Information about the course

Degree: Bachelor of Science Degree in Human Nutrition and Dietetics

Faculty: Faculty of Medicine and Health Sciences

Code: 1311105 **Name:** Biochemistry

Credits: 6,00 ECTS **Year:** 1 **Semester:** 2

Module: Basic Sciences Module

Subject Matter: Bioquímica **Type:** Formación Básica

Branch of knowledge:

Department: Biomedical Sciences

Type of learning: Classroom-based learning

Language/-s in which it is given: Spanish

Teachers:

131A	Jesus Angel Prieto Ruiz **(Profesor responsable)**	jesus.prieto@ucv.es
	Maria Jesus Vega Bello	mj.vega@ucv.es

Module organization

Basic Sciences Module

Subject Matter	ECTS	Subject	ECTS	Year/semester
Biología	6	Biology and Genetics	6	1/1
Bioquímica	6	Biochemistry	6	1/2
Química	12	Basic Fundamentals of Chemistry	6	1/1
		Organic Chemistry	6	1/2
Fisiología	12	Physiology	6	1/2
Estadística	6	Biostatistics	6	1/1
Anatomía Humana	6	Human Anatomy	6	1/1
Antropología	12	Anthropology	6	1/1
Microbiología	6	Microbiology and Parasitology	6	1/2
Inglés	6	English	6	1/2

Learning outcomes

At the end of the course, the student must demonstrate having acquired the following learning outcomes:

R3 - Con25 - - To know the chemical, biochemical and biological fundamentals of application in human nutrition and dietetics.

Learning outcomes of the specified title

Type of AR: Habilidades o Destrezas

- Ability to communicate knowledge, methodologies, ideas, problems, and solutions within their field of study clearly and precisely to all types of audiences (specialized or not).

Type of AR: Conocimientos o contenidos

- To understand the chemical, biochemical and biological fundamentals applicable to human nutrition and dietetics.

R4 - Con1 - - To have acquired advanced knowledge and demonstrated an understanding of the theoretical and practical aspects and the working methodology in their field of study with a depth that reaches the forefront of knowledge.

Learning outcomes of the specified title

Type of AR: Conocimientos o contenidos

- Having acquired advanced knowledge and demonstrated an understanding of the theoretical and practical aspects and the working methodology in their field of study with a depth that reaches the forefront of knowledge.

- To understand the chemical, biochemical and biological fundamentals applicable to human nutrition and dietetics.

Assessment system

In-person modality

Assessed learning outcomes	Granted percentage	Assessment tool
R3	15,00%	Assessment of individual or group activities or practical exercises, which require students to research and organize information related to each subject, and solve cases or problems. This is done through a continuous assessment system throughout the course, which involves the submission and/or presentation of assignments, the objectives and content of which will be set by the instructor.
R3	15,00%	Evaluation of practical work in the laboratory, or culinary techniques workshop laboratory, through which the acquired skills must be demonstrated and that one is able to use them to solve the different situations and problems that arise in a laboratory; this evaluation may be carried out through one of the following methods, or a combination of several of them: an individual written test, the individual or group performance of a laboratory experiment, the submission of an individual or group report on the work carried out in the laboratory.
R3	65,00%	Written assessment of the knowledge and skills acquired. This test may consist of a series of open-ended or multiple-choice questions on the theoretical content of the subject and/or practical exercises (problem-solving).
R3	5,00%	Evaluation of the effectiveness of practical classroom classes, problem-solving or computer science sessions, seminars and tutorials. Through attendance and participation in the various activities planned.

Observations

A minimum grade of 5 out of 10 is required in the written evaluation to be able to average.
Attendance to laboratory practices is mandatory.

This course does not allow for a single assessment, as it requires students to actively participate in practical activities.

Use of AI:
Students may use AI for personal study of the course. Students may not use AI to complete assessable tasks, unless required for a specific activity and indicated by the instructor. If AI is used in any of the activities, students must cite where in the activity it was used, which AI tool was used, and for what purpose.

MENTION OF DISTINCTION:
In accordance with the regulations governing the assessment and grading of subjects in force at UCV, the distinction of "Matrícula de Honor" (Honours with Distinction) may be awarded to students who have achieved a grade of 9.0 or higher. The number of "Matrículas de Honor" (Honours with Distinction) may not exceed five percent of the students enrolled in the group for the corresponding academic year, unless the number of enrolled students is fewer than 20, in which case a single "Matrícula de Honor" (Honours with Distinction) may be awarded. Exceptionally, these distinctions may be assigned globally across different groups of the same subject. Nevertheless, the total number of distinctions awarded will be the same as if they were assigned by group, but they may be distributed among all students based on a common criterion, regardless of the group to which they belong. The criteria for awarding "Matrícula de Honor" (Honours with Distinction) will be determined according to the guidelines stipulated by the professor responsible for the course, as detailed in the "Observations" section of the evaluation system in the course guide.

