



Universidad de Jaén
FACULTY OF HEALTH SCIENCES

Human biochemistry and microbiology

2024-2025
Grado en Enfermería



GRUPO



Acceso Mayores 40

Guías docentes UJA

Horarios de tutorías

Llamamientos PEvAU

Movilidad (Coordinador)

P.O.D.

Solicitud bilingüismo

Syllabus 2024-25 - 10021003 - Human Biochemistry and Microbiology (Bioquímica humana y microbiología)

Caption

- Level 1: Tutorial support sessions, materials and exams in this language
- Level 2: Tutorial support sessions, materials, exams and seminars in this language
- Level 3: Tutorial support sessions, materials, exams, seminars and regular lectures in this language

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DEGREE:

Grado en Enfermería

FACULTY:

FACULTY OF HEALTH SCIENCES

ACADEMIC YEAR:

2024-25

COURSE:

Human Biochemistry and Microbiology

SYLLABUS

1. COURSE BASIC INFORMATION

NAME: Human Biochemistry and Microbiology

CODE: 10021003

ACADEMIC YEAR: 2024-25

LANGUAGE: English

LEVEL: 2

ECTS CREDITS: 6.0

YEAR: 1

SEMESTER: PC

2. LECTURER BASIC INFORMATION

NAME: BENOMAR EL BAKALI, NABIL

DEPARTMENT: U130 - CIENCIAS DE LA SALUD

FIELD OF STUDY: 630 - MICROBIOLOGÍA

OFFICE NO.: B3 - 256

E-MAIL: nben@ujaen.es

P: 953212007

WEBSITE: -

ORCID: <https://orcid.org/0000-0002-7297-6171>

LANGUAGE: -

LEVEL: 1

NAME: BEGARA MORALES, JUAN CARLOS

DEPARTMENT: U103 - BIOLOGÍA EXPERIMENTAL

FIELD OF STUDY: 060 - BIOQUÍMICA Y BIOLOGÍA MOLECULAR

OFFICE NO.: B3 - 08

E-MAIL: jbegara@ujaen.es

P: 953213058

WEBSITE: -

ORCID: -

LANGUAGE: -

LEVEL: 2

NAME: GRANDE BURGOS, MARÍA JOSÉ

DEPARTMENT: U130 - CIENCIAS DE LA SALUD

FIELD OF STUDY: 630 - MICROBIOLOGÍA

OFFICE NO.: B3 - 250

E-MAIL: mjgrande@ujaen.es

P: 953213044

WEBSITE: <https://www.ujaen.es/departamentos/ciesal/area-de-microbiologia>ORCID: <https://orcid.org/0000-0002-4803-0562>

LANGUAGE: -

LEVEL: 2

3. CONTENT DESCRIPTION

THEORIC PROGRAM:

- Didactic Unit I: Introduction to Biochemistry. Bioelements and biomolecules.

Topic 1.- Introduction to Biochemistry. Bioelements and biomolecules. Aqueous dissolutions. Biological buffers.

- Didactic unit II: Structure and function of carbohydrates, lipids and proteins. Biological membranes.

Topic 2.- Structure and function of carbohydrates. Clinical applications.

Topic 3.- Structure and function of lipids. Plasma lipoproteins.

Topic 4.- Structure and function of proteins. Proteins in the clinic. cell membranes.

- Didactic Unit III: Enzymology. Vitamins and coenzymes.

Topic 5.- General concepts. Mechanism of action. enzyme catalysis. Vitamins and coenzymes. Enzymes in the clinic.

- Didactic unit IV: Nucleic acids and flow of genetic information.

Topic 6.- Structure and function of nucleic acids.

- Didactic unit V: Energetic metabolism. Biochemical mechanisms of hormonal action.

Topic 7.- General principles of metabolism and its regulation.

Topic 8.- Energetic metabolism. Biochemistry and hormonal signaling.

- Didactic Unit VI: Microbiology concept. Structure and growth of bacteria.

Topic 9.- Concept and history of Microbiology.

Topic 10.- Structure and bacterial growth.

- Didactic Unit VII: Disinfection, sterilization and Chemotherapy of bacterial infections.

Topic 11.- Sterilants, disinfectants, antiseptics, and chemotherapy.

- Didactic unit VIII: Gram-positive and Gram-negative bacteria.

Topic 12.- Gram-positive bacilli.

Topic 13.- Gram-negative bacilli.

- Didactic unit IX: Gram positive and Gram negative bacteria.

Topic 14.- Gram-negative cocci

Topic 15.- Gram-positive cocci

- Didactic unit X: Spirochetes, Mycoplasmas, Chlamydia and Rickettsia.

Topic 16.- Spirochets, Mycoplasmas, Chlamydiae and Rickettsiae.

- Didactic unit XI: Other pathogenic microorganisms: Eukaryotes and viruses.

Topic 17.- Eukaryotes.

Topic 18.- Viruses.

