THE IMPORTANCE OF ECONOMICS, POLICY AND LAW WHEN ADAPTING AGRICULTURAL AND FORESTRY ENGINEERING DEGREE COURSES TO THE EUROPEAN HIGHER EDUCATION AREA

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Abstract. The implementation of the European Higher Education Area (EHEA) to the Spanish University Studies in Agronomy and Forestry Engineering, has entailed a process of Study Plans renewal, which has led to the approval of 48 different Bachelors in Agronomy and 14 in Forestry Sciences and Engineering, both of studies commonly known as "Green Engineering Bachelors". According to the Spanish White Book, five competences have been clearly detached by the University Graduates in Agronomy and Forestry, for considering them crucial to their future professional activity. These key competences are mainly linked to some specific areas, as it's the case of Business Organization and Management, Policy and Law.

University Spanish Laws regulating the requirements for the new Studies in Green Engineering (CIN/323/2009 and CIN/324/2009 Regulation) have echoed this Graduates' appeal, establishing the Entrepreneurial Knowledge, as the main basic competence to be acquired by every student in the above mentioned bachelors, pointing, in particular, to the Institutional and Legal frame and Business Organization and Management learning. Moreover, other common and specific competences for both kind of studies (agronomic and forestry) are also considered of main interest, as it is the case of Economics, Sociology, or Agricultural and Forestry Policy.

In this frame, the University Study Plans in Spain for such Bachelors have incorporated all these subjects, but through different courses, where the length, importance (as considered in ECTS) and typology (compulsory versus optional) vary from one to another Faculty. This paper aims to analyze this situation, summarizing the information available in the official webs of the Faculties teaching Agricultural and Forestry University Studies in Spain. Results show a great variety concerning the Spanish University formative offer for such Studies, which results in an important difference which refers to the number and typology of ECTS. Thus, in Agricultural University Studies, basic and compulsory credits range from 4 to 22,5, with optional credits being from 0 to 180, while in forestry, the range is 6 to 18 for basic and compulsory credits and 0-10,5 for optional credits. As well, 93% of the Study Plans include the performance of external practices as part of their learning offer, ranging from 4,5 to 24 credits, being compulsory in a 25% of the considered bachelors.

Keywords: Economics, Agricultural Policy and Law, Degree Courses in Agriculture and Forestry, Green Engineering Teaching.

Introduction

In Spain, the harmonization of university systems required by the process of setting up the European Higher Education Area (EHEA) has brought with it considerable diversification of curricula and the appearance of a wide range of officially recognized degrees. In fact, the adaptation of university syllabi from the former qualifications of Agricultural Engineer (Spanish abbreviation ITA) and Forestry Engineer (ITF) to meet the EHEA standards led to the creation of 48 degrees in the agricultural area, taught in 32 establishments, and 12 in the forestry area, taught in 12. These have a range of very diverse titles, according to the university and specialism, which at times makes it rather complicated to publicize programmes, their objectives and the likely professional profiles of graduates. However, almost all of them grant the same professional privileges as the earlier qualifications and have been grouped under the common name of Green Engineering Degrees (GEDS). At present, several of them are being merged or phased out so as to optimize resources or as an outcome of accreditation processes or of university policy.

At the same time, Spanish regulation states that one basic competence that students must acquire is an appropriate awareness of the concept of a business, the institutional and legal framework for businesses, and business organization and management. Moreover, other skills are listed which are common to the whole of the agricultural branch or of the forestry branch, or are related to specific technology, economics, sociology or farming and forestry policies.

In an effort to comply with norms and ensure recognition for their qualifications, the universities teaching GEDS have incorporated subjects that allow students to acquire competences in business and economics. This has been done in very diverse ways when it comes to total workload (number of ECTS credits assigned) and to type of course (compulsory or optional).

