MODULE SPECIFICATION TEMPLATE

**SECTION 1: MODULE SPECIFICATIONS**

1. Title of the module

**PS740 Forensic Science Research Project**

1. School which will be responsible for management of the module

**School of Physical Sciences**

1. Start date of the module

**September 2011**

1. The cohort of students (onwards) to which the module will be applicable

**Current 3rd year M.Sci students onwards**

1. The number of students expected to take the module

**20 – 25**

1. Modules to be withdrawn on the introduction of this proposed module and consultation with other relevant Schools and Faculties regarding the withdrawal

**None – this module forms part of the new M.Sci program**

1. Level of the module *(e.g. Certificate [C], Intermediate [I], Honours [H] or Postgraduate [M])*

**M**

1. The number of credits which the module represents

**60 Credits**

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

**Autumn and Spring terms**

1. Prerequisite and co-requisite modules

**Successful completion of 3rd year M.Sci program to prescribed threshold (50 % average mark at first attempt with no credits to be awarded by compensation)**

1. The programme(s) of study to which the module contributes

**M.Sci Forensic Science and M.Sci Forensic Chemistry**

1. The intended subject specific learning outcomes and, as appropriate, their relationship to programme learning outcomes

* **To build on the research independence gained in year 3 as part of PS720 (Advanced Forensic Science Laboratory).**
* **To establish advanced research skills at M level.**
* **The capacity to undertake advanced scientific investigations, advanced problem solving and data analysis in a research environment.**
* **Ability to communicate scientific ideas through presentations and written reports.**
* **In conjunction with PS700 (Physical Science Research Planning) to gain knowledge of how research is structured and funded.**
* **Time management and forward planning skills**

1. The intended generic learning outcomes and, as appropriate, their relationship to programme learning outcomes

**It is considered that the subject specific learning outcomes and assessment pattern fulfil or contribute to the following learning outcomes;**

**A2: Advanced theory, concepts and practice in the Forensic field.**

**A3: Areas of Chemistry (including analytical chemistry, states of matter, organic functional groups, properties of chemical elements, medicinal chemistry, fires and explosions, organic and inorganic materials and compounds, synthetic pathways) as applied to Forensic Science.**

**A5: Numeracy (including data analysis and statistics), forensic investigation and interpretation (including image analysis, forensic archaeology, ballistics, interrogation and the extraction, analysis, interpretation of physical evidence) and apply them to forensic examination and analysis.**

**B8: Ability to demonstrate knowledge and understanding of essential facts, concepts, principles and theories relating to the subject and to apply such knowledge and understanding to the solution of qualitative and quantitative problems.**

**B9: Ability to recognise and analyse novel problems and plan strategies for their solution by the evaluation, interpretation and synthesis of scientific information and data by a variety of computational methods.**

**B10: Ability to recognise and solve forensic related problems at an advanced level.**

**B11: Ability to recognise and implement good measurement science and practice and commonly used forensic laboratory techniques.**

**B12: Ability to select the most appropriate techniques for a given analysis and to use a wide range of advanced apparatus.**

**B13: Skills in essay writing and presenting scientific material and arguments clearly and correctly, in writing and orally, to a range of audiences including legal contexts. The ability to communicate complex scientific arguments to a lay audience.**

**C14: Skills in the safe handling of chemical materials, taking into account their physical and chemical properties, including any specific hazards associated with their use and to risk assess such hazards.**

**C15: Skills required for the conduct of standard laboratory procedures involved in analytical work and in the operation of standard forensic instrumentation such as that used for analytical investigations and separation.**

**C16: competence in the planning, design and execution of investigations, from the problem recognition stage through to evaluation and appraisal of results and findings; this to include the ability to select appropriate techniques and procedures.**

**C17: Research project planning and implementation.**

**C19: Ability to interpret data derived from laboratory observations and measurements in terms of their underlying significance and the theory underpinning them and to present such data to an examining body in the role of expert witness.**

**D21: Communication skills, covering both written and oral communication. Self management and organisational skills with the capacity to support life-long learning.**

**D22: Problem solving skills relating to qualitative and quantitative information extending to situations where evaluations have to be made on the basis of limited information.**

**D23: Numeracy and computational skills including such aspects as error analysis, order-of-magnitude estimations, correct use of units and modes of data presentation.**

**D24: Information retrieval skills in relation to primary and secondary information sources including information retrieval through on-line computer searches.**

**D25: Information technology skills such as word processing and spread sheet use, data logging and storage, internet communications etc.**

**D27: Time management and organisational skills as evidenced by the ability to plan and implement efficient and effective modes of working.**

**D28: Effective research costing and planning.**

**D29: study skills needed for continuing professional development and preparation for employment as a practicing forensic scientist.**