LABORATORY PRACTICE PROGRAM:

- Identification, material and basic equipment handling in the Biochemistry laboratory. Preparation of reagents and buffers. pH determination.

- Determination of glucose in serum.

- Determination of lipids in serum.

- Determination of the activity of an enzyme.

- Determination of protein concentration.

- Description and handling of the optical microscope. Observation of microorganisms by simple staining. Bacterial mobility.

- Differential stains for bacteria. Gram stain and Ziehl Neelsen stain.

- Structural stains. Staining of the bacterial capsule and of resistance forms (spores).

*Antibiotic sensitivity. Sensitivity tests in solid media. Antibiogram

The contents of this subject connect with the third Sustainable Development Goal of the United Nations: Guarantee a healthy life and promote well-being for all at all ages.

4. COURSE DESCRIPTION AND TEACHING METHODOLOGY

The teaching of Human Biochemistry and Microbiology subject in the Nursing Degree will be marked by the following training activities and methodologies:

- Theory classes in a large group (maximum 75 students) in which the teacher will present the theoretical fundamentals of the different topics. Support material will be provided (texts, images, videos), and will be

available on the University's Virtual Teaching platform (PLATEA), in the library or on the Internet. Students are encouraged to discuss, participate and attend the tutorials to ask any questions that may arise.

- Practical classes in small groups will be carried out in the teaching laboratory of Biochemistry and Molecular Biology and Microbiology Areas. Students will have, in advance, a practice notebook in which they appear detailed the objectives, fundament, material and reagents to be used and their preparation, protocols to follow, tables for data collection and advices for its correct processing and obtaining the final results. The notebook also contains a questionnaire at the end of each practice.

This methodology will allow the students to acquire all the skills of the subject.

Students with special educational needs should contact the Student Attention Service (Servicio de Atención y Ayudas al Estudiante) in order to receive the appropriate academic support

5. ASSESSMENT METHODOLOGY

The percentage of each part of the final mark is as follows: 75.0% evaluation of theoretical knowledge, 10.0% evaluation of exercises / assignments and 15.0% evaluation of practical knowledge. Given that the subject as a whole consists of two parts; Human Biochemistry and Microbiology, at least a score of 4.0 points must be obtained in each part to obtain the final average of the subject. Otherwise, it will be understood that the subject is not passed. In the case of not doing the practices of the subject, a test must be taken in the next call of the same academic year. In addition, individual marks of neither of the two parts of the subject will not be kept in the following course; the student will have to study the subject in its entirety and in all its sections.

6. BOOKLIST ([Access the bibliography in the Library catalog](#))

MAIN BOOKLIST:

- Fundamentals of Biochemistry: Life at the Molecular Level. . Edition: 5th Edition. Author: Donald Voet, Judith G. Voet, Charlotte W. Pratt. Publisher: Wiley.
- **Notes:** -
([Library](#))

ADDITIONAL BOOKLIST:

- Harper's Illustrated Biochemistry.. Edition: 31/E. Author: Victor W. Rodwell. Publisher: MCGRAW HILL BOOK CO.
- **Notes:** -
([Library](#))
- Medical microbiology . Edition: 7th ed. Author: Murray, Patrick R.. Publisher: Mosby Elsevier,
([Library](#))

7. SUSTAINABLE DEVELOPMENT GOALS

Salud y bienestar

Educación de calidad

Igualdad de género

Alianzas para lograr objetivos

DETAILED INFORMATION

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8. VIRTUAL / CLASSROOM TEACHING SCENARIO

I.- TEACHING MET HODOLOGY AND TRAINING ACTIVITIES

Training activities	Format (classroom/online)*	Teaching methodology Description
-15 sessions of theoretical classes of Human Biochemistry. -15 sessions of theoretical classes of Microbiology.	All teaching activities including evaluation - will be face-to-face as long as the situation allow it.	30 sessions of theoretical classes of one hour, held in the classroom and retransmitted by videoconference to the rest of the group. Periodic rotation of students.
-5 practical sessions of Human Biochemistry in the A2-223C laboratory.	All teaching activities including evaluation - will be face-to-face as long as the situation allow it.	10 practical sessions of three hours each one, applying rotation in small groups of 50%. Retransmission of practical

-5 practical sessions of Microbiology in the A2-222B I laboratory.		classes to the rest of the group.
tutorials	Online	The tutorials will be carried out online (synchronous and asynchronous)

II.- EVALUATION SYSTEM

Assessment will be carried out through the delivery of theoretical and practical activities by the students using the Virtual Teaching Platform of the University of Jaén (PLATEA), which will account 50% of the final mark. An online synchronous final test will also be carried out through the PLATEA Platform or the Google Forms application, on the date established by the Faculty of Health Sciences for each of the official calls, which will account 50% of the final mark. Given that the subject as a whole consists of two parts; Human Biochemistry and Microbiology, at least a score of 4.0 marks must be obtained in each part to obtain the final average of the subject. Otherwise, it will be understood that the subject is not passed. In the case of not doing the practices of the subject, a test must be taken in the next call of the same academic year. In addition, individual marks of neither of the two parts of the subject will not be kept in the following course; the student will have to study the subject in its entirety and in all its sections.

