



**SCHOOL OF AGRICULTURAL AND
FORESTRY ENGINEERING**

UNIVERSITY OF CORDOBA (SPAIN)
—E CORDOBA01—

SOCRATES-ERASMUS

ECTS

European Credit Transfer System

2007/2008 Academic Year

Agricultural Engineering (Plan 2000)

FIRST CYCLE

FIRST YEAR

COURSE	PHYSICAL BASES OF ENGINEERING			SIGA Code 8130001
Type Core	Year 1st	Period Annual	Hours per week 5	ECTS Credits 12
Course description	Mechanical physics. Electricity. Thermodynamics. Fluid mechanics.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	BIOLOGICAL BASES OF PLANT PRODUCTION			SIGA Code 8130002
Type Core	Year 1st	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Biology: the cell as a unit of life. Genetics and evolution. Plant anatomy.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	GENERAL CHEMISTRY			SIGA Code 8130005
Type Core	Year 1st	Period 1st semester	Hours per week 6	ECTS Credits 7.5
Course description	General chemistry. Basic chemistry operations for the sector.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ENGINEERING DRAWING			SIGA Code 8130003
Type Core	Year 1st	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Orthogonal contour projection. Axonometric drawing. Conventional drawing systems.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	BIOCHEMISTRY			SIGA Code 8130006
Type Core	Year 1st	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Organic chemistry. Biochemistry. Principal constituents of living beings. Enzymology. Bioenergetics and cell metabolism.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	MATHEMATICS I			SIGA Code 8130004
Type Core	Year 1st	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Linear algebra			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	FUNDAMENTALS OF AGRICULTURAL BOTANY			SIGA Code 8130009
Type Core	Year 1st	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Economic botany. Fundamentals of morphology, nomenclature and plant systematics for plants of economic interest. Plant biodiversity.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	TOPOGRAPHY			SIGA Code 8130010
Type Core	Year 1st	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Instruments, methods and topographic uplifting. Photogrammetry. Cartography.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	PRINCIPLES OF INSTRUMENTAL CHEMICAL ANALYSIS			SIGA Code 8130008
Type Core	Year 1st	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Instrumental analysis. Chromatographic, optic and electroanalytical instrumental techniques.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	MATHEMATICS II			SIGA Code 8130007
Type Core	Year 1st	Period 2nd semester	Hours per week 6	ECTS Credits 7.5
Course description	Infinitesimal calculus. Integration. Differential equations. Statistics. Numerical methods.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	MICROBIOLOGY			SIGA Code 8130011
Type Core	Year 1st	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Fundamentals of microbiology; principles of manipulation, cultivation, identification and taxonomy of microorganisms.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

SECOND YEAR

COURSE	ECONOMICS			SIGA Code 8130013
Type Core	Year 2nd	Period 2nd semester	Hours per week 6	ECTS Credits 7.5
Course description	General economics. Applied economics for the agroforestry sector. Assessment.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ADVANCED MATHEMATICS			SIGA Code 8130016
Type Compulsory	Year 2nd	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Differential equations. Numerical calculus.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	GEOLOGY, CLIMATOLOGY AND EDAPHOLOGY			SIGA Code 8130012
Type Core	Year 2nd	Period 2nd semester	Hours per week 6	ECTS Credits 7.5
Course description	Introduction to the environmental and physical sciences: geology, climatology and edaphology.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	APPLIED STATISTICS			SIGA Code 8130017
Type Compulsory	Year 2nd	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Introduction to probability calculus. Descriptive statistics. Data analysis. Computer science. Applications in agriculture.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	CALCULUS OF STRUCTURES AND CONSTRUCTION			SIGA Code 8130014
Type Core	Year 2nd	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Fundamentals of materials resistance. Fundamentals of structures analysis. Actions on buildings. Fundamentals of metallic structures. Fundamentals of reinforced concrete structures.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	FUNDAMENTALS OF PLANT PHYSIOLOGY			SIGA Code 8130015
Type Core	Year 2nd	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Plant physiology. Plant-water relations. Mineral and organic nutrition. Growth and development.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	HYDRAULICS			SIGA Code 8130018
Type Core	Year 2nd	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Fundamentals for the hydraulic calculation of water distribution systems: fluid properties; dimensional, static, kinematic and dynamic analysis of fluids; permanent flows at head, hydrometry.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	MOTORS AND MACHINES			SIGA Code 8130018
Type Core	Year 2nd	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Motors: characteristics, assays and selection. Machines: transmissions and mechanisms.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ENVIRONMENTAL SCIENCE AND TECHNOLOGY			SIGA Code 8130021
Type Core	Year 2nd	Period 2nd semester	Hours per week 6	ECTS Credits 7.5
Course description	Ecology of agricultural systems. Environmental impact: assessment and remediation.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ELECTROTECHNOLOGY			SIGA Code 8130020
Type Core	Year 2nd	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Electrotechnology. Fundamentals of electric power systems and electric machines. Electric and electronic control systems.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

