



Teaching Guide

| Teaching Guide | | | | |
|---------------------|---|--------|-----------------------|-----------|
| Identifying Data | | | | 2022/23 |
| Subject (*) | Biology | | Code | 610G01005 |
| Study programme | Grao en Química | | | |
| Descriptors | | | | |
| Cycle | Period | Year | Type | Credits |
| Graduate | 1st four-month period | First | Basic training | 6 |
| Language | Spanish | | | |
| Teaching method | Face-to-face | | | |
| Prerequisites | | | | |
| Department | Biología | | | |
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| Web | | | | |
| General description | The subject is in the first year of the degree, and the only precedent that most students have is the knowledge of biology studied in secondary education. This subject is included in the basic training, so it is in the first semester of the first year of the degree, to provide students with the basic knowledge necessary for other subjects. | | | |

Study programme competences

| Code | Study programme competences |
|------|--|
| A1 | Ability to use chemistry terminology, nomenclature, conventions and units |
| A12 | Ability to relate macroscopic properties of matter to its microscopic structure |
| A13 | Understanding of chemistry of main biological processes |
| A15 | Ability to recognise and analyse new problems and develop solution strategies |
| A16 | Ability to source, assess and apply technical bibliographical information and data relating to chemistry |
| A20 | Ability to interpret data resulting from laboratory observation and measurement |
| A22 | Ability to plan, design and develop projects and experiments |
| A23 | Critical standards of excellence in experimental technique and analysis |
| A24 | Ability to explain chemical processes and phenomena clearly and simply |
| A25 | Ability to recognise and analyse link between chemistry and other disciplines, and presence of chemical processes in everyday life |
| A27 | Ability to teach chemistry and related subjects at different academic levels |
| B1 | Learning to learn |
| B3 | Application of logical, critical, creative thinking |
| B4 | Working independently on own initiative |
| B5 | Teamwork and collaboration |
| B6 | Ethical, responsible, civic-minded professionalism |
| B7 | Effective workplace communication |
| C1 | Ability to express oneself accurately in the official languages of Galicia (oral and in written) |
| C6 | Ability to assess critically the knowledge, technology and information available for problem solving |

Learning outcomes

| Learning outcomes | Study programme competences | | |
|--|-----------------------------|----|--|
| - Comprender os fundamentos e a importancia da biotecnoloxía no contexto social e científico actual. | A1 A24 A25 | | |
| - Coñecer e comprender os procesos biolóxicos e as relacións entre o medio e os seres vivos. | A12 A15 A27 | B6 | |



| | | | |
|--|-----|----|----|
| - Coñecemento das técnicas empregadas nun laboratorio de bioloxía. | A20 | B3 | |
| - Elección das técnicas máis apropiadas para abordar o estudo dun determinado problema práctico. | A22 | B4 | |
| | A23 | B5 | |
| | | B7 | |
| - Coñecer os mecanismos asociados á dinámica dos procesos celulares. | A13 | B1 | C6 |
| | A16 | | |
| - Coñecer e estudar a composición e estrutura celular e a súa relación e implicación no metabolismo. | | | C1 |

| Contents | |
|---|---|
| Topic | Sub-topic |
| GROUP I: INTRODUCTION | Lesson 1. Introduction to Biology's history. . |
| 1. Introduction | Lesson 2. Carbohydrates. Lípids. Nucleic Acids. Proteins |
| GROUP II: CELLULAR BIOLOGY | Lesson 3: Structure of membranes. Functional diversity of membranes' proteins. |
| 2. Cell's molecular composition | Transport in membranes. Extracellular surface. |
| 3. Cellular surface and membrane | Lesson 4. Structure and metabolic functions of cytosol. |
| 4. The cytoplasm | Lesson 5. Cellular genomic organization. Cromatin and cromosomes. DNA Replication |
| 5. Genetic expression and nucleus | . Transcription. genic expression regulation. |
| 6. Cell's regulation | Lesson 6. Cellular cycle. mytosis. Meiosis. Cellular death. Cellular differentiation. |
| GROUP III: EVOLUTION GENETIC | Lesson 7. The gen. |
| 7. Genetic's concepts | Lesson 8. Evolution theory. |
| 8. Evolution | Lesson 9. Genetic engineering. |
| GROUP IV: DNA RECOMBINANT AND BIOTECHNOLOGY | Tema 10. Biotechnology process. |
| 9. DNA recombinant technology | Tema 11. Enviroment and distribution. |
| 10. Biotechnology | |
| GROUP V: ECOLOGY | |
| 11. Introduction to ecology | |
| Practice lessons: | <ul style="list-style-type: none"> - Use of microscopy. - Observation and study of bacteria. - Observation and stydy of animal and vegetables cells. - Observation and study of plast (cloroplasts, cromoplasts y amiloplasts). - Osmotic process study. - Mitosis study. - Dna extraction. - Carbohydrates, lipids and proteins study. |

| Planning | | | | |
|---|---------------------------------|----------------------|-------------------------------|-------------|
| Methodologies / tests | Competencies | Ordinary class hours | Student's personal work hours | Total hours |
| Mixed objective/subjective test | A1 A13 A16 A20 A22 A24 C1 C6 | 5.5 | 0 | 5.5 |
| Directed discussion | A25 B6 B7 C1 | 9 | 9 | 18 |
| Laboratory practice | A12 A15 A23 B3 B5 | 15 | 16.5 | 31.5 |
| Guest lecture / keynote speech | A27 B1 B4 | 27 | 67.5 | 94.5 |
| Personalized attention | | 0.5 | 0 | 0.5 |
| (*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students. | | | | |

| Methodologies | |
|---------------|-------------|
| Methodologies | Description |



