Study Plan

School: Institute for Research and Advanced Training
Degree: *** TRANSLATE ME: Curso de Formação ***
Course: 3rd Cycle Cross Skills (cód. 690)

1st Semester - 1st Semester

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
*** TRANSLATE ME:Optativas ***					

Component code	Name	Scientific Area Field	ECTS	Duration	Hours
FIL13966D	Epistemology of Science	Philosophy	3	Semester	78
VIS13967D	Communication techniques	Education Sciences Design Linguistics	3	Semester	78
HIS13970D	Open Science and strategies of science communication and dissemination	Design History Informatics	3	Semester	78
LLT13973D	Academic writing skills in English I	Linguistics	3	Semester	78
LLT13974D	Academic writing skills in English II	Linguistics	3	Semester	78
PSI13968D	Personal Career Management	Psychology	3	Semester	78
INF13969D	LaTex Introdution	Informatics	3	Semester	78
GES13975D	Project Planning and Management	Management	3	Semester	78
MAT14055D	Fundamentals of Data Analysis in Environment R	Mathematics	6	Semester	156
FIL13971D	Ethics and Research	Philosophy	3	Semester	78
GES14077D	Start-up PhD	Management	3	Semester	78
MAT15034D	Numerical Tools with Python	Informatics Mathematics	6	Semester	156
FIS15035D	History of Sciences	Physics History	3	Semester	78
HIS15036D	Introduction to automatic bibliographic reference systems	History	3	Semester	78
PSI15037D	Emotions in learning contexts	Psychology	3	Semester	78

1st Semester - *** TRANSLATE ME:2.º Semestre ***

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FIL13966D	Epistemology of Science	Philosophy	3	Semester	78
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HIS13970D	Open Science and strategies of science communication and dissemination	Design History Informatics	3	Semester	78
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LLT13974D	Academic writing skills in English II	Linguistics	3	Semester	78
PSI13968D	Personal Career Management	Psychology	3	Semester	78
INF13969D	LaTex Introdution	Informatics	3	Semester	78
GES13975D	Project Planning and Management	Management	3	Semester	78
MAT14055D	Fundamentals of Data Analysis in Environment R	Mathematics	6	Semester	156
FIL13971D	Ethics and Research	Philosophy	3	Semester	78
GES14077D	Start-up PhD	Management	3	Semester	78
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FIS15035D	History of Sciences	Physics History	3	Semester	78
HIS15036D	Introduction to automatic bibliographic reference systems	History	3	Semester	78
PSI15037D	Emotions in learning contexts	Psychology	3	Semester	78

Conditions for obtaining the Degree:

*** TRANSLATE ME: Para completar o curso dos estudantes têm de completar 12 ECTS, podendo escolher qualquer UC do plano de estudos ***

Program Contents

Back

Epistemology of Science (FIL13966D)
1. Contemporary Epistemology and the contributions of the History and Philosophy of Science, Studies of Science and Technology.
2. The Scientific Revolution and its repercussions. The unit of knowledge and the organization of the disciplines. The problem of demarcation: science and common sense, religion, art and power.
3.Beliefs, methodologies, scientific truths and justification. The epistemological virtues. Normal science, controversies and innovation.
4.The scientific veracity: the logical-formal, empirical and hermeneutic dimensions. Practices and 'trading zones". The logic of discovery and of justification. Personae, objectification and ontologies.
5.Special epistemologies: the epistemologies of the social sciences, of life sciences, of engineering and technologies, of arts. Interdisciplinarity, multidisciplinarity and transdisciplinarity.
6.The dynamics of scientific communities an the challenges of the globalization of science: problems of culture, functioning and scientific et

Communication techniques (VIS13967D)
1. Communication:
- general concepts
- channels, codes, meanings and contexts
- noise and communication facilitators
- style
- verbal and nonverbal communication
- oral and written communication

2. Written communication:
- different types of writing: formal, informal, academic, literary, journalistic, technical, advertising; social media
- subjectivity vs objectivity
- techniques of plain language writing
- typography, layout and graphics
- non-formal science communication writing
- writing press releases
- writing emails
- writing on social media