OPTIONAL COURSES

COURSE	OPERATIONAL RESEARCH			SIGA Code 8130213
Type Optional	Year 2nd	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Optimisation. Linear programming. Dynamic programming. Tails and inventory. Simulation.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRIFOODS ANALYTICAL CHEMISTRY			SIGA Code 8130218
Type Optional	Year 2nd	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Advanced optical techniques. Advanced electroanalytical techniques. Applications of these techniques in agrifoods industries.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	APPLIED GRAPHIC ENGINEERING			SIGA Code 8130218
Type Optional	Year 2nd	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Previous geometry. Surfaces. Representations of and on terrain and their use. Graphic representation of civil constructions and infrastructures. Conventional representation of agrifoods industry facilities and machinery.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	KNOWLEDGE AND ASSAYING OF MATERIALS			SIGA Code 8130214
Type Optional	Year 2nd	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Materials and assays in rural machinery and equipment. Construction materials.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	COMPUTER-ASSISTED DATA ANALYSIS			SIGA Code 8130209
Type Optional	Year 2nd	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Computer-assisted data analysis. Statistical, numerical and graphic software. BMPD and other computer programming languages. Solving technical problems.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	HISTORY OF AGRICULTURE			SIGA Code 8130208
Type Optional	Year 2nd	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	History of man's relationship with plants and animals; domestication and technological development.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ADVANCED PHYSICS			SIGA Code 8130211
Type Optional	Year 2nd	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Mechanics. Advanced elasticity. Heat transmission.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ECONOMIC ORGANISATION OF THE AGROFORESTRY SECTOR			SIGA Code 8130217
Type Optional	Year 2nd	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Agriculture and silviculture in Spain. Historical background, current reality and structural, institutional and organisational aspects that are key to the future of the sector. Agriculture and silviculture in the EU and the world.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRICULTURAL AND ENVIRONMENTAL CHEMISTRY			SIGA Code 8130216
Type Optional	Year 2nd	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Advanced optical techniques. Advanced electroanalytical techniques. Applications of these techniques to agrifoods industries.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ADVANCED CHEMISTRY			SIGA Code 8130219
Type Optional	Year 2nd	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Radioactivity. Activities and fugacities. Chemical reaction mechanisms. Colloidal chemistry. Water chemistry. Chemistry in non-aqueous solutions. Atmospheric chemistry. Ionic change.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

SECOND CYCLE

THIRD YEAR

COURSE	BASIS AND TECHNOLOGY OF ANIMAL BREEDING AND PRODUCTION			SIGA Code 8130022
Type Core	Year 3rd	Period Annual	Hours per week 5	ECTS Credits 12
Course description	Principles of animal production. Breeding. Products. Production systems.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	RURAL ELECTRIFICATION			SIGA Code 8130026
Type Core	Year 3rd	Period 1st semester	Hours per week 3	ECTS Credits 3,5
Course description	Electric power systems; calculating electric lines. Transformers. Electric motors.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRICULTURAL AND FOOD INDUSTRIES			SIGA Code 8130024
Type Core	Year 3rd	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Uses, technologies and agricultural and food industries.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	BUSINESS ECONOMICS			SIGA Code 8130023
Type Core	Year 3rd	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Business economics. Production functions. Costs. Profitability and investments. Agricultural assessment.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ENGLISH FOR AGROFORESTRY ENGINEERING			SIGA Code 8130027
Type Core	Year 3rd	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Reading and comprehension of the English used in agricultural technology.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	PROCESSES AND CONTROL IN AGRICULTURAL INDUSTRIES			SIGA Code 8130025
Type Core	Year 3rd	Period 1st semester	Hours per week 6	ECTS Credits 7.5
Course description	Balances. Dimensional analysis and similarity theory. Transference: movement quantity, heat and matter. Potentiality factors. Equilibria. Operations; continuous, semi-continuous and discontinuous. Heat changers.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	PLANT PRODUCTION			SIGA Code 8130025
Type Core	Year 3rd	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Crop-environment interactions. Factors that limit agricultural production, agricultural technology and the management of agricultural systems.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	PLANT BREEDING			SIGA Code 8130029
Type Core	Year 3rd	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Fundamentals of genetics, genetic resources and breeding methods for obtaining, conserving and propagating crops.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	HYDRAULIC ENGINEERING FOR IRRIGATION SYSTEMS			SIGA Code 8130030
Type Core	Year 3rd	Period 2nd semester	Hours per week 5	ECTS Credits 6
Course description	Hydrodynamics. Impulsions, free flows. Hydraulic works and facilities. Irrigation and drainage.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRI-INDUSTRIAL CONSTRUCTIONS AND LAND WORKS			SIGA Code 8130031
Type Core	Year 3rd	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Calculating agricultural and industrial buildings. Pad foundations. Containment walls. Rural roads. Loose-material dams.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	MARKET POLICY AND REGULATIONS			SIGA Code 8130032
Type Core	Year 3rd	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Agricultural policy and the regulation of agricultural markets. Functions of the CAP and the WTO. Socio-structural policy. New schemes for international trade relations			
Methodology	Theoretical and practical classes			
Assessment	Exam			

