School of Engineering and Built Environment

BSc(Hons) Forensic Investigation

Programme Specification Pro-forma (PSP)

Session 2018-19

GLASGOW CALEDONIAN UNIVERSITY

Programme Specification Pro-forma (PSP)

1. GENERAL INFORMATION

1.	**Programme Title:**	Forensic Investigation
2.	**Final Award:**	BSc (Hons) Forensic Investigation
3.	**Exit Awards:**	BSc Forensic Investigation Certificate of Higher Education Diploma of Higher Education
4.	**Awarding Body:**	Glasgow Caledonian University
5.	**Approval Date:**	22 March 2017
6.	**School:**	Engineering & Built Environment
7.	**Host Department:**	Engineering
8.	**UCAS Code:**	F410
9.	**PSB Involvement:**	Royal Society of Chemistry
10.	**Place of Delivery:**	Glasgow Caledonian University
11.	**Subject Benchmark Statement:**	Forensic Science 2012, Chemistry 2014
12.	**Dates of PSP Preparation/Revision:**	February 2017

2. EDUCATIONAL AIMS OF THE PROGRAMME

An introduction should be included here which describes the overall aim of the programme together with the educational aims of the programme at the exit points

Forensic Investigation is the application of science and technology to provide evidence acceptable in a court of law. The sciences used in investigation of evidence include chemistry, biology, maths (statistics) and physics, alongside knowledge of the relevant aspects of Law. The Forensic Investigation programme is therefore multidisciplinary in nature, with the emphasis on two key themes:

1. chemical and biological analysis of physical evidence;
2. critical evaluation, interpretation and presentation of evidence.

Forensic Investigation graduates will be well equipped for employment not only in the Forensic Science sector but also in alternative industries such as pharmaceutical, environmental, research and teaching.

Educational aims are:

- To instil in students a sense of enthusiasm for scientific problem solving and thus to involve them in an intellectually stimulating and satisfying experience of learning and studying.
- To provide a broad education in chemistry and chemical analysis together with specialist topics in biology, law, environment and microscopy related to Forensic Investigation.
- To give students the expertise required to conduct a Forensic Investigation including defining the problem, planning a solution, implementing that solution and reporting their work in a professional manner.
- To develop a familiarity with the justice system relevant to the procedures and practice of Forensic work.
- To foster, through the medium of an education in science, a range of transferable skills of value in a wide range of future employment.
- To provide students with a knowledge and skills base from which they can proceed to further

studies in specialised areas of chemical and biological sciences.

- To enable students to make valid scientific measurements robust enough to be considered as credible evidence within a court of law.

- To provide students with scientific, critical analysis and communication skills which, together with knowledge of the legal process, will equip them to be credible and authoritative witnesses in a court of law.

- To provide students with a range of hands-on practical experiences to develop their problem solving, team working and reporting skills.

- To assist the student to develop independent learning and to demonstrate initiative and flexibility required to adapt to changing technological and organisational developments.

- To encourage students to reflect on both the content and processes of their learning thus enabling them to plan an effective personal development strategy suited to their present and future needs.

- To give students confidence in themselves and in their abilities.

University Certificate Exit Award Objective:- By the end of the University Certificate the student will have a broad and balanced knowledge of scientific and legal principles and concepts which will form a suitable underpinning for more advanced study in these subject areas. The student will be to perform prescribed practical scientific tasks when the methods to be employed are clearly and closely specified, and be able to produce a report on the work undertaken which may require a limited interpretation of the data obtained.

University Diploma Exit Award:- By the end of the University Diploma the student will be able to apply existing analytical techniques to propose solutions to forensic investigation problems. Problem solving skills will include selection of sampling strategy, choice of method, consideration of the uncertainty of the result, and interpretation and reporting of data, such that an audit trail, sufficiently robust to satisfy appropriate legal requirements can be demonstrated

Unclassified Degree Exit Award Objective:- By the end of the unclassified degree programme a student will be able to carry out appropriate standard scientific and analytical techniques and methodologies in response to the specification of a given problem in forensic investigation, and present the results, findings and conclusions such that they will stand the test in a court of law.

