

**Course plan**

Subject	LaTeX training course		
Matter	Cross-disciplinary		
Degree	Physics, Mathematics, Chemistry, Engineering		
Study program	-----	Reference no.	-----
Term	Second term	Type	Cross-disciplinary
Level	Bachelor degree	Course/Year	2021-2022
ECTS units	3 ECTS		
Language	English		
Lecturer in charge	Luis Miguel Nieto		
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Office hours	Please check the timetable		
Department	Física Teórica, Atómica y Óptica		

1. Placement of the subject in the study program**1.1 Context**

LaTeX is a high-quality typesetting system. It includes features designed for the production of technical and scientific documentation. *LaTeX* is the *de facto* standard for the communication and publication of scientific documents. It is available free of charge on Unix, Windows, macOS, et.

1.2 Relationship with other subjects

This cross-disciplinary course is related to all those subjects in mathematical methods and physics that the students have taken in previous terms. It contains applications to a number of subjects in a Science curriculum. In a few words, it may be an essential tool for making progress in all Science subjects, in a TFG/TFM or even in advanced research activities.

1.3 Requirements

No special requirements are needed.

2. Competencies and capabilities**2.1 General**

- T1. Analysis and synthesis skills.
- T2. Organization capability.
- T4. Problem solving strategies.
- T6. Autonomous work and learning capabilities.
- T8. Capability to apply generic methods to particular scenarios.
- T9. Creativity.

2.2 Specific

- E1. Capability to deliver a presentation on academic topics and research work.
- E2. Capability to get into new fields of study and research.



- E3. Capability to work out the necessary approximations to make complicated problems manageable.
 E4. Computation skills leading to the development of original software, as well as to the application of conventional software packages.
 E6. Teaching skills at academic level.
 E7. Capability to integrate the knowledge from different areas in order to apply it to solve complex problems.
 E8: The student should be able to search and use bibliography in Physics and other technical areas, as well as use other information resources to deliver papers and other projects.
 E10: The student should be able to be updated about new developments.

3. Aims

Learning the basics of the program, to be able to write documents in several disciplines, either Mathematics, Physics, Chemistry, Engineering, etc.
 Learning to use the many available advanced specific tools to prepare more complicated documents, as TFG, TFM, PhD thesis, etc.

4. Contents

- 1.- Introduction
 - Basics
 - LATEX Input Files and File Structure
 - A Typical Command Line Session
 - The Layout of the Document
- 2.- Typesetting Text
 - The Structure of Text and Language
 - Line Breaking and Page Breaking
 - Special Characters and Symbols
 - International Language Support
 - The Space Between Words
 - Titles, Chapters, and Sections
 - Cross References
 - Footnotes
 - Emphasized Words
 - Environments
 - Including Graphics and Images
 - Floating Bodies
- 3.- Typesetting Mathematical Formulae
 - The AMS-LATEX bundle
 - Single Equations
 - Building Blocks of a Mathematical Formula
 - Single Equations that are Too Long
 - Multiple Equations
 - Arrays and Matrices
 - Spacing in Math Mode
 - Fiddling with the Math Fonts
 - Theorems, Lemmas
- 4.- Specialities
 - Bibliography
 - Indexing
 - Fancy Headers
 - The Verbatim Package
 - Installing Extra Packages
 - LATEX and PDF
 - Creating Presentations
- 5.- Producing Mathematical Graphics
 - Overview
 - The picture Environment
 - The PGF and TikZ Graphics Packages

5. Schedule

CHAPTERS	LOAD (ECTS)	TIME PERIOD
All the material	3	2 March – 20 March

6. Methodology

- Practical sessions in the computing class.
- Practical exercises will be given.

7. References

1. LaTeX: A document preparation system, User's guide and reference manual, L. Lamport, Addison Wesley (1994).
2. LaTeX Beginner's Guide, S. Kottwitz, Packt Publishing (2011).
3. The LaTeX Companion, 2nd edition (TTCT series), F. Mittelbach, M. Goossens, J. Braams, D. Carlisle, C. Rowley, Addison Wesley (2004).
4. LaTeX Wikibook: <https://en.wikibooks.org/wiki/LaTeX>

8. Time distribution of students' activities

IN-CLASS ACTIVITIES	TIME (h)	OUT-OF-CLASS ACTIVITIES	TIME (h)
Laboratory/computing sessions (L)	30	Autonomous individual and team work	45
In-class total time	30	Out-of-class total time	45

9. Assessment

PROCEDURE	OVERALL WEIGHT	REMARKS
Several assignments will be offered to be addressed at home.	100%	Compulsory

10. Final remarks