MD9A8-30 Essential and Transferable Research Skills

24/25

Department
Warwick Medical School
Level
Taught Postgraduate Level
Module leader
Stephen Royle
Credit value
30
Module duration
48 weeks
Assessment
100% coursework
Study location
University of Warwick main campus, Coventry

Description

Introductory description

The module intends to develop research and professional transferable skills that future employers will look for whether in academia, industry or other professional settings. The module will develop students' analytical and critical skills and provide training on various topics including managing of research progress, data collection, analysis and presentation; managing time, resources and people; scientific technical and non-technical writing. The module also intends to provide knowledge of the legal framework including intellectual property and contract law and promote awareness of the principles of research ethics and integrity and good professional practice in a biomedical laboratory setting. Students will be trained to present research concepts orally, will write a research proposal similar to a grant application and will be trained to defend a research proposal in a virtual funding committee (Term 2). Throughout the year, students will demonstrate progress in their transferable research skills by engaging in a series of activities (annual conference organization; engagement with departmental seminars; partaking in various committees within the School or other departments, etc) as well as following lectures related to research ethics, patent law, exploitation of research, team work skills, time and resource management, communication skills, self-assessment skills and leadership skills. Students will submit reflective pieces in a form of a portfolio of evidence.

Module aims

1. To develop research skills to formulate research ideas, questions and hypotheses
2. To develop analytical and critical thinking skills, including the soundness and originality of a research topic
3. To develop written skills (technical and non-technical), construct coherent arguments and articulate ideas clearly to a range of audiences, formally and informally through a variety of techniques
4. To develop managerial and leadership skills (time; organization; interaction)
5. To equip students with knowledge of research ethics and professional and academic integrity

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Topics will include:
Legal framework, including health & safety (COSHH, policies)
Good academic practice, including plagiarism and data manipulation; data management and presentation (collecting and documenting, electronic lab books; database and large datasets); probity and research integrity; reproducibility and reliability.
Team work, leadership and communication including organizing a scientific event; taking part in committee/panel discussion; outreach and public engagement; networking; delivering written and oral reports.
Report and outputs, including researching databases; reviewing and rebutting grants and papers, asking a research question; developing contingency plans; composing grants and papers; planning (e.g.; Gantt charts), scheduling; budgeting and publishing (e.g.; prep-prints, open access).

Learning outcomes

By the end of the module, students should be able to:

- 1. Frame appropriate research questions to address complex topics in biomedical science
- 2. Demonstrate originality and creativity in producing and defending a grant proposal
- 3. Conduct critical appraisal of scientific concepts and project proposals
- 4. Communicate orally and in writing complex ideas to specialist and non-specialist audience
- 5. Demonstrate advanced knowledge of research ethics and culture of the research environment; differentiate good from inadequate research practice
- 6. Evaluate and reflect on own professional behaviour and image: critically analyse personal development and demonstrate an insight into the transferable nature of research skills to other work environments within and outside academia.

Indicative reading list

Hofmann A.H. Scientific Writing and Communication: Papers, Proposals, and Presentations (4rd

edition 2017) Oxford University Press.
Zinsser, W. On Writing Well 3rd ed (2006) Turtleback books
Strunk Jr, W. The Elements of Style (1999) Pearson.

Interdisciplinary

The module will allow students to acquire skills through various opportunities during the MSc year, that transfer across the boundaries of any particular module.

Subject specific skills

1. Acquire and develop professionalism in research;
2. Knowledge of research ethics and good academic practice
3. Knowledge of the development of a research proposal including a budget

Transferable skills

1. Managerial skills (time management, team work and leadership)
2. Ability of articulate and defend own ideas and questions
3. Develop critical analytical skills
4. Develop communication and leadership skills

Study

Study time

Type	Required
Lectures	10 sessions of 4 hours (13%)
Seminars	10 sessions of 1 hour (3%)
Online learning (scheduled sessions)	8 sessions of 1 hour (3%)
Online learning (independent)	(0%)
Private study	92 hours (31%)
Assessment	150 hours (50%)
Total	300 hours

Private study description

Private study will be protected for students to familiarise themselves with the materials provided for them to choose a topic for their research grant proposal.

Other activity description

Activities will be attributd and organised by the module lead and the course director. Activities will

include the preparation and organization of student conference , cohort events, offer holder day; or welcome afternoon; or other activities demonstrating leadership and team work.

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group A1

	Weighting	Study time
Oral presentation of a scientific paper	15%	20 hours
(15 min presentation + 5 minutes questions): to demonstrate understanding and critical thinking and develop communication skills using appropriate scientific language.		
Written Research Grant proposal	35%	50 hours
2,000 words: to present complex scientific concepts in a concise manner and demonstrate critical awareness of research techniques in biomedicine. 700 words: to present the justification of resources for the research proposal 250 words: to write a summary of the research proposal in plain English targeted to the non-initiated public		
Oral Defense of a research proposal	15%	20 hours
Grant panel discussion: to demonstrate critical appraisal of the work of others; to demonstrate communication skills		
Portfolio of evidence	35%	60 hours
Students will submit evidence and refective pieces of their engagement in various activities including the preparation for group-related activity (conference, cohort activity etc.), presenting written and oral scientific work, leadership activities (e.g.; committees, course newletters etc.)		

Feedback on assessment

Standardized rubrics will be used to mark and provide feedback (including individualized feedback) on the Research proposal, oral presentation, oral appraisal of the research proposal and the portfolio of evidence in line with WMS assessment criteria (including submission for plagiarism software). The oral presentation and oral defense will be double marked. The research grant proposal will be marked and the module lead will moderate marks and feedback. Written tests will be marked and moderated.
Feedback throughout the module and after assessment will be available to students on request. Every student who fails an element of assessment will be offered an appointment with the Module

Lead for face-to-face feedback.

Availability

Courses

This module is Option list A for:

- Year 4 of UMDA-CF10 Undergraduate Integrated Natural Sciences (MSci)