Honours Degree Exit Award Objective:- By the end of the Honours degree programme, the student will, in addition, be able to analyse a familiar or unfamiliar forensic investigation problem, and produce a design for its solution which may involve an extension or adaptation of standard techniques or the use of novel methodologies.

3. INTENDED LEARNING OUTCOMES

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills, qualities and other attributes in the following areas: [QAA Forensic Science Benchmarking Statement 2012, QAA Chemistry Benchmarking Statement 2014]

3A Knowledge and understanding;

The students should:

A1 Gain a comprehensive knowledge and understanding of key disciplines in chemical, biological and environmental analysis, materials science and law appropriate to a forensic investigation.

A2 Understand the principles and areas of applicability of a range of data acquisition and data handling techniques.

A3 Understand the theoretical and practical aspects of making a valid measurement in a scientific or forensic application.

A4 Develop an awareness of the requirements, in attitude, integrity, skills and professionalism expected of those carrying out a forensic investigation.

A5 Recognise the importance and range of applicability of oral, written and computer based communication techniques in the context of forensic casework.

A6 Develop a knowledge of the criminal justice system in the UK and the role of the expert witness.

3B Practice: Applied knowledge, skills and understanding;

The students should:

B1 Demonstrate skills in the practical application of a range of chemical and biological techniques and test measurement systems.

B2 Be able to keep full and accurate records of laboratory work.

B3 Be able to select and apply the appropriate advanced analytical techniques for a given forensic investigation problem or sample type.

B4 Select appropriate methods to critically analyse data and evaluate the level of its uncertainty.

B5 Be able to work safely and effectively in a laboratory, following documented procedures and with an awareness of risk and COSHH assessments.

B6 Demonstrate an ability to make a professional judgement between the merits of particular explanations, arguments and positions leading to the making of a reasoned choice between them.

3C Generic cognitive skills;

The students should:

C1 Develop strategies for the solution of practical forensic investigation problems of a familiar or standard nature.

C2 Be able to analyse novel forensic investigation problems, plan strategies for their solution and present conclusions in an appropriate form.

C3 Be able to contribute positively as part of a group to plan, organise and carry out work efficiently in a timely manner.

C4 Demonstrate independent learning ability, including self-reflection and personal development planning.

C5 Critically evaluate work undertaken by themselves and others.

C6 Review critically research material from a variety of sources.

3D Communication, numeracy and ICT skills;

The students should:

D1 Be able to present complex concepts and information in a clear, concise manner, both orally and in writing.

D2 Demonstrate numeracy and mathematical skills related to data handling, error analysis, systematic use of scientific units and different types of data presentation.

D3 Demonstrate good communication skills including listening, written and oral skills, and use of computer based presentation packages.

D4 Demonstrate skills in the practical application of a range of statistical, quality assurance, and computational techniques used in the acquisition and treatment of experimental data.

D5 Be able to communicate experimental results in the context of forensic casework, including expert opinion.

D6 Demonstrate information retrieval skills in relation to primary and secondary sources including

computer database searches and on-line scientific and engineering journal searches.

3E Autonomy, accountability and working with others.

The students should demonstrate:

E1 Interpersonal skills relating to the ability to interact with other people as evidenced by effective team performance.

E2 Application of time management and task prioritisation skills as evidenced by the ability to plan and implement efficient and effective modes of working.

E3 An appreciation of why standards and codes of conduct are required.

E4 An awareness of the ethical and legal responsibilities of a forensic practitioner.

E5 Awareness of issues from a global and environmental perspective along with respect for different cultures and economic backgrounds.

E6 Confidence in their own ability and self-motivation to succeed.