| | |
|---------------------------------|---|
| Mixed objective/subjective test | <p>During the course, two controls will be carried out on the theoretical contents of the subject, with questions of test type and short questions, as well as exercises.</p> <p>The final exam will consist of a written test on the contents taught in the practical part of the subject with short questions about processes and reactions made in the practices, as well as identification of structures in images. Also, the final theoretical exam will consist of test questions, short questions, definitions as well as exercises.</p> |
| Directed discussion | In small groups will discuss content related to the subject. Likewise, test exercises and problems will be performed that will serve as a review of the concepts explained in the lectures. Questions will be presented, object of discussions directed by the teacher, to conduct debates among students on methodological and theoretical aspects related to the subject. |
| Laboratory practice | Some theoretical aspects related to the apparatus and the experimental methodologies will be approached and the manual skills of the simple chemical-biological techniques are acquired |
| Guest lecture / keynote speech | 50-minute face-to-face sessions on some of the contents of the program. For a total use of these, it is recommended that the student has read, previously and on his own, the fundamental aspects of these subjects. |

Personalized attention

| Methodologies | Description |
|---------------------------------|---|
| Mixed objective/subjective test | The student is free to ask all your questions during theoretical sessions (lectures , small groups) or practices . It also will have the ability to resolve any questions about the course by attending individual tutorials in the schedule of this (see schedule http://ciencias.udc.es/grao-en-biologia) . |
| Directed discussion | In the case of students with recognition of part time and dispensation academic medical exemption , it can use the same channels or can pose your questions via email. |
| Laboratory practice | |
| Guest lecture / keynote speech | Those students with part-time dedication or academic exemption, will only have to carry out the practical part of the subject in an indispensable way to be evaluated. |

Assessment

| Methodologies | Competencies | Description | Qualification |
|---------------------------------|---------------------------------|---|---------------|
| Mixed objective/subjective test | A1 A13 A16 A20 A22 A24 C1 C6 | <p>Haberá dous controis teóricos escritos e obrigatorios ao longo do curso, e un exame final (o termo) dos contidos teóricos da materia con cuestións de tipo test, preguntas curtas e exercicios. Tales controis representarán o 30% da nota de teoría.</p> <p>O exame final constará de cuestións de tipo test, preguntas curtas e exercicios. Este exame final representará o 70% da nota de teoría.</p> | 80 |
| Laboratory practice | A12 A15 A23 B3 B5 | Realizarase un exame escrito (obligatorio) sobre os contidos prácticos da materia, constando de preguntas curtas e imaxes para identificar. Esta proba representa o 20% restante da cualificación global. | 20 |

Assessment comments



Attendance at practical classes is a necessary condition to be evaluated. To pass the subject it is necessary to obtain a score of 5 out of 10 in the theoretical part as well as in the practical part. First opportunity (January): The calculation of the qualification of the theoretical part (January) is constituted by the sum of the controls carried out during the course calculating 30%, plus the final exam that calculates 70%, and it will be an essential requirement to obtain a minimum grade of 5 out of 10 so that you can average with the general grade of the practical part. The qualification of the practical part will be obtained directly from the final practical exam, and it will be an essential requirement to obtain a minimum grade of 5 out of 10 so that you can make an average with the general qualification of the theoretical part. Likewise, the honors registration, if applicable, will be granted preferably in the first of the opportunities granted (end of the first semester.) The student who has not carried out any of the activities proposed for the subject, such as the Mixed tests carried out during the semester, as well as the evaluable tests of the first opportunity. The final calculation of the global qualification will consist of the sum of the general theoretical qualification (80%), plus the practical qualification (20%) and a minimum mark of 5 points out of 10 must be obtained in each of the parts(theory and practical) so that the global computation can be performed. Second opportunity (July): Students will be evaluated only by the theoretical or practical grade obtained in this second opportunity, constituting 80% the theoretical part and 20% the practical part. In this last opportunity (final call in July) it will be possible to recover the part (s) (theoretical or practical) not passed, in the first opportunity (January). The grade of Not presented will be obtained by not showing up for this opportunity even having carried out activities proposed for the subject during the semester. Failure of the subject (in the previous academic year) entails the completion and overcoming of each and every one of the activities included in this teaching guide, both the theoretical part and the practical part. In the case of those students whose average mark(theory-practical) exceeds 5, but in any of the aforementioned sections they do not reach the minimum score of 5 points, they will be qualified with a 4.9.

Students who request to be evaluated in the extraordinary opportunity of December, both the theoretical contents as well as the evaluation criteria will correspond to the 2021-2022 academic year. The fraudulent performance of tests or evaluation activities, once verified, will directly involve a grade of "0" in the matter at the corresponding opportunity.

Sources of information

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| Basic | BIBLIOGRAFÍA BÁSICA: - Curtis, H; Barnes, N.S; Schnek, A; Flores, G. "Biología". Ed. Panamericana (2006). Alberts, B y col. "Introducción a la Biología Celular". Ed. Omega (1999). Paniagua, R.; Nistal, M.; Sesma P.; Álvarez-Uria, M.; Anadón R.; Fraile, B.; Sáez, F.J. "Citología e Histología Vegetal y Animal". Ed. Interamericana McGraw-Hill (2007). Smith, T.M.; Smith, R.L. "Ecología". Ed. Pearson (2007). Libro. |
| Complementary | |

Recommendations

Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously

Subjects that continue the syllabus

Other comments

The learning will include: the incorporation of fundamental concepts on the subject, familiarization with the work in the laboratory, the elaboration of simple reports of practices and the search for information. It is recommended: to read or work on the topic of the lectures beforehand, take the pertinent notes during the theoretical and practical classes.

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.