As a general objective, this paper is intended to constitute a survey that will provide a review of the current situation relating to implementation of these subjects in various Spanish universities concerned. To that end, it will use information on syllabi that are available from various secondary sources of data. In particular, it aims to:

- Verify the fulfilling of the regulations implemented at a national/regional level by every university in Spain teaching "Green Engineering Degrees".
- Enlarge knowledge about the level of education and training in Economics, Policy and Law got by Spanish university students performing "Green Engineering Degrees".

Thus, the information provided in this article could be used as a reference by Spanish Administration and the Universities in order to implement future improvement plans to favour the quality, internationalization and excellence of their learning plans.

Finally, this paper could be an important tool which lays the groundwork towards the development of future studies for contrasting the interrelationship between the training received by these university students and their future entrepreneurship level.

Analysis
State of the art

The harmonization of university systems required by the process of setting up the European Higher Education Area (EHEA) began in 1999 with the Bologna Declaration. In Spain it led to the drawing up of Basic Law 4/2007 of 12 April 2007 modifying Basic Law 6/2001 on Universities (Office of the Head of State, 2007). It also led to Royal Decree 1393/2007 of 29 October 2007, which established a system for organizing officially recognized university programmes (Spanish Ministry of Education and Science, 2007).

This Royal Decree made the concept and expression of university autonomy deeper than formerly had been the case. This was because it allowed universities to propose and create the programmes they would teach and the qualifications they would award without being subject to any previously fixed approved list. The objective of this new system of management is to make it easier for academic institutions to take advantage of their capacity to innovate, their strengths and their opportunities as a mechanism of response to the demands of a constantly changing society.

The current reality is that the application of these new norms has brought with it considerable diversification of curricula and the appearance of a wide range of officially recognized degrees. Since 2010 Spanish universities have been aware of this problem, in particular in the case of degrees in conformity with EHEA standards replacing the former qualifications of Agricultural Engineer (with the Spanish abbreviation ITA) and Forestry Engineer (ITF). So as to group together under a standard heading the extremely wide range of such programmes on offer in Spain, they have been encouraging the use of the expression "Green Engineering" with a distinction between two branches: agriculture and forestry.

The Conference of Directors and Deans of the establishments which had previously taught the courses leading to the qualifications of Agronomical Engineer, Hill Farming Engineer, ITA and ITF, which are now being phased out, adopted the slogan "The Natural Choice". Under this heading they have drawn up prospectuses to guide potential university students. They have also run a campaign to promote "Green Engineering Degrees" (GEDS) using publicity over the Internet, by creating a specialist website and by adding pages to the websites of their institutions and to social networks.

GEDS in the agricultural branch provide a double, technical and scientific, specific training which can be applied to the improvement of the productivity of arable and pastoral farming. Those in the forestry branch qualify graduates to be aware of, develop and implement skills and techniques in the planning and management of scrubland, production and exploitation of woodland, hunting and fishing, and sustainable environmental management.

In Spain as a whole, the adaptation of previous syllabi for the qualifications of ITA and ITF to European standards has led to the creation of 62 GEDS. Of these 48 are in the agricultural branch (taught in 32 establishments) and 14 in the forestry branch (taught in 13 establishments) (Campleo and Lorenzana, 2014a). These have a varying range titles, according to the university and particular specialism involved.

Within the agricultural branch, 23 different names are used for GEDS. These are as follows (the figure in brackets indicates how many establishments use the name in each case): Technology of Agricultural and Food Industries (1), Agronomical Engineering and Science (1), Fruit and Vegetable Engineering and Gardening (1), Biological System Engineering (1), Engineering for Agriculture and Food Industries (2), Agricultural and Food Industry Engineering (3), Engineering of Arable and Pastoral Farming (1), Engineering for Fruit and Vegetable Growing and Gardening (1), Food Engineering (2), Engineering for Arable and Pastoral Farming and the Rural Environment (1), Engineering for Arable and Pastoral Farming and the Landscape (1), Agricultural and Environmental Engineering (2), Engineering for Agriculture, Food and the Rural Environment (6), Innovation in Food Processes and Products (1), Food, Agriculture and Rural Environment Engineering (1), Food and Agriculture Engineering (7), Food, Agricultural and Environmental Engineering (1), Farm and Rural Environment Engineering (7), Farm Engineering (6), Agricultural and Rural Environment Engineering (1) and Agricultural and Food Engineering (1). As for GEDS in the forestry branch, there are five different names

in use to designate programmes: Engineering of the Natural Environment (1), Forestry Engineering (4), Forestry and Environmental Engineering (7), Forestry and Environmental Engineering: Exploitation of Woodlands (1) and Forestry Engineering: Woodland Industries (1).

