Universitat Autònoma de Barcelona

Research Methodology 2016/2017

Code: 42951
ECTS Credits: 9

Degree	Type	Year	Semester
4313782 Cytogenetics and Reproductive Biology	OT	0	2

Contact

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Use of languages

Principal working language: catalan (cat)

Prerequisites

Because the main focus of this Module is to develop a research work, the student must be registered in the Research itinerary of the Master.

Fluent english is very important, as the main bibliographic fonts and research papers are published in this language.

Objectives and Contextualisation

The student must join a research group whose research fields are linked to the Master's scopes. In this group, the student will design and develop an original research work. To develop this task, every student will be assigned to a RESEARCH SUPERVISOR, who will **supervise** and **evaluate** the student's work. The student will be provided with a list of research lines linked to the Master, along with their respective directors.

- Any **researcher with a doctor degree** who actively participates in a research field linked to the Master's scopes can act as a RESEARCH SUPERVISOR.
- If a student has a director affiliated to an academic and/or research institution DIFFERENT FROM the Cell Biology, Physiology and Immunology Department of the UAB, he/she must obtain the conformity from one of the professors or lecturers of the Department, who will stand as an INTERNAL TUTOR.
- In case the student experiences difficulties in joining a research line, the coordinator of this Module (Research Methodology) will help him/her to find one.

Skills

- Apply knowledge of theory in both research and clinical care contexts.
- Apply the basic tools of statistical analysis in cytogenetics and reproductive biology.
- Apply the scientific method and critical reasoning to problem solving.
- Communicate and justify conclusions clearly and unambiguously to both specialist and non-specialist audiences.
- Continue the learning process, to a large extent autonomously.
- Design experiments, analyse data and interpret findings.
- Identify the ethical dilemmas and apply current laws governing the area of knowledge of the master's degree.
- Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
- Interpret, resolve and report on clinical cases or scientific findings in the area of the master's degree.

- Organise and manage research laboratories and clinical laboratories in the area of knowledge of the master's degree.
- Respect ethical principles in one's work.
- Show an ability to work in teams and interact with professionals from other specialist areas.
- Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
- Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.
- Use and manage bibliography or ICT resources in the master's programme, in one's first language and in English.
- Use creative, organisational and analytic skills when taking decisions.

Learning outcomes

1. Analyse and interpret findings from research within the master's programme.
2. Apply ethical and legal principles in the conduct of research.
3. Apply knowledge of theory in both research and clinical care contexts.
4. Apply the scientific method and critical reasoning to problem solving.
5. Communicate and justify conclusions clearly and unambiguously to both specialist and non-specialist audiences.
6. Continue the learning process, to a large extent autonomously.
7. Design experiments, analyse data and interpret findings.
8. Design experiments that can achieve the proposed aims.
9. Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
10. Organise the research project so that it is coherent and in keeping with the proposed aims.
11. Respect ethical principles in one's work.
12. Show an ability to work in teams and interact with professionals from other specialist areas.
13. Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
14. Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.
15. Use and manage bibliography or ICT resources in the master's programme, in one's first language and in English.
16. Use creative, organisational and analytic skills when taking decisions.
17. Use statistical packages to analyse the data obtained during research work.
18. Use the Reproductive Biology or Cytogenetic Laboratories in keeping with scientific standards.

Content

The student will develop a research project, and the content will be established along with the director of the research.

Methodology

The methodology to execute the research work will be elaborated under the supervision of the director of research.

Activities

Title	Hours	ECTS	Learning outcomes
Type: Supervised			
Develop skills related to dissemination of scientific results	40	1.6	3, 12, 13, 5, 6, 15
Development of the Scientific Method	77	3.08	1, 4, 7, 8, 16, 10, 18

Type: Autonomous			
Development of ethical consciousness related to science	25	1	4, 2, 12, 11, 9
Development of skills related to scientific research	77	3.08	4, 12, 16, 9, 6, 14

Evaluation

The Module 12 will be held during the second semester and will consist of 2 parts:

1- MONTHLY MONITORING REPORT written by the STUDENT

- The student will write a monthly report in which he or she will describe the main results obtained, the chronogram of the performed tasks and the accomplishment of the research work objectives.
- These reports will have a MONTHLY periodicity (from February to June) and will NOT EXCEED 300 words.
- The monthly monitoring reports will be sent to the coordinator of the Research Methodology's Module and to the director. The complete set of monthly reports will account for 1/3 of the Module's mark (33%) and will be evaluated by the module's coordinator.

2- IMPROVEMENT REPORT written by the TUTOR

- The tutor will write 1 final report in which he or she will describe the student's improvement during the development of the research work and will evaluate him/her, accounting for 2/3 (66%) of the Module's mark.
- This report will be send to the coordinator of the Research Methodology's Module.

Evaluation activities

Title	Weighting	Hours	ECTS	Learning outcomes
Improvement Report	66%	1	0.04	12, 11, 16, 13, 5, 9, 14
Monthly monitoring reports	33%	5	0.2	1, 4, 3, 2, 7, 8, 10, 13, 5, 9, 6, 14, 18, 17, 15

Bibliography

The following web pages can guide the student when facing the onset of a research work:

- http://en.wikipedia.org/wiki/Scientific_method
- http://depts.washington.edu/rural/RURAL/design/scimethod.html
- http://www.wikihow.com/Conduct-Scientific-Research
- http://www.niehs.nih.gov/research/resources/bioethics/whatis