

UCD CONWAY INSTITUTE OF BIOMOLECULAR & BIOMEDICAL RESEARCH
GRADUATE EDUCATION
ADVANCED RESEARCH SKILLS MODULE 2008/2009

Module Co-ordinator: Dr C O'Connor

Credits: 5

Venue: UCD Conway seminar room 1 (sessions 1-5); computer laboratory (sessions 6-9)

For students who have completed at least one year of their research programme

Date & Time	Session & Topic	Co-ordinator
Tue 24th March	<p>Integrity in Scientific Research Workshop</p> <p>This workshop will comprise five videos on specific topics in ethics in research, each raising a set of issues and dilemmas that may be encountered throughout a research career. Students will be shown videos in turn and will be asked what questions the dramas raise for them, followed by group-based discussions and presentations on potential ethical solutions. The workshop will present scenarios of which some will definitely occur during a Ph.D. The learning objectives include how to recognize them and ways to get advice on such matters. These videos have been sourced as official learning material with permission from the American Association for Advancement of Sciences (AAAS). They are also being used concurrently in the 'Online Research Skills' module for postgrads, being piloted in the School of Agriculture, Food Science and Veterinary Medicine and the School of Computer Science.</p> <p>In "<i>Only a Bridge</i>" a researcher meets a personal friend at a social function, who he knows is on a grant-reviewing panel looking at confidential material relating to competitor work.</p> <p>In "<i>Noah's dilemma</i>" a Ph.D. student comes under supervisor pressure to complete a dataset to allow the lab to publish and he has to make a set of choices. A pushy girl-friend in the background all adds to the mix!</p> <p>In "<i>Of mice and Mendoza</i>," an academic scientist realizes that industrial support carries legal and professional obligations that come to a head when a close academic collaborator puts the squeeze on him for materials.</p> <p>In "<i>Where credit is due</i>," we see a drama over career advancement, supervisor behaviour, authorship practice, and fair allocation of credit in publications.</p> <p>In "<i>The whole truth</i>," there is confusion over the accuracy of material presented in a poster, issues of mistreatment of laboratory animals and a whistle-blower's dilemma</p>	D. Brayden & A. Baird
Tue 31st March L1 09.30 – 10.45 L2 11.00 – 12.30	<p>Science & Society – Workshop 1</p> <p>This workshop will cover</p> <ul style="list-style-type: none"> • "Dr Jeckyl or Mr Hyde?" Different perceptions about how science and society interact • Who decides what science gets done? 	C. O'Connor
Tue 7th April L1 09.30 – 10.45 L2 11.00 – 12.30	<p>Science & Society – Workshop 2</p> <p>Workshop 2 will focus on</p> <ul style="list-style-type: none"> • the role of the scientist as advisor to policy making and lobbying groups • interacting with the media 	C. O'Connor
Tue 14th April	EASTER BREAK – NO LECTURE	
Tue 21st April L1 09.30 – 10.45	<p>Commercialisation and Patenting of Research</p> <p>These workshops will provide a more in-depth look at the area of</p>	NovaUCD

L2 11.00 – 12.30	commercialisation of research. They will help students to appreciate the complexities of identification and protection of intellectual property in Biotechnology and Life Sciences, and will look in detail at what to do if you think you have some technology with commercial potential.	NovaUCD
Tue 28th April L1 09.30 – 10.45 L2 11.00 – 12.30		
Tue 5th May L1 09.30 – 10.45 L2 11.00 – 12.30	Data Analysis Workshop 1: “Know your data” <ul style="list-style-type: none"> - Types of data generated by different experimental systems - Checking data for errors / reliability - Describing and summarising data <ul style="list-style-type: none"> o Constructing and Interpreting Tables o Constructing and Interpreting Graphs o Summary Statistics - Distribution and Dispersion of Data - Populations, samples and N 	M. Cashman
Tue 12th May L1 09.30 – 10.45 L2 11.00 – 12.30	Data Analysis Workshop 2: Comparing Groups <ul style="list-style-type: none"> - Is any analysis necessary? Examples of experimental outcomes that do not require further analysis - What’s the question? Clarifying the specific hypothesis to be tested - What outcome would prove the hypothesis? p values, Confidence Intervals (including issues re multiple testing) - Comparing 2 samples. <ul style="list-style-type: none"> o For difference. Unpaired or Paired? Parametric or Non-Parametric? Which test? One- or two-tailed? 	M. Cashman
Tue 19th May L1 09.30 – 10.45 L2 11.00 – 12.30	Data Analysis Workshop 3: Measuring Association <ul style="list-style-type: none"> - Analysing categorical data. Contingency tables & tests, Odds ratios - Association measures – Correlation, Pearson & Spearman Tests - Simple Linear Regression Analysis 	M. Cashman
Tue 26th May L1 09.30 – 10.45 L2 11.00 – 12.30	Data Analysis Workshop 4: “Advanced Methods” <ul style="list-style-type: none"> - Comparing multiple groups <ul style="list-style-type: none"> o What is the predicted outcome (a priori hypothesis)? o Testing for difference: Analysis of variance & post-hoc testing. Parametric and non-parametric tests - Testing for Association <ul style="list-style-type: none"> o Multiple regression - Dealing with Ratios 	M. Cashman

Assessment Outline

- Assessment of the Commercialising and Patenting of Research workshops will involve completion of an invention disclosure form and carrying out a patent search
- Data analysis workshops will be assessed on a continual, session-by-session basis
- For assessment of the Integrity in Scientific Research sessions, each student will be required to submit a separate one-page dramatic story-board outline of a potentially ethically-compromising scenario for a life-sciences researcher working in academia or industry
- For assessment of the Science & Society workshops, students will identify an issue in their own field of research that is of public concern and draft an outline presentation designed to inform (a) relevant policy makers and (b) a relevant lobbying group of the scientific aspects of the issue.