1. **Title of the module**

PSCI5560 (PS556) - Firearms & Ballistics

1. **School or partner institution which will be responsible for management of the module**

Physical Sciences

1. **The level of the module (Level 4, Level 5, Level 6 or Level 7)**

Level 5

1. **The number of credits and the ECTS value which the module represents**

15 credits (7.5 ECTS)

1. **Which term(s) the module is to be taught in (or other teaching pattern)**

Spring

1. **Prerequisite and co-requisite modules**

Prerequisite:

PSCI3240 Introduction to Ballistics

1. **The programmes of study to which the module contributes**

BSc Forensic Science with/without a Year in Industry

M.Sci Forensic Science

This is not available as a wild module.

1. **The intended subject specific learning outcomes.
On successfully completing the module students will be able to:**

Have a knowledge and understanding of:

1. The internal working of a range of firearms. (A1, C18)
2. Heat transfer within firearms. (C18)
3. How firearms can fail and why. (A6, C18)
4. How sound and flash moderators operate. (C18)
5. In depth analyses of cartridge cases and bullets. (A6, B11, C15, C18)
6. The different methods utilised for gunshot residue analyses. (A3, A6, C15, C18)
7. Methods employed for serial number restoration of tampered with firearms. (A6, B11, C18)
8. The reconstruction of bullet trajectories from crime scene evidence. (A5, A6, B11, C16, C18)
9. Extrapolation of useful information from ballistic trauma. (A6, C18)
10. The consideration of all evidence at a shooting scene to reconstruct possible scenarios. (A7, B13, C15, C16, C18)
11. The effect of fragments from Improvised Explosive Devices (IEDs) on the body and structures. (C18)
12. A consideration of how to take a multidisciplinary approach to ballistics. (B8, B9, C18)
13. Up-to-date research in the field of ballistics. (C18)
14. **The intended generic learning outcomes.
On successfully completing the module students will be able to:**

Have a knowledge and understanding of:

1. Building on the ballistics knowledge learned in PS324 – Introduction to Ballistics. (D22, D29)
2. Increasing of students’ general mathematical abilities. (D22, D23)
3. The application of law to ballistics. (D22)
4. Develop practical skills in ballistics. (D22, D26)
5. Writing of reports for different audiences. (D21, D22, D24, D25, D26, D29)
6. To develop the skills required for employment in the ballistics field. (D22, D29, D30)
7. **A synopsis of the curriculum**
* Internal ballistics
* Weapon failure
* Suppressors
* Cartridge case and bullet analyses
* Gunshot residue analyses
* Serial number restoration
* Trajectory analyses
* Wound ballistics
* Shooting scene reconstruction
* The effect of Improvised Explosive Devices (IEDs)
* A multidisciplinary approach to ballistics
* Modern Ballistics research
1. **Reading list (Indicative list, current at time of publication. Reading lists will be published annually)**
* Criminalistics (An introduction to Forensic Science), Richard Saferstein (2015), Prentice Hall. ISBN 0-13-013827-4
* Understanding Firearm Ballistics, R.A. Rinker (2005). Mullberry Hs, USAISBN 0-9645598-4-6
* Practical Skills in Forensic Science (2005), Pearson Press ISBN 0-131-14400-6
* Wounds Ballistics and the Scientific Background (2011), Karl G. Sellier, Beat P. Kneubuehl, ISBN 0444815112
* Wound Ballistics: Basics and Applications: Robin M Coupland, Beat P. Kneubuehl, Markus A Rothschild, Michael J Thali (2011), ISBN 3642203558
1. **Learning and teaching methods**

Total contact hours: 51

Private study hours: 99

Total study hours: 150

1. **Assessment methods**
	1. Main assessment methods

Assignment 1 (8%) - 3 hours

Assignment 2 (16%) - 1000 words

Assignment 3 (16%) - 1000 words

Examination (60%) - 2 hours

13.2 Reassessment methods

Like-for-like

1. **Map of module learning outcomes (sections 8 & 9) to learning and teaching methods (section12) and methods of assessment (section 13)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | *8.1* | *8.2* | *8.3* | *8.4* | *8.5* | *8.6* | *8.7* | *8.8* | *8.9* | *8.10* | *8.11* | *8.12* | *8.13* | *9.1* | *9.2* | *9.3* | *9.4* | *9.5* | *9.6* |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Private Study | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |  | **x** | **x** |
| Lecture | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |  | **x** | **x** |
| Workshop |  |  |  |  |  |  |  | **x** |  | **x** |  |  |  | **x** | **x** |  |  |  | **x** |
| Lab Class | **x** |  |  | **x** | **x** |  |  | **x** | **x** | **x** |  | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |
| **Assessment method** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Assignment 1 | **x** |  |  | **x** | **x** |  |  |  |  |  |  | **x** | **x** |  |  |  |  |  |  |
| Assignment 2 | **x** |  |  |  | **x** |  |  | **x** |  |  |  |  |  | **x** | **x** |  | **x** | **x** | **x** |
| Assignment 3 |  |  |  |  | **x** | **x** |  | **x** | **x** | **x** |  | **x** |  | **x** | **x** |  | **x** | **x** | **X** |
| Examination | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** | **x** |  |  | **x** |

1. **Inclusive module design**

The School recognises and has embedded the expectations of current equality legislation, by ensuring that the module is as accessible as possible by design. Additional alternative arrangements for students with Inclusive Learning Plans (ILPs)/declared disabilities will be made on an individual basis, in consultation with the relevant policies and support services.

The inclusive practices in the guidance (see Annex B Appendix A) have been considered in order to support all students in the following areas:

a) Accessible resources and curriculum

b) Learning, teaching and assessment methods

1. **Campus(es) or centre(s) where module will be delivered**

Canterbury

1. **Internationalisation**

In many respects, the Mathematics taught in this module is an international language. The intended learning outcomes within this module are applicable worldwide as part of the universal principles of Mathematics and the building blocks of science. Additionally, the varied international manufacture of weapon systems and social aspects of firearms are discussed in relation to their effects on many different countries and cultures around the world.

**FACULTIES SUPPORT OFFICE USE ONLY**

**Revision record – all revisions must be recorded in the grid and full details of the change retained in the appropriate committee records.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date approved | Major/minor revision | Start date of the delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
|  |  |  |  |  |
|  |  |  |  |  |

Revised FSO Jan 2018