All of the GEDS taught by Spanish universities have a length of four years. The total number of ECTS credits required is 240 (60 credits per year, split into two semesters each of 30 credits).

At the present time, some recently established GEDS are being merged or phased out with a view to the optimization of resources or as a consequence of processes of accreditation and university policy. This is the case for the GEDS in the agricultural branch taught in the Universities of Castilla La-Mancha, León, Lugo, Murcia and Valladolid ('Campus de Soria').

Royal Decree 1393/2007 indicates that it is necessary to draw up further standards for any qualifications that authorize their holders to enter a profession or to exercise it. It stipulates that these norms must lay down the conditions that syllabi must meet in order to guarantee that qualifications are an accreditation that holders have the appropriate competences and knowledge to conduct such professional activities. Hence, the Spanish Ministry of Science and Innovation issued Orders CIN/323/2009 and CIN/324/2009 for GEDS on 9 February 2009. These list the requirements for verifying qualifications that entitle holders to do the work for which an ITA or an ITF, respectively, was formerly required (Ministry of Science and Innovation, 2009a-b).

One important feature is that all the GEDS taught in Spain give their holders the ability to do such work. Those in the agricultural branch equate to the former ITA (specializing in Arable and Pastoral Farming, Fruit and Vegetable Growing and Gardening, Food and Agriculture Industries, or Farm Mechanization and Buildings, according to the qualification or specialism selected). Those in the forestry branch equate to the old ITF (specializing in Woodland Exploitation or Forest Industries, according to the programme followed). There are four exceptions to this general norm in the agricultural branch. These are the degree courses in: Biological System Engineering ('Universidad Politécnica de Cataluña'), in Agricultural and Environmental Engineering and in Technology of Agricultural and Food Industries ('Universidad Politécnica de Madrid') and Innovation in Food Processes and Products ('Universidad Pública de Navarra'). These do not meet all the criteria to enter a regulated profession.

As regards training in economics for future holders of GEDS, it should be recalled that the "Libro Blanco de Estudios de Grado en Ingenierías Agrarias y Forestales" [White Book on Degree Studies in Farming and Forestry Engineering] (Alcalde, 2005) indicated five general skills that graduates felt were most necessary for working professionally. These were abilities in organization and planning, problem-solving, applying knowledge in practice, in analysis and synthesis, and in decision-making. As to the specific individual skills considered crucial, in most cases they were linked to business organization and management and to policy and legislation.

Research Methods and Conditions

As stated in the previous section, the intention of this article is to provide an initial academic overview of a recently emerging problem, the current situation in respect of courses in the new syllabi that allow students to acquire competences in business and economics.

As there is still insufficient information on this topic to permit more detailed studies or to allow hypotheses to be formulated for future research, the most appropriated research method for this purpose is an exploratory research, in order to gain experience which will be helpful for more definite investigation.

Exploratory research is a methodology conducted to determine the nature of a problem which is not currently clearly defined, as it is the case of this study, helping us to have a better understanding of the problem Saunders et al. (2007, p.134) and to create new information sources for further conclusive research.

Exploratory research often relies on secondary research such as reviewing available literature and/or data. For this purpose, various secondary sources of information were used. These allowed the collection of data and material relating to the matter being investigated. Particular attention was paid to the following items:

- Institutional websites of the establishments that deliver programmes leading to GEDS, especially information concerning to the subjects in the areas of economics and of farming and forestry policy.
- Degrees Verification Official Reports and Teaching Guides of the main courses object of this research.

