



| Teaching Guide      |  |        |   |           |
|---------------------|--|--------|---|-----------|
| Identifying Data    |  |        |   | 2022/23   |
| Subject (*)         | Ecology I: Individuals and Ecosystems  |        | Code  | 610G02039 |
| Study programme     | Grao en Bioloxía   |        |   |           |
| Descriptors         |  |        |   |           |
| Cycle               | Period   | Year   | Type  | Credits   |
| Graduate            | 1st four-month period  | Third  | Obligatory  | 6         |
| Language            | SpanishEnglish   |        |   |           |
| Teaching method     | Face-to-face   |        |   |           |
| Prerequisites       |  |        |   |           |
| Department          | Bioloxía   |        |   |           |
| Coordinador         | Martínez Abraín, Alejandro   | E-mail | a.abrain@udc.es   |           |
| Lecturers           | Martínez Abraín, Alejandro<br>Piñeiro Corbeira, Cristina<br>Ruiz De la Rosa, Jose Miguel | E-mail | a.abrain@udc.es<br>c.pcorbeira@udc.es<br>jose.miguel.ruiz.delarosa@udc.es |           |
| Web                 |  |        |   |           |
| General description | Distribution patterns : the individual and the environment. The ecosystem.               |        |   |           |

| Study programme competences / results |  |
|---------------------------------------|--|
| Code                                  | Study programme competences / results                                |
| A1                                    | Recoñecer distintos niveis de organización nos sistemas vivos.       |
| A17                                   | Realizar bioensaios e diagnósticos biolóxicos.                       |
| A20                                   | Muestrear, caracterizar e manexar poboacións e comunidades.          |
| A21                                   | Deseñar modelos de procesos biolóxicos.                              |
| A24                                   | Xestionar, conservar e restaurar poboacións e ecosistemas.           |
| A26                                   | Deseñar experimentos, obter información e interpretar os resultados. |
| A30                                   | Manexar adecuadamente instrumentación científica.                    |
| B4                                    | Traballar de forma autónoma con iniciativa.                          |
| B6                                    | Organizar e planificar o traballo.                                   |
| B7                                    | Comunicarse de maneira efectiva nunha contorna de traballo.          |
| B8                                    | Sintetizar a información.  |
| B12                                   | Adaptarse a novas situacións.  |

| Learning outcomes   |  |                                       |     |
|---|--|---------------------------------------|-----|
| Learning outcomes   |  | Study programme competences / results |     |
| To describe ecological concepts at the individual, population, community and ecosystem level. |  | A1                                    |     |
|   |  | A24                                   |     |
| To discuss ecological concepts by critically considering the evidence in support of them.     |  |                                       | B8  |
| To face with some success the specialised literature.   |  | A30                                   |     |
| To use some basic techniques from the vast ecological methodology.                            |  | A17                                   | B4  |
|   |  | A20                                   | B6  |
|   |  | A21                                   | B7  |
|   |  | A26                                   | B12 |
|   |  | A30                                   |     |

| Contents                              |                               |
|---------------------------------------|-------------------------------|
| Topic                                 | Sub-topic                     |
| Section 1. Ecology and evolution (2h) | Unit 1. Ecology and evolution |



|  |  |
|--|--|
| Section 2. The individual and the environment (9h) | Unit 2: Generalities<br>Unit 3. Responses and adaptations to the abiotic environment: temperature, water and light.<br>Unit 4. Other responses to environmental variations.                              |
| Section 3. The ecosystem (13h)                     | Unit 5. The ecosystem and its functioning.<br>Unit 6. Production.<br>Unit 7. Flow of energy<br>Unit 8. Cycles of matter.<br>Unit 9. Decomposition and nutrients regeneration.<br>Unit 10. Global cycles. |

