

Full Title:	Biopharma Research Project
Module Code:	PROJ S8007
Credits:	20
Valid From:	Semester 1 - 2013/14 (September 2013)
Module Delivered in	1 programme(s)
Module Description:	The aims of this laboratory based research project module are to provide an opportunity for students to integrate the knowledge and practical skills they have acquired to date and further develop their skills in the research, planning, implementation, interpretation and presentation of a defined body of scientific work. This module will foster independence, confidence and a sense of personal responsibility for the work researched and executed.
Learning Outcomes:	
<i>On successful completion of this module the learner should be able to</i>	
<ol style="list-style-type: none"> 1. Describe and critically interpret the scientific knowledge base in a defined subject area and apply it to a specific area of scientific study. 2. Design, present and justify a suitable programme of laboratory based investigation and present a comprehensive and viable research plan. 3. Apply knowledge and practical skills in a research laboratory and employ advanced data analysis and synthesis techniques within the scope of the project. 4. Solve complex technical problems associated with the execution of the project. 5. Work independently within defined time and resource boundaries. 6. Maintain accurate and complete records of project-based activities and present the results of this research in high quality oral and written formats 	

Module Content & Assessment

Indicative Content

Semester 1

- Each student will be assigned a supervisor who will be responsible for overseeing the research project for the duration of the academic year. Each supervisor will guide the work of a 'team' of students who are working on interrelated projects, which have a common theme.
- Students who express interest in a specific project area will be allocated supervisors with corresponding expertise. Other students will be allocated a project supervisor by random ballot.
- Project titles will be agreed by mutual consent after discussion.
- Each student will collect, collate, review and present an academic rationale for the design of their proposed research project. They will also prepare a detailed project plan incorporating a chemical agents risk assessment.
- They will also be provided with supervised laboratory sessions of 4 hours per week. These sessions will be utilised for the practical element of the research project.
- Students must maintain a laboratory notebook in which they should record thoughts, plans, methods, raw data, calculations and other details of practical activities during the course of the project and for both Semesters.
- Students will meet with their project supervisor for approximately one hour per week to discuss the planning, experimental design and progress of the work. Supervisors will employ a combination of individual student meetings and 'team' meetings. During weekly meetings, the project supervisor may add remarks or suggestions to the laboratory notebook.
- Refresher library tutorials will be provided to improve information retrieval skills and ensure compliance with the Institute Academic Integrity Policy.

Semester 2

- Students will be provided with 8 hours per week of supervised laboratory time for the execution of their project.
- Students will meet with their project supervisor for approximately one hour per week to discuss the progress of the work, data analysis and preparation of the thesis and oral presentation. .
- Students must submit a typed, bound, project thesis of 8,000 (+/- 2,000) words using an approved format and perform and defend a 10-minute oral presentation of their work.

Sample Project Titles

- The synthesis of a some simple derivatives of a suitable compound and a study on their lipid solubility and membrane penetration
- The development of an immunoassay for a suitable drug
- The comparison of a range of methods (eg uv/visible spectroscopy, GC, HPLC) for the analysis of a set of related drugs
- A study of the biological bacteriocidal specificity of a range of related antibiotics
- The effect of a range of smooth muscle or other drugs on earthworm contraction
- Studies on the effect of food additives (eg colourants) on the heart rate of Daphnia

