

Research Design and Methods

Overview

This module will enable you to undertake a research project, with an appropriate study design to validate a hypothesis and analyse the data, including the presentation of results and writing a grant application.

Subject areas: introduction to scientific research and how to formulate a hypothesis; literature search, critical analysis of papers and writing a scientific review; experimental and statistical design in project planning; project management; preparing data for analysis - qualitative data, quantitative data; statistical analysis and analysing the validity of findings; report writing, presentation of data and writing a scientific paper; introduction to grant application writing, planning the proj

Course structure

The course consists of eight units of study, all of which you should complete. They make up the following three modules.

Module 1: Research Methods and Design

This module (Units 1–4) is designed to help you develop the skills you require as you begin your project. It is quite important that you spend some time carefully constructing your hypothesis, on which you will base your research project. Therefore, the module begins by describing the process of formation and testing of hypotheses. Literature searching is described in detail giving you an opportunity to explore some of the methods described in Unit 2. Being able to critically appraise scientific literature is another important skill, and in Unit 3 of this module a structured framework to assist in critically appraising scientific papers will be presented. The final part of the module focuses on study design and how to plan a research project.

Module 2: Research Management and Implementation

The second module (Units 5 and 6) aims to give you a basic understanding of the processes, methods and terminology used in developing, managing and implementing projects, with particular emphasis on research project management at a practical level. It includes the concepts, processes and details of developing logical frameworks to monitor activity and resource schedules. The methods and the necessary management skills to progress projects in the field and laboratory are described.

Module 3: Presentation of Results and Writing Grant Applications

The final module (Units 7 and 8) introduces generic skills that are necessary in writing