This information was used to build up a database, containing information and data concerning to every course related with the object of this research. Thus, for every course, the following information has been compiled into the above mentioned database:

- Name of the course.
- Field of knowledge.
- Academic Sections/Departments implicated in the teaching.
- Number of ECTS.
- Academic year to be implemented

- Brief description of contents.

Later, this information was processed with the aid of the Excel program (Microsoft Office Excel 2013), with the intention of synthesizing and analysing the facts available, producing the charts, graphs and tables that are included in this paper. The objective was to give a general idea of the situation subjects being considered within the various recently established university syllabi in Spain.

The secondary data analysis is mainly focused on the calculus of extreme values as maximum and minimum for the quantitative variables (as number of courses, number of ECTS), analysis of frequencies for the qualitative ones, and finally, grouping subjects/courses according to their typology. Moreover the Wordle Web tool has been used for the performance of words maps identifying the main courses belonging to the Agricultural Economics, Business and Policy competences.

Research Results

a) Subjects in the Agriculture Area

In the 48 GEDS in the agricultural branch, a total of 208 subjects relating to economics and agricultural policy are taught. They total 1,056 ECTS credits, with 58% of the subjects and 63% of the credits being compulsory. This implies an average of four subjects and 22 ECTS per degree course. However, there is great variability from one university to another (Table 2.1).

Two universities stand out as having a syllabus with the greatest workload in these subject areas. One is the 'Universidad Politécnica de Valencia', where 120 ECTS are on offer (10 ECTS being compulsory), spread over 24 subjects in the degree programme in Engineering for Agriculture, Food and the Rural Environment. The other is the 'Universidad de Córdoba', which has a degree course with the identical name and professional status that includes 48 ECTS (of which 18 ECTS are compulsory) spread over nine subjects.

In contrast, the smallest student workload for these topics is found at the Universidad Miguel Hernández in Elche. This institution offers just 15 ECTS spread over three subjects in its degree in Food, Agricultural and Environmental Engineering. However, all of these are compulsory credits.

In relation to the obligatory or optional nature of such business training, it can be stated that all syllabi for GEDS in the agriculture branch have at least one compulsory subject (6 ECTS), while 63% of them include two. The maximum number of compulsory subjects in any syllabus is nine (36 ECTS).

Table 2.1. Summary of Implementation of Economics, Sociology and Policy Subjects in Syllabuses for GEDS in the Agriculture Area.

UNIVERSITY	DEGREE PROGRAMME	1st		2nd		3rd		4th			
		OBL		OBL		OBL		OPT		OBL		OPT	
		N	C	N	C	N	C	N	C	N	C	N	C
U. Almería	Agricultural Engineering	1	6	1	6	2	12						
U. Burgos	Rural environment and Agro-food Engineering	1	6	1	6	1	3						
U. Castilla-La	Agro-food Engineering	1	6			1	6					2	9
Mancha (C. Albacete)	Agricultural Engineering y del Medio Rural	1	6			1	6					2	9
U. Castilla-La Mancha	Agricultural Engineering y del Medio Rural	1	6			1	6					1	4,5
(C. Ciudad Real)	Agro-food Engineering	1	6			1	6					1	4,5
U. Católica S. Teresa de Jesús	Agricultural and Rural Environmental Engineering			1	6	2	8					1	4
U. Córdoba	Rural environment and Agro-food Engineering	1	6	1	6	1	6	2	12			4	18
U. Europea Miguel Cervantes	Agro-food Engineering			1	6	1	6					1	6
U. Extremadura - C.U. Sta. Ana	Agricultural and Food industries Engineering	1	6	1	6								
U. Extremadura (C. Badajoz)	Agricultural Holdings Engineering	1	6	1	6			2	12				
	Horticulture and Gardening Engineering	1	6	1	6								
	Agricultural and Food industries Engineering	1	6	1	6								
U. Gerona	Agro-food Engineering	1	6	1	6			1	6				
U. Huelva	Agricultural Engineering	1	6							1	6		