Assessment Breakdown	%
Course Work	100.00%

Full Time

Course Work							
Assessment Type	Assessment Description	Outcome addressed	% of total	Marks Out Of	Pass Marks	Assessment Date	Duration
Presentation	The student will be required to make a 10 minute presentation in which they will outline the academic rationale for their proposed research project making reference to relevant literature. They should also outline the proposed aims and objectives of the study. This will be followed by questions. The presentation will be assessed by the project supervisor and another member of the programme team.	1,2,5	15.00	0	0	Week 8	0
Written Report	The student will be required to submit a plan of work for their proposed project including project objectives, methods used in the laboratory sessions, data analysis, weekly activities and requirements for key chemicals and capital equipment. This should also include a risk assessment of the proposed research project in line with the requirements of the Safety, Health & Welfare (Chemical Agents) Regulations,2001. (2,000 +_ 500 words).	1,2,3,6	15.00	0	0	Week 12	0
Project	Project Thesis. The student will be required to submit a comprehensive thesis containing a literature review, methodology, results, data analysis and conclusions of their project using an approved format (8,000 ± 2,000 words). This should be presented in the form of a peer reviewed publication. This report will be assessed by the project supervisor, a second reader appointed from the team of supervisors and the external examiner.	1,3,4,5,6	50.00	0	0	Week 26	0
Presentation	The student will be required to present the research project findings in the form of an illustrated oral presentation of 10-15 minutes duration, followed by questions. This will be attended and assessed by the entire team of supervisors and the external examiner will be invited.	1,4,5,6	10.00	0	0	Week 28	0
Performance Evaluation	Supervisor's report. The project supervisor (in consultation with the laboratory supervisor) will issue a report based on the student's performance during the course of the project. This will be based on criteria such as attendance, diligence, motivation and initiative as well as laboratory technique, safety and problem solving skills. The student's laboratory notebook will be assessed as part of the supervisor's report.	3,5,6	10.00	0	0	Sem 2 End	0

No Project

No Practical

No End of Module Formal Examination

Reassessment Requirement

No repeat examination

Reassessment of this module will be offered solely on the basis of coursework and a repeat examination will not be offered.

DKIT reserves the right to alter the nature and timings of assessment

Module Workload & Resources				
Workload: Full Time				
Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecturer Supervised Learning	Meeting with supervisor	1.00	Every Week	1.00
Independent Study	Literature review and thesis preparation	7.00	Every Week	7.00
Practical	Method development and experimental work	6.00	Every Week	6.00
Total Weekly Learner Workload				14.00
Total Weekly Contact Hours				7.00

This course has no Part Time workload.

Resources
<i>Recommended Book Resources</i>
<p>Ruxton, G.D. and Colegrave, N. 2010, <i>Experimental design for the life sciences</i>, 3rd ed. Ed., Oxford Press</p> <p>Denscombe, M. 2010, <i>The good research guide</i>, 4th ed. Ed., Open University Press</p> <p>Sambrook, J. and Russell, D.W. 2001, <i>Molecular cloning: A laboratory manual</i>, Cold Spring Harbor Laboratory Press</p> <p>Blaxter, L., Hughes, C. and Tight, M. 2010, <i>How to research</i>, 4th ed. Ed., Open University Press</p> <p>Jacobs, D.T. 2008, <i>The authentic dissertation</i>, Routledge</p> <p>Bonner, P and Hargreaves, A. 2011, <i>Basic bioscience laboratory techniques: A pocket guide</i>, Wiley-Blackwell</p>
<i>This module does not have any article/paper resources</i>
<i>Other Resources</i>
<p>Website: European Biopharmaceutical Enterprises http://www.ebe-biopharma.org/</p> <p>Website: European Medicines Agency http://www.ema.europa.eu/ema/</p> <p>Website: United States Food and Drug Administration http://www.fda.gov</p> <p>Website: National Center for Biotechnology Information (Entrez / PubMed) http://www.ncbi.nlm.nih.gov/</p> <p>Website: Science Direct http://www.sciencedirect.com</p> <p>Website: DkIT Library Summon https://www.dkit.ie/library</p> <p>Website: Laboratory Health and Safety / Laboratory Rules https://www.dkit.ie/applied-sciences/documents-policies/health-safety</p> <p>Website: School of Health & Science, DkIT Safe Work Practice Sheets http://www.dkit.ie/health-science/health-safety/</p> <p>Link: Library Catalogue http://tinyurl.com/qbb5dph</p>

Module Delivered in

Programme Code	Programme	Semester	Delivery
DK_SBIOP_8	Bachelor of Science (Honours) in Biopharmaceutical Science	1	Mandatory