| Planning                       |  |                                      |                               |             |
|--------------------------------|--|--------------------------------------|-------------------------------|-------------|
| Methodologies / tests          | Competencies / Results                           | Teaching hours (in-person & virtual) | Student?s personal work hours | Total hours |
| Guest lecture / keynote speech | A1 A17 A20 A21 A24<br>A26 A30 B4 B6 B7 B8<br>B12 | 28                                   | 56                            | 84          |
| Laboratory practice            | A1 A17 A20 A21 A24<br>A26 A30 B4 B6 B7 B8<br>B12 | 15                                   | 15                            | 30          |
| Seminar                        | A1 A17 A20 A21 A24<br>A26 A30 B4 B6 B7 B8<br>B12 | 8                                    | 8                             | 16          |
| Long answer / essay questions  | A1 A17 A20 A21 A24<br>A26 A30 B4 B6 B7 B8<br>B12 | 0                                    | 1                             | 1           |
| Case study                     | A1 A17 A20 A21 A24<br>A26 A30                    | 0                                    | 14                            | 14          |
| Objective test                 | A1 A17 A20 A21 A24<br>A26 A30 B4 B6 B7 B8<br>B12 | 3                                    | 0                             | 3           |
| Personalized attention         |  | 2                                    | 0                             | 2           |

(\*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

| Methodologies                  |  |
|--------------------------------|--|
| Methodologies                  | Description  |
| Guest lecture / keynote speech | Oral presentations to transfer knowledge and facilitate learning. Most of the graphical support of presentations is available in the virtual campus (Moodle).  |
| Laboratory practice            | For the students to learn effectively through the completion of practical activities in the field and/or in the laboratory.  |
| Seminar                        | Demonstration and study of numerical models for a better understanding and resolution of ecological problems. Most models will be executed with UDC PCs if students do not have their own laptops.   |
| Long answer / essay questions  | Partial examination of the subject (mid-term). One or two mid-terms will take place during the course. They will be eliminatory and altogether they will account for 30% of the final mark. Mid-term exams will be written in-person and they will have the structure decided by the professor in charge of that teaching. Usually 6 questions to be developed in written. Multiple-choice exams could be scheduled in special occasions, in which attendance in-person is not possible (e.g. COVID pandemia). |
| Case study                     | Reports of the activities carried out in Seminars and Labs.  |
| Objective test                 | Written exam on all sections of the course: theory, labs and seminars.   |

|                        |
|------------------------|
| Personalized attention |
|------------------------|



| Methodologies  | Description  |
|--|--|
| Objective test<br>Laboratory practice<br>Seminar<br>Long answer / essay<br>questions<br>Case study | Preparation, explanation and revision of exams. Elucidation of possible doubts emerging as the subjects are implemented.<br><br>Orientation and tuition to make the most of practicums.<br><br>Orientation and tuition to make the most of seminars. |

| Assessment                       |  |  |               |
|----------------------------------|--|--|---------------|
| Methodologies                    | Competencies / Results                           | Description  | Qualification |
| Objective test                   | A1 A17 A20 A21 A24<br>A26 A30 B4 B6 B7 B8<br>B12 | Final written exam of the contents of the ENTIRE subject: theory (only material not covered in the mid-term examination), labs and seminars (see observations). 50%                                      | 50            |
| Long answer / essay<br>questions | A1 A17 A20 A21 A24<br>A26 A30 B4 B6 B7 B8<br>B12 | Partial exam/s or mid-terms of the subject developed throughout the course (see observations) 30%. Subjects covered by the mid-term exam are eliminatory, and hence will not be asked in the final exam. | 30            |
| Case study                       | A1 A17 A20 A21 A24<br>A26 A30                    | Reports of the activities developed in Seminars and Labs (see observations). 20%   | 20            |
| Others                           |  |  |               |

### Assessment comments



The final grade will result from the student performance in all the activities under evaluation, which will include the three parts of the subject: Theory, Seminars and Labs, with a contribution to the final grade proportional to its contribution in time planning:

60% Theory

20% Seminars

20% Labs

All students will have two opportunities to pass the course.

In the first opportunity, a continuous evaluation will be carried out, including assignments, mid-term tests and a final exam (on a date set by the Faculty Board), with the following relative weighting:

60% Theory (30% mid-term tests + 30% final exam)

20% Seminars (10% assignments + 10% final exam)

20% Labs (10% assignments + 10% final exam)

In the second opportunity, there will be only a single final exam

(on a date set by the Faculty Board) that will include questions on the three parts of the subject with the following relative weighting:

60% Theory

20% Seminars

20% Labs

Both in the first and in the second opportunities it will be necessary to pass each and every one of the three parts simultaneously (Theory, Seminars and Labs) to pass the subject. A failed part may be offset with others if its grade is at least 4/10. The average grade to pass the course must be a 5.0 out of 10.

