Universitat de Lleida

DEGREE CURRICULUM

CROP PRODUCTION BASES

Coordination: BOSCH SERRA, ÁNGELA DOLORES

Academic year 2021-22

CROP PRODUCTION BASES 2021-22

Subject's general information

Subject name	CROP PRODUCTION BASES
Code	102520
Semester	1st Q(SEMESTER) CONTINUED EVALUATION
Typology	

Degree	Course	Character	Modality
Bachelor's Degree in Agricultural and Food Engineering	2	COMPULSORY	Attendance-based

Course number of credits (ECTS)	6
Type of activity, credits, and groups	

Activity type	PRALAB		PRAULA	TEORIA
Number of credits	1	0.8	1.2	3
Number of groups	2	3	1	1

Coordination	BOSCH SERRA, ÁNGELA DOLORES
Department	ENVIRONMENT AND SOIL SCIENCES
Important information on data processing	Consult this link for more information.

CROP PRODUCTION BASES 2021-22

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
BOSCH SERRA, ÁNGELA DOLORES	angela.bosch@udl.cat	8,6	

Learning objectives

The student, once he/she has passed the subject, has to be able:

1. To know the basical principles which are applied to agricultural production.

2. To use the adquired knowledge in order to solve practical problems.

3. To demonstrate knowledge on the tecnical principles on the usage of equips or simple diagnostical techniques.

4. To master, although in a critical way, the necessary informatic tools in order to make decisions.

5. To search, organise and present in an adequate way the information which is contained in the subject's program.

6. To work as a group in the analisis, resolution and presentation of the proposed practical activities.

7. To apply, in an agricultural system, the knowledge adquired about planting and working the soil, as well as about irrigation and fertilization programming, the succession of crops and their protection

thorugh prevention from the limiting conditions of the ecosystem in which they are situated.

8. To assess their decisions' consequences in other fields: social, ethical and environmental.

Competences

General competences

It will be garanteed, at least, the following basic competences:

GC1: The students must demonstrate that they have acquired and understood the scientifical content given in their high school period and have reached a minimum level in order to follow the classes that,

although being based in advanced textbooks, include certain content which was taught in that previous period.

GC2: The students must know how to apply their knowledge in their work or their vocation in a professional manner. They must possess the competences which are usually demonstrated through the elaboration and defense of reasons and the solution of problems which are contained in their field of study.

GC3: The students must have the capacity of gathering and interpreting relevant pieces of information in order to make assessments which include a reflection about relevant social, scientifical or ethical topics.

GC4: The students must be capable to communicate information, ideas, problems and made solutions to any kind of audience, being it specialised or not.

GC5: The students must develop the needed learning habilities in order to pursue further studies with autonomy.

In addition, the licensed student has to be able to:

GC6: Analise concrete situations, to define problems, to make decisions and to implement action plans in order to find solutions.

GC7: Interpret studies, reports and data and to analise them numerically.

GC8: Select and manage the available sources of information (either computerised or in a physical format) which are related to his professional activity.

GC9: Use the existent computer and comunication tools as an aid in order to develope his professional activity (UdL strategical competence).

GC10: Work alone and, also, in a multidisciplinary group.

GC11: Understand the appropriate terminology and to express himself with it.

GC12: Correctly present information in both written and oral forms (UdL strategical competence).

GC13: Discuss and argue in various forums.

GC14: Be fluent in a foreign language and to communicate himself through it (UdL strategical competence).

GC15: Update himself via continual learning and knowing about technological improvements.

GC16: Value personal growth, personal motivation and mobility.

GC17: Analise and assess the social and ethical consequences of his professional activity.

GC18: Have a critical and innovative spirit.

GC19: Analise and assess the environmental consequences of his professional activity.

GC20: Respect the fundamental right of equality between men and women, to promote the Human Rights and pacific and democratic values.

Subject contents

Course syllabous

1. Context of plant production. Agricultural systems.

2. Acquisition of resources: energy.

3. Acquisition of resources: water and evapotranspiration; hydrological needs.

4. Acquisition of resources: mineral nutrients.

5. Growth and development.

6. Productivity. Efficiency on the usage of resources.

7. Environmental limitations: abiotical factors; defense measures.

8. Edaphic limitations: salinity and acidity; correction measures.

9. Soil conservation and tillage. Applications on agronomic systems.

10. Water quality and crop production.

11. Applications of measurements in the soil and on the plants on irrigation programming.

12. Fertility diagnosis: analysis of soils and plants; interpretation.

13. Organic matter. Management bases.

14. Mineral fertilization bases. Nitrogenous, potassic and phosphoric fertilization, as well as others related with calcium, magnesium, micronutrients and sulphur.

15. Making a decision about agriculture. Acquisition and usage of information. Introduction to spatial variation.

Practical activities

1. Tutorised project of the subject which deals with a different topic every academic year and is related to a present problem about crop production.

