Universitat de les Illes Balears

Scientific Research Methodology

General Information

Professors

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The Course

- This course forms part of EDISS (Master Program on the Engineering of Data-intensive Intelligent Software Systems) https://www.master-ediss.eu/, which is an Erasmus Mundus Joint Master Degree with EU funding
- The course is taught in English

The Course: Context

- Research can be defined as the "exhaustive search for the solution of a problem“
- To ensure the validity of the conclusions of a research work, a methodology (scientific method) must be followed
- Knowledge acquired through research must be transmitted through the writing and presentation of scientific papers; carried out in a standard and ethical way so that it can be reproduced by any researcher
- This course introduces the student to the fundamentals of the scientific method, the search for bibliographic resources and the writing and presentation of scientific communications

The Course: Competencies

Specific

- [CE2]: Capacity to carry out the design process of an automatic information acquisition system in the field of intelligent systems
- [CE3]: Capacity for modelling, simulation and interpretation of results in the field of intelligent systems
- [CE5]: Capacity to assess the importance of documentary sources, manage them and search for information to carry out technological development or research work
- [CE6]: Capacity to read and understand publications in the technological field, as well as to catalog them and estimate their scientific value

The Course: Competencies

Generic

- [CG1]: Integration of knowledge from different disciplines, as well as managing complexity
- [CG2]: Capacity for technical management and research, development and innovation projects in companies and technology centers
- [CG4]: Ability to work in an international context
- [CG5]: Understand the procedure, value and limitations of the scientific method, being able to design and guide analytical, modeling and experimental investigations, as well as critically evaluate data and draw conclusions

The Course: Competencies

Transversal

- [CT1]: Understand that any professional activity must be carried out with respect for fundamental rights, the promotion of equality between women and men, the principle of universal accessibility and design for all people and environmental protection and in accordance with the values characteristic of a culture of peace and democratic values

The Course: Content

- Introduction. Choosing a research topic.
- The scientific method. Bibliographic search, hypothesis and methodology.
- Writing scientific papers.
- Peer review process.
- Ethics and presentations.

Course Assessment

Research Project: research on a topic following scientific method; a written report, its oral presentation and defense

- Research paper: 50%
- Peer review: 25%
- Presentation: 25%

Validation grade of 5 (over 10)

9. Student Learning Assessment

9.1. Activities

ACTIVITY	PERIOD	WEIGHTING	VALIDATION GRADE	COMPULSORY ATTENDANCE	REC yes/no	IMPROVEMENT yes, no
Research paper	Continuous	50%	5	-	yes	no
Peer reviews	Continuous	25%		-	no	no
Presentation	Continuous	25%		-	no	no

In order to participate in the peer review, students must have submitted their own works to receive feedback, as the evalution is done by co-evaluation. To present the work, students must have gone trough the peer review process to get feedback and present the work improvements in the presentation and in the written final work.

Use of AI exclusively for suggestion of styles and grammatical review. The use of AI tools when not allowed, or improper use, will be considered academic fraud.

11750. Scientific Research Methodology (2024-25)

Big Topics

- Human-centered explainable AI
- Human-centered AI
- AI+Gender+Computer Science
- Responsible AI
- Human-based evaluation and metrics for AI and XAI
- AI+disability

Academic Calendar 2024-25 First semester

OCTOBER 2025				
		1	2	3
6	7	8	9	10
13	14	15	16	17
20	21	22	23	24
27	28	29	30	31

NOVEMBER 2025				
3	4	5	6	7
10	11	12	13	14
17	18	19	20	21
24	25	26	27	28

DECEMBER 2025				
1	2	3	4	5
8	9	10	11	12
15	16	17	18	19

Academic Calendar 2025-26 First semester

OCTOBER 2025				
		1	2	3
6	7	8	9	10
13	14	15	16	17
20	21	22	23	24
27	28	29	30	31

NOVEMBER 2025				
3	4	5	6	7
10	11	12	13	14
17	18	19	20	21
24	25	26	27	28

DECEMBER 2025				
1	2	3	4	5
8	9	10	11	12
15	16	17	18	19

Date	Class
02-oct	I: Introduction + Topics
08-oct	C: Sources
15-oct	C: Systematic reviews
22-oct	I: Writing a research paper I
29-oct	I: Writing a research paper II + ex_Intro
05-nov	C: Writing: arguments & conclusions
12-nov	I: Writing: visual evidences
19-nov	C: The reviewing process
26-nov	C: Ethics & presentations
3, 10, 17-dec	I-C: Oral presentations

Academic Calendar 2025-26 First semester

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DECEMBER 2025				
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15	16	17	18	19

ACTIVITIES' SCHEDULE	
07-oct	Topic
	Introduction and related work
	First Draft
	Paper deadline
	Paper reviews
	Oral presentations
	Camera-ready copy