



COURSE GUIDE

Universidad Católica de Valencia

Innovation and educational research in
didactics of Technology

Academic Year: 2023-24



COURSE GUIDE TO INNOVATION AND EDUCATIONAL RESEARCH IN DIDACTICS OF TECHNOLOGY

		ECTS
MODULE: Specific of Technology Education		24
FIELD: Teaching innovation and introduction to educational research		6
Subject: Innovation and educational research in didactics of Technology		6
Type of learning: Obligatory	YEAR: 2023-24 Semester: 2nd	
Teacher: PhD Carlos Ferreira Gauchía	Department: Interdepartamental	
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SUBJECT ORGANIZATION

Specific Module: Technology Education	Nº ECTS: 24
<p>Duration and temporal location within the curriculum:</p> <p>The course is taught in the second semester, within the subject of "Teaching innovation and introduction to educational research" when the students have already taken other courses and begun the Practicum phase.</p> <p>This course, in the specific module aims to introduce teachers in continuous improvement dynamics emphasizing the need for research on their own practice, to generate theory over practice and learn from it.</p> <p>It is imperative that teachers examine their practice and innovate so that the gap between education and socio-generational changes that increasingly occur more quickly, do not lose the effectiveness and efficiency of the professionals.</p> <p>For all specialties MPS has developed a specific module. The course Teaching innovation and introduction to educational research seeks to address the following contents:</p> <ul style="list-style-type: none"> - Action-research processes: processes and improving quality as a driver of classroom work. - Methodologies and techniques of research in education. - Real or simulated experiential activities. - Innovative teaching proposals in the field of education. - Teaching behavior through an observation laboratory. 	



Subjects and Courses				
Field	ECTS	Subject	ECTS	Course/semester
Complements for disciplinary training	6	Technology in Secondary Education	6	1/1
Learning and teaching of the corresponding subjects	12	Didactics of Technology	6	1/1
		Didactic Resources for Teaching in Technology	6	1/2
Innovation in teaching and introduction to educational research	6	Innovation and Research in Didactics of Technology	6	1/2
COURSE GUIDE TO THE SUBJECT: Innovation and educational research in didactics of Technology				
Prerequisites: No prerequisites, except from access to the specialty and knowledge of the languages of the Spanish educational system.				
GENERAL GOALS				
<ul style="list-style-type: none"> a. Can analyze critically the process of teaching, of good practice and guidance from quality indicators. b. Knowing how to identify situations concerning secondary teaching and learning in order to raise research involving alternatives and solutions. c. Knowing transform educational proposals and programs of work activities, acquiring selection criteria and preparing educational materials. d. To know how to implement and apply the proposed classroom teachers innovative, dynamic and search improvement of quality in education. e. Understand and apply methods and techniques of research and evaluation and to be able to design and develop research, innovation and evaluation. f. Knowing how to find, obtain and process information and transform it into knowledge in teaching self-formation processes. g. Knowing relate theory to practice to improve this while participating in the construction of knowledge of the teaching profession. h. Knowing how to communicate proposals and research to specialists, explaining and arguing information and knowledge. 				
CROSS-SECTIONAL COMPETENCES			Competence measuring scale	
Instrumental			1	2
			3	4



G1 Competence in the application of acquired knowledge and problem solving abilities, encountered in new or unfamiliar environments; and, initiated within broader contexts or multidisciplinary scopes relative to one's field of study;			X	
G2 Capability to integrate knowledge and determine complex judgment calls based on information which incorporates, but is not limited to, reflections on social and ethical responsibilities associated with pertinent knowledge and judgments;				X
G3 Knowledge of effectively communicating summations (and sustaining relative rational or arguments) to specialized and unspecialized audiences, in a clear and unambiguous manner.				X
G4 Having learned skills that enable them to continue studying in a self-directed or autonomous manner within the majority of circumstances;				X
G5 To Know the curriculum related to the specialization and the didactics of teaching and learning. A knowledge of the different professions will be included for vocational training.		X		
G6 To plan, develop and evaluate the teaching and learning process enhancing educational activities to facilitate the acquisition of the different competences, taking into account the level and previous training of students to guide them, both individually and in collaboration, with other teachers and school professionals.			X	
G7 To look for, obtain, process and communicate information (oral, printed, audiovisual, digital, or multimedia), transforming it into knowledge that will be applied in the teaching and learning process.			X	
Interpersonal	1	2	3	4
G10. To acquire strategies to encourage student effort and enhance their capacity to learn by themselves and with others, and develop thinking skills and decision-making abilities to facilitate autonomy, confidence and personal initiative.			X	
G11. To know the processes of interaction and communication in the classroom, mastering social skills necessary to promote learning and coexistence together in the classroom, dealing with problems of discipline and conflict resolution.			X	
G15. To inform and advise families about the process of teaching and learning and personal counseling, to know the academic and professional development of their children.	X			