Strategy for Learning

The Common Good Attributes are:

- Active & Global Citizenship
- Entrepreneurial Mind-set
- Responsible Leadership
- Confidence

All students will develop these attributes through their core curriculum as well as opportunities such as volunteering and community engagement. The Forensic Investigation programme by its nature encourages students to be outward looking and to develop confidence in their own abilities through carrying out practical and problem solving exercises, reporting them in a format that would acceptable in a court of law and able to withstand cross-examination. Leadership is encouraged via group working activities and through independent learning, culminating in the Honours project which is largely student led. Study abroad opportunities for both outgoing and incoming students encourages cross-cultural exchange of outlook and approaches to learning and teaching.

Approaches to be used include:

- **Lectures.** Module material is delivered interactively in large groups. Essential module material is delivered in lectures and is used to underpin subsequent consolidation of module material in other teaching and learning formats. The use of international examples of forensic investigations and case studies will ensure a culturally-inclusive approach to teaching.

- **Tutorials and Seminars.** These are smaller-group interactive sessions. Material presented in other module sessions can be consolidated by evaluation and review in group discussions and students have the opportunity to raise further questions about the module material. Tutorials can also be used to evaluate student understanding of module content and give the opportunity for remedial action to be devised where appropriate. Students are also encouraged to attend the research seminar programme which runs throughout the academic session.

- **Presentations.** Students are involved in individual and group presentations on a variety of topics and at all levels of the programme. These may involve the production of conference-standard poster presentations and PowerPoint presentations for oral delivery.

- **Blended Learning**. GCULearn is used in all modules to provide course material, study guides and links to external sources. Some modules, e.g. Maths, Physics, utilise on-line assessment (formative and summative). GCULearn is also used to allow students to use Turnitin anti-plagiarism software to check their own work, thus providing a check prior to submission but more importantly acts as a learning tool to help students comprehend the nature of plagiarism and so avoid mistakes made out of lack of understanding.

- **Laboratory-based Practicals.** The Chemical Sciences group places great emphasis on the value of allowing students to participate in laboratory-based practical classes which will take place in our recently refurbished laboratories with state-of-the art equipment giving students hands-on experience in a series of student-centred exercises which will further develop key practical skills. These laboratories are utilised for all levels of Programme provision, exposing students to the rigour and demands of scientific investigation. Practical classes are seen as a vital component of the curriculum, which provide valuable experiences and intellectual challenges which are not always available at other universities. The fact that our students undertake laboratory practicals at all levels is regarded as a major strength of our programmes by employers, both in the Health Service and in Industry, and was commended in the 2004 Enhancement Led Internal Subject Review.

- **Workshops.** Practical workshops are seen as a vital component of the curriculum to allow students to develop their hands-on skills and to reinforce the practical nature of the programme.

- **Data Analysis.** The programme encourages the students to enhance their ability to interpret scientific and clinical data. Case studies are a useful mechanism for presenting pertinent data for analysis. Students are also expected to critically analyse recently published material.

- **Structured Industrial Practice Studies (SIPS).** Although employability skills, group working, presentation and general transferable skills are embedded throughout the Programme, there is a particular form of assessment in Level 3 in which in which students take part in an industrial visit which will be linked to the material in the Forensic Analysis (Environmental Forensics) Module. The assessable element of SIPS consists of students addressing particular learning outcomes and working in groups for a presentation.

- **Skills Development.** Academic Development Tutors can provide support in specific skills such as dissertation writing. Due to the analytical nature of our subject disciplines and the need to underpin mathematics, the School runs an online maths helpline and plans to employ a full time maths tutor in the LDC.

- **E-Learning**. The development of e-learning is a key part of the University's strategy for curricula development and e-learning plays a prominent role in learning, teaching activities within the Schools. SEBE has 4 learning technologists (LT) who provide direct support for academic staff in the effective use of technology in their classrooms. They are based within LDC and they have a range of technical and graphical skills which are used to develop technology supported learning materials (targeted towards distance-based and e-learning). The LTs also support the use of the virtual learning environment GCU Learn.

