

**COURSE DATA****Data Subject**

<b>Code</b>	34282
<b>Name</b>	External internships
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2021 - 2022

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. Period year</b>
1105 - Degree in Physics	Faculty of Physics	4 Annual

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1105 - Degree in Physics	16 - Complements of Physics	Optional

**Coordination**

<b>Name</b>	<b>Department</b>
GONZALEZ DE LA HOZ, SANTIAGO	180 - Atomic, Molecular and Nuclear Physics

**SUMMARY**

The purpose of External Internships is to strengthen the training and academic career of the university students in the Institutions and/or companies operating areas in order to get professionals with a real vision of problems and their interrelationships, preparing her/his future incorporation into productive work in a company or in an research Institution.

The University may establish agreements with institutions or companies, programs for the cooperation in which their participation can be arranged in specialized training and required internships practice for the training of students.

Internship programs will be established for the students in the final year of Degree in Physics. The programs must be developed in a way to allow a dedication to studies and activities within the established credit number.



The activity to be performed will be assigned from a list of institutions and companies with an agreement established with the Faculty of Physics, or others whom the student establish a contact with, after approval by the commission of the External Internships.

## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

### Other requirements

Relationship with other subjects of the same degree:

There are not specified restrictions with other subjects of the Physics Degree.

Other requirements:

To carry out the External internships I will be required to have passed all the subjects of the first two courses and a total of 170 credits of the Physics degree.

## OUTCOMES

### 1105 - Degree in Physics

- Knowledge and understanding of the fundamentals of physics in theoretical and experimental aspects, and the mathematical background needed for its formulation.
- To know how to apply the knowledge acquired to professional activity, to know how to solve problems and develop and defend arguments, relying on this knowledge.
- Ability to collect and interpret relevant data in order to make judgements.
- Problem solving: be able to evaluate clearly the orders of magnitude in situations which are physically different, but show analogies, thus allowing the use of known solutions in new problems .
- Modelling & Problem solving skills: be able to identify the essentials of a process / situation and to set up a working model of the same; be able to perform the required approximations so as to reduce a problem to an approachable one. Critical thinking to construct physical models.
- Physics general culture: Be familiar with the most important areas of physics and with those approaches which span many areas in physics, or connections of physics with other sciences.
- Basic & applied Research: acquire an understanding of the nature and ways of physics research and of how physics research is applicable to many fields other than physics, e.g. engineering; be able to design experimental and/or theoretical procedures for: (i) solving current problems in academic or industrial research; (ii) improving the existing results.



- Foreign Language skills: Have improved command of English (or other foreign languages of interest) through: use of the basic literature, written and oral communication (scientific and technical English), participation in courses, study abroad via exchange programmes, and recognition of credits at foreign universities or research centres.
- Literature Search: be able to search for and use physical and other technical literature, as well as any other sources of information relevant to research work and technical project development.
- Learning ability: be able to enter new fields through independent study, in physics and science and technology in general.
- Communication Skills (written and oral): Being able to communicate information, ideas, problems and solutions through argumentation and reasoning which are characteristic of the scientific activity, using basic concepts and tools of physics.
- Students must have acquired knowledge and understanding in a specific field of study, on the basis of general secondary education and at a level that includes mainly knowledge drawn from advanced textbooks, but also some cutting-edge knowledge in their field of study.
- Students must be able to apply their knowledge to their work or vocation in a professional manner and have acquired the competences required for the preparation and defence of arguments and for problem solving in their field of study.
- Students must have the ability to gather and interpret relevant data (usually in their field of study) to make judgements that take relevant social, scientific or ethical issues into consideration.
- Students must be able to communicate information, ideas, problems and solutions to both expert and lay audiences.
- Students must have developed the learning skills needed to undertake further study with a high degree of autonomy.

## LEARNING OUTCOMES

- Problem solving: to being able to evaluate clearly the orders of magnitude, to developing a perception of the situations that are physically different but show analogies allowing, therefore, the use of known solutions to new problems.
- Modelling: Being able to identify the essential elements of a process / situation and establish a working model. Distinguish between real/experimental phenomena and physical/theoretical models
- Being able to perform the required approximations to reduce a physical problem to a manageable level. Critical thinking to construct new physical models.
- Distinguishing a feasible result from a wrong one. Analyze the possible causes of this result if it was wrong.
- General Physical Culture: Having become familiar with the most important fields of physics and related approaches covering different areas of physics, as well as relations with other sciences.
- Fundamental and applied research: Acquiring an understanding of the physics research nature, how this research is performed and it is applied to many different science fields, such as engineering; being able to design experimental and / or theoretical procedure for: (i) solving the current problems in academic or industrial research, (ii) improving the existing results.



