Teaching Guide					
Identifying Data					2021/22
Subject (*)	Introduction to Botany: General Botany			Code	610G02023
Study programme	Grao en Bioloxía				
Descriptors					
Cycle	Period	Year		Type	Credits
Graduate	1st four-month period	First		Obligatory	6
Language	SpanishGalicianEnglish				
Teaching method	Face-to-face				
Prerequisites					
Department	Bioloxía				
Coordinador	Leira Campos, Antón Manoel		E-mail	m.leira@udc.es	
Lecturers	Fagúndez Díaz, Jaime Leira Campos, Antón Manoel Sahuquillo Balbuena, Elvira		E-mail	jaime.fagundez@udc.es m.leira@udc.es elvira.sahuquillob@udc.es	
Web	http://campusvirtual.udc.es/moodle/				
General description	Introduction to Botany, the science which studies the different organisms traditionally included under the label "plants". It integrates information from a wide variety of disciplines, including physiology, plant anatomy and histology, biochemistry, genetics, ecology, etc. The students will acquire knowledge and skills useful for different professional activities, including research, teaching, environmental consultancy, agronomy, ethnobotany, etc.				

Contingency plan	1. Modifications to the contents The contents of the teaching program will be maintained, respecting the objectives, competences and level of demand. 2. Methodologies Teaching methodologies that are maintained Master session Interactive teaching: practices (computes in the evaluation) Interactive teaching: seminars (computes in the evaluation) Case study (with personalized attention) (computes in the evaluation) The contents of all the activities of the subject will be available in the virtual classroom, as power point presentations or scripts for the practicals. Teaching methodologies that are modified (i) Adaptation planned in the center for cases in which the capacity of the classroom assigned for the subject is exceeded For the expository teaching, it will consist of the attribution of two or more classrooms to the subject and the teaching of the class through TEAMS for the students who are not in the classroom with the teacher. Practicals will be face-to-face for 50% of the sessions, guaranteeing that all students can carry out these activities while maintaining the schedule programmed by the Center. The virtual part of the practical classes (the remaining 50%) will be based on activities in the virtual classroom. (ii) Adaptation to be carried out in the event of a sudden absence caused by outbreaks of the disease Virtual classes of the contents of the subject through Teams / Virtual classroom through explained and commented presentations. Questions will be answered through the forum or MS Teams. The interactive classes will use practical exercises using the Virtual classroom or Teams. 3. Mechanisms for personalized attention to students ? Moodle: Daily. According to the lighting needs. They have "thematic forums associated with the modules" of the subject, to formulate the necessary queries. There are also forums for specific activity ?to develop the? Directed Discussions ?, through which the development of theoretical content on the subject is put into practice. ? Teams: 1 weekly session in large group for the advancement of the theoretical contents and the supervised work in the time slot assigned to the subject in the faculty classroom calendar. From 1 to 2 weekly sessions (or more as required by the students) in a small group (at least 6 people), for follow-up and support in carrying out the ?supervised work?. This dynamic allows a standardized follow-up and adjusted the learning needs of lighting to develop the work of the subject. ? Email: Daily. Use to make inquiries, request virtual meetings to resolve doubts and follow up on supervised jobs. 4. Changes in the evaluation Methodology, Weight in qualification, Description Seminar, 10%, The work carried out by the student in each seminar will be assessed, as well as attitude and participation. The videoconference sessions will be carried out by Teams and will be recorded. Master class, 20%, It will understand the resolution of questionnaires presented in the Virtual Classroom. The questionnaires will be of multiple answer, true / false, fill in the blanks, short or essay questions on the topics covered during the classes. Laboratory practicals, 20%. Resolution of practical exercises presented in the Virtual Classroom. -The assessment of the practicals will be carried out through questionnaires around the activities carried out. Complementary activity, 10%, This activity will remain second to the planned one. Students must submit a brief floristic study within this activity. An activity that only requires internet access will be sought, so it will not undergo modifications. The parts that require going out to the field will be replaced by the search for online information on botanical websites. Objective test, 40%, It will be assessed through an objective test composed of questionnaires in Moodle and an individual handwritten exam (with delivery of a photo or scan file). The test will be done in a video conference room recorded in Teams. However, if during the preparation of the qualifications, the teachers detect any irregularity that puts into question the knowledge presented by the student during the test, the student will be contacted for verification through an oral test (videoconference individual Teams). Evaluation observations: To obtain the qualification of "not-taken", the student may not have participated in more than 30% of the scheduled assessable activities. To pass the subject at the first opportunity, it will be necessary to have participated in at least 70% of the scheduled assessable activities. Likewise, the student must obtain at least the qualification of 4.5 out of 10 points in the

objective written test (and no less than 4 in the different parts of this test.

