

20 credit module STEM Research Internship

Module title: STEM Research Internship
SITS Module Code: <i>Module codes are allocated by Quality and Standards. If a new module, please leave blank until post approval</i>
Credit level: <i>Level 6</i>
Length: 6 weeks in the Summer period (June – July)
UK credit value: 20 credits
ECTS credit value: 10 ECTS
College and School: College of Liberal Arts and Sciences, School of Life Sciences
Module Leader: Dr Adele McCormick and Dr Joan Liu
Progression and assessment board:
Pre-requisites
Co-requisites:
Study abroad: Yes the module will be offered to International students as part of the University of Westminster's London International Summer School.
Special features: N/A
Access restrictions: N/A
Are the module learning outcomes delivered, assessed, or supported through an arrangement with organisation(s) other than the University of Westminster: No
Summary of module content: This module will provide students with the knowledge and essential skills required to participate actively in research and development, as they conduct high quality research over a six-week period, within the School of Life Sciences. Students will work independently under the supervision of an experienced project supervisor to design and carry out academic research, which will provide a foundation for students seeking research at postgraduate level. Students will learn key aspects involved in planning and designing their research project such as identifying a specific research angle of interest for the project, health and safety considerations, ethical implications and risk management, contingency plans to show flexibility and adaptability, thinking forward in terms of data acquisition and analysis and considering the relevance of their study to society. Students will take ownership of their research project by completing a critical review prior to arrival to identify the research angle, setting research goals and conducting research over the six-week period to fulfill these research goals, and dissemination of their research work as a conference style oral presentation.

Assessment Methods

Students undertaking this module will be required to complete two forms of assessments: Critical review (2000 words) and a project presentation (30 minutes plus Q and A).

The critical review (2000 words) will be undertaken 2 weeks prior to starting the 6-week research project in the summer and under guidance with the project supervisor will enable the student to research the scientific literature relevant to the research topic area to become familiar with what has been undertaken before and highlight any gaps that could be addressed as part of the 6-week research project. For the 20-minute oral project presentation plus 10-minute Q and A, will be in the format of a mini symposium as an authentic piece of assessment in which marking and feedback will be provided to the students on the day. The marking rubrics will encapsulate the following: knowledge and understanding of the research topic area, interpretation of the scientific data that was generated, Health and Safety, Ethical consideration, as well as scientific importance of the research undertaken, and engagement in learning (evidenced by attendance and performance during the research project) as well as discussion of the data and limitations and future work. Presentation style and communication as well as ability to defend questions posed will also be incorporated into the marking rubrics.

Rank	Assessment type	Assessment name	Weighting	Qualifying Mark	Qualifying set (where the minimum mark required applies across multiple assessments)
1	Review (2000 words)	Critical Review	40%		
2	Presentation (30-minutes)	Project presentation (oral)	60%		

Learning outcomes

At the end of the module the successful student will be able to:

1. design and execute a programme of independent research appropriate to degree pathway offered in the School of Life Sciences under supervision of allocated member/s of staff;
2. critically evaluate background information on the project topic area to act as a foundation for the student's own work, including how it relates to the global sustainable development goals (SDGs)
3. evaluate the risks of their project design, demonstrate awareness of ethical and related issues (e.g. health and safety) associated with research and conduct themselves as a professional researcher.
4. Critically apply appropriate methods for analysis and/or synthesis of data (as appropriate to project), including statistical and other mathematical techniques where appropriate.
5. rigorously and critically interpret the data obtained from the project and show awareness of the relevance of this work in its own field and to society as a whole
6. present a reliable and professional record of research on a day-to-day basis and communicate and reflect on their research findings in appropriate and professional manner

Course outcomes the module contributes to: N/A

Indicative syllabus content

In addition to research/investigative work and techniques specific to their project, students will gain experience of:

1. planning and conducting the final project; including reliable recording and reflections of the various project stages.
2. working as part of a team (when required), as well as an independent and professional, working within Life Sciences.

3. carrying out quantitative and/or qualitative analysis on data generated on the project
4. critical evaluating and analysing data, including statistical or mathematical/non-mathematical techniques (as appropriate to the project)
5. oral communications of their research ideas and plans through to selecting and delivering an appropriate final assessment piece for the project.

Taught sessions will cover:

1. importance of project planning and management angles
2. essential healthy, safety and well-being guidance with emphasis on good research practices.
3. importance of ethical and legal considerations (e.g. Human Tissue Act) when planning projects in Life Sciences and understanding relevant institutional governance aspects.
4. various angles for data collection, analysis and interpretation, using appropriate processes and analysis software.
5. key aspects of scientific writing and various alternative ways of implementing and communicating a project in Life Sciences.

Teaching and learning methods

Learning on this module is primarily experimental with students spending much of their time carrying out independent project related work. Depending on the project angle, this may involve time spent in the University laboratories or other facilities, in community settings. Each student will be allocated academic supervisor/s, who will meet with the student to discuss their progress, guide them with the critical review and in the initial design for their project, support them in steps required for project progress and advise them when needed through this project. There will also be a series of authentic lectures to support and extend students' learning in terms of project management angles, health and safety, ethical considerations, good practice and professional conduct as well as how to make your research project sustainable. Taught sessions will provide students with tools for selecting and applying appropriate analysis for their project work. Furthermore, students will have access to additional drop-in/support sessions over the course of the module. After each lecture, there will be bespoke tutorials sessions so that students can work in small groups on aspects related to a particular lecture topic area and promote peer learning and active learning through discussion/debates. For both the lecture and tutorial sessions will incorporate flipped classroom approach to enhance student engagement and include poll everywhere as well as quizzes to monitor knowledge and understanding. From a health and wellbeing perspective will also incorporate a session on resilience for researchers to develop coping skills, a strong support network, and self-care strategies to navigate common challenges in a research environment such as stress and meeting deadlines and how to cope if experiments do not go to plan.

To embed the teaching material, students will have the opportunity to attend external visits such as visiting museums/scientific exhibitions or tour laboratories focused on healthcare or industry so that students get exposed to research areas other than academic research and will benefit them when deciding upon their career plans.

Activity type	Category	Student learning and teaching hours*
Lecture	Scheduled	6
Seminar	Scheduled	
Tutorial	Scheduled	6
Project supervisor	Scheduled	14
Demonstration	Scheduled	
Practical classes and workshops	Scheduled	
Supervised time in studio/workshop	Scheduled	
Fieldwork	Scheduled	

Commented [AM1]: To cover ethics, health and safety, data analysis (stats), scientific writing, communicating science, sustainability, resilience

Commented [AM2]: 1hr per week hold tutorial over 6 weeks to support what was covered in the lecture material

Commented [AM3]: 12hrs supervisor time (2hrs/week) plus one off 2hr for support on the critical review

External visits	Scheduled	6
Work based learning	Scheduled	
Scheduled online learning	Scheduled	
Other learning	Scheduled	60
Total scheduled		92
Placement	Placement	
Independent study	Independent	108
Total student learning and teaching hours		200hrs

*hours per activity type are indicative and subject to change.

A total of approximately 60 h will be spent directly in project related activity but the type of activity applicable (or which combination, if more than one is involved) will depend on the specific project. This may be, for example, practical sessions/workshops, fieldwork, placement, community event preparation and implementation. Alongside the scheduled activities, students are expected to undertake 108 hours of independent study for this module. Timetabled weekly sessions will include 'extension tasks' designed for completion as independent study outside formal taught sessions which will prepare students for the project journey. The content of these tasks will feed into their project design, thinking through ethical and health and safety aspects through to data collection and analysis. Along with these extension tasks student will also need to work independently to prepare for the two pieces of assessment within this module. In addition, additional time will be allocated for external visits in central London such as visiting science museums or anatomical museums, laboratory tours (healthcare/industry) sustainability walks in London.

Commented [AM4]: 2 times over 6 weeks arrange (2x 3hr) visits to visit either: natural history museum, Wellcome Trust, HSL halo building, anatomy museum, industry or sustainability walk

Commented [AM5]: 10hrs sessions per week - laboratory/data analysis and assessments