Those students who submit and/or attend to any of the continuous evaluation activities will be considered as presented (attended), receiving the corresponding grade for the work submitted and/or tests carried out according to their weighting, and a grade of zero in those works and/or tests in which they have not presented anything or not attended to. In the event of not submitting any assignments and not taking any of the tests, the student will be considered as ?not presented? (NP).

Attendance to Seminars and Labs is not mandatory, but will be recorded.

The assignments to be handed in (linked to Seminars and Labs) will consist on exercises of the activities carried out in Seminars and Labs. Those reports will be prepared and handed in following the indications given by the professor in charge of the subject (number, format, content, deadlines, etc.) and their qualification will be subject to individual oral examination, if necessary. These exercises must collect the work and interpretation of each student.

The achievement of the Honours mark (maximum qualification) will require, at least, a final grade of 9.0 or

higher, and the execution of all the assignments of the course.

For students who can use the early December opportunity, the evaluation will consist of a final global exam with a value of 100%, similar to that described for the second opportunity.

Students with officially recognized academic exemption are able to participate in the proposed or equivalent activities and will have support by tutoring (onsite or online).

Subjects covered by the mid-term exam are eliminatory, and hence will not be asked in the final exam. Second-opportunity final exams will cover all material covered during the whole course.

The fraudulent execution of the exam or activities (once verified) will directly imply the failing of the subject and a grade of '0' in the corresponding call (first and second opportunities).



## Sources of information

|                             |   |
|-----------------------------|---|
| <p><b>Basic</b></p>         | <ul style="list-style-type: none"> <li>- Alstad DN (2001). Basic Populus models of ecology. New Jersey: Prentice-Hall</li> <li>- Alstad DN (). www.cbs.umn.edu/populus.</li> <li>- Begon M, Harper JL &amp; Townsend CR (1999). Ecología: individuos, poblaciones y comunidades. Barcelona: Omega</li> <li>- Piñol J &amp; Martínez-Vilalta J (2006). Ecología con números. Barcelona: Lynx</li> <li>- Piñol J &amp; Martínez-Vilalta J (). www.ecologiaconnumeros.uab.es.</li> <li>- Ricklefs RE (1998). Invitación a la ecología: la economía de la naturaleza. Madrid: Panamericana</li> <li>- Rodríguez J (2010). Ecología. Pirámide</li> <li>- Smith TM &amp; Smith RL (2007). Ecología. Madrid: Pearson</li> </ul> <p>Unha das referencias básicas para os seminarios é a de Piñol &amp; Martínez-Vilalta (EC-650). Os modelos que inclúe o libro están dispoñibles na web (<a href="https://ddd.uab.cat/record/225887/">https://ddd.uab.cat/record/225887/</a>). Do enlace de Alstad pódese descargar libremente o programa "Populus", con modelos de bioloxía xeral e para algúns seminarios en particular. Inclúe PopulusHelp.pdf (parcialmente en castelán) que foi editado como libro en 2001 (EC-505). Pode haber edicións mais recentes das demais referencias básicas. A descarga de Populus pode resultar problemática para os usuarios de Mac e Windows 10 e 11 polo que se recomenda facelo con tempo para atopar solucións.</p> |
| <p><b>Complementary</b></p> | <ul style="list-style-type: none"> <li>- Gotelli NJ (1995). A primer of ecology. Sinauer</li> <li>- Krebs CJ (1986). Ecología: el análisis experimental de la distribución y la abundancia. Pirámide</li> <li>- Margalef R (1974). Ecología. Barcelona: Omega</li> <li>- Molles M (2006). Ecología: Conceptos y Aplicaciones. McGraw Hill</li> <li>- Odum EP, Barret GW (2006). Fundamentos de ecología. Mexico: Thomson</li> </ul> <p>Pode haber edicións mais recentes destas referencias complementarias.</p>  |

## Recommendations

### Subjects that it is recommended to have taken before

Chemistry/610G02001  
 Mathematics/610G02003  
 Statistics/610G02005

### Subjects that are recommended to be taken simultaneously

Applied Plant Physiology /610G02029  
 Animal Physiology I/610G02035

### Subjects that continue the syllabus

Ecology II: Populations and Communities/610G02040  
 Human Ecology/610G02041  
 Ecotoxicology/610G02042  
 Data Analysis in Biology/610G02044

### Other comments

Understanding rather than memorization is favored.

(\*)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.