UNIVERSIDAD FRANCISCO DE VITORIA
VINCE IN BONO MALUM

Teachers' guide – summary sheet

Initial Identification details:

Title:	Degree in Biotechnology (Plan 2009)
Faculty/School:	Bio-Health Sciences
Course subject:	**Integrated Laboratory I**
Type (3):	Obligatory
Credits ECTS:	6
Year / Semester (4):	1st Year-2nd Semester
Code (1):	2018
Subject (2):	Practicum
Module (2):	Experimental Methods in Biotechnology
Language (5):	Spanish
Total number of hours undertaken by pupil (6):	150

Brief description of the course (7):

Integrated Laboratory Course I aims to train seriously students in laboratory work so as to enable better access to employment and strengthen the theoretical formation of the degree. This course is made up of practicals designed as real laboratory experiments, in which they apply the content and techniques of various subjects of the first year, and will take place in the teaching laboratories of the University Francisco de Vitoria.

Prior Knowledge (8):

That pertaining to the degree.

General objective (9)

Acquire skills in management and development of basic techniques specific to a laboratory in which they apply concepts that cover various subjects.
Develop skills of observation, evaluation of results, organization and practical application of theoretical concepts as well as safe working habits in the laboratory.

Skills / Abilities:

General (10):

Acquire a solid technological and humanistic training necessary for the development of the professional activities.
Encourage the restlessness for knowledge as a key tool in the process of personal and professional growth for the student.
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.
Acquiring the ability to think analytically, synthetically, reflectively, critically, theoretically and practically.
Know how to plan time effectively.
Develop the capacity and commitment for learning.

Specific (10):

Properly organize and plan work in the laboratory.
Identify and define instruments and laboratory materials.
Work properly in a laboratory with biological material (bacteria, fungi, viruses, animal and plant cells, plants and animals) including security, handling and disposal of biological waste.
Ability to apply instrumental techniques commonly used in biotechnology lab experiments: chromatography, electrophoresis, absorption cytometry, purification and quantification of macromolecules, centrifugation, etc.
Understanding physical basis of basic mathematical instrumental techniques used in biotechnology laboratory experimentation.
Know how to design and implement adequately an experimental protocol from the knowledge of different subjects.
Able to describe, quantify, analyze and critically evaluate the results of experimental work in the laboratory.
Know and apply rules and general principles of health and safety in laboratories.
Develop habits of rigorous thought.
Ability to communicate orally and in writing the acquired knowledge.
Being able to self-evaluate the knowledge acquired.
Know how to apply theoretical knowledge to problem solving and case studies related to various subjects.
Learn teamwork and coordinated effectively.

Brief index to subjects (12):

- Recognition and use for laboratory strength material.
- Tabulations of experimental data. Graphs.
- Solutions.
- Volumetric analysis.
- Acid-base chemistry.
- Precipitation reactions.
- Separation of components of a mixture.
- Extraction techniques.
- Qualitative studies of thermodynamics.
- Analysis of the chemical behavior of some of the most common functional groups.
- Study and characterization of nucleic acids.
- The chemical synthesis.
- Colorimetric methods for quantification of protein.
- Kinetic studies.

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:	0%
Practical Classes:	86.8%
Workshops/Labs/Presentations:	4.7%
Others:	8.5%
Total:	100%

Evaluation system:

Examinations:	32%
Assistance and participation:	45%
Course work:	15%
Others:	8%
Total:	100%

Specifics of evaluation (14):

The percentages of the evaluation system will apply whenever the the student has submitted to the review and has all grades equal to or higher than 4 out of 10. Attendance at all practice sessions, seminars as well as laboratory, is required to pass the course. Participation in practical classes will be evaluated continuously.

Basic bibliography (15):

- Lozano, J.A., Tudela, J. (1988). *Prácticas de Bioquímica: experimentación y simulación*. Síntesis, Madrid.
- Farrel, S. O., Ranallo, E. T. (2000). *Experiments in Biochemistry*. Thompson Learning.
- Boyer, R. (2000). *Modern Experimental Biochemistry*. 3rd ed. Addison Wesley Longman, San Francisco.
- Alberts, B. et al. (2007). *Molecular Biology of the Cell.* 5th ed. Garland Science, New York and London.
- Mathews, C. K. et al. (2002). *Biochemistry*. 3rd ed. Addison Wesley Longman, San Francisco.
- Petrucci, R. H. (2003). *Química General*. 8ª ed. Pearson Prentice Hall, Madrid 2003.
- Teijó Rivera J.M. (2001). *Bioquímica estructural: conceptos y test*. 2ª ed. Tebar, Madrid.

(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.

UNIVERSIDAD
FRANCISCO DE VITORIA
VINCE IN BONO MALUM