III.- RESOURCES

The computer resources provided by the University of Jaén (PLATEA, Google Meet, other Google applications: Docs, Slides, Calendar, Drive) and the electronic bibliographic resources available in the library of the University of Jaén.

9. VIRTUAL TEACHING SCENARIO

I.- TEACHING METHODOLOGY AND TRAINING ACTIVITIES

- All teaching activities -including evaluation - will be online.

Training activities	Format (classroom/online)*	Teaching methodology Description
-15 sessions of theoretical classes of Human Biochemistry. -15 sessions of theoretical classes of Microbiology.	Online	30 sessions of theoretical classes of one hour, held by videoconference.
-5 practical sessions of Human Biochemistry in the A2-223C laboratory. -5 practical sessions of Microbiology in the A2-222B laboratory.	Online	Substitution of the 10 practical sessions by online training activities and practical cases. Synchronous activities consisting of explanations of practical methodologies and asynchronous that allow students to work individually and make a presentation about the practical content of the subject.
tutorials	Online	All tutorial sessions will be held online (synchronous and asynchronous)

II.- EVALUATION SYSTEM

Assessment will be carried out through the delivery of theoretical and practical activities by the students using the Virtual Teaching Platform of the University of Jaén (PLATEA), which will account 50% of the final mark. An online synchronous final test will also be carried out through the PLATEA Platform or the Google Forms application, on the date established by the Faculty of Health Sciences for each of the official calls, which will account 50% of the final mark. Given that the subject as a whole consists of two parts; Human Biochemistry and Microbiology, at least a score of 4.0 marks must be obtained in each part to obtain the final average of the subject. Otherwise, it will be understood that the subject is not passed. In the case of not doing the practices of the subject, a test must be taken in the next call of the same academic year. In addition, individual marks of neither of the two parts of the subject will not be kept in the following course; the student will have to study the subject in its entirety and in all its sections.

III.- RESOURCES

The computer resources provided by the University of Jaén (PLATEA, Google Meet, other Google applications: Docs, Slides, Calendar, Drive) and the electronic bibliographic resources available in the library of the University of Jaén.

DATA PROTECTION CLAUSE (on line exams)

Institution in charge of data processing: Universidad de Jaén, Campus Las Lagunillas, s/n, 23071 Jaén

Data Protection Delegate: dpo@ujaen.es

Purpose: In accordance with the Universities Law and other national and regional regulations in force, carrying out exams and assessment tests corresponding to the courses students are registered in. In order to avoid frauds while sitting the exam, the exam will be answered using a videoconference system, being able the academic staff of the University of Jaén to compare and contrast the image of the person who is answering the exam with the student's photographic files. Likewise, in order to provide the exam with evidential content for revisions or claims, in accordance with current regulation frameworks, the exam will be recorded and stored.

Legitimacy: compliance with legal obligations (Universities Law) and other national and regional regulations currently in force.

Addressees: service providers who are the owners of the platforms where the exams are carried out and with whom the University of Jaén has signed the corresponding data access contracts.

Storage periods: those established in current in force regulations. In the specific case of exam videoconference recordings, not before the examination records and transcripts are closed or the exam can still be reviewed or challenged.

Rights: you can exercise your right of access, amendment, cancellation, opposition, suppression, limitation and portability by sending a letter to the postal or electronic address indicated above. In the event that you consider that your rights have been violated, you may submit a complaint to the Andalusian Council for Transparency and Data Protection www.ctpdandalucia.es

CLASS RECORDING CLAUSE PERSONAL DATA PROTECTION

Person in charge: Universidad de Jaén, Paraje Las Lagunillas, s/n; Tel.953 212121; www.ujaen.es

Data protection delegate (DPO): TELEFÓNICA, S.A.U. ; Email: dpo@ujaen.es

Procedure aim: To manage proper recordings of teaching sessions with the aim of facilitating learning process under a multimodal and/or online teaching

Period for record storage: Images will be kept during legal term according to regulations in force

Legitimacy: Data will be managed according to legal regulations (Organic Law 6/2001, December 21, on Universities) and given consent provided by selecting corresponding box in legal admission documents

Data recipients (transfers or assignments): Any person allowed to get access to every teaching modality

Rights: You may exercise your rights of access, rectification, cancellation, portability, limitation of processing, deletion or, where appropriate, opposition. To exercise these rights, you must submit a written request to the Information, Registration and Electronic Administration Service of the University of Jaen at the address above, or by e-mail to the address above. You must specify which of these rights you are requesting to be satisfied and, at the same time, you must attach a photocopy of your ID card or equivalent identification document. In case you act through a representative, legal or voluntary, you must also provide a document that proves this representation and identification. Likewise, if you consider that your right to personal data protection has been violated, you may file a complaint with the Andalusian Data Protection and Transparency Council www.ctpdandalucia.es