Study programme competences	
Code	Study programme competences
A1	Recoñecer distintos niveis de organización nos sistemas vivos.
A2	Identificar organismos.
A4	Obter, manexar, conservar e observar especímenes.
A7	Reconstruír as relacións filogenéticas entre unidades operacionales e pór a proba hipóteses evolutivas.
A19	Analizar e interpretar o comportamento dous seres vivos.
A22	Describir, analizar, avaliar e planificar o medio físico.
A29	Impartir coñecementos de Bioloxía.
A30	Manexar adecuadamente instrumentación científica.
A31	Desenvolverse con seguridade nun laboratorio.
A32	Desenvolverse con seguridade no traballo de campo.
B1	Aprender a aprender.
B3	Aplicar un pensamento crítico, lóxico e creativo.
B6	Organizar e planificar o traballo.
B7	Comunicarse de maneira efectiva nunha contorna de traballo.
B8	Sintetizar a información.
B9	Formarse unha opinión propia.
B10	Exercer a crítica científica.
B12	Adaptarse a novas situacións.
C1	Expresarse correctamente, tanto de forma oral coma escrita, nas linguas oficiais da comunidade autónoma.
C3	Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C4	Desenvolverse para o exercicio dunha cidadanía aberta, culta, crítica, comprometida, democrática e solidaria, capaz de analizar a realidade, diagnosticar problemas, formular e implantar solucións baseadas no coñecemento e orientadas ao ben común.
C6	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.

Learning outcomes			
Learning outcomes	Study programme competences		
-Being able to critically manage relevant information from different bibliographic sources.		B1 B8 B9 B10	
- Encourage students to further learn and research about Botany, a basic discipline in Biology.		B6 B12	
- Understanding the different reproductive types and life cycles of the diverse organisms studied in Botany.	A19		
- Acquiring skills related to the observation, description and identification of fungi, algae and plants.	A1 A2 A4		
- Learning basic techniques of field- and laboratory work in Botany.	A22 A30 A31 A32		
- Understanding the evidences of the evolutionary relationships among the different fungi, algae and plants.	A7		
- Understanding the taxonomic organization and nomenclature of fungi, algae and plants.	A1 A2 A7		

- Understanding the morphological and taxonomical diversity of fungi, algae and plants.	A1 A2 A29		
-Ability for reasoning, argumentation and critical thinking.		B3 B7 B9 B10	C4 C6
Ability to apply ICT in the field of Biology.		B12	C3
Learning skills needed to undertake further studies		B6 B8 B12	C4
Ability to convey information, ideas, problems and solutions to both specialized and non-specialized audiences.		B1 B3 B7	C1

Contents	
Topic	**Sub-topic**
BLOCK I: INTRODUCTION AND GENERAL CONCEPTS	I.1. Organisms studied in Botany. I.2. The Scientific Method in Botany. I.3. Systematics, nomenclature and taxonomy of plants. I.4. Fields and applications of Botany.
BLOCK II: STRUCTURE OF PLANTS AND FUNGI	II.1. Introduction to the structure of plants and fungi II.2. The vegetative body. II.3. Reproductive structures. II.4. Reproduction. Alternation of nuclear and generational phases. Biological cycles.
BLOCK III: ECOLOGY AND CONSERVATION	III.1. Plant communities and populations. Interaction with other organisms III.2. Reproductive ecology III.3. Conservation of plant biodiversity. Conservation threats and strategies III.4. Geobotany as an integrative science. The floristic kingdoms and the main plant formations of the Earth. Biomes.
BLOCK IV: BIODIVERSITY AND EVOLUTION	IV.1. The evolution in vegetables. Frame of vegetables in living things. Evolutionary relationships and importance of phylogeny. Characters and main groups IV.2. Morphological levels of plant organization. Evolution from talophytes to cormophytes IV.3. Photosynthetic coins and protists. Cyanobacteria and algae IV.4. Fungi and other heterotrophic organisms. Fungal symbioses IV.5. Plants without flowers. General characteristics of embryophytes. Vascular embryophytes. General characteristics and life cycle of pteridophytes IV.6. The prevascular vascular embryophytes. General characteristics and life cycle of bryophytes IV.7. Flowering plants. General characteristics and life cycle of spermatophytes IV.8. Gymnosperms and angiosperms (dicotyledons and monocotyledons)
SEMINARS	1.- Classification and systematics. 2.- Life cycles of plants and fungi. 3.-Floral diagrams and formulas. Identification keys. 4.- Comparative studies of organism

