



Teachers' guide – summary sheet

Initial Identification details:

Title: Degree in Biotechnology (Plan 2009)

Faculty/School: Bio-Health Sciences

Course subject: **Fundamentals of Physics**

Type (3): Basic Teaching

Credits ECTS: 6

Year / Semester (4): 1st Year-1st Semester

Code (1): 2012

Subject (2): Physics

Module (2): Fundamental Sciences

Language (5): Spanish

Total number of hours undertaken by pupil (6): 150

Brief description of the course (7):

Present the basic concepts of physics, focusing on practical application of these to the topics that will be competence of the student throughout their formation.

Prior Knowledge (8):

To pursue the subject of Fundamentals of Physics and for optimal utilization of subject, you should have the knowledge level of 2^o Bachillerato for the subjects of physics and mathematics.

General objective (9)

Know and understand the application of fundamental methods to study the dynamics of different biotechnology phenomena.
Understand, know how to apply and solve problems arising of a physical nature, both in the laboratory, as in the models presented.
Know and understand the theoretical models that lead to laws that govern biological processes.

Skills / Abilities:

General (10):

- Acquire a solid technological and humanistic foundation necessary for the development of professional activities.
- Encourage concern for knowledge as a key tool in the process of personal and professional growth for the student.
- Develop the ability to search, assimilation, analysis, synthesis and of information relationship.
- Know the principles and basic tenets of the experimental sciences and humanities.
- To develop skills of oral and written communication.
- Understand the principles and fundamental laws of physics, mathematics, chemistry and biology as the basis of the mental structure of biotechnologist.
- Acquire the skills required for experimental work: design, implementation, collection of results and drawing conclusions, understanding the limitations of the experimental approach.
- Ability to work as a team and manage groups.
- Acquiring the ability of synthetic, reflective, critical, theoretical, practical and analytical thought.
- Learn to plan time effectively.
- Develop the capacity and commitment for own learning and personal development.

Specific (10):

- Understand the principles and laws of physics necessary for application to the development of biotechnological processes.
- To understand the physical-mathematical foundation of basic instrumental techniques used in biotechnology laboratory experimentation.
- Be able to describe quantify analyze and critically evaluate the results of experimental work in the laboratory.
- To develop habits of rigorous thought.
- Ability of communicate orally and in writing the knowledge acquired.
- Know how to apply theoretical knowledge to problem solving and case studies related to various subjects.
- Ability to work effectively as a team and coordinated.
- Be able of self-evaluate the knowledge acquired.

Brief index to subjects (12):

UNIT 1. - Principles of Mechanics
UNIT 2 .- Fluid
UNIT 3 .- Electric, magnetic and electromagnetic
UNIT 4 .- Waves
UNIT 5 .- Optics

Teaching Activities (13) (Approximate % as a function of total credits, considering solely those activities where the student's presence is required and that these represent between 30% and 40%)

Theory classes:	35%
Practical Classes:	5%
Workshops/Labs/Presentations:	5%
Others:	55%
Total:	100%

Evaluation system:

Examinations:	60%
Assistance and participation:	10%
Course work:	10%
Others:	20%
Total:	100%

Specifics of evaluation (14):

There will be two written tests to assess the learning of content presented in the lectures and problems. A partial examination is conducted mid-semester and release material for the final exam as long as note is equal to or greater than 6 out of 10. If you do not pass this note on the final exam, students will examine all the theoretical content of the course. Staff will evaluate the oral and written presentation of the work done in groups and supervised by the teacher. Active participation during lectures and debates intervention in the specific issues raised in class will be evaluated positively.

Basic bibliography (15):

M. ALONSO, E.J. FINN (1976). *Física* (Tomo I: Mecánica, Tomo II: Campos y Ondas). Fondo Educativo Interamericano.
W.E. GETTYS, F.J. KELLER, M.J. SKOVE (1992). *Física Clásica y Moderna*. McGraw-Hill, Madrid.
F.W. SEARS, M.W. ZEMANSKY, H.D. YOUNG (1981). *Física*. Aguilar, Madrid.
A.H.CROMER (1986). *Física para las ciencias de la vida*. 2ª ed. Reverté, Barcelona.
NELSON, P. *Física biológica*. Ed. Reverté, Barcelona.

- (1) Code of the course
- (2) Description as per the Verified Memorandum
- (3) May be either: Basic Teaching, Obligatory, Optional, External Practices, or Final Degree Work.
- (4) May be either: First Year - 1st semester and (or) 2nd semester; Second Year - 3rd semester and (or) 4th semester; Third Year - 5th semester and (or) 6th semester; Fourth Year – 7th semester and (or) 8th semester.
- (5) The language in which the course will be taught
- (6) The total number of hours that the student will dedicate to the course. Being approximately twenty-five hours for each ECTS, accounting for all activities.
- (7) Between three and five phrases that summarize the description of the course.
- (8) Corresponds to those recommendations to aid taking the course. A brief recommendation is written. If they are not required, one specifies “those corresponding to the degree”.
- (9) Set out the general objective of the course, writing a sole objective.
- (10) The skills as set out in the Verified Memorandum along with the abbreviations corresponding to each of them
- (11) One can add various other skills that are not in the Verified Memorandum and which the teacher deems relevant
- (12) The main thematic blocks of the course
- (13) In this case neither tutorials nor evaluations are included. Only those activities where the student is present.
- (14) Explain the process of evaluation that has been set out previously in percentages with three brief phrases
- (15) Three to ten references should be detailed.