FOURTH YEAR

COURSE	HYDROLOGY			SIGA Code 8130033
Type Core	Year 4th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Hydrology. Managing hydraulic resources.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRICULTURAL MARKETING			SIGA Code 8130034
Type Core	Year 4th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Marketing agricultural products. Description and analysis of the functions and institutions involved in the process of commercialising agricultural products.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRICULTURAL MECHANISATION			SIGA Code 8130035
Type Core	Year 4th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Tractors. Farming practices, sowing, fertilising, treatment and harvesting machines.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	RECOGNISING PHYTOPHAGES AND METHODS AGAINST PLAGUES			SIGA Code 8130036
Type Core	Year 4th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Crop protection: Morphology, biology, behaviour and taxonomy of phytophagous agents. Principles of pest control.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	DIAGNOSIS AND CONTROL OF PLANT DISEASES			SIGA Code 8130037
Type Core	Year 4th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Crop protection: Concept of disease. Biology, ecology and taxonomy of phytopathogenic agents. Diagnostic theory and methodology. Models to combat disease.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	PROJECT MANAGEMENT			SIGA Code 8130038
Type Core	Year 5th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Methodology, organising and managing projects.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	HERBACEOUS CROP PRODUCTION: SYSTEMS AND TECHNIQUES			SIGA Code 8130039a
Type Core	Year 5th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Agricultural characteristics of the EEC. Agricultural systems. Crop methods and techniques applied to herbaceous plants. Principal groups of herbaceous crop species.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	POMOLOGY			SIGA Code 8130040r
Type Compulsory	Year 5th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Physiology and structure of fruit trees. The crop environment in fruit tree production. Tree crop systems and methods.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