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Systemic	1	2	3	4
G8 To set the curriculum that will be established in a school. Develop and implement teaching methodologies, for both groups and individually, taking into account the diversity of students.			X	
G9. To design and develop learning processes with special attention to equity, education and emotional values, equal rights and opportunities between men and women, civic education and respect for human rights that make life easier in our society, making decisions and building a sustainable future.			X	
G12. To design and carry out formal and informal activities that make the center a place of participation and culture in the environment where it is located. Perform the functions of mentoring and guiding students in a collaborative and coordinated way. Participate in the evaluation, research and innovation of teaching and learning.			X	
G13. To know the rules and institutional organization of the education system and models of quality in schools.			X	
G14. To know and analyze the historical characteristics of the teaching profession, its current status, perspectives and interaction with the social reality of the time.	X			
SPECIFIC COMPETENCES				
Disciplinary	1	2	3	4
E1. To know the cultural and educational value of the specific subjects and the content that is taught.	X			
E2. To know the history and perspectives of the classroom subjects in order to transmit a dynamic point of view.		X		
E3. To know contexts and situations in which the various course content is used or applied.	X			
E4. To know the theoretical and practical processes in teaching and learning different classroom subjects.		X		
Skills	1	2	3	4
E5. To transform the educational plan in work activities.			X	



E6. To acquire some criteria to select and develop educational resources.			X	
E7. To foster a climate that facilitates learning and evaluates the contributions of the students.		X		
E8. To integrate in the teaching-learning process a training for the use of media studies.				X
E9. To learn strategies and evaluation techniques and to understand the evaluation as a tool to regulate and encourage the effort.			X	
Professional	1	2	3	4
E10. To know and apply innovative teaching proposals in the field of specialization.				X
E11. To analyze critically the process of teaching, the practicum and the direction using quality indicators.				X
E12. To identify the problems of teaching and learning and to propose alternatives and solutions.				X
E13. To understand and apply methods and techniques of research and evaluation and to be able to design and develop research, innovation and evaluation.				X

LEARNING OUTCOMES	COMPETENCES
RA. Understand the concept of quality to analyze critically teaching practices.	G2, G10, G9, G12, G13, G14, E7, E8, E9, E10, E11, E12, E13
RB. Identify the most common situations related to the teaching and learning process.	G1, G2, G4, G5, G6, G10, G11, G15, G8, G12, E2, E3, E4, E6, E7, E8, E9, E11, E12
RC. Knowing transform a simple educational approach in a sequence of activities by selecting the most appropriate educational material.	G1, G4, G5, G6, G11, G9, G8, E1, E3, E4, E5, E6, E8, E9
RD. Understand the concept of innovation and evaluation in relation to the classroom.	G5, G12, G13, E2, E7, E8, E9, E10, E11, E12, E13
RE. Be able to design a short research project and evaluate the outcome.	G2, G7, G12, E9, E10, E11, E12, E13
RF. Learn important information about issues related to specific teaching.	G1, G4, G5, G7, G9, G12, E1, E2, E12, E13



RG. Knowing how to relate theory and practice to build teacher knowledge.	G2, G4, G5, G6, G7, G10, G14, E2, E3, E4, E5, E6, E8, E9, E11, E13
RH. Knowing how to communicate a brief didactic or research in a formal situation.	G1, G3, G6, G7, G11, G12, E7, E13

ON-CAMPUS EDUCATIONAL ACTIVITIES			
ACTIVITY	Teaching-Learning Methodology	Relationship With Learning Outcomes for the subject	2,4 ECTS
ON-CAMPUS CLASS	Teacher presentation of contents, analysis of competences, explanation and in-class display of skills, abilities and knowledge.	RA, RB, RC, RD, RE	1,15
PRACTICAL CLASSES	Group work sessions supervised by the professor. Case studies, diagnostic tests, problems, field work, computer room, visits, data search, libraries, on-line, Internet, etc. Meaningful construction of knowledge through interaction and student activity.	RA, RB, RC, RD, RE, RF, RG, RH	0,67
LABORATORY	Activities carried out in spaces with specialized equipment.	RA, RB, RD, RE, RF, RG	0,3
SEMINAR	Supervised monographic sessions with shared participation	RA, RB, RD, RG, RH	0,06
GROUP PRESENTATION OF PAPERS	Application of multidisciplinary knowledge	RA, RB, RC, RE, RF, RG, RH	0,06
OFFICE ASSISTANCE	Personalized and small group attention. Period of instruction and/or orientation carried out by a tutor to	RA, RB, RE, RF	0,04



	review and discuss materials and topics presented in classes, seminars, readings, papers, etc.		
ASSESSMENT	Set of oral and/or written tests used in initial, formative or additive assessment of the student	RA, RC, RD, RE, RF, RG, RH	0,12
Total			2,4

