



## Teaching Guide

| Teaching Guide      |                                                       |        |                                  |           |
|---------------------|-------------------------------------------------------|--------|----------------------------------|-----------|
| Identifying Data    |                                                       |        |                                  | 2017/18   |
| Subject (*)         | Ecology II: Populations and Communities               |        | Code                             | 610G02040 |
| Study programme     | Grao en Bioloxía                                      |        |                                  |           |
| Descriptors         |                                                       |        |                                  |           |
| Cycle               | Period                                                | Year   | Type                             | Credits   |
| Graduate            | 2nd four-month period                                 | Third  | Obligatoria                      | 6         |
| Language            | Spanish                                               |        |                                  |           |
| Teaching method     | Face-to-face                                          |        |                                  |           |
| Prerequisites       |                                                       |        |                                  |           |
| Department          | Bioloxía                                              |        |                                  |           |
| Coordinador         | Ruiz De la Rosa, Jose Miguel                          | E-mail | jose.miguel.ruiz.delarosa@udc.es |           |
| Lecturers           | Martínez Abraín, Alejandro                            | E-mail | a.abrain@udc.es                  |           |
|                     | Ruiz De la Rosa, Jose Miguel                          |        | jose.miguel.ruiz.delarosa@udc.es |           |
| Web                 |                                                       |        |                                  |           |
| General description | Population ecology. Species interactions. Communities |        |                                  |           |

## Study programme competences

| Code | Study programme competences                                          |
|------|----------------------------------------------------------------------|
| A1   | Recoñecer distintos niveis de organización nos sistemas vivos.       |
| A17  | Realizar bioensaios e diagnósticos biolóxicos.                       |
| A20  | Muestrear, caracterizar e manexar poboacións e comunidades.          |
| A21  | Diseñar modelos de procesos biolóxicos.                              |
| A24  | Xestionar, conservar e restaurar poboacións e ecosistemas.           |
| A26  | Diseñar 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     |                       |  |
|----------------------------------------------------------------------------------------|---------------------------------|-----------------------|--|
| Describe ecological concepts at individual, population, community and ecosystem level. | A1<br>A24                       |                       |  |
| Analytical discussion of ecological concepts.                                          |                                 | B8                    |  |
| Managing scientific literature.                                                        | A30                             |                       |  |
| Using basic techniques in ecology.                                                     | A17<br>A20<br>A21<br>A26<br>A30 | B4<br>B6<br>B7<br>B12 |  |

## Contents

| Topic | Sub-topic |
|-------|-----------|
|-------|-----------|



|                                 |                                                                                                                                                     |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Section 1. Populations          | Unit 1. Size, structure and life cycles.<br>Unit 2. Population growth models.<br>Unit 3. Growth in natural populations.<br>Unit 4. Metapopulations. |
| Section 2. Species interactions | Unit 5. Competition.<br>Unit 6. Predation.<br>Unit 7. Mutualism.                                                                                    |
| Section 3. Communities          | Unit 8. Community structure.<br>Unit 9. Patterns in species richness.<br>Unit 10. Ecological succession, trophic structure and stability.           |

| Planning                                                                                                                        |                                                  |                      |                               |             |
|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------|-------------------------------|-------------|
| Methodologies / tests                                                                                                           | Competencies                                     | Ordinary class hours | 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 | 24                   | 62.4                          | 86.4        |
| 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                    | 20.8                          | 28.8        |
| Objective test                                                                                                                  | A1 A17 A20 A21 A24<br>A26 A30 B4 B6 B7 B8<br>B12 | 3                    | 0                             | 3           |
| Personalized attention                                                                                                          |                                                  | 1.8                  | 0                             | 1.8         |
| (*)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 ease 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 worked with Faculty PCs if students have no portables. |
| Objective test                 | Written exam on all aspects of the matter: theory, practicals and seminars.                                                                                                              |

| Personalized attention                                                             |                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Methodologies                                                                      | Description                                                                                                                                                                                                                                            |
| Laboratory practice<br>Seminar<br>Guest lecture / keynote speech<br>Objective test | Elucidation of possible doubts emerging as the matter is developed.<br><br>Orientation and tuition to make the most of practicals.<br><br>Orientation and tuition to make the most of seminars.<br><br>Preparation, explanation and revision of exams. |