OPTIONAL COURSES

COURSE	MICROECONOMICS			SIGA Code 8130220l
Type Core	Year 4th	Period 1st semester	Hours per week 5	ECTS Credits 6
Course description	Consumer theory. Theory of production and costs. Pricing on the goods market and the factors market. General equilibrium and welfare.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	GENERAL AND AGRICULTURAL SOCIOLOGY			SIGA Code 8130221
Type Core	Year 4th	Period 1st semester	Hours per week 6	ECTS Credits 7.5
Course description	Basic concepts of general sociology. Sociological theory. Social and structural processes. Sociological and agricultural theory. Human ecology. Principle research methods and techniques. Agricultural and social structure in the EEC, Spain and Andalusia.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ECONOMIC STRUCTURE			SIGA Code 8130222
Type Core	Year 4th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Concept of economic structure. Resources and productive sectors in the Spanish economy. Economic agents and enterprises. Income distribution and use. Agricultural structure of the EU.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	GENERAL AND AGRICULTURAL ACCOUNTING			SIGA Code 8130223
Type Optional	Year 4th	Period 2nd semester	Hours per week 5	ECTS Credits 6
Course description	Business patrimony. Balance analysis. Double-entry accounting. General accounting plan (GPC). Sources of financing for enterprises: internal and external sources of long-term financing.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRIFOODS MARKETING			SIGA Code 8130224
Type Optional	Year 4th	Period 2nd semester	Hours per week 6	ECTS Credits 7.5
Course description	Marketing concepts and variables. Market segmentation. Market research. Product, pricing, distribution and promotion strategies. Special marketing. Merchandising. Case analysis.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	BUSINESS PLANNING MODELS			SIGA Code 8130227
Type Optional	Year 4th	Period 1st semester	Hours per week 5	ECTS Credits 6
Course description	Linear programming for agricultural enterprises. Product planning. Decision and games. Stock management. Calculating optimal dimension and localisation. Commercial distribution. Investment planning.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRICULTURAL POLICY			SIGA Code 8130229
Type Optional	Year 5th	Period 2nd semester	Hours per week 5	ECTS Credits 6
Course description	Basic notions of international trade. Protection and liberalism in agricultural policy. Analysis of the effects of different protectionist instruments. National agricultural policies of different countries. Theoretical aspects of international agricultural policies.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRICULTURAL REGULATIONS AND LEGISLATION			SIGA Code 8130225
Type Optional	Year 5th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	The public administration. Plurality of public administrations and the relations between them. Study of the foundations of the administrative and legal code. The role of regulations. Administrative acts and procedures. Agricultural/rural legislation. Trade unionism.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRICULTURAL MARKETING THEORY			SIGA Code 8130226
Type Optional	Year 5th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Economic theory and agricultural markets. Supply and demand of agricultural products and their empirical analysis. Prices in space, time and form. Theory of industrial organisation. New institutional economics.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	MACROECONOMICS			SIGA Code 8130228
Type Optional	Year 5th	Period 1st semester	Hours per week 7.5	ECTS Credits 6
Course description	Macromagnitudes. Money and its functions. System and financial intermediaries. Inflationary processes. The labour market. Actions in the public sector. The national budget. Open economies with mobile capitals.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ENGINEERING FOR FLUID AND PARTICLE MANIPULATION FACILITIES			SIGA Code 8130230
Type Optional	Year 4th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Compressible and non-compressible fluids. Viscosimetry. Reology. Measuring and controlling pressures and flows. Singular elements and non-Newtonian fluids. Suspensions. Fluid storage. Compatibility of materials and products. Sieving, mixing and grinding. Fluidisation. Pneumatic transport.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	INDUSTRIAL MICROBIOLOGY			SIGA Code 8130266
Type Optional	Year 4th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Microbiology of industrial processes and foodstuffs.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ENZYMATIC TECHNOLOGY			SIGA Code 8130264
Type Optional	Year 4th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Fundamentals of enzymology: enzymatic kinetics. Aspects of applied enzymology: extraction, purification and characterisation of enzymes; enzyme immobilisation; enzymes of industrial interest; analytical applications of enzymes; recent advances and developments in enzyme technology.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	THERMAL ENGINEERING IN AGRICULTURAL INDUSTRIES			SIGA Code 8130267
Type Optional	Year 4th	Period 1st semester	Hours per week 5	ECTS Credits 6
Course description	Calculating and designing installations for generating and distributing heat and cold.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	FOOD OPERATIONS AND CONSERVATION			SIGA Code 8130269
Type Optional	Year 4th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Evaporation, pasteurisation, sterilisation and drying operations. Refrigeration and conservation operations.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	FOOD CHEMISTRY			SIGA Code 8130268
Type Optional	Year 4th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Chemical components of foodstuffs. Principal food products. Nutritional elements.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	INDUSTRIALISATION OF AGRICULTURAL PRODUCTS			SIGA Code 8130271
Type Optional	Year 5th	Period Annual	Hours per week 5	ECTS Credits 12
Course description	Description of raw materials of agricultural origin and of the industries that transform them. Processes, equipment and facilities.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	FERMENTATION FACILITY ENGINEERING			SIGA Code 8130273
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Facilities and processes in industries dedicated to the fermentation of liquid and solid agricultural products. Applications in different industries.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	DESIGN AND OPERATION IN AGRICULTURAL INDUSTRIES			SIGA Code 8130270
Type Optional	Year 5th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Hygienic design of equipment, materials and operations in agricultural industries. Designing and calculating food processing lines and food industry plants. HACCP and quality control programmes: their influence on the hygienic quality of finished products.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRI-INDUSTRY CONSTRUCTION ENGINEERING			SIGA Code 8130272
Type Optional	Year 5th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Further notions of the calculus of structures. Calculating gabled porticos. Warehouses.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ELECTRICAL AND AUTOMATION ENGINEERING IN INDUSTRIES			SIGA Code 8130274