U. Islas Baleares	Rural environment and Agro-food Engineering	1	6	1	6					1	6		
U. Jaime I	Rural environment and Agro-food Engineering			2	12								
U. La Laguna	Agricultural Engineering y del Medio Rural	1	6	1	6					1	6		
U. León (C. León)	Rural Environment and Agricultural Engineering			1	6					1	4,5		
	Agro-environmental Engineering			1	6	1	6			1	4,5	1	3
U. León (C. Ponferrada)	Agro-food Engineering			1	6					1	4,5	1	3
U. Lérida	Food and Agricultutal Engineering			2	12								
U. Miguel Hernández	Agro-Food and Agro-environmental Engineering	1	6	1	4,5	1	4,5						
U. Politécnica de Cartagena	Hortofruit and garden Engineering			1	6	2	7,5			1	3	1	3
	Agro-Food Industries Engineering			1	6	1	4,5			1	3	2	6
U. Politécnica	Agricultural Engineering			2	12							1	6
de Cataluña	Country and Agro-environmental Engineering			2	12	1	6					1	6
	Food Engineering			2	12							2	12
	Bio-systems Engineering			1	6							1	6
U. Politécnica	Agricultural Engineering			1	6	1	6						
de Madrid	Agro-environmental Engineering	1	4									5	22
	Food Engineering	1	4	1	6					1	4	2	8
	Agronomic Engineering and Science	1	4			1	4			1	4	5	20
	Agricultural and Food Industries Engineering	2	10	2	8	3	10	1	4	2	8	4	20
U. Politécnica de Valencia	Rural environment and Agro-food Engineering			1	6	1	6	1	6			21	102
U. Pública de Navarra	Rural environment and Agro-food Engineering	1	6	1	6					1	6	3	9
	Processes and Food Products Engineering	1	6	1	6	1	6						
U. Rovira y Virgili	Agro-food Engineering			1	6					1	3		
U. Salamanca (C. Salamanca)	Agricultural Engineering			2	12	2	13,5						
U. Salamanca (C. Zamora)	Agro-food Engineering			1	6	1	6						
U. Santiago de Compostela	Agricultural Engineering y del Medio Rural			1	6	1	6					1	4,5
(C. Lugo)	Agro-Food Industries Engineering							1	4,5	2	12		
U. Sevilla	Agricultural Engineering			2	12							1	6
U. Valladolid - INEA	Agricultural Engineering y del Medio Rural	1	6							1	6	9	30
U. Valladolid (C. Palencia)	Agricultural Engineering y del Medio Rural	1	6					2	6	1	6		
	Agricultural and Food Industries Engineering	1	6	1	6								
U. Valladolid (C. Soria)	Rural Environmental and Agricultural Engineering	1	6					2	8	1	6	2	8
U. Zaragoza	Rural environment and Agro-food Engineering			1	6	1	6					1	6

N: Number of courses; C: Number of ECTS, OBL: Compulsory contents; OPT: Optative Contents; 1st: First year; 2nd: Second year; 3rd: Third year; 4th: Fourth year.

As regards the contents of courses, reference may be made to Figure 2.1. This is a word-map reflecting the contents most often included to meet the need to acquire the competences defined in legislation.

Fig. 2.1. Word-Map of Economics, Sociology and Agricultural Policy Subjects in Syllabuses for GEDS in the Agriculture Area.

b) Subjects in the Forestry Area

In the 14 GEDS in the forestry branch, a total of 53 subjects relating to economics and forestry policy are taught (275 ECTS credits). Of these subjects, 59% are compulsory, as are 64% of the credits. This implies an average of three subjects and 19 ECTS per degree. However, here again a certain variability can be seen, according to the university concerned (Table 2.2).

The university whose syllabus has the heaviest workload for these subjects is the 'Universidad Politécnica de Valencia'. It offers 48 ECTS (of which 12 ECTS are compulsory), spread over 10 subjects in its programme leading to the degree in Forestry and Environmental Engineering.

In contrast, the smallest workload in these subjects is to be found in the degree in Forestry Engineering at the 'Universidad de Lérida'. This has just 12 ECTS divided between two subjects, although both of these are compulsory.