| Assessment     |                                                  |                                                                                                                                                                                                                                                                                    |               |
|----------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Methodologies  | Competencies                                     | Description                                                                                                                                                                                                                                                                        | Qualification |
| Objective test | A1 A17 A20 A21 A24<br>A26 A30 B4 B6 B7 B8<br>B12 | Written exam on all aspects of the matter: theory, practicals and seminars (see Assessment comments).<br><br>By means of this global exam all the degree's specific competencies included in this matter will be evaluated (A1, A17, A20, A21, A24, A26, A27, A29, A30, A31, A32). | 100           |
| Others         |                                                  |                                                                                                                                                                                                                                                                                    |               |

| Assessment comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Written exam on all aspects of the matter: theory, practicals and seminars (see Assessment comments).</p> <p>By means of this global exam all the degree's specific competencies included in this matter will be evaluated.</p> <p>Objective test. Written exam on all aspects of the matter: theory, practicals and seminars (see Assessment comments).</p> <p>One and only exam (but 2 opportunities) on all and every part: theory, practicals (P) and seminars (S). Weight proportional to contribution to time planning: 60%, 20% y 20% (respectively). All 3 parts are to be passed simultaneously, but compensation possible if one part &gt; 4/10.</p> <p>Attendance not compulsory, but for P and S it'll be recorded. Students can voluntarily present at the exam a paper personal copybook on the work developed in all 8 S and/or all 3 P classes; main text must be manuscript (by hand) and the whole should be easily readable. Guides will be available in Moodle and the marks on these workbooks may help overcome insufficiencies in the corresponding exam. Copybooks can be drafted in pairs or groups, but the final result is not to be cloned: they must reflect individual work and interpretation. Both copybooks are needed to get the top mark (Honours).</p> |

| Sources of information |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic                  | <ul style="list-style-type: none"> <li>- Alstad DN (2001). Basic Populus models of ecology. New Jersey: Prentice-Hall</li> <li>- Alstad DN (). <a href="http://www.cbs.umn.edu/populus">www.cbs.umn.edu/populus</a>.</li> <li>- Begon M, Harper JL, Townsend CR (1999). Ecología: individuos, poblaciones y comunidades. Barcelona: Omega</li> <li>- Begon M, Howarth RW, Townsend CR (2014). Essentials of Ecology. USA: Wiley</li> <li>- Krebs CJ (1986). Ecología: el análisis experimental de la distribución y la abundancia. Madrid: Pirámide</li> <li>- Molles M (2006). Ecología: Conceptos y Aplicaciones. Madrid: McGraw - Hill</li> <li>- Piñol J, Martínez-Vilalta J (2006). Ecología con números. Barcelona: Lynx</li> <li>- Piñol J, Martínez-Vilalta J (). <a href="http://www.ecologiaconnumeros.uab.es">www.ecologiaconnumeros.uab.es</a>.</li> <li>- Ricklefs RE (1998). Invitación a la ecología: la economía de la naturaleza. Madrid: Panamericana</li> <li>- Smith RL, Smith TM (2000). Ecología. Madrid: Pearson</li> <li>- Smith TM, Smith RL (2012). Elements of Ecology. USA: Pearson</li> </ul> <p>Unha das referencias básicas para os seminarios é Piñol e Martínez-Vilalta (EC-650). Os modelos contidos no CD que inclúe o libro están tamén dispoñibles na súa web. Do enlace de Alstad pódese descargar libremente o programa Populus, con modelos de bioloxía xeral e para algúns seminarios en particular. Inclúe un PopulusHelp.PDF que foi editado como libro en 2001 (EC-505). Hai edicións mas recentes das demais referencias básicas.</p> |



|                      |                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Complementary</b> | <ul style="list-style-type: none"><li>- Gotelli NJ (1995). A primer of ecology. Sunderland: Sinauer</li><li>- Margalef R (1974). Ecología. Barcelona: Omega</li><li>- Odum EP, Barret GW (2006). Fundamentos de ecología. Mexico: Thomson</li></ul> <p>Hai edicions mais recentes destas referencias complementariasHai edicions mais recentes destas referencias complementarias</p> |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Recommendations

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

Chemistry/610G02001

Mathematics/610G02003

Statistics/610G02005

Physical Geography/610G02006

Ecology I: Individuals and Ecosystems/610G02039

### Subjects that are recommended to be taken simultaneously

Population Genetics and Evolution/610G02021

Animal Physiology II/610G02036

### Subjects that continue the syllabus

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.