, and certification standards, to the ability to assess those skills necessary for effective job performance (NIST 2015).

“Despite the growing space and sophistication of cyber threats there are not enough people equipped with the appreciate knowledge, skills and abilities to protect the information technology for strategic advantage” - Professionalizing Cybersecurity: A Path to universal standards and status (2015). Therefore “81% of IT and Cybersecurity Professionals believe that if the right investments in people, process and technologies were in place, their organisations would be better able to mitigate all future security breaches” - 2014 Ponemon Institute Research Report.

## Information Security at UEL

The Programme is currently unique in offering a professional doctoral qualification in the expanding area of information security. Most of the Programme is based on negotiated learning, where students construct research-based learning around their interests and life experience. The workplace module is purely workplace-focussed and tutors will visit and support the student and their employer. The Security Management module provides a background to governance of the technology and the humans who use it whilst IT and Internet law module provides data Protection and Cross-Border data transfer laws and regulations. The Research Conference module encourages more reflective, innovative ways of presenting research findings and responding to feedback.

The Professional Doctorate in Information Security believes research is fundamental to maintaining this balance between access and safety. Applied Research Tools and Techniques provides a basis to develop in the student a sophisticated toolset of research techniques. This is augmented in Research Methods for Technologists with highly specialised approaches.

### Programme structure

The Professional Doctorate programme contains two distinct phases: firstly, stage one - 6 taught modules followed by stage two - the research phase. The 6 taught modules in stage one are of three main types: 2 information security 'content' modules (CN7014 and CN015); one 'work-based' module (CN7405); and the three 'research' modules (CN8001, CN8002, CN8003).

The Professional Doctorate programme will be available only in part-time mode, and its delivery will include block and blended learning. Block mode delivery of taught modules will normally be based on a one week intensive attendance at UEL Docklands (usually at the beginning of each term) according to an advertised calendar. During the remainder of the term, students can work on their reading, practical components (from a workbook) and coursework with on-line help, supervision and group tutorials.

### Learning environment

The programme use:

- A series of face-to-face lectures, workshops and lab-based learning as a way of securing a knowledge base;
- Other teaching methods including block-mode classes, practical sessions, seminars and reflection of work-based practice to enforce learning and professional skills;
- Holistic, experiential and self-directed learning approaches as the basis for adult learning;
- Valuing programme members as active learners with differing and valuable experiences;
- Problem-based learning approach as a way of addressing the complexity of situations in the real world;

- Supervision to develop reflexive and reflective Data Scientists in professional settings.

## Assessment

### Stage One - Taught modules assessment:

- In all level 8 modules students must obtain: 60% overall with a minimum component mark of 50%
- In all level 7 modules students must obtain: 50% overall with a minimum component mark of 40%
- Students who, after the appropriate reassessment attempts, are unable to pass one or more of core taught modules will not achieve the award of Professional Doctorate. Students who are unable to gain enough credits from the taught modules may be eligible exit with a lesser award (see Exit Awards).  
Students who are unsuccessful in any level 8 module of assessment may be re-assessed on one further occasion only. Students who are unsuccessful in any level 7 module of assessment may be re-assessed on three further occasions.

### Stage Two - Research thesis assessment:

On completion of the taught modules, students undertake a supervised period of research. Research proposals must be registered through the Research Degrees Sub-committee within six months full-time or twelve months part-time of starting of the research component. The research will culminate in a Research Thesis. The student must pass their Thesis through an examined viva voce. The University's Part 9 regulations apply.

**To obtain the degree of Professional Doctorate in Information Security, students must achieve 540 credits** as specified in Awards below.

Students with disabilities and/or particular learning needs should discuss assessments with the Programme Leader to ensure they are able to fully engage with all assessments within the programme.

## Relevance to work/profession

Students are actively encouraged to negotiate learning centred on their workplace issues. In addition, during the work-based module it is compulsory to use work-based material.

## Research/project work

On successful completion of all taught modules, Students will progress to the research component of the programme (stage two). Students will complete a Research Thesis of approximately 50,000 words showing that they have made an original contribution to the Information Security profession as specified in the UEL PGR Code of Practice and the regulations for postgraduate research programmes.

Registration of the research component can only take place following a recommendation from the relevant School Research Degrees Sub-Committee to the university Research Degrees Subcommittee of the suitability of the candidate to undertake research, of the programme of research, of the supervision arrangements and of the research

environment. These approvals require appropriate academic judgement to be brought to bear on the viability of each research proposal.

Candidates for a Professional Doctorate must successfully complete all assessed elements of their programme before award of the degree can be made.