- **GCULearn** is also used to allow students to use Turnitin anti-plagiarism software to check their own work, thus providing a check prior to submission but more importantly acts as a learning tool to help students comprehend the nature of plagiarism and so avoid mistakes made out of lack of understanding.

- All Schools are supported by GCULead, which promotes the University's aim to develop innovative teaching and learning programmes for a diverse student population.

4. PROGRAMME STRUCTURES AND REQUIREMENTS, LEVELS, MODULES, CREDITS AND AWARDS

SCQF Level 7

Module Code	Module Title	Credit
M1F121832	Chemistry	20
M1C124442	Human Biology	20
M1G308810	Mathematics & Statistics of Experimentation	20
M1F424469	Introduction to Forensic Investigation	20
M1F321834	Physics	20
M1M223812	Introductory Scots Law	20

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SCQF Level 8

Module Code	Module Title	Credit
M2F124502	Physical Chemistry	20
M2M225115	Civil & Criminal Procedure	20
M2F124501	Chemical Analysis	20
M2F121837	Organic Chemistry 1	20
M2F424484	Inorganic Chemistry	20
M1C723490	Cells & Biomolecules	20

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SCQF Level 9

Module Code	Module Title	Credit
M3F124481	Instrumental Analytical Chemistry	20
M3F121840	Organic Chemistry 2	20
M3F424479	Forensic Analysis	20
M3F124485	Incident Prevention, Investigation & Analysis	20
M3F121843	Chemical Data Analysis & Management	20
M3F121844	Environmental Chemistry and Chemical Hazards	20

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SCQF Level 10

Module Code	Module Title	Credit
MHF424483	Forensic Project	40
MHF423631	Forensic Microscopy	20
MHF424200	Advanced Techniques in Forensic Science	20
MHC124503	Advanced Forensic Biology	20
MHF421848	Environmental Forensic Analysis	20

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5. SUPPORT FOR STUDENTS AND THEIR LEARNING

Support facilities are listed below:

- Induction programme
- Facebook for students new to GCU
- Student handbook and module descriptors
- GCULearn (module support)
- Project guidelines
- Poster presentation guidelines
- Saltire Centre with access to other local and national library resources
- Academic advisor
- Personal Development Planning
- Student e-mail
- Open access to IT facilities including the Learning Cafe
- Open access to academic staff including the programme organiser
- Access to Student Services Department which provides assistance and guidance
- Programme of Seminars and Visiting Lecturer presentations
- Industrial Visits and Links
- Professional body contacts
- Student representatives on the Programme Board
- Student representation on Senate and its standing Committees
- Student Staff Consultative Group
- Access to the EBE Learning Development Centre
- Careers Guidance
- Disability Co-ordinator

Personal Development Planning (PDP)

Students will be supported throughout the programme by an academic advisor who will advise on the PDP process and support the students in developing effective techniques for reviewing their progress. The students will be expected to keep a portfolio of coursework and feedback.

A key element in the PDP process is to foster the employability of graduates. Students will be encouraged to make use of the University Careers Guidance service and other mechanisms in order to develop an awareness of the employment sector and identify career opportunities. Students will also be encouraged to attend university research seminars and attend meetings of the Royal Society of Chemistry and similar bodies.

Academic Development Tutor

It is recognised that the transition from school or college to University can be challenging and some students will require support in developing the skills and practices required for independent study. It is the role of the Academic Development Tutors within the School of Engineering and Built Environment (EBE) to assist students to maximise their academic opportunities and to become more independent learners. This includes assistance with the development of skills and approaches which enhances both the understanding and enjoyment of programmes offered within EBE. Examples of support offered include:

- Academic writing skills
- Critical thinking
- Plagiarism
- Exam preparation

Accessibility

The programme team has considerable experience of ensuring that students with a wide range of disabilities are able to access a valuable educational experience. Having considered the modules on this programme, there are none that are ‘out of line’ with our previous experience, and we are confident that provision can be made for a wide-range of disabilities. Experience has taught that a detailed

analysis of the entire provision must be undertaken prior to admission, in order that the applicant understands and hopefully accepts the arrangements proposed. Each case is different and so risk assessments will be made which will be specific for each individual student.