3. Oral communication:
- different types of oral communication: informative and persuasive
- preparation of an oral presentation
- techniques for facing, captivating and persuading the audience
- the importance of storytelling
- the tone of voice
- nonverbal communication
- visual aids to oral communication - information design
- interviews and press conferences
- debates: the art of disagreeing and arguing
- job interviews

Open Science and strategies of science communication and dissemination (HIS13970D)
1. Fundamental concepts and topics on Open and Citizen Science and their emergent contexts.
2. How to publish?
2.1. The various types of scientific texts and disciplinary areas.
2.2. The peer review.
2.3. Indexed publications and impact factors.
2.4. The h-index.
3. The problems of opening and sharing data: from ethical issues to data intelligibility.
3.1. Copyright and creative commons licenses. Permanent links. The patents.
3.2. The metadata
3.3.The institutional repositories.
4. Open and shareable data requirements: from data management plan to preservation issues
5. Interoperability.
6. Information Representation and Retrieval
7. Data Security
8. Science communication strategies
8.1. The history of science communication and the challenges of modern societies
8.2. How to stimulate the intellectual pleasure of critical and scientific thinking?
8.3. Strategies to attract and build audiences: emotional design

Academic writing skills in English I (LLT13973D)
Unit 1. The writing process: (a) the purpose, types and features of academic writing; (b) types of academic texts; (c) the development of critical reading approaches; (d) planning and brainstorming; key points & note-making; (e) paraphrasing & summarizing; (f) references & quotation; (g) rewriting & proofreading.
Unit 2. Elements of writing: (a) argument and discussion; (b) cause and effect; (c) cohesion; (d) comparison; (e) examples; (f) generalization.

Academic writing skills in English II (LLT13974D)
Unidade 1. Accuracy in writing: (a) academic vocabulary; (b) conjunctions, nouns & adjectives, prepositions; (c) punctuation; (d) verbs: passive, referencing, tenses.
Unidade 2. Writing models: (a) reports, case studies and literature reviews; (b) designing and reporting surveys; (c) essays; (d) the PhD thesis.

Personal Career Management (PSI13968D)
1. Work and career
1.1. The changing nature of work in a globalized society
1.2. The importance of personal career management in globalized societies
1.3. Models and practices of personal career management

2. The development of personal career management skills
2.1. My career
2.2. Identity
2.3. Career adaptability resources
2.4. Barriers and supports to personal career management
2.5. The implementation of personal career management strategies

3. Research on personal career management

LaTex Introdution (INF13969D)
1. Document Organization: Document divisions, Lists.
2. Common Documents: Presentations, Tables and Figures.
3. Academic Publications: Acronyms, Bibliographies & References.
4. Monographs and Books: Multi-File Documents.
5. Advanced Topics: Mathematical Expressions, Hyperlinks, Indexes, Graphics.

Project Planning and Management (GES13975D)
1. Project planning, programming and control
2. Project programming with deterministic durations
3. Project programming with stochastic durations
4. Project planning and financial management
5. Presentation, resolution and discussion of research project exemples

Last update 25/04/2024

Fundamentals of Data Analysis in Environment R (MAT14055D)
1. Introduction to the R language
i. Installation of R, R Studio and libraries
ii. Use of R as a calculator: mathematical and logical operations
iii. Data storage: variables, vectors, matrices and lists
iv. Object classes and object conversion into different classes
v. Data import, export and storage
vi. Data manipulation: filters, selections, renames, groupings, sorts, etc.
vii. Pipe Operator
2. Graphical data visualization: categorical, discrete and continuous data
i. Static graphs
ii. Dynamic graphs
iii. Recording graphs in several formats
3. Summary measures
i. Location
ii. Dispersion
iii. Form
iv. Association
4. Hypothesis tests
i. Parametric
ii. Non-parametric

