

Science in Action 2008-2009

Course description

Name of course: Science in Action – scientific integrity and responsible conduct of research.

Type of course: Mandatory

Total hours: 20 hours of which 6-8 hours will correspond to classroom attendance. *Seminar period:* October

Building: PRBB

Schedule: The course comprises:

- i) Six online modules for self-study. Time expected to cover the course materials and reading: approximately 10-12 hours
- ii) Attendance at 4-6 compulsory seminars
- iii) Online test based on an extended case study to be completed within one week of the last seminar.

Coordination: Jordi Camí

Department: Ciències Experimentals i de la Salut, UPF

Teaching details

Language: English

Lecturers: Jordi Camí and Elinor Thompson.

Presentation.

This course aims to develop the student's thinking about issues related to values in science, scientific integrity and the responsible conduct of research. The course takes the PRBB *Code of Good Scientific Practice (CGSP)* as a starting point and aims to contribute to a reflective process which will mature during the student's professional life as a scientist. All students should be familiar with the contents of the CGSP prior to starting this course.

The objectives of the course are to stimulate students to think critically about different aspects of good scientific practice and to enhance understanding the realities of scientific practice in today's environment of scarce resources, high competitiveness and low regulation.

The online modules aim to promote student autonomy by providing the essential information relevant to the course topics in a format which can be studied flexibly in the student's own time. Completion of the self-study component is essential to developing an understanding of the different tensions that operate in today's scientific enterprise and students are expected to devote sufficient time to the careful study of these materials in preparation for the seminars.

Seminars will be based on the analysis and discussion of problems. Problems will be prepared as cases or from published articles and will be given to the students, together with the relevant material, at the beginning of the course or in the seminars as appropriate. Students are expected to actively engage in discussion and problem solving individually and in groups.

Requisites:

Language. The course will be entirely imparted in English and the articles and course materials will be in English. Students are expected to have advanced English conversation skills so that they can discuss these themes actively with their peers and the course tutors.

Background. Students are expected to have good skills in critical reading and the ability to extract and analyse arguments logically from given texts.

Competences to be attained in the subject

General:

1) To ensure that all students are fully familiar with the PRBB *Code of Good Scientific Practice*.

2) To raise awareness of the uncertainties, conflicts, tensions and contradictions that underlie the practice of scientific research today.

Specific:

1) To develop skills in critical reading, reflection and discussion of ethical issues and conflicts that may confront a scientist during their professional life.

2) To develop skills in thinking logically about sometimes difficult and uncomfortable problems and situations.

Evaluation

Course test

There will be a final online test based on an extended case study. Students may complete the test in their own time. The test answers will be submitted online by a closing date shortly after the last seminar.

Format and methodology:

See above under schedule

Topics

1) Scientific integrity:

- Be aware of the behaviours that may threaten the integrity of science.
- Know the contents of the *Universal Ethical Code for Scientists*.
- Be familiar with the PRBB *Code of Good Scientific Practice*.
- Understand the best ways to prevent problems of integrity.

2) Building and performing a research project:

a) Record Keeping:

- Be aware of the data types that need to be collected systematically in all scientific studies.
- Know the best ways to collect and store data collected in scientific studies
- Be aware of the mechanisms and procedures for the adequate protection of data and samples.

b) Data ownership:

- Understand the concept of ownership with respect to data and samples obtained in a scientific study.
- Know the rules regarding ownership of data and samples obtained during one's own research when one is moving from one centre to another.

c) Sharing data and collaboration

- Be aware of the need to plan for future sharing of data, samples and other scientific results.

3) Animal experimentation:

- Be familiar with the debate on the moral status and rights of animals.
- Be able to justify the use of animals in a research project.
- Understand the necessary procedures for the use of animals in a research project.
- Understand the "3 Rs" policy, for Reduction, Replacement and Refinement of the use of animals in research.

4) Human research

- Be familiar with the issues surrounding the obtaining of informed consent from human participants in research.
- Be familiar with the major national and international policy guidance in this area eg the *Declaration of Helsinki*.
- Be aware of the tensions between different philosophical positions with respect to autonomy, liberty and duty in the use of humans in research.

5) Conflicts of interest:

- Be aware of different possible conflicts of interest and be able to distinguish them from a bioethical dilemma.
- Know about specific conflicts of interest and their potential consequences.
- Be aware of the main conflicts of interest that may arise in academic-industry relationships.
- Be able to identify the main conflicts of interest that may occur in a clinical study financed by the pharmaceutical industry.
- Know about strategies for managing conflicts of interest.

6) The politics and practice of publication

a) Publication practices

- Know about good practice in the communication of scientific results.
- Understand the peculiarities of communicating scientific results in different communication media.

b) Peer review

- Be familiar with the peer review process in both grant applications and in articles for publication.
- Identify the conflicts of interest that may arise for a reviewer of a grant application or an article submitted for publication.
- Recognise the strengths and weaknesses of peer review and be able to propose alternatives or ways in which the peer review process may be improved.

c) Authorship

- Know how to identify the conditions for authorship and be able to argue cogently regarding the position of an author in a list of credits.
- Understand who should appear in the acknowledgements.