Once the research stage of the programme is reached progression will be formally reviewed annually by a Panel comprised of staff with appropriate academic and professional expertise who are independent of the candidate's supervisory team. The School Research Degrees Sub-Committee and the university Research Degrees Subcommittee monitor the reports from these Panels.

The examination of the research component of the Professional Doctorate includes: firstly the submission and preliminary assessment of the research; and secondly its defence by oral examination.

### **Added value**

This is an extremely flexible programme that facilitates the professional and academic learning of information security students at different stages of their careers. It offers a range of post-qualifying and academic awards –including the Professional Doctorate in Information Security. This is the only professional doctorate in Information Security in the UK and it provides a practice based programme, emphasising learning from experience.

### **Your future career**

Students regularly find enhanced employment status in the Information Security area having furthered their career position after completion of the programme.

### **How we support you**

At the commencement of the programme students are given an explicit overview of the total programme teaching and learning activities, assignments, organisation, structure and progression. An annually updated Programme Handbook helps guide the student through the Programme.

The Programmer Leader along with both the Research Methods Leader and the Work-Based Learning Leaders deal with the students day-to-day academic issues. In addition Supervisor and Personal Tutors provide academic and personal support throughout the Programme. Our Counselling, Disability, Dyslexia and Student Support Services provide more specialist help, where appropriate.

The Graduate School provides support for our postgraduate research students and for our institution's research and scholarly strategy.

Professional Doctorate students will have at least two and not normally more than three supervisors, who together demonstrate an appropriate range of academic and professional experience. One supervisor shall be the Director of Studies with responsibility to supervise the candidate on a regular and frequent basis. During the Research Thesis supervisors

meet their students, either physically or virtually, at least once a month. Documentary evidence of these meetings are kept as part of the student's record.

## Programme aims and learning outcomes

### What is this programme designed to achieve?

This programme is designed to give you the opportunity to:

- \_Develop research skills to empower you as a professional information security expert
- \_Foster reflective and analytic approaches to work-based practice
- \_Produce high-quality research output

### What will you learn?

A candidate who is awarded a Professional Doctorate will be expected to have achieved the following learning outcomes:

Created and interpreted new knowledge, through original research, or other advanced scholarship, of a quality to satisfy peer review, which extends the forefront of the discipline and merits publication;

Systematically acquired an understanding of a substantial body of knowledge which is at the forefront of an academic discipline or area of professional practice;

The general ability to conceptualise, design and implement a project for the generation of new knowledge, application or understanding at the forefront of the discipline and to adjust the project design in the light of unforeseen problems;

A detailed understanding of applicable techniques for research and advanced academic enquiry;

Ability to make informed judgements on complex issues in specialist fields, often in the absence of complete data, and be able to communicate their ideas and conclusions clearly and effectively to specialist and non-specialist audiences:

Ability to continue to undertake pure and/or applied research and development at an advanced level, contributing substantially to the development of new techniques, ideas or approaches;

The qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and largely autonomous initiative in complex and unpredictable situations, in professional or equivalent environments.

### Knowledge

- Analyse high level research in the area of Information Security
- Produce knowledge in the form of doctoral level research output

- Evaluate the value of knowledge in the Information Security area

### Thinking skills

- Critical analysis of research
- Reflection on your practice
- Ability to make cross-disciplinary connections

### Subject-Based Practical skills

- Using sophisticated software tools to enhance your research
- Produce scholarly work that is concise, justified and structure to a high standard
- Using a multi-dimensional approach to investigative research

### Skills for life and work (general skills)

- Develop sophisticated research skills
- Appreciation and response to critical and positive feedback
- Sophisticated communication skills

## The programme structure

### Introduction

All programmes are credit-rated to help you to understand the amount and level of study that is needed.

One credit is equal to 10 hours of directed study time (this includes everything you do e.g. lecture, seminar and private study).

Credits on the Professional Doctorate in Information Security are one of 2 levels:

7 equivalent in standard to a Masters degree 8 equivalent in standard to a Doctorate degree

**The overall credit rating for this programme is 540 credits for the Professional Doctorate.**

### Typical duration

#### On this programme

- It is not possible to move from part-time to full-time study
- It is not possible to use the credit gains in this programme to transfer to PhD

The normal minimum and maximum periods of registration for a Professional Doctorate (Stage One - Taught - and Stage Two - Research) are as follows:

	Minimum	Maximum
Part-time	45 months	60 months

Registration is governed and administered by the Graduate School. On the Professional Doctorate in Information Security registration will typically take place in the first 6 months after completing all taught modules. Registration is achieved by the completion of a document, available on the Graduate School pages of the UEL website, which provides a proposal for the student's research thesis. It is at this point that the supervisory team is

identified and entered on the form. Each registration document is evaluated by ACE's Research Degrees Sub-Committee (RDSC).