LAB SESSIONS	1.- Introduction of the local vegetal landscape, organographic study and field diagnosis of a selection of species. Collection and conservation methods. 2.- Characteristics and function of fungi and lichens. Observation of vegetative (mycelium) and reproductive structures in microscopic Zygomycetes and Ascomycetes. Recognition of fruiting bodies of Ascomycetes and Basidiomycetes. Morphological types of lichens and their habitat. Recognition of reproductive structures in lichens. 3.- Characteristics and function of microscopic algae. Microscope handling. Analysis of microscopic algae in inland waters (eutrophic or not). Study of algae in marine plankton. 4.- Characteristics and function of macroscopic algae. Observation of freshwater and marine representatives. Organization and morphology, reproductive structures and life cycle. 5.- Characteristics and function of bryophytes and pteridophytes. Study of diversity of representatives of bryophytes (liver and moss) and pteridophytes (ferns, horsetails and lycopods). 6.- Characteristics and function of gymnosperms. Observation of vegetative and reproductive characters. Recognition of species of gymnosperms (Pinaceae, Cupressaceae, Taxaceae) representative of the Iberian flora. 7.- The flower. Flower analysis. Morphological study of different types of flowers. 8.- Study of the characteristics and function of monocotyledonous angiosperms. Recognition of common species in the Iberian Eurosiberian environment. 9.- Study of the characteristics and function of dicotyledonous angiosperms. Recognition of common species in the Iberian Eurosiberian environment.
CASE STUDY (ICT practicals)	Realization of a virtual herbarium as a valid strategy of research training that enable the theoretical-practical integration of previous knowledge with new computer technologies, to obtain meaningful learning.

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
ICT practicals	A22 A2 B1 B6 B7 B8 B12 C3 C6	0	15	15
Laboratory practice	A4 A30 A31 A32	20	20	40
Guest lecture / keynote speech	A1 A7 A19 A29 B1 B6 B8 B12	23	46	69
Objective test	B8 C1	2	0	2
Online forum	B3 B9 B10 C4 C3	0	2	2
Short answer questions	B8 C1	0	2	2
Multiple-choice questions	B8	0	2	2
Seminar	A7 A1 B1 C4	8	8	16
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
ICT practicals	Realization of a virtual herbarium as a valid strategy of research training that enable the theoretical-practical integration of previous knowledge with new computer technologies, to obtain meaningful learning.
Laboratory practice	The student will work with different kinds of living and preserved material, representative of the studied groups of the subject.

Guest lecture / keynote speech	Lecturers will explain the main concepts of the subject. Lecture notes will be uploaded.
Objective test	The acquisition of the contents of the subject will be qualified by means of an objective written test that will include test-type questions, definitions, short questions and topics to be developed.
Online forum	Continual assessment will include a forum as an informal discussion space for students to address a topic or problem, which is developed through the virtual classroom asynchronously.
Short answer questions	Objective test aimed at continual assessment. A question-and-answer statement is presented to be answered with a specific phrase, word, number, or symbol.
Multiple-choice questions	The continual assessment will include questions in the form of a direct question or an incomplete statement, and several options or answer alternatives that provide possible solutions, of which only one is valid.
Seminar	Lecturers will invite the students to work on specific aspects of the studied groups, and discussion will follow in seminars.

Personalized attention	
Methodologies	**Description**
Seminar Laboratory practice ICT practicals	Personalized attention will be given individually when direct feedback to the student so requires. In case of in-person situation, it will take place during the development of the tutorials of the subject. In the event of a non-contact situation, it will take place online, during pre-arranged tutorial hours, and via e-mail. For students with recognition of part-time dedication and academic exemption from attendance, specific tutorials will be agreed at the beginning of the course, either to attend or arranged electronically via email, and that are compatible with their dedication. Gender discrimination will be avoided and actions and measures will be proposed to correct them. Non-sexist language will be used, intervention in class by students will be encouraged. The integration of students who, due to physical, sensory, mental or sociocultural reasons, experience difficulties in passing the subject, through the appropriate aids, will be facilitated.