- Improving the English skills (or another interesting foreign language) through access to fundamental reference bibliography, oral and written communication (Scientific-technical English).
- Being able to search and use bibliography in Physics or another technical references, as well as any kind of relevant information source for research and technical development projects.
- Prepare reports: being able to communicate information, ideas, problems and solutions by argumentation using the concepts and basic tools of physics.
- Learning to work in an organized way. Establishing work plans that allow obtaining the desired results more directly.
- Ability to understand and synthesize the problems/issues in order to reach a solution. Contribute with original solutions.
- Knowing how to identify useful resources that could carry out an intervention. Knowing how to apply and develop an intervention.
- Developing skills of cooperation with other professionals/scientists.
- Making contact with the routine and less attractive aspects of the profession.
- Severity with the work done by yourself. Promoting and encouraging critical thinking.
- Being aware of the ethical component and the ethical principles related with the profession.
- Assess and apply in the workplace the fundamental rights of equality between women and men.

## DESCRIPTION OF CONTENTS

### 1. Modalities of External Practice

There are two different ways for the development of subject:

1. Take one of the proposals offered by the ADEIT ([www.adeit.uv.es](http://www.adeit.uv.es)) and coordinated with the CAT's Degree in Physics. For the development of this modality, the guidelines detailed in the ADEIT website must be followed, which have been previously agreed with the CAT's Degree in Physics.
2. Proposing the development of a project to be done as External internships. The proposal will be made through the internships commission in coordination with the ADEIT. The CAT or commission in which it delegates will consider its feasibility.

In both cases, if the proposed internship project is coordinated with the subject "TFG", the TFG and External internships programs must be included to be considered by the commission.

The Commission shall make an offer of companies/institutions interested specifically in Physics students, which will be updated throughout the course. Preference will be given those requests for companies that are not related to universities, public institutions and enterprises.

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Internship		100
Study and independent work	15,00	0
Readings supplementary material	10,00	0
Preparation of evaluation activities	15,00	0
Internship	110,00	0
<b>TOTAL</b>	<b>150,00</b>	

**TEACHING METHODOLOGY**

The course develops its content through 6 ECTS credits corresponding to a minimum of 150 hours of effective student work that are distributed as follows:

**1. Contact hours:**

- 1.a) Interview and monitoring activities
- 1.b) Initial training
- 1.c) Attendance and work in the institution and/or company
- 1.d) Contact and meetings with the supervisor of the institution or company
- 1.e) Attendance at seminars or workshops

**2. External hours:**

2a) Study and preparation of work-related aspects to be performed (instrumentation, methodology, organization, etc..)

2.b) Preparation of activities and seminars

2.c) Preparation of the final External internships report. The report should be approximately 10 to 15 pages (in exceptional cases where a further extension of 15 pages necessary authorization shall request the responsible external practices justifying circumstances) may be written official languages of University of Valencia and/or English, and with at least the following contents:

- Introduction
- Objectives
- Development





- Results
- Conclusions
- Bibliography

2.d) In case the External internship is related and coordinated with the TFG subject, and annex must be included explaining the differences between the External internship activities and the TFG work.

Internships are a minimum of 150 hours which, with the approval of both parties (student and company) could be increased to a maximum of 450 hours.

## EVALUATION

The supervisor if the institution or company in which the student has done the work, must provide a final report evaluating different aspects of the work developed: organization, initiative, responsibility, interest, interpretation and evaluation of data, timeliness, integration working group, discipline, assimilation of new technologies, etc..

The University supervisors, who are the experts and responsables in the subject matter, must evaluate the student taking into account the report provided by the institution or company supervisor, a report submitted by the student and an interview. In the agreement with the institution or company, the goals and the skills to be developed will be established.

The final evaluation will consider the work executed and its suitability with those goals. In case that the work performed in the internships is similar to the final project, evaluation of both subjects will be held separately.

The commission internships resolve potential conflicts between the TFG and external intership.

The commission internships will determine the final mark from evaluating the following percentages:

Company/institution report: 50%.

University supervisor report: 50% based on memory and interview.

Students who have achieved a “Sobresaliente/Excel.lent” fin the inal qualification will be eligible for the mention “Matrícula de Honor”. These “Matrícula de Honor” will correspond to be decided by the External Internship Commission based on the oral presentation about the work developed by the students. This presentation will take place after the second call (“segunda convocatoria”), previous request send by the students to the Commission. The oral presentation will last a maximum of 15 minutes and then the student must answer questions, clarifications and suggestions that may be referred by the committee members. The language of presentation of the work may be one of the official languages of the Univeristy of Valencia and/or English. In any case, the allocation of “Matrícula de Honor” will be made following the criteria of the relevant regulations of the University of Valencia.



## REFERENCES

### Basic

- [www.adeit.uv.es](http://www.adeit.uv.es)

## ADDENDUM COVID-19

**This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council**

### TEACHING METHODOLOGY:

In case that health situation requires blended teaching, the teaching model approved by the Academic Degree Committee on July 23, 2020 will be adopted.

— Compulsory subjects: 50% student attendance in the classroom, while the rest of students attend the class in streaming broadcast. Two groups will be set with alternate days attendance to the classroom in order to guarantee 50% of teaching hours attendance for all students. Laboratory sessions will have a 100% attendance.

— Optional subjects: 100% attendance in all activities.

If a total reduction in attendance is necessary, classes will be broadcast by synchronous videoconference at their regular schedule, along the period determined by the Health Authority.