6. CRITERIA FOR ADMISSION

Candidates must be able to satisfy the general admissions requirements of Glasgow Caledonian University

Programme Admission Requirements:

Scottish Certificate of Education (SCE) Higher Grade: passes in three subjects at B and one at C. The Higher passes must include Chemistry. Recommended subjects at Higher Grade:- English, Maths and Human Biology or Biology. There must also be passes in Mathematics and English (Standard Grade Credit Level or Intermediate 2).
A-Level: passes in two subjects at B and one at C. A-level passes must include Chemistry. There must also be passes in Mathematics and English (GCSE level at C or above).
ILC: passes in three subjects at B and one at C. Passes to conform in standard and subject to those specified for the Scottish Certificate of Education.
International qualifications which are equivalent to the entry requirements for SCE Higher Grade entry. International students for whom English is not the first language require an ILETS score of 6 with no element below 5.5.

Flexible Entry - Credit Transfer and RPL:

Accumulation of credit points from other courses and from prior experiential learning may allow direct entry into the programme at an appropriate level, subject to satisfying the necessary pre-requisites for completion of the programme.
Formal entry requirements may be relaxed for mature applicants, that is applicants over twenty one years of age, whose record of educational achievement and relevant experience is deemed to be appropriate.
All non-standard applicants will normally be interviewed prior to being offered a place on the programme.

Entry with Advanced Standing (level 2):

A-level/Advanced Higher: three passes at B and one pass at C. Essential subjects are Chemistry, with Biology English and Mathematics (with a statistics unit) recommended.
HNC (Applied Science): with 15/16 Credits with graded unit at B minimum.

7. METHODS FOR EVALUATING AND IMPROVING THE QUALITY AND STANDARDS OF TEACHING AND LEARNING

Mechanisms for review and evaluation of teaching, learning, assessment, the curriculum and outcome standards:

- Annual Programme Monitoring Process
- Annual Module Monitoring Process
- Module Feedback Questionnaire
- External Examiner(s) Reports
- Annual monitoring (required by Professional and/or Statutory Bodies)
- Enhancement-led Internal Subject Review (ELISR)
- Enhancement-led Institutional Review (ELIR)

Committees with responsibility for monitoring and evaluating quality and standards:

- Student-Staff Consultative Group (SSCG)
- Programme Board (PB)
- School Board
- Assessment Board (AB)
- University Learning and Teaching Sub-Committee (LTSC)
- University Academic Policy Committee (APC)
- University Senate
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Mechanisms for gaining student feedback on the quality of teaching and their learning experience:

- Student-Staff Consultative Group (SSCG)
- Student representation on Programme Board (PB)
- Student representation on School Board
- Module Feedback Questionnaire
- GCULearn
- Open access to members of Programme Team e.g. Module Leaders, Programme Leader, Academic Advisor, Year Tutor

Staff development priorities include:

- Postgraduate Certificate in Learning and Teaching
- Continuous Professional Development (CPD)
- Performance and Development Annual Review (PDAR)
- Peer support for teaching
- Mentoring scheme for new teaching staff
- Conference and seminar attendance and presentation
- Research Excellence Framework (REF) submission
- Membership of Higher Education Academy (HEA)
- Membership of and involvement with Professional Bodies

8. ASSESSMENT REGULATIONS

Students should expect to complete their programme of study under the Regulations that were in place at the commencement of their studies on that programme, unless proposed changes to University Regulations are advantageous to students.