Consequently the figures above may not necessarily represent the period the student will spend on the Programme but rather the period for which they are **registered to the research phase** (after completing all taught modules). Under normal circumstances students are unable to have their research thesis examined unless they have been registered for 24 months. Where normal circumstances are thought to not apply the supervisory team are required to make a written case to the RDSC who will, if they consider the case has merit, forward it to the UEL Research Committee for approval. Likewise the normal maximum period refers to the registration period and if a student is deemed by their supervisors to justify an extension of this period an application must be made to the RDSC. In addition under normal circumstances students will not remain on the Programme for a total period exceeding 60 months; students with exceptional circumstances with a case for an extension beyond this period, need to also be presented to the RDSC.

### How the teaching year is divided

#### PROGRAMME STRUCTURE - TAUGHT STAGE

Year 1 Term 1
<p>Module 1: CN7014 Security Management (30)</p> <p>Including:</p> <ul style="list-style-type: none"> <li>• Security concepts: goal, asset, vulnerability, threat , risks,</li> <li>• security requirements,</li> <li>• security mechanism, policy</li> </ul> <p>Assessment: Assignment 1 and Exam (combined equivalence 5000 words)</p>
Year Term 2
<p>Module 2: CN8001 Applied Research Tools and Techniques (30)</p> <p>Including:</p> <ul style="list-style-type: none"> <li>• Mathematics and Statistics</li> <li>• Artificial Intelligence</li> <li>• Data Mining</li> <li>• Dynamic Modelling</li> </ul> <p>Assessment: Assignment 5 (equivalence 5000 words)</p>
Year 2 Term 1
<p>Module 3: CN8002 Research Methods for Technologists (30)</p> <p>Including:</p> <ul style="list-style-type: none"> <li>• Knowledge production</li> <li>• Proposal construction</li> <li>• Digitalised research approaches</li> <li>• Health, Legal and Ethical issues</li> </ul> <p>Assessment: Assignment 8 (equivalence 5000 words)</p>
Year 2 Term 2
<p>Module 4: CN7015 IT and Internet law ( 30)</p> <p>Including:</p> <ul style="list-style-type: none"> <li>• Copyright, Trade Mark and Patent</li> <li>• Privacy, Anonymity, and surveillance</li> <li>• Data Protection and Cross-Border data transfer laws and regulations.</li> <li>• Consumer protection, trust and confidence</li> </ul> <p>Assessment: Assignment 3 and Exam 4 (combined equivalence 5000 words)</p>
Year 3 Term 1
<p>Module 5: CN7405 Project Portfolio (30).</p> <p>Including:</p>

<ul style="list-style-type: none"> <li>• Planning and archiving data</li> <li>• Reflection</li> <li>• Measurement of success</li> <li>• Analysis</li> </ul>
Assessment: Assignment 9 (equivalence 5000 words)
Year 3 Term 2
Module 6: CN8003 Research Conference (30)
Including: <ul style="list-style-type: none"> <li>• Identifying a suitable topic</li> <li>• Writing a research paper</li> <li>• Experimenting with Methodologies</li> <li>• Presentation and Defence</li> </ul>
Assessment: Assignment 10 and Presentation 11 (combined equivalence 5000 words)

### What you will study when

Level	UEL Module Code	Module Title	Credit	Status*
7	CN7014	Security Management	30	Core
7	CN7015	IT and Internet Law	30	Core
7	CN7405	Project Portfolio	30	Core
8	CN8001	Applied Research Tools and Techniques	30	Core
8	CN8002	Research Methods for Technologist	30	Core
8	CN8003	Research Conference	30	Core
<b>RESEARCH STAGE 360 CREDITS</b>				

*\*Please Note - A core module for a programme is a module which a student must have passed (i.e. been awarded credit) in order to achieve the relevant named award. An optional module for a programme is a module selected from a range of modules available on the programme.*

### Requirements for gaining an award

Students who, for whatever reason, fail to complete the entire programme may be eligible for an intermediate award. The award to be offered is subject to the following guidelines:

#### Postgraduate Certificate in Professional Information Security

A student who successfully completes 60 credits (Level 7 or 8) of taught modules, including CN7014 or CN7019 or both, on the Professional Doctorate programme is eligible for the Award of Postgraduate Certificate in Professional Information Security.