**D30: Skills relevant to a career in forensic science (practice or judiciary) and forensic research.**

1. A synopsis of the curriculum

**Synopsis:**

**Students will undertake a project from an available project listing and will work under the guidance of a supervisor. The student will be encouraged to develop some level of research independence within the project remit appropriate of a M level master’s student. The project will be assessed on a number of criteria which will include the project work (the amount, quality etc appropriate for the level), effort put in by the student, the preparation of a written report and an oral presentation session. The student’s progress will be assessed at the end of the first term through some form of progress report. This will also involve some degree of forward planning such that the students assess their own project requirements for the following term allowing the student to learn time management and forward planning skills.**

**Aims:**

* **To conduct individual masters level research.**
* **To develop research independence such that the student can take responsibility for the research direction of the project within the confines of the project remit.**
* **To further deepen the student’s knowledge within a specific research area.**
* **To prepare students for independent research careers in industry or at PhD level.**
* **To further enhance student’s abilities for scientific communication through oral presentations and report writing.**
* **Time management and forward planning skills**

1. Indicative Reading List

**Appropriate learned journals and texts as set by project supervisor and sourced by student**

1. Learning and Teaching Methods, including the nature and number of contact hours and the total study hours which will be expected of students, and how these relate to achievement of the intended learning outcomes

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| **Task** | **Contact Hours** | **Private Study** | **Learning Outcomes** |
| **Laboratory work** | **264**  **(22 week x 2 days/week)** |  | **A2, A3, B9, B10, B11, B12, C14, C15, C16, C17, D22, D27, D28, D29, D30** |
| **Data analysis** | **60** | **80** | **A5, B9, B10, B11, B12, C19, D22, D23, D29, D30** |
| **Library/computer research** | **10** | **80** | **C17, D24, D25, D29, D30** |
| **Report writing** | **12** | **80** | **B8, B13, D21, D23, D25, D29, D30** |
| **Presentation** | **2** | **12** | **B8, B13, D21, D23, D25, D29, D30** |

**Total study time 600 hours including 348 contact hours**

1. Assessment methods and how these relate to testing achievement of the intended learning outcomes

**100 % coursework this can be broken down into the following;**

* **Project report, 50 %, this report will including a detailed account, analysis and interpretation of the experiments conducted in the laboratory including a detailed literature review. This report will demonstrate the following learning outcomes; A2, A5, B8, B9, B12, B13, C16, C17, C19, D21, D23, D24, D25, D29.**
* **Oral presentation, 20 %, this presentation will be aimed at communicating the aims and motivations of the research conducted as well as presenting background information, key results and conclusions. The presentation will demonstrate the following learning outcomes; A2, A5, B8, B9, B12, B13, C16, C17, C19, D21, D23, D24, D25, D29.**
* **Supervisor mark, 20 %, this will allow the supervisor to assess the students progress and competency within the laboratory. This mark will allow the supervisor to assess for the following learning outcomes; A2, A3, A5, B9, B10, B11, B12, C14, C15, C16, C17, C19, D21, D22, D23, D27, D28, D30**
* **Progress report, 10 %, the progress report will allow for the assessment of the project about half way through and allow for the student to assess their own progress in relation to their objectives as well as assess what is required moving forward. The progress report will demonstrate the following learning outcomes; A2, A5, B8, B9, B11, B12, B13, C16, C17, C19, D21, D22, D23, D24, D25, D27, D28, D29.**

1. Implications for learning resources, including staff, library, IT and space

**The students will require access to laboratory space and equipment in order to successfully complete this module. It is considered that all equipment necessary to run this module is already and will be in place at SPS by the start of this module. Some budget will be required for running costs, maintenance etc. Staff will be required to provide project synopsis and supervise students as with B.Sc. Forensic Science/Chemistry Project module (PS620).**

**Adequate library, journal and IT access are available for this module.**

1. **The School recognises and has embedded the expectations of current disability equality legislation, and supports students with a declared disability or special educational need in its teaching. Within this module we will make reasonable adjustments wherever necessary, including additional or substitute materials, teaching modes or assessment methods for students who have declared and discussed their learning support needs. Arrangements for students with declared disabilities will be made on an individual basis, in consultation with the University’s disability/dyslexia support service, and specialist support will be provided where needed.**

**SECTION 2: MODULE IS PART OF A PROGRAMME OF STUDY IN A UNIVERSITY SCHOOL**

**Statement by the School Director of Learning and Teaching/School Director of Graduate Studies (as appropriate):** "I confirm I have been consulted on the above module proposal and have given advice on the correct procedures and required content of module proposals"

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| ................................................................  Director of Learning and Teaching/Director of Graduate Studies (delete as applicable)  …………………………………………………  Print Name | ..............................................  Date |

**Statement by the Head of School:** "I confirm that the School has approved the introduction of the module and, where the module is proposed by School staff, will be responsible for its resourcing"

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| .................................................................  Head of School  …………………………………………………….  Print Name | ..............................................  Date |

Module Specification Template  
Last updated July 2010