In respect of the obligatory or optional nature of this business training, it can be stated that all the syllabi for GEDS in the forestry branch have at least one compulsory subject (6 ECTS), and that 64% of them include two. The maximum number of compulsory subjects found is three (18 ECTS).

Table 2.2. Summary of Implementation of Economics, Sociology and Policy Subjects in Syllabuses for GEDS in the Forestry Area.

UNIVERSITY	DEGREE PROGRAMME	1st		2nd		3rd		4th			
		OBL		OBL		OBL		OPT		OBL		OPT	
		N	C	N	C	N	C	N	C	N	C	N	C
U. Castilla-La Mancha (C. Albacete)	Forestry and Environmental Engineering	1	6									2	9
U. Católica S. Teresa de Jesús	Forestry Engineering			1	6			1	4	2	9		
U. Córdoba	Forestry Engineering	1	6	1	6							2	10,5
U. Extremadura (C. Plasencia)	Forestry and Environmental Engineering: Forestry Holdings	1	6	1	6							2	12
U. Huelva	Forestry and Environmental Engineering			1	6	1	6					1	4,5
U. León (C. Ponferrada)	Forestry and Environmental Engineering			1	6					1	4,5	2	6
U. Lérida	Forestry Engineering			1	6					1	6		
U. Oviedo (C. Mieres)	Forestry and Environmental Engineering	1	6							1	6	1	6
U. Politécncia de Madrid	Natural Environment Engineering	1	6	1	3					1	6		
	Forestry Engineering	1	6	1	3					1	6		
U. Politécnica de Valencia	Forestry and Environmental Engineering			2	12							8	36
U. Santiago de Compostela (C. Lugo)	Forestry and Environmental Engineering			1	6	1	6						
Valladolid (C. Palencia)	Forestry and Environmental Engineering	1	6					1	3	1	6		
U. Valladolid (C. Soria)	Forestry Engineering: Forestry Industries	1	6	1	6			2	8	1	6		

N: Number of courses; C: Number of ECTS, OBL: Compulsory contents; OPT: Optative Contents; 1st: First year; 2nd: Second year; 3rd: Third year; 4th: Fourth year.

Figure 2.2 shows the word-map reflecting the contents most often incorporated in such courses. These are intended to meet the need to acquire the competences laid out in legislation.

Fig. 2.2. Word-Map of Economics, Sociology and Agricultural Policy Subjects in Syllabuses for GEDS in the Forestry Area.

c) Practical Placements

The organization of university courses on the basis of the stipulations of Royal Decree 1393/2007 brought major changes in structures. However, it also led to the modification of teaching methods. The possibility of introducing practical placements into the syllabus is intended to reinforce commitments to ensure graduates of courses are employable. It aims to enrich students' training within a business context, allowing them to exchange information that will permit them to gain a deeper knowledge of the skills demanded by the labour market, as it sets in different studies (Campelo and Lorenzana, 2014b).

Of GEDS in the agricultural branch, 92% offer practical placements in enterprises, while 100% of those in the forestry branch do so. These placements amount to between 4.5 and 24 ECTS. However, they are compulsory in only 25% of the programmes.

Conclusions

1. Despite their shared legislative framework, great disparity may be observed in the way in which the various degree courses in "Green Engineering" implement the required contents in economics and business studies. This is equally true in both the agriculture and the forestry area.
2. This disparity is visible in respect both of contents and of total workload (ECTS credits). It may also be seen in the way in which contents are implemented as compulsory or optional. The range is between a minimum of 4 ECTS and a maximum of 22.5 ECTS for compulsory credits, whilst optional credits available run from 0 to 180, according to syllabus and university.
3. This disparity deserves further investigation in the near future with a view to determining both its possible causes and its consequences. This is because it is likely that it will soon give rise to certain difficulties in respect of student mobility between universities within Spain. This type of analysis might constitute a new line of research.
4. Finally, it is worth stressing the consensus in place with regard to commitments to linking universities and businesses. This is reflected in the introduction of practical placements almost universally in syllabuses, even if with varying prominence as a function of which university is involved, as reflected in this paper.