#### Postgraduate Diploma in Professional Information Security

A student who successfully completes 120 credits (Level 7 or 8) of taught modules, including CN7014 and CN7015, on the Professional Doctorate programme is eligible for the Award of Postgraduate Diploma in Professional Information Security.

## Teaching, learning and assessment

### Teaching and learning

A variety of learning methods are used including: one module of Distance Learning; three modules of largely work-based supervision; a Block mode module; two research modules offering lab sessions as well as specialised guest lectures; a conference based module; and a supervised thesis. In addition, a highly interactive website will support student learning.

Knowledge is developed through

- Research for coursework and the Research Thesis
- Class discussion both off and online
- Lab work
- Reflection on your workplace activity
- Supervised Tutorials

Thinking skills are developed through

- Designing and completing negotiated assessment
- Class discussion
- Reflection and Analysis of Work-Based activity

Practical skills are developed through

- Lab sessions
- Work-based and Research Methods modules
- Group-work

Skills for life and work (general skills) are developed through

- Lab work
- Research Methods modules
- Coursework and Research Thesis construction
- Presentations and communications
- Group-work

### Assessment

Assessment takes a variety of forms including: examination; written individual or group coursework; lab work; research thesis.

Knowledge is assessed by

- Presentation
- Written coursework and Research Thesis

Thinking skills are assessed by

- Writing coursework and Research Thesis
- Presentation

Practical skills are assessed by

- Research skills
- Hand on lab practical
- coursework

Skills for life and work (general skills) are assessed by

- Coursework
- Labwork

## **How we assure the quality of this programme**

### **Before this programme started**

Before this programme started, the following was checked:

- there would be enough qualified staff to teach the programme;
- adequate resources would be in place;
- the overall aims and objectives were appropriate;
- the content of the programme met national benchmark requirements;
- the programme met any professional/statutory body requirements;
- the proposal met other internal quality criteria covering a range of issues such as admissions policy, teaching, learning and assessment strategy and student support mechanisms.

This is done through a process of programme approval which involves consulting academic experts including some subject specialists from other institutions.

### **How we monitor the quality of this programme**

The quality of this programme is monitored each year through evaluating:

- external examiner reports (considering quality and standards);
- statistical information (considering issues such as the pass rate);
- student feedback.

Drawing on this and other information, programme teams undertake the annual Review and Enhancement Process which is co-ordinated at School level and includes student participation. The process is monitored by the Quality and Standards Committee.

Once every six years an in-depth review of the whole subject area is undertaken by a panel that includes at least two external subject specialists. The panel considers documents, looks at student work, speaks to current and former students and speaks to staff before drawing its conclusions. The result is a report highlighting good practice and identifying areas where action is needed.

### **The role of the programme committee**

This programme has a programme committee comprising all relevant teaching staff, student representatives and others who make a contribution towards the effective operation of the programme (e.g. library/technician staff). The committee has responsibilities for the quality of the programme. It provides input into the operation of the

Review and Enhancement Process and proposes changes to improve quality. The programme committee plays a critical role in the quality assurance procedures.

### **The role of external examiners**

The standard of this programme is monitored by at least one external examiner. External examiners have two primary responsibilities:

- To ensure the standard of the programme;
- To ensure that justice is done to individual students.

External examiners fulfil these responsibilities in a variety of ways including:

- Approving exam papers/assignments;
- Attending assessment boards;
- Reviewing samples of student work and moderating marks;
- Ensuring that regulations are followed;
- Providing feedback through an annual report that enables us to make improvements for the future.

The external examiner reports for this programme are located on the UEL virtual learning environment (Moodle) on the School noticeboard under the section entitled 'External Examiner Reports & Responses'. You can also view a list of the external examiners for the UEL School by clicking on the link below:

<http://www.uel.ac.uk/qa/externalexaminersystem/currentexaminers/>

### **Listening to the views of students**

The following methods for gaining student feedback are used on this programme:

- Module evaluations
- Student representation on programme committees (meeting 2 times year)

Students are notified of the action taken through:

- circulating the minutes of the programme committee on Moodle
- providing details on the programme noticeboard

### **Listening to the views of others**

The following methods are used for gaining the views of other interested parties:

- Industrial liaison committee
- Work-Based Learning Leaders
- Regular liaison with professional bodies

### **Where you can find further information**

Further information about this programme is available from:

- The UEL web site (<http://www.uel.ac.uk>)
- The student handbook
- Module study guides
- UEL Manual of General Regulations (<https://www.uel.ac.uk/Discover/Governance> )
- UEL Quality Manual (<https://www.uel.ac.uk/Discover/Governance> )

- The Graduate School (<http://www.uel.ac.uk/gradschool/>)