Ethics and Research (FIL13971D)
I. INTRODUCTION - THE PLACE OF ETHICAL QUESTIONING IN SCIENTIFIC AND TECHNOLOGICAL RESEARCH
I. 1. Research and Science
I. 2. Science, Technique and Technology
I. 3. Technological development and Ethics
II. CONCEPTS, VALUES AND ETHICAL PRINCIPLES IN RESEARCH
II. 1. Safeguarding human rights by the ethical regulation of research
II. 2. The common heritage of obligations of information professionals and researchers
II. 3. The criteria of freedom and responsibility in research
III. LICITUDE AND LEGALITY IN RESEARCH PROJECTS
III. 1. Issues of authorship - the rights and duties of the researcher
III. 2. Ethics Committees, codes or letters of conduct and personal decision
III. 3. Digital Age and research integrity

Last update 25/04/2024

Start-up PhD (GES14077D)

I. Navigating the Entrepreneurs' Sea: why are there start-ups that fail and others that are successful?

• What is an entrepreneur and what is entrepreneurship made of?

• Entrepreneurial personality, entrepreneurial skills and entrepreneurship teams.

• The power of innovation and ingredients to innovate.

• Entrepreneurship and critical sense - identify your own weaknesses and threats through SWOT analysis.

II. Designing a Value Proposition

• The validation of needs.

• How to eliminate the problems of a target audience?

• The conceptualization of a solution / prototype.

• Test and get feedback.

III. Minimum Viable Product (MVP): from the commitment of features to rapid prototyping

IV. Lean start-up: an integrated model

• From business strategy to business model: a roadmap for the future.

• The power of business communication.

V. Intellectual Property and Protection of Innovation

VI. Funding Sources: from investment rounds to crowdfunding

Numerical Tools with Python (MAT15034D)

1. Introduction to SageMath software. Installation.

2. SageMath as a calculator: first calculations, elementary functions, Python variables, symbolic variables, first graphs.

3. Representation of floating point numbers: properties, rounding.

4. Programming and data structure: algorithms (loops, conditions and functions), lists and other data structures.

5. Analysis: symbolic expressions and simplifications, elementary mathematical functions, explicit resolution of equations. Sums, limits, sequences, series, derivatives and integrals. Solving differential equations.

6. Linear algebra: vector and matrix computation, solving linear systems, eigenvalues and eigenvectors computation, matrix decomposition.

7. Graphics: graphical representation of functions, parametric curves, curves in polar coordinates, implicitly defined curves, representation of discrete data, representation of the solution of differential equations.

History of Sciences (FIS15035D)
Plurality of approaches in the history and philosophy of science and their interest in pedagogy and integral and humanistic training.
Aristotelian worldview.
Navigations and the preconditions of the Scientific Revolution.
Scientific Revolution: from Copernicus to Newton.
Kant and the theory of knowledge.
Lavoisier: Chemistry and the respiration of animals.
Laplacian Cosmovision and the development of Thermodynamics.
The consilience of inductions.
The Biological transformism and the anthropological model.
Overcoming mechanism, history and epistemology.
Quanta, relativity: overcoming the classical paradigm.
The history of science place.
Homo faber and the educational value of the history of science.
Institutionalization of HFC: creation of magazines and organization of conferences.
The modular structure of scientific theory.
Contemporary technoscience.
Material culture (laboratories, instruments, collections, etc).
The circulation of knowledge.
Science and values. Science and gender

Introduction to automatic bibliographic reference systems (HIS15036D)
Introduction
1. Software installation
2. The importance of state of art and the difficulties in doing it
3. The main text formats used in the academic world
4. Zotero in the context of automatic management systems of bibliographic references
5. University libraries, available databases and the Web of Knowledge
Part I - Using Zotero to create my library
1. Collecting bibliography with Zotero
2. The organization of the library
3. Exploration of reading
4. Searching within the library
Part II - Reading with Zotero
Part III - Using Zotero for writing academic texts
1 Making the notes.
2. Styles
3.Automatically producing the final bibliography and changinge it
Part IV - Sharing with Zotero
1. E-mailing bibliographic references
2.Creating groups and sharing a library

Emotions in learning contexts (PSI15037D)
1- Models and explanatory theories on the relationship between emotion and cognition.
2- Emotions and feelings in learning experiences
3- Emotional regulation in learning contexts

Last update 25/04/2024