Assessment			
Methodologies	**Competencies**	**Description**	**Qualification**
Multiple-choice questions	B8	Objective test that consists of asking a question in the form of a direct question or an incomplete statement, and several answer options or alternatives that provide possible solutions, of which only one is valid.	5
Seminar	A7 A1 B1 C4	Quality of interventions and demonstrated interest in the subject	10
Laboratory practice	A4 A30 A31 A32	Resolution of questionnaires and the submission of practical reports. Content and quality will be graded.	20
ICT practicals	A22 A2 B1 B6 B7 B8 B12 C3 C6	At the beginning of the course, students are informed of the activity to be carried out throughout the course, which can be both individual and group. The content, quality and presentation of the activity will be qualified.	10
Short answer questions	B8 C1	Objective test aimed at provoking the memory of a presented learning. A statement is presented in the form of a question to answer with a specific phrase, word, number or symbol.	10
Online forum	B3 B9 B10 C4 C3	Informal discussion space for students to address a topic or problem, which is developed through a virtual learning environment using asynchronous communication tools (forum).	5
Objective test	B8 C1	A written test will be used to assess learning. The Objective Test can combine different types of questions: multiple choice questions, ordering questions, short answer questions, discrimination questions, completion questions and / or association questions. It can also be built with a single type of any of these questions.	40

Assessment comments

In order to pass the subject at the first opportunity it will be necessary to have a participation of at least 70% of the scheduled evaluable activities. Likewise, the student must obtain at least a grade of 4.5 out of 10 points in theory, and 4 out of 10 in the practical part.
In order to pass the subject in the second opportunity (July), the student, depending on the result of his first evaluation, will have to carry a written objective test and pass the practical part. The need to take one or both of the second-chance examinations will be indicated in the first opportunity grades.
The qualifications obtained in the evaluable activities will be kept only during the corresponding academic year except for the practical part. To obtain the qualification of "not presented" the student will not be able to participate in more than 30% of the scheduled evaluable activities. In the case of students with part-time dedication or specific learning modalities and support for diversity, the assessment of the objective tests will be the same, and the continual assessment of participation may be replaced by an individual work proposed by the teacher and evaluated in tutorials.
In the case of students with recognition of part-time dedication and academic exemption from attendance, the same evaluation criteria will be followed for the 1st and 2nd opportunity as for the rest of the students.
Fraud on the tests or assessment activities will directly imply the grade of failed '0' in the subject in the corresponding opportunity, invalidating like this any grades obtained in all the assessment activities towards the extraordinary announcement.

Sources of information	
Basic	Teoría:BARNES, C. (2001). Invitación a la Biología. PanamericanaDIAZ-GONZALEZ, T.E.; FERNÁNDEZ-CARVAJAL, M.C. & FERNÁNDEZ, J. A.(2004). Curso de Botánica. Ediciones Trea, Gijón.FONT I QUER, P. (1982). Iniciación a la Botánica. Editorial Fontalba.FONT I QUER (1987). Plantas medicinales. El Dioscórides renovado. Labor.FONT I QUER, P. (1993). Diccionario de Botánica. Labor, Barcelona.IZCO, J.; BARRENO, E.; BRUGUÉS, M.; COSTA M.; DEVESA, J.; FERNÁNDEZ, F.; GALLARDO, T.; LLIMONA, X; SALVO, E; TALAVERA, S. & VALDÉS, B. (2004). Botánica. McGraw-Hill, Madrid.NABORS, M.W. (2006). Introducción a la Botánica. Pearson.REECE, C. et al. (2008). Biology. Pearson International EditionSCAGEL, R.; BANDONI,R.J.; ROUSE,G.E.; SCHOFIELD, G.E.; STEIN,J.R. & TAYLOR,T.M.(1987). El Reino Vegetal. Omega, Barcelona.STRASBURGER, E., F. NOLL, H. SCHENCK & A.F.W. SCHIMPER. (2004). Tratado de Botánica (actualizado por P. SITTE et al.) Omega, Barcelona. Prácticas:
Complementary	

Recommendations
Subjects that it is recommended to have taken before
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Plant Systematics: Cryptogamia/610G02024 Plant Systematics: Phanerogamia/610G02025 Botanical Geography: Geobotany/610G02026
Other comments
It is highly recommended that you take this course before any of other continuing subjects (mostly Botánica Sistemática: Criptogamia, Botánica Sistemática: Fanerogamia and Xeobotánica)