INDEPENDENT WORK ACTIVITIES			
ACTIVITY	Teaching-Learning Methodology	Relationship of Course with Learning Outcomes	ECTS
GROUP WORK	Group preparation of readings, essays, problem solving, seminars, papers, reports, etc. to be presented or submitted in theoretical lectures, practical and/or small-group tutoring sessions. Work done on the university e-learning platform (www.plataforma.ucv.es)	RC, RD, RE, RF, RG, RH	1,44
INDEPENDENT WORK	Student study: Group Individual preparation of readings, essays, problem solving, seminars, papers, reports, etc. to be presented or submitted in theoretical lectures, practical and/or small-group tutoring sessions. Work done on the university e-learning platform (www.plataforma.ucv.es)	RC, RD, RE, RF, RG, RH	2,16
Total			3,6



SYSTEM FOR ASSESSING THE ACQUISITION OF THE COMPETENCES AND ASSESSMENT SYSTEM		
Assessment Tool	LEARNING OUTCOMES ASSESSED	Allocated Percentage
Participation in practical classes and class work	RB, RC, RD, RE	40 %
Written test	RA, RB, RC, RD, RE, RF, RG, RH	60 %

Note: In order to pass the subject the student must pass both the theoretical and the practical content separately.

MENTION OF DISTINCTION:

The mention of Distinction will be awarded to students who have achieved a score equal to or greater than 9.0. The number of Distinctions granted will not exceed 5% of students enrolled in a subject in the corresponding academic year unless enrollment is under 20, in which case only one Distinction may be granted. (Royal Decree 1125/2003).

From getting a 9 and if the outcome is the result of excellent academic achievement coupled with an effort and interest in the subject.

In case there are more candidates than possible tuition grant will be a development test consisting of a single open question about the content of the course.

DEVELOPMENT OF THE SUBJECT IN SECOND AND SUBSEQUENT ENROLLMENTS:

There will be a special group for students who are not enrolling for the first time if they exceed the occupancy limit of the classroom and a teacher is assigned to that group.

The professor in charge of this group will conduct 4 follow-up sessions and tutoring for 2 hours each. Assessment of skills and abilities will be done through the scheduled practice sessions. In each session the subject will be developed so as to reinforce the work on the skills that each student needs to pass the course.

Assessment of content and skills will be made during the examination set in the official calendar for this course.



DESCRIPTION OF CONTENTS	COMPETENCES
<p>DIDACTIC UNIT I: Action research processes: processes and improving quality as a driver of classroom work. Research as a process of educational improvement. Classroom situations in teaching different subjects. The collaborative work: educational team. The quality of education.</p>	E2, E3, E5, E11, E12
<p>DIDACTIC UNIT II: Methodologies and techniques of research in education. Main lines of research and evaluation in specific teaching. Methodological approaches: formulation of objectives and hypotheses, selecting strategies, collecting and interpreting data and drawing conclusions. Information and knowledge: knowledge transfer.</p>	E6 , E11
<p>DIDACTIC UNIT III: Real or simulated experiential activities. Self-training of teachers. Educational programming and educational materials.</p>	E1, E4,
<p>DIDACTIC UNIT IV: Innovative teaching proposals in the area of specific teaching. The specific educational innovation. Innovation as motivation and self-learning strategies. The classroom as a creative space.</p>	E5, E6, E8, E9, E10, E13
<p>DIDACTIC UNIT V: Teaching behavior through an observation laboratory. Critical analysis of classroom behaviors. Training in media studies. Effectiveness and efficiency in specific teaching. The construction of knowledge of the teaching profession</p>	E7, E13

