

**Strengthening Teaching Competences** 

in Natural and Mathematical Sciences

in Higher Education



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### REPORT ON SITUATION OF HIGHER EDUCATION, THE APPLICATION OF PEDAGOGICAL METHODS AND IT TECHNOLOGIES AT THE UNIVERSITY OF GRANADA

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### **General framework**

In the University of Granada, the Vice Rectorate for Teaching is responsible for all aspects related to the different undergraduate and postgraduate studies at the University of Granada and aims to ensure the correct development of official university teaching (undergraduate, master's and doctoral degrees) as well as non-official university teaching (own degrees).

The teaching methods and the organization of the teaching are coordinated by the teaching departments (which provide the teachers, and are organized by knowledge fields) and the faculties (which have the competencies in the quality control of the teaching practices). Teachers are also supported by the Centro de Producción de Recursos para la Universidad Digital (CEPRUD, its acronym in Spanish).

The Quality, Teaching Innovation and Foresight Unit of the University of Granada has a Training and Teaching Innovation Plan, with the aim of guaranteeing quality teaching and facilitating the professional development of its teaching staff.

In the following pages we will describe the pedagogical methods and IT technologies as well as the teacher training.

#### **Teaching methodology**

In every study program (bachelor's and master's degrees) there exist a memorandum, approved by the National Agency for Quality in Higher Education (ANECA), establishing a framework for the type of methodologies which will be used in every subject and the distribution of these types. Every year, the teachers who are assigned a course must present a teaching guide specifying those methods for the following



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academic year: what type of teaching methodology, what type of assessment, the weight of every assessment instrument, etc. This teaching guide must fit within the framework established in the memorandum. This is controlled by a Quality Commission in every faculty, and also the departments must approve the teaching guides. Therefore, teachers have a certain margin of freedom to decide, but they cannot change the methodology as it was established in the memorandum.

### **Types of teaching sessions**

The University of Granada acknowledges 4 type of teaching sessions:

• Expositive lectures: it is conceived for greater groups of students, having a less active role. The teacher assumes the leading role, conducting the lesson by expositions, presentations or explanations (written or oral, generally supported by technologies). Of course, students can also participate. The number of students can vary depending on different variables such as the degree, the kind of contents, or the faculty for example.

• Practice lectures: this type is for medium-size groups, generally for each expositive lesson group there are two practice lectures groups (average size is between 20 and 40 students per group). As it names says, practice lectures are conceived with a basically practical orientation, thus, contrary to expositive lessons, here the students' role becomes much more active.

• Lab lectures: the size of these groups is limited by the physical restrictions on the laboratory which is used (number of seats, number of computers, etc.) and there will be always less than 15 students per group. Therefore, this is a type of session in which there is space for a great amount of autonomous work by the student, supervised by teacher, who can personally follow each student's progress.

• Group tutorials: these are sessions conceived also for smaller groups, as lab lectures. They consist of a periodical meeting with the teacher to analyze the students' learning progress by solving doubts, underlining particular ideas which could remain unclear, or organizing focus groups to discuss about a certain problem.

For each degree, and for each subject, the distribution of expositive, practice and lab lectures and group tutorials varies. Therefore, it is not possible to give a general overview.



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Even within the same degree, there are great variations from one subject to another, depending on the content and the needs of lab using.

# Teachers' pedagogical, psychological, methodological, and English language education at the University of Granada

All university graduates in Spain finish their undergraduate education with a B1 degree in English, which ensures a minimum knowledge in that language. The university offers different training experiences for teachers to have a higher level of knowledge but it is not mandatory.

The Faculty of Education has departments of Didactics of Mathematics and Experimental Sciences with a long tradition in teaching and learning methods in scientific areas.

The new teaching staff of the UGR and scholarship holders and researchers are prioritized for the realization of a course of initiation to university teaching. This course is organized by the Quality, Teaching Innovation and Prospective Unit of the University. This course is highly valued for the professional promotion of university professors.

## **Teachers' training**

At the University of Granada there is a specific unit that deals with teacher training: The Quality, Teaching Innovation and Foresight Unit of the University of Granada. It associates the processes of teacher training and innovation, responds to the training and innovation needs of the teaching staff of this University and is committed to a dynamic teaching style, capable of adapting to different scenarios and based on participation, reflection, teamwork, research and entrepreneurship. It is oriented to the development of teaching skills and competences demanded by the current university roles and scenarios of teaching and learning; knowledge, skills and attitudes related, among others, to the diagnosis and evaluation of students, planning, management and evaluation of teaching and learning processes and tutorial action. Competencies that consider entrepreneurship, inclusion, internationalization, digitalization and virtualization of teaching welfare in teaching practice.



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Within this unit, there are different courses, both face-to-face and virtual, whose objective is teacher training. In the following website you can consult those designed for the last academic years.

https://calidad.ugr.es/areas/formacion-innovacion-docente/formacion

### Methodological, material, and English involved in teaching practices

The materials used for the development of the subjects are not conditioned by language. That is to say, articles and manuals will be used in English or Spanish.

Regarding English, some professors teach in English in the bilingual degrees of the University of Granada. The vast majority of classes are taught in Spanish, the official language of the Spanish state.

The University of Granada has a virtual platform based on Moodle where each professor can manage the subject with his students. Most of the faculty use it to share information and to communicate with students.

### Professors' attitudes and our attitudes towards using ICT

The teacher regularly uses ICT in the development of his teaching. Specifically, he uses e-mail and the PRADO platform for communication with students, slides for the presentation of content in class and shared documents for group work.

The use of ITC in teaching allows to show illustrations of higher quality, to show properties with dynamic software and to show how different mathematics software allows to approach problems in an intuitive way.

# Level of cooperation between teachers and students, enthusiasm for orderly improvement and modernization of teaching

Most teachers are particularly interested in improving their teaching. Within this interest, the modernization of teaching is a constant concern. It is common for faculty to seek, and



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the University promotes, to increase cooperation between teachers and students through the tutorial action plan.