2. Crop system characterisation. Justification criteria and research of alternatives.

3. Water. Evapotranspiration. Calculation of the hydrological needs according to different managements systems.

4. Degree-day. Application examples on the development of plants or plague control.

5. Productivity. Efficiency on the use of resources. Biomass production and intercepted radiation.

6. Corrections for the improvement of edaphic properties. Rehabilitation.

7. Water quality. Evaluation for a concrete usage and system management.

8. Integration of the soil-plant-atmosphere connections on the irrigation programming. Real time adaptation.

9. Establishment and initial growth of seedlings. Analysis based on the different content of water in the soil.

10. Organic matter management. Analysis on conventional and organic agriculture.

11. Fertility diagnosis. Different examples.

12. Mineral and organic fertilisation. Differentiating peculiarities on the proposed cases.

13. Mineral and organic fertilisation. Observation of the effects of the lack of a nutrient on seedling growth.

Methodology

See the methodology associated to the Development plan.

Development plan

Kind of activity	Description	In-class activities Student		Outside-class activities Student		Evaluation	Total time	
		Objectives	Hours		Student's work	Hours	Hours	ECTS
Masterclass	Masterclass (Lecture room. Big group)	Lecture on main concepts	34	Study: to know, understand and summarise knowledge	**40**	**2**	**60**	2.4
Problems and case studies	Participatory lecture (Lecture room. Big group)	Resolution of problems and cases	10	To learn how to resolve problems and cases	**15**	**0**	**10.5**	0.42
Seminars	Participatory lecture (Medium group)	Execution of tutorised activites, discussion and aplication.	3	Study of the proposed specific problems	**9.5**	**0**	**21**	0.84
Tutored activitis	Student's work (group work)	Guidance of the student about his oral presentation (during the hours of tutorials which are scheduled)	1	To make an oral presentation and an oral defense about a bibliographic or a practical project which has been developed during the seminars	**1.5**	**4**	**15**	0.6
Laboratory	Laboratory practice (Medium group)	Execution of the practice: to understand, mesure, assess and interpret different phenomena	8	Studying and making a report	**12**	**0**	**33**	1.32

Computer laboratory	Practice in the computer laboratory (Medium group)	Execution of the practice: to understand, assess and handle the processes; as well as being able to make decisions	4	Studying and making a report and/or exercises	**6**	**0**	**10.5**	0.42
Totals		**60**			**84**	**6**	**150**	6

Notes

The program can be adapted to the students' needs. It is possible that some concepts may be harder to understand, so more time will be spend in order to fully solve them, while others may be taught faster, as they may be easier to understand. However, the classes will always be based on the recommended bibliography.

Evaluation

Kind of activity	Evaluation activity		Qualification value
	Procedure	Number	(%)
Masterclass plus practical' theory	Written exams about the theory stipulated in the subject program	2	**48.8**
Problems and case studies	Presentation of the suggested problems, cases and knowledge about their theoretical bases	X	**5**
Seminars	Written project about a certain topic	1	**14**
Other activities	Oral presentation of the research work done and its exposition	1	**11**
Laboratory	Report presentation	x	16.2
Computer laboratory	Report presentation, written or oral exams	x	5
TOTAL			100

Marks

The evaluation activities can be done individually or in a group depending on the topic. In the group-work activities, every member will have the same qualification.

The number X indicates that there will exist some variations during the development of the subject .

In the *resources* section the evaluation is clearly detailed, although it is summarised in this section.

Framework of the 6 credits

4,5 credits (65% exams i 35% practice)

–Content which will be evaluated (theory, practice and work)

Two evaluations.

Every evaluation counts as a 24,4% of the final qualification (6 credits).

Second-chance examination (about all the course syllabus: 48,8%)

The individual exam has to be passed with a minimum mark of 4 over 10) in order to take into account the rest of the evaluated parts of the subject, including the practices and the course (research) project.

–Laboratory practices, problems and computer laboratory (26,2% of the final qualification, 6 credits)

ALL the associated exercices must be presented in order to be counted and evaluated

1,5 credits

–Course project (25% of the final qualification, 6 credits).

Others

-The teacher will have the right to set homework or to ask questions about the subject without previous warning. This activities will be valued positively in order to round the final qualifications.

Bibliography

Basic bibliography

- Bosch Serra A.D. (ed.). 2010. Avaluació de la qualitat d'aigua per a reg. Edicions de la Universitat de Lleida.
- Bosch Serra A.D. (ed.). 2009. Fitotècnia. Fonaments i tecnologies de la producció agrícola. Edicions de la Universitat de Lleida.
- Bosch Serra A.D., Porta Montserrat P., Torres Fabregat J. 2009. Treballar el sòl. Un art per descobrir. Edicions de la Universitat de Lleida.
- Urbano P.2002. Fitotecnia. Ingeniería de la producción vegetal. Mundi – Prensa.
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Extra bibliography

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- Bosch Serra A.D. (ed.) 2013. Fertilitat, fertilització i fertirrigació. Edicions de la Universitat de Lleida.
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