**TEMPORAL ORGANIZATION OF LEARNING:**

	CONTENT/TEACHING UNIT	# OF MEETINGS
1	The Final Master's Project (TFM). What is the TFM? Requirements, types, length, wording, etc. Defense of the TFM (the presentation, the formal oral, the scientific writing ...)	
2	Research tools: EBSCO Database Managers to find new references and documents: Mendeley and / or Zotero	
3	Innovation. First questions: What is innovate? Why and why innovate? When to innovate? How to innovate? Characteristics of educational innovation. Areas of educational innovation	
4	Resistance to change. Restrictive factors.	
5	Design and development of innovation projects: definition, purpose and participation requirements.	
6	Characteristics and priority contents of an innovation project: methodology to be used	
7	Quality in education. Innovation as a quality factor of the educational system. Critically analyze the performance of teaching, good practices and guidance using quality indicators.	
8	Reflection on teaching practice. Identify the problems related to the teaching and learning of the subjects of the specialization and propose alternatives and solutions.	
9	Educational investigation. Know and apply basic educational research and evaluation methodologies and techniques and be able to design and develop research projects	
10	Action-research as an educational research methodology	



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**ADDITIONAL INFORMATION:****DELIVERY OF THE SUBJECT IN SECOND AND SUBSEQUENT ENROLLMENTS:**

There will be a specific group for non-first-year students and a teacher in charge of that group.

In this group there will be a number established by the UCV of follow-up and tutoring sessions (6 of 2 hours each) in which the work in the competences that the students of the group need to acquire to pass the subject will be reinforced.

These sessions are included in the schedule attached in this guide and are detailed in the description of the Didactic Units of the subject.

TEMPORARY ORGANIZATION OF LEARNING (Students of second or successive enrollments)		
	CONTENT BLOCK / DIDACTIC UNIT	# OF MEETINGS
1	Educational research: the TFM. Know and apply basic educational research and evaluation methodologies and techniques and be able to design and develop research, innovation and evaluation projects. Defense of the TFM (the presentation, the formal oral, the scientific writing ...)	
2	Quality in education. Critically analyze the performance of teaching, good practices and guidance using quality indicators.	
3	Reflection on teaching practice. Identify the problems related to the teaching and learning of the subjects of the specialization and propose alternatives and solutions.	
4	Educational innovation. Concept and areas of educational innovation Know and apply innovative teaching proposals in the field of specialization.	





Addendum to the Course Guide of the Subject Innovation and educational research in didactics of Technology (Master in Secondary School Teacher Training)

Due to the exceptional situation caused by the health crisis of the COVID-19 and taking into account the security measures related to the development of the educational activity in the Higher Education Institution teaching area, the following changes have been made in the guide of the subject to ensure that Students achieve their learning outcomes of the Subject:

Situation 1: Teaching without limited capacity (when the number of enrolled students is lower than the allowed capacity in classroom, according to the security measures taken).

In this case, no changes are made in the guide of the subject.

Situation 2: Teaching with limited capacity (when the number of enrolled students is higher than the allowed capacity in classroom, according to the security measures taken).

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject will be made through a simultaneous teaching method combining onsite teaching in the classroom and synchronous online teaching.

Students will be able to attend classes onsite or to attend them online through the telematic tools provided by the university (videoconferences). In any case,



students who attend classes onsite and who attend them by videoconference will rotate periodically.

In the particular case of this subject, these videoconferences will be made through:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Microsoft Teams | <input checked="" type="checkbox"/> Blackboard Collaborate Ultra |
| <input checked="" type="checkbox"/> Kaltura | |

Situation 3: Confinement due to a new State of Alarm.

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen onsite activities described in this section of the Course Guide, as well as the group and personalized tutoring, will be done with the telematic tools provided by the University, through:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Microsoft Teams | <input checked="" type="checkbox"/> Blackboard Collaborate Ultra |
| <input checked="" type="checkbox"/> Kaltura | |

Explanation about the practical sessions:



2. System for Assessing the Acquisition of the competences and Assessment System

ONSITE WORK

Regarding the Assessment Tools:

- ☒ The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus.
- ☐ The following changes will be made to adapt the subject's assessment to the online teaching.

Course guide		Adaptation	
Assessment tool	Allocated Percentage	Description of the suggested changes	Platform to be used

The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.

Comments to the Assessment System:



ONLINE WORK

Regarding the Assessment Tools:

- ☐ The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus.
- ☒ The following changes will be made to adapt the subject's assessment to the online teaching.

Course guide		Adaptation	
Assessment tool	Allocated Percentage	Description of the suggested changes	Platform to be used
Participation in practical clases and realization of works in the classroom	40%	Its value becomes 80%	UCV.net Blackboard Collaborate Ultra
Written Test	60%	Its value becomes 20%	UCV.net Blackboard Collaborate Ultra

The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.