Type Optional	Year 5th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Types of electrical distributions. Short circuits. Fundamentals of logic circuits.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	CARTOGRAPHIC ENGINEERING			SIGA Code 8130232
Type Optional	Year 4th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Geodesy and reference systems. Cartography. Digital and analytical photogrammetry. Global positioning systems. Satellite mapping.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	STRUCTURES			SIGA Code 8130231
Type Optional	Year 4th	Period 1st semester	Hours per week 6	ECTS Credits 7.5
Course description	Further notions of materials resistance and analysis of structures. Further notions of the calculus of metallic and reinforced concrete structures.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ELECTRICAL INSTALLATIONS AND AUTOMATION SYSTEMS			SIGA Code 8130230
Type Optional	Year 4th	Period 1st semester	Hours per week 5	ECTS Credits 6
Course description	Design and dimensions of electrical installations in the field of rural engineering. Automation systems.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	TECHNICAL APPLICATIONS OF THERMODYNAMICS			SIGA Code 8130230
Type Optional	Year 4th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Heat transmission. Humid air. Refrigeration facilities. Climate control for farming and stockbreeding facilities. Drying of products.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	SOIL MECHANICS AND AGRICULTURAL AND LIVESTOCK CONSTRUCTIONS			SIGA Code 8130235
Type Optional	Year 4th	Period 2nd semester	Hours per week 6	ECTS Credits 7.5
Course description	Soil properties and classification. Effective soil force. Resistance to cutting force. Calculating sediment. Load-bearing capacity for surface foundations. Pile calculation. Calculating soil deposits. Livestock housing facilities. Greenhouses. Storage structures.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	CROP, HARVESTING AND POST-HARVESTING MACHINERY			SIGA Code 8130234
Type Optional	Year 4th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Farming practices, sowing, planting and transplanting techniques. Harvesting forage, cereal, tuber and root crops. Fruit and horticulture crop harvesting. Post-harvesting mechanisation. Costs.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ENVIRONMENTAL IMPACT AND RISK PREVENTION			SIGA Code 8130238
Type Optional	Year 5th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Environmental impact of rural industries and agricultural industries. Occupational risk prevention.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	IRRIGATION AND DRAINAGE TECHNOLOGY			SIGA Code 8130236
Type Optional	Year 5th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Water distribution systems. Drainage systems. Irrigation methods. Irrigation assessment, management and maintenance. Measurements and new technologies.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	EQUIPMENT AND MACHINE TECHNOLOGY AND DESIGN			SIGA Code 8130237
Type Optional	Year 5th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Design concepts, static design and dynamic design. Elements of machines, optimisation and manufacturing systems.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	SOIL MANAGEMENT AND CONSERVATION			SIGA Code 8130241
Type Optional	Year 5th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Description and characterisation of processes that deteriorate soil. Erosion, transport and sedimentation. Erosion remediation. Control measures.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	RURAL PLANNING AND PROJECT ASSESSMENT			SIGA Code 8130240
Type Optional	Year 5th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Territorial zoning and planning processes. Assessment of plans and programmes. Principles and objectives of project assessment. Assessment methods. Assessment of projects under conditions of uncertainty.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	PROJECT MANAGEMENT			SIGA Code 8130239
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Project management. Contracting and executing projects. Project quality control.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ANIMAL FEEDING			SIGA Code 8130243
Type Optional	Year 4th	Period Annual	Hours per week 4	ECTS Credits 10
Course description	Digestion in domestic animals. Digestibility. Energy metabolism. Food consumption. Protein metabolism. Minerals and vitamins. Non-nutrient additives. Foods. Rationing for domestic species: ruminants, swine and birds.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	PRINCIPLES OF ANIMAL PRODUCTION			SIGA Code 8130242
Type Optional	Year 4th	Period 1st semester	Hours per week 6	ECTS Credits 7.5
Course description	Morphological functions of organs, tracts and systems in animals.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	PRODUCTS OF ANIMAL ORIGIN			SIGA Code 8130246
Type Optional	Year 4th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Products of animal origin. Viscera. Eggs. Milk. Wool and fibre. Honey and beekeeping products. Abattoir scraps and by-products. Manure.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ANIMAL BREEDING			SIGA Code 8130244
Type Optional	Year 4th	Period 2nd semester	Hours per week 6	ECTS Credits 7,5
Course description	Theoretical bases. Objectives and methods of animal breeding. Organisation of animal breeding. Animal breeding practices.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	MANAGEMENT AND USE OF PASTURES			SIGA Code 8130245
Type Optional	Year 4th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Fundamentals of the management, use and ecology of pastures. Pasturage systems.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	HERBIVORE BREEDING			SIGA Code 8130247
Type Optional	Year 5th	Period Annual	Hours per week 4	ECTS Credits 10
Course description	Situation of the bovine, ovine, caprine and equine sectors. Ethnology and improvement. Breeding and management systems. Hygiene and health. Farm management. Analysis, diagnosis and treatment of farms. Deer breeding.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	SWINE PRODUCTION			SIGA Code 8130248
Type Optional	Year 5th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Situation and trends in the sector. Ethnology. Breeding. Production and handling systems. Hygiene and health. Farm management. Environmental impact.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRICULTURAL AND LIVESTOCK PRODUCTION SYSTEMS			SIGA Code 8130249
Type Optional	Year 5th	Period 1st semester	Hours per week 3	ECTS Credits 4.5
Course description	Theory of systems. Typology of systems. The 'dehesa' pastureland. Animal breeding in fragile ecosystems. Animal breeding and extensification in crop areas. Tropical systems. Industrial systems.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ORGANISATION OF SERVICES: BUSINESS WORKSHOP			SIGA Code 8130251
Type Optional	Year 5th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Consultancy services for the livestock breeder, information about the sector, feeding, technical and economic management, animal welfare and commercialisation, mechanisation and control of equipment. Interprofessional services.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

