



CORPORATE AND ACADEMIC SERVICES

MODULE SPECIFICATION

| Part 1: Basic Data | | | | | |
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| Module Title | Research Methods and Practical Skills | | | | |
| Module Code | USSKM3-30-M | Level | M | Version | 1 |
| Owning Faculty | Health and Life Sciences | Field | Applied Sciences | | |
| Contributes towards | MSc Biomedical Science – compulsory on all routes | | | | |
| | 30 | ECTS Credit Rating | 15 | Module Type | Standard |
| Pre-requisites | | | Co- requisites | | |
| Excluded Combinations | | | Module Entry requirements | | |
| Valid From | Sept 2012 | | Valid to | September 2018 | |
| CAP Approval Date | 30 May 2012 | | | | |

| Part 2: Learning and Teaching | |
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| Learning Outcomes | <p>On successful completion of this module students will be able to:</p> <ul style="list-style-type: none"> • review critically the scientific literature relevant to biomedical sciences. (exam and all coursework) • demonstrate a critical awareness of the principles of good experimental design in biomedical research. (coursework – practical report element - B2) • select and perform appropriate statistical techniques for the analysis of experimental data. (coursework – data handling and interpretation element – B1) • develop basic laboratory techniques and scientific writing skills. (coursework – practical report element – B2) |
| Syllabus Outline | <p>Principles of good experimental design. Methods for the assessment of data quality and method validation. Descriptive statistics. Inferential statistics and hypothesis testing. Statistical significance, variance, regression, covariance. Selecting the appropriate statistical method. Effective literature searching strategies. Critical reading skills. Scientific writing skills. The peer review process as applied to research papers and grant applications. Characteristics of a good project, research paper and review article. Evidence based medicine. Introduction to bioethics. An understanding of how Ethics Committees work. Basic laboratory skills in the areas of microbiology, tissue culture, and molecular techniques with a focus on RT-PCR. Writing up laboratory work effectively.</p> |
| Contact Hours/Scheduled Hours | <p>There are a total of 60 contact hours in this module (5 hrs per week over a 12 week period – delivered in semester one prior to student starting their project module). 2 hours per week are lectures delivering the theoretical aspects of the module. 3 hours per week will be practice based, either statistical analysis computer based sessions, laboratory practical session or other skills workshops.</p> |
| Teaching and Learning Methods | <p>Delivery of the material in this module will involve a mixture of lectures, practical classes, tutorials and student-centred skill development exercises. The emphasis throughout will be on the acquisition and development of the skills required in a research scientist</p> |

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| <p>Reading Strategy</p> | <p>At Masters level students are expected to demonstrate the ability to find information, assess its relevance and utilise it in their studies in an independent manner; however the programme team recognise that students entering the programme may be at different levels of the development of the skills required to undertake this successfully. Therefore module leaders will provide you with a starting point in terms of core readings and the lecture material will also give you a strong starting point. However it is in the area of further reading that you need to show the independence of skills and of knowledge development, so you will need to find the Further Readings yourself. However, the skills required to do this are covered during the early stages of the course, during induction week you will have a library induction session, in the Research Methods and Practical Skills module that you take during the first semester we will cover how to undertake a literature search and how to assess and use the material you find appropriately. The programme tutorials will provide opportunities for you to further develop these skills and to ask any questions that you have. Further support and guidance is available through the library which runs workshops that you can sign up to, and also has advice in its website.</p> <p>Module leaders will give you a clear indication of any essential reading, and point you towards the appropriate textbooks and journals for their discipline. This will usually be in the form of a reading list in the module guide; the indicative list on this module specification is as it states indicative as the relevant available books and journals can change regularly – and the module specification is a document written only once when a module is modified and can last for many years. So it is important that you refer to the reading list for your specific year group as the definitive document.</p> <p>All students will be encouraged to make full use of the print and electronic resources available to them through membership of the University. These include a range of electronic journals and a wide variety of resources available through web sites and information gateways. The University Library’s web pages provide access to subject relevant resources and services, and to the library catalogue. Many resources can be accessed remotely.</p> |
| <p>Indicative Reading List</p> | <p>Textbooks – current editions of</p> <ul style="list-style-type: none"> • “Bioethics - and introduction for the biosciences.” Mepham B. (Oxford University Press). • “Introduction to Bioethics”. Bryant J.A., Baggott la Velle L. & Searle J. (John Wiley & Sons Ltd). • “An introduction to medical statistics.” Bland M. (Oxford University Press). • “Basic statistics: a primer for the biomedical sciences.” Dunn O. J. & Clark V.A. (John Wiley). • “Medical statistics: a commonsense approach.” Campbell M.J. & Machin D. (Wiley). • “Statistics for terrified biologists.” van Emden H. (Blackwell Publishing). • “Scientific papers and presentations.” Davis M. (Academic Press). • “Writing and presenting scientific papers.” Malmfors B., Garnsworthy P., & Grossman M. (Nottingham University Press). • “Making sense - a student’s guide to research and writing.” Northey M. & Timney B. (Oxford University Press). • “A student handbook for writing in biology.” Kinsely K. (Sinauer Associates / WH Freeman). |

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| Part 3: Assessment |
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| Assessment Strategy | <p>Coursework as decided by the module leader in line with the programme assessment strategy.</p> <p>Summative assessment will be as detailed in the matrix that follows.</p> |
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| Identify final assessment component and element | |
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| % weighting between components A and B (Standard modules only) | A: | B: |
| | 35 | 65 |

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| First Sit |
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| Component A (controlled conditions) Description of each element | Element weighting (as % of component) |
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| 1. Exam (Research Paper Critique) – final assessment | 100 |
| Component B Description of each element | Element weighting (as % of component) |
| 1. Data Handling and interpretation exercise | 50 |
| 2. Practical Laboratory report | 50 |

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| Resit (further attendance at taught classes is not required) |
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| Component A (controlled conditions) Description of each element | Element weighting (as % of component) |
|--|--|
| 1. Exam (Research Paper Critique) | 100 |
| Component B Description of each element | Element weighting (as % of component) |
| 1. Data Handling and interpretation exercise | 50 |
| 2. Practical Laboratory report | 50 |

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| <p>If a student is permitted an EXCEPTIONAL RETAKE of the module the assessment will be that indicated by the Module Description at the time that retake commences.</p> |
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