The Glasgow Caledonian University Assessment Regulations which apply to this programme, dependent on year of entry can be found at:
GCU Assessment Regulations

9. INDICATORS OF QUALITY AND STANDARDS

Programme Board statements on modules
Annual Programme Analysis
Enhancement-led internal subject reviews
External Examiner Reports

10. INFORMATION ABOUT THE PROGRAMME

Key information about the programme can be found in:

- Definitive Programme Document
- Programme Handbook
- Module Handbook
- University Website http://www.gcu.ac.uk
- School Website
- GCULearn
- My Caledonian
- University Prospectus

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning assessment methods of each module can be found in the University Module catalogue which can be accessed from the University website. The accuracy of the information in this document is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education.

A curriculum map is attached showing how the outcomes are being developed and assessed within the programme. This relates the modules from Section 4 to the outcomes in Section 3.

DATE**:** **March 2017**

Curriculum Map for Forensic Investigation

The curriculum map links the modules (Section 4) to the Outcomes listed in Section 3

PSMAP

This map provides both a design aid to help academic staff identify where the programme outcomes are being developed and assessed within the course. It also provides a checklist for quality assurance purposes and could be used in approval, accreditation and external examining processes. This also helps students monitor their own learning, and their personal and professional development as the course progresses. The map shows only the main measurable learning outcomes which are assessed. There are additional learning outcomes (e.g. attitudes and behaviour) detailed in the module specifications which are developed but do not lend themselves to direct measurement

Modules			Programme outcomes																													
	Code	Title	A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	D6	E1	E2	E3	E4	E5	E6
SCQF 7	M1F424469	Introduction to Forensic Investigation	X		X	X	X	X	X	X			X		X		X	X	X		X	X	X		X	X	X	X	X	X		
	M1F121832	Chemistry	X	X	X				X	X			X		X							X	X					X				
	M1M223812	Introductory Scots Law	X			X	X	X						X			X	X	X	X			X			X	X	X	X	X	X	
	M1G308810	Mathematics and Statistics for Experimentation	X	X	X							X			X			X				X	X	X				X	X			X
	M1F321834	Physics	X	X	X	X	X		X	X			X		X			X	X		X	X	X	X			X	X				
	M1C124442	Human Biology	X	X	X				X	X			X										X					X				
SCQF8	M2F124502	Physical Chemistry	X	X	X	X	X		X	X			X		X			X				X	X	X			X	X	X			
	M2F124501	Chemical Analysis	X	X	X	X	X		X	X		X	X	X	X		X	X	X		X	X	X	X	X		X	X	X	X		
	M2M224779	Civil and Criminal Procedure	X			X	X	X						X			X	X	X	X	X				X	X		X	X	X	X	
	M1F121837	Organic Chemistry 1	X	X	X	X	X		X	X			X		X			X			X		X				X	X	X			
	M2F424484	Inorganic Chemistry	X	X	X	X	X		X	X			X		X			X			X	X	X	X	X		X	X	X	X	X	
	M1C723490	Cells and Biomolecules	X		X		X											X	X		X					X		X	X			
SCQF9	M3F124481	Instrumental Analytical Chemistry	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	X
	M3F121840	Organic Chemistry 2	X	X	X	X	X		X	X	X		X			X		X	X		X		X			X	X	X	X	X		X
	M3F121844	Environmental Chemistry and Chemical Hazards	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	X	X	X	X
	M3F124485	Incident Prevention, Investigation and Analysis	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	X	X	X
	M3F121843	Chemical Data Analysis and Management	X	X	X	X	X		X	X		X	X	X		X		X	X		X	X	X	X	X		X	X	X	X		X
	M3F424479	Forensic Analysis	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	X	X	X

SCQF10	MHF424483	Forensic Project (40 credits)	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	X
	MHF423631	Forensic Microscopy	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
	MHF421848	Environmental Forensic Analysis	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	X	X
	MHF424200	Advanced Techniques in Forensic Science	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
	MHC102508	Advanced Forensic Biology	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