References

1. Alcalde, M. (2005). Libro Blanco: Título de Grado en Ingenierías Agrarias e Ingenierías Forestales, Agencia Nacional de Evaluación de la Calidad y Acreditación, (Coord.) , Madrid. Available at: http://www.aneca.es/var/media/150348/libroblanco_agrarias_forestales_def.pdf
2. Campelo, M.P. Lorenzana A. (2014a). Formación económica y empresarial en los planes de estudio de los „Ingenieros Verdes" españoles. In: Experiencias en la adaptación al EEES (Rodríguez, J. (Coord.)). McGraw Hill Education. Madrid (Spain).
3. Campelo, M.P. Lorenzana A. (2014b). La calidad de las prácticas externas en titulaciones de Ingenierías Verdes: valoraciones de los agentes implicados. In: Aprendizaje y métodos de docencia avanzada (Visa, M. (Coord.)). Editorial ACCI. Madrid (Spain).
4. Jefatura del Estado (2007). Ley Orgánica 4/2007, de 12 de abril, por la que se modifica la Ley Orgánica 6/2001, de 21 de diciembre, de Universidades, Boletín Oficial del Estado nº 89. Available at: http://www.boe.es/buscar/doc.php?id=BOE-A-2007-7786
5. Ministerio de Ciencia e Innovación (2009a). Orden CIN/323/2009, de 9 de febrero, por la que se establecen los requisitos para la verificación de los títulos universitarios oficiales que habiliten para el ejercicio de la profesión de Ingeniero Técnico Agrícola, Boletín Oficial del Estado nº 43. Available at: http://www.boe.es/buscar/doc.php?id=BOE-A-2009-2803
6. Ministerio de Ciencia e Innovación (2009b). Orden CIN/324/2009, de 9 de febrero, por la que se establecen los requisitos para la verificación de los títulos universitarios oficiales que habiliten para el ejercicio de la profesión de Ingeniero Técnico Forestal, Boletín Oficial del Estado nº 43. Available at: http://www.boe.es/buscar/doc.php?id=BOE-A-2009-2804
7. Ministerio de Educación y Ciencia (2007).Real Decreto 1393/2007, de 29 de octubre, por el que se establece la ordenación de las enseñanzas universitarias oficiales, Boletín Oficial del Es-

tado nº 260. Available at: https://www.boe.es/buscar/act.php?id=BOE-A-2007-18770
8. Saunders, M., Lewis, P, Thornhill, A, (2007). Research Methods for Business Students, 4th edition, Prentice Hall.

EKONOMIKOS, POLITIKOS IR TEISĖS SVARBA ADAPTUOJANT ŽEMĖS ŪKIO IR MIŠKININKYSTĖS LAIPSNĮ SUTEIKIANČIAS PROGRAMAS Į EUROPOS AUKŠTOJO MOKSLO ERDVĘ.

Santrauka

Įgyvendinant Europos Aukštojo Mokslo Erdvės kūrimą Ispanijos universitetai pradėjo Žemės ūkio bei Miškininkystės studijų programų atnaujinimo procesą, kurio metu buvo patvirtintos 48 skirtingos Bakalauro laipsnio programos žemės ūkio bei 14 programų miškininkystės srityse. Abi šios studijų kryptys taip pat žinomos kaip „Žaliosios Inžinerijos“. Baltojoje Žemės Ūkio bei Miškininkystės bakalauro laipsnių knygoje nurodomi 5 kritiniai įgūdžiai (gebėjimai, kompetencijos) būtini šias studijas baigusiems diplomantams jų būsimoje profesinėje veikloje. Šie gebėjimai susiję su specifinėmis sritimis, kaip pavyzdžiui, Versolo vadyba bei administravimu, Politika ir Teise. Ispanijos Universitetų Teisės reglamentai naujoms „Žaliųjų inžinerijų“ studijų programoms (CIN/323/2009 ir CIