FP031-30 Inquiry and Research Skills for Science and Engineering (FP031-30)

22/23

Department
Warwick Foundation Studies
Level
Foundation
Module leader
Rachel Evans
Credit value
30
Module duration
25 weeks
Assessment
100% coursework
Study location
University of Warwick main campus, Coventry

Description

Introductory description

The IRS for Science module aims to ensure that students develop the necessary competencies and skills to succeed in science and related courses in the United Kingdom. It will provide bespoke skills training and support for students aiming at progressing to an undergraduate degree in the United Kingdom. It will provide competency training in reflective and critical thinking, team-working, and raising the awareness of self to develop greater ability in learners to engage with academic debate in science and take responsibility to critically inquire and evaluate issues in science and engineering. The module aims to ensure that students become independent learners and researchers who are equipped to think for themselves.

Module aims

1. Develop students' independent-learning and research skills.
2. Practice and reflect on skills in academic, scientific research.
3. Apply research skills through undertaking a self-led, scientific research project.

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.

1. Foundations of Research – The first part of the module will develop students' skills in information literacy, evaluating sources, effective search strategies and reflection to enable students to access reliable academic sources.
2. Solving problems in Science – Students will take part in problem-based learning tasks in which they will develop their research skills, such as communication and team-working.
3. Research Project – Students will design an independent research project. They will plan and manage the research process, and analyse and communicate the findings.

Learning outcomes

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

- Engage effectively in reflective and critical thinking .
- Propose, design, manage and carry out an independent scientific research project.
- Investigate and analyse academic debates that arise in science
- Analyse and evaluate research undertaken by others within the scientific field

Indicative reading list

Cottrell S (2008) The Study Skills Handbook (3rd edition) Palgrave Macmillan
Cottrell S (2011) Critical Thinking Skills: Developing Effective Analysis and Argument (2nd edition) Palgrave Macmillan
Cottrell S (2014) Dissertations and project reports : a step by step guide Palgrave MacMillan
Dane, C (2018) Evaluating research : methodology for people who need to read research (2nd edition) SAGE
Humphreys P (2016) Oxford Handbook of the Philosophy of Science Oxford University Press
Kennett, B (2014) Planning and managing scientific research : a guide for the beginning researcher Australian National University Press
Yeong, FM (2014) How to read and critique a scientific research article : notes to guide students reading primary literature (with teaching tips for faculty members) University of Singapore
The New Scientist
IEEE International Symposium on Ethics in Science, Technology and Engineering (Journal)

View reading list on Talis Aspire

Research element

Students will design and conduct an independent research project on a scientific topic.

Interdisciplinary

Students will use the knowledge and skills they have gained from the academic modules they are studying on the IFP in order to choose, plan and carry out a research project.
Students will work on an interdisciplinary project with students from other IFP disciplines on a sustainability issue in order to share experiences and different approaches to problem-solving.

International

This module will look at scientific issues from a global perspective. Students will be given a free choice of what they would like to investigate for their research project in order for them to explore international problems or scientific issues that interest them.

Subject specific skills

- Information literacy skills - library skills, effective internet searching, use of databases.
- Inquiry Skills - asking questions, seeking and analysing different answers, coming to your own conclusion
- Group work skills
- Independent learning skills - planning, time management
- Research skills - e.g. planning research, data collection and analysis
- Reflective thinking/ writing
- Critical thinking

Transferable skills

- Information literacy skills - library skills, effective internet searching, use of databases.
- Inquiry Skills - asking questions, seeking and analysing different answers, coming to your own conclusion
- Independent learning skills - planning, time management
- Research skills - e.g. planning research, data collection and analysis
- Reflective thinking/ writing
- Critical thinking

Study

Study time

Type	Required
Seminars	64 sessions of 1 hour (30%)
Supervised practical classes	4 sessions of 2 hours (4%)
Total	210 hours

Type	Required
Online learning (independent)	6 sessions of 1 hour (3%)
Private study	132 hours (63%)
Total	210 hours

Private study description

Students are expected to prepare for seminars by reading and practising of ideas taught in class.

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group A2

	Weighting	Study time	Eligible for self-certification
Assessment component			
Foundations of Research	5%	5 hours	Yes (extension)
Online learning and tests on basics of research , such as search strategies and ethics.			
Reassessment component is the same			
Assessment component			
Annotated Bibliography	20%	20 hours	Yes (extension)
Annotated bibliography on subject for individual research project.			
Reassessment component is the same			
Assessment component			
Research Log Book	30%	20 hours	Yes (extension)

	Weighting	Study time	Eligible for self-certification

Reflective account of the planning, findings and progress of research project.

Reassessment component

Reflective essay			Yes (extension)

A reflective essay on the process of the research project.

Assessment component

Research Project Presentation	40%	40 hours	Yes (extension)

Presentation of research project to include both an academic poster and discussion of the research.

Reassessment component

Research Project Interview			Yes (extension)

Interview on the research project (process, results and limitations)

Assessment component

Ethics	5%	5 hours	Yes (extension)

Ethics online training and submission of ethics application for individual project

Reassessment component is the same

Feedback on assessment

Written feedback will be given on Tabula and verbal feedback in seminars. Tutorials are available for students who wish to have further guidance

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Availability

Courses

This module is Core for:

- FIOE Warwick International Foundation Programme

- Year 1 of FP19 Warwick International Foundation Programme - Engineering
- Year 1 of FP21 Warwick International Foundation Programme - Life Sciences
- Year 1 of FP22 Warwick International Foundation Programme - Psychology