Training activities

The methodologies to be used so that the students reach the expected learning outcomes will be the following:

M1	Group preparation of readings, essays, problem-solving, seminars, papers, reports, etc... for discussion or submission
M2	Group preparation of readings, essays, problem-solving, seminars, papers, reports, etc... for discussion or submission
M3	Personalized attention in small groups. A period of instruction and/or guidance provided by a tutor to review and discuss the materials and topics presented in classes, seminars, readings, assignments, etc. Student attendance and their gradual progress in understanding the subjects will be evaluated.
M5	Student study: individual preparation of readings, essays, problem solving, seminars, papers, memoirs, etc. for discussion or submission in electronic format.

M7 Individual or group work sessions in groups supervised by the teacher, which take place in spaces with specialized equipment.

M9 The teacher will present the content, analyze competencies, and explain and demonstrate skills, abilities, and knowledge in the classroom.
The whiteboard, computer, and projector will be used to display texts, graphics, etc.

IN-CLASS TRAINING ACTIVITIES

ACTVITY	RELATIONSHIP WITH THE COURSE LEARNING OUTCOMES	METHODOLOGY	HOURS	ECTS
ASSESSMENT	R3, R4	Group preparation of readings, essays, problem-solving, seminars, papers, reports, etc... for discussion or submission	2,00	0,08
TUTORING	R3, R4	Personalized attention in small groups. A period of instruction and/or guidance provided by a tutor to review and discuss the materials and topics presented in classes, seminars, readings, assignments, etc. Student attendance and their gradual progress in understanding the subjects will be evaluated.	2,00	0,08

LABORATORY	R3, R4	Individual or group work sessions in groups supervised by the teacher, which take place in spaces with specialized equipment.	15,00	0,60
PRACTICAL CLASSES	R3, R4	Group preparation of readings, essays, problem-solving, seminars, papers, reports, etc... for discussion or submission	5,00	0,20
THEORETICAL CLASSES	R3, R4	The teacher will present the content, analyze competencies, and explain and demonstrate skills, abilities, and knowledge in the classroom. The whiteboard, computer, and projector will be used to display texts, graphics, etc.	36,00	1,44
TOTAL			**60,00**	**2,40**

TRAINING ACTIVITIES OF AUTONOMOUS WORK

ACTVITY	RELATIONSHIP WITH THE COURSE LEARNING OUTCOMES	METHODOLOGY	HOURS	ECTS
INDEPENDENT GROUP WORK	R3, R4	Group preparation of readings, essays, problem-solving, seminars, papers, reports, etc... for discussion or submission	20,00	0,80
I N D I V I D U A L SELF-EMPLOYMENT	R3, R4	Student study: individual preparation of readings, essays, problem solving, seminars, papers, memoirs, etc. for discussion or submission in electronic format.	70,00	2,80
TOTAL			**90,00**	**3,60**

Description of contents

Description of content necessary for the acquisition of learning outcomes.

Theoretical content:

Block of content	Contents
TEACHING UNIT I: Structure of biomolecules and catalysis	1. The Foundations of Biochemistry 2. Water 3. Carbohydrates. Structure. Classification. Functions. 4. Lipids. Structure. Classification. Functions. 5. Amino Acids, Peptides and Proteins. Structure. Properties. Classification. Functions. 6. Enzymes. Enzymatic Kinetics. Mechanisms. Regulatory enzymes 7. Nucleotides and Nucleic Acids. 8. Vitamins and coenzymes
TEACHING UNIT II: Genetic information flow	9. Genetic information replication, transcription and translation
TEACHING UNIT III: Bioenergetics and metabolism	10. Metabolism introduction and organization. 11. Electronical transport chain and synthesis of ATP. 12. Acetyl-CoA and the Citric acid cycle. 13. Carbohydrate metabolism. 14. Lipid metabolism. 15. Protein metabolism. 16. Hormonal regulation of metabolism. Hormone structure and function.

Temporary organization of learning:

Block of content	Sessions	Hours
TEACHING UNIT I: Structure of biomolecules and catalysis	12	24,00
TEACHING UNIT II: Genetic information flow	3	6,00
TEACHING UNIT III: Bioenergetics and metabolism	15	30,00

References

MAIN BIBLIOGRAPHY

·**LEHNINGER. PRINCIPIOS DE BIOQUÍMICA.** Cox, M.M. - Nelson, D.L. Editorial Omega, 2014. Sexta edición.

·**BIOQUÍMICA. Curso Básico.** Tymoczko, John L.; Berg, Jeremy M.; Stryer, Lubert L. Editorial Reverté. 2014.

·**BIOQUÍMICA**. Matthews, C.K., et al. Editorial PEARSON, 2013. Cuarta Edición

ADDITIONAL BIBLIOGRAPHY

·**BIOQUÍMICA.** Stryer Lubert L.; Berg Jeremy M.; Tymoczko, John L. Editorial Reverté, S.A. Barcelona. 2013. 7ª Edición.

·**BIOLOGÍA MOLECULAR DE LA CÉLULA.** Alberts, B., *et al.* Editorial Omega, 2016. 6ª Edición.

·**BQTEST: 1000 PREGUNTAS TIPO TEST DE BIOQUÍMICA PARA UNIVERSITARIOS.** Blas Pastor, J.R. 2013. 1ªed.