SIGNATURA	POULTRY PRODUCTION			SIGA Code 8130250
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Situation of the sector and trends. Ethnology and breeding. Production systems: Reproducers. Laying hens. Meat chickens. Hygiene and health. Farm management. Production of huntable species.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ECONOMIC BOTANY			SIGA Code 8130254
Type Optional	Year 4th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Plant species of economic interest, their diversity and relationship to wild relatives, their geographical origin and distribution, botanical characters related to their utility. Applications, use and consumption of these plants.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	GENETICS			SIGA Code 8130253
Type Optional	Year 4th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Constitution, recombination, transmission and expression of genetic material.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	SOIL ASSESSMENT			SIGA Code 8130252
Type Optional	Year 4th	Period 1st semester	Hours per week 5	ECTS Credits 6
Course description	Morphology, genesis and spatial distribution of soils. Interpreting soil maps. Soil assessment.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	PLANT PHYSIOLOGY			SIGA Code 8130255
Type Optional	Year 4th	Period 2nd semester	Hours per week 5	ECTS Credits 6
Course description	Water and mineral balance in plants. Physiology under conditions of stress. Growth and development, hormonal control and control by means of environmental factors.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	CROP ECOPHYSIOLOGY			SIGA Code 8130256
Type Optional	Year 4th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Crop production processes with an emphasis on the assimilation of CO ₂ and the use of water and nutrients in the field.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	COMPLEMENTS OF PLANT BREEDING			SIGA Code 8130257
Type Optional	Year 4th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Origin and evolution of cultivated plants. Safekeeping of plant germoplasma.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	PLANT PATHOLOGY			SIGA Code 8130259
Type Optional	Year 5th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Cycles of pathogens. Mechanisms of pathogenesis and plant defence, Epidemiology and disease control.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRICULTURAL ENTOMOLOGY			SIGA Code 8130258
Type Optional	Year 5th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Insect-plant relations: benefits, detrimental effects and interactions. Harmful species in agricultural systems and crop protection measures.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	FRUIT SPECIES			SIGA Code 8130263
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Principal cultivated fruit species: organography, classification, distribution and adaptation, plant material and improvement, crop systems and methods, harvesting, post-harvesting and commercialisation.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	HORTICULTURE			SIGA Code 8130262
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Principal horticulture crops: classification and description, plant material, eco-physiology and crop methods.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	PLANT PROPAGATION			SIGA Code 8130260
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Scientific and technical foundations of plant propagation.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	HERBACEOUS CROPS			SIGA Code 8130261
Type Optional	Year 5th	Period 2nd semester	Hours per week 6	ECTS Credits 7.5
Course description	Principal extensive herbaceous crops: classification and description, plant material, eco-physiology and crop methods.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	SYSTEMS FOR ANIMAL BREEDING			SIGA Code 8130203
Type Optional	Year 4th	Period Annual	Hours per week 3	ECTS Credits 7.5
Course description	Reproduction management systems. Principles and techniques of interest in biotechnology. Animal breeding using classic methods and biotechnology.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	GENETICS			SIGA Code 8130253
Type Optional	Year 4th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Constitution, recombination, transmission and expression of hereditary material			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRICULTURAL MICROBIOLOGY			SIGA Code 8130201
Type Optional	Year 4th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Soil microorganisms and cycles of the elements. Mutual relations between microorganisms and plants. Microbiology of natural waters.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	BIOTECHNOLOGY AND CELL METABOLISM			SIGA Code 8130204
Type Optional	Year 4th	Period 2nd semester	Hours per week 5	ECTS Credits 6
Course description	Theoretical and practical principles of plant biotechnology. Biotechnological applications based on the manipulation of the primary, secondary and other metabolic pathways. Biotechnological applications based on the manipulation of stress response.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	PLANT PHYSIOLOGY			SIGA Code 8130255
Type Optional	Year 4th	Period 2nd semester	Hours per week 5	ECTS Credits 6
Course description	Water and mineral balance in plants. Physiology under conditions of stress. Growth and development, hormonal control and control by means of environmental factors.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	COMPLEMENTS OF PLANT BREEDING			SIGA Code 8130257
Type Optional	Year 4th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Origin and evolution of cultivated plants. Safeguarding the plant germoplasma.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRI-FORESTRY GENETIC ENGINEERING			SIGA Code 8130340
Type Optional	Year 5th	Period Annual	Hours per week 5	ECTS Credits 12
Course description	Methods of genetic analysis used in plant, animal and microorganism biotechnology; genetic transformation.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	INTEGRATED WEED CONTROL			SIGA Code 8130341
Type Optional	Year 5th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Classification and mode of action of herbicides. Transgenic plants resistant to herbicides. Their role in integrated weed control.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	BIOTECHNOLOGICAL APPLICATIONS IN ENTOMOLOGY			SIGA Code 8130342
Type Optional	Year 5th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Biotechnology in studies of the systematics, behaviour, ecology, etc. of insects. Controlling plagues of insects of agricultural, forestry and medical-veterinarian interest using biotechnological methods. Genetic manipulation of predators, parasitoids and entomopathogenic microorganisms. Transgenic plants resistant to insects: their role in integrated pest control. The use of genetic manipulation in beneficial insects: apiculture and sericulture.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	BIOTECHNOLOGICAL APPLICATIONS IN PHYTOPATHOLOGY			SIGA Code 8130343
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Biotechnology for the diagnosis and characterisation of phytopathogenic agents. Diversity of phytopathogenic agents: characterisation and analysis by biotechnological methods. Resistance in the plant-pathogen interaction. Principles and practices for disease control. Strategies for using resistances. Biological disease control. Agents, mechanisms and biotechnological applications.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	CHEMICAL, ANALYTICAL AND MICROBIOLOGICAL PROCESSES IN ENVIRONMENTAL ENGINEERING			SIGA Code 8130207
Type Optional	Year 4th	Period 1st semester	Hours per week 5	ECTS Credits 6
Course description	Chemical analysis of environmental parameters. Chemical processes in environmental engineering. Microbiological processes.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	GEOGRAPHIC INFORMATION SYSTEMS IN ENGINEERING			SIGA Code 8130273
Type Optional	Year 4th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Geographic information and GIS. Spatial data: sources and capture methods. Digital terrain models. Data structure and storage.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ELECTRONIC INSTRUMENTATION AND MEASUREMENT SYSTEMS IN BIOENGINEERING			SIGA Code 8130273
Type Optional	Year 4th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Fundamentals of electronics. Software. Applications. Measuring and controlling noise and vibrations.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	FOREST BIOMASS AND XYLOENERGY			SIGA Code 8130278
Type Optional	Year 4th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Forest biomass as a renewable resource. Processes to transform energy. Environmental industry.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ENVIRONMENTAL CONTROL			SIGA Code 8130279
Type Optional	Year 4th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Environmental monitoring. Theory of the localisation of sampling points. Physical principals of capture systems (transducers). Signal processing and fitting. Generation, transmission and automatic processing of information. Measurement integration and environmental control projects			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	WATER PLANNING AND MANAGEMENT			SIGA Code 8130346
Type Optional	Year 5th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Water resource planning. Demands and resources. Vulnerability. Joint management of surface and ground resources. Floods and drought. Water resource planning and management models.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ENVIRONMENTAL ECONOMICS AND POLICY			SIGA Code 8130345
Type Optional	Year 5th	Period 1st semester	Hours per week 6	ECTS Credits 7.5
Course description	Basic concepts and institutions. Economic analysis of natural resources. Economics of contamination. The environment and development. Economic assessment of environmental goods.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	REHABILITATION AND DESIGN OF WASTE TREATMENT PLANTS			SIGA Code 8130347
Type Optional	Year 5th	Period 1st semester	Hours per week 6	ECTS Credits 7.5
Course description	Sanitary engineering. Wastewater and rainwater. Wastewater treatment plants. Purification systems. Purifiers.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ENVIRONMENTAL DEGRADATION: SOIL AND WATER. CAUSES, PROCESSES AND CONTROL			SIGA Code 8130348
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Physical degradation and contamination. Origin. Sediment and contaminant transport processes. Distribution in time and space in waters and soils. Prevention and recovery methods.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGROENERGY AND EMISSIONS CONTROL			SIGA Code 8130344
Type Optional	Year 5th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	The energy sector. Energy crops. Using agricultural wastes as sources of energy. Biofuels. Air pollution and emissions control.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ENVIRONMENTAL MANAGEMENT AND AUDITING. LANDSCAPE MANAGEMENT			SIGA Code 8130349
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Environmental policies in companies. Regulations. Environmental auditing. Landscape assessment. Visual impact of works in construction engineering. .			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRI-FORESTRY GENETIC ENGINEERING			SIGA Code 8130340
Type Optional	Year 5th	Period Annual	Hours per week 5	ECTS Credits 12
Course description	Methods for genetic analysis used in plant and animal biotechnology; genetic transformation.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ENGINEERING PROJECT ESTIMATES			SIGA Code 8130351
Type Optional	Year 5th	Period 1st semester	Hours per week 3	ECTS Credits 3,5
Course description	Computerised estimates. Estimates, measurements and certifications. Reports and issuing of documents. Cost analysis and control. Purchasing management.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	STATISTICAL SOFTWARE PACKAGES			SIGA Code 8130354
Type Optional	Year 5th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Software packages for DOS, UNIX and WINDOWS: BMDP, SPSS, EVIEWS, STATGRAPHICS, etc.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	OCCUPATIONAL RISK PREVENTION IN THE RURAL ENVIRONMENT			SIGA Code 8130296
Type Optional	Year 5th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Basic concepts concerning social security and health in the workplace. General risks and their prevention. Specific risks in the agricultural and forestry sector and their prevention.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ECONOMETRICS			SIGA Code 8130305
Type Optional	Year 5th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Building econometric models. Uniequational and multiequational models. Time series. Economic simulation and forecasting.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	MATHEMATICAL BASES OF ECONOMICS			SIGA Code
Type Optional	Year 5th	Period 1st semester	Hours per week 4	ECTS Credits 5
Course description	Linear functions and mathematical models. Differential calculus. Integral calculus. Finite difference equations. Differential equations.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ORGANIC FARMING			SIGA Code 8130300
Type Optional	Year 5th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Theory and practice of agroecology and sustainable rural development. Sociological aspects. Types of organic farming. Field trips to organic farms.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	ENGLISH FOR AGROFORESTRY ENGINEERING II			SIGA Code 8130282
Type Optional	Year 5th	Period 1st semester	Hours per week 3	ECTS Credits 3.5
Course description	Study of advanced texts, comprehension of formal oral texts. Scientific content with video and audio tapes. Formal scientific writing.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	WEED SCIENCE			SIGA Code 8130283
Type Optional	Year 5th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Biology, ecology, taxonomy and systematics of crop-competing weeds. Species recognition.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	PRACTICUM IN AGRICULTURAL AND LIVESTOCK ENTERPRISES			SIGA Code 8130285
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Definition of goals. Organisation of activity. Practicum in an enterprise. Report.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AQUATIC PRODUCTION SYSTEMS			SIGA Code 8130286
Type Optional	Year 5th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Products of the aquatic environment. Production systems.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	RURAL DEVELOPMENT			SIGA Code 8130289
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Concepts and methods. Approaches to development. Rural development in the EU. Development planning.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	MANAGING FARM COOPERATIVES			SIGA Code 8130290
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Modern cooperative movements. Principles, legal framework and economic aspects. Organisation of cooperative enterprises. Credit. Accounting. Investment and financial assessment for agricultural cooperatives.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	RURAL CONSTRUCTION AND ARCHITECTURE			SIGA Code 8130292
Type Optional	Year 5th	Period 2nd semester	Hours per week 6	ECTS Credits 7.5
Course description	Architecture for rural constructions: design, calculations, installations, legislation and environmental impact.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	DESIGNING DRAINAGE SYSTEMS FOR SMALL BASINS			SIGA Code
Type Optional	Year 5th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Drainage systems in urban basins and small rural basins. Calculation procedures. Planning and designing reservoirs.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	LIVESTOCK FACILITIES AND INSTALLATIONS			SIGA Code 8130294
Type Optional	Year 5th	Period 2nd semester	Hours per week 3	ECTS Credits 3,5
Course description	Controlling the microclimate. Stables and shelters. Fences. Pastures. Silos. Hay storage structures. Milking machinery. Food conservation and distribution. Cleaning. Automatisation of processes.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	APPLIED GRAPHIC DESIGN			SIGA Code 8130280
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Using Computer Assisted Design (CAD) to generate and represent surfaces and the structural combinations used in rural engineering.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	REMOTE SENSING			SIGA Code 8130281
Type Optional	Year 5th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Principles of remote sensing. Remote sensors. Spatial remote sensing systems. Visual analysis and digital treatment of images.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	OLIVE CROP AND VITICULTURE MECHANISATION			SIGA Code 8130295
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Planting. Soil maintenance systems. Pruning. Harvesting. Viticulture mechanisation.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	MANAGEMENT AND EXECUTION OF WORKS			SIGA Code 8130297
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Quality control in the construction of rural infrastructures. Designing agrifoods industry plants. Calculating structures using computers.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	CULTIVATED PLANT DISEASES			SIGA Code 8130298
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Aetiology and control of the principal diseases affecting agricultural crops in Andalusia. Mycosis, bacteriosis, virosis, diseases due to nematodes, parasitic plants and other agents.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	INTEGRATED CROP PROTECTION			SIGA Code
Type Optional	Year 5th	Period 2nd semester	Hours per week 6	ECTS Credits 7.5
Course description	Biology, epidemiology and integrated control of diseases and pests in agricultural crop systems: cereal, leguminous, horticulture, industrial, ornamental and woody crops.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AGRICULTURAL AND FORESTRY EXTENSION			SIGA Code 8130301
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Classic and contemporary concepts and theories regarding rural extension. Methods and techniques. Rural extension in the FAO and different countries. The case of Spain and its autonomous communities.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	SOCIOLOGY OF SPANISH AGRICULTURE			SIGA Code 8130302
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Social aspects of the processes of agricultural transformation in 20th-century Spain. Agricultural and social structure in Andalusia.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	RENEWABLE ENERGIES			SIGA Code 8130303
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Introduction. Solar radiation. Photovoltaic solar energy. Using solar energy for technical purposes. Minihydraulic energy. Aeolic energy.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	PREDICTION AND MODELLING METHODS			SIGA Code
Type Optional	Year 5th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	The GLM. Non-linear estimation. LOGIA and PROBIT models. Linear and time series models. Prediction.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	OPTIMISATION IN ENGINEERING			SIGA Code 8130306
Type Optional	Year 5th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Non-linear programming. Penalisation method. Genetic algorithms. Neural networks. Applications in engineering.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	QUALITY ASSURANCE SYSTEMS			SIGA Code 8130307
Type Optional	Year 5th	Period 2nd semester	Hours per week 4	ECTS Credits 5
Course description	Review of general aspects. Quality planning, control and improvement. Design, development and implementation of quality systems according to ISO guidelines: assessment models.			
Methodology	Theoretical and practical classes			
Assessment	Exam			

COURSE	AUTOMATICS: CONTROL AND INSTRUMENTATION			SIGA Code 8130308
Type Optional	Year 5th	Period 2nd semester	Hours per week 3	ECTS Credits 3.5
Course description	Elements of an automated machine. Input and output: sensors and actuators. Programming.			
Methodology	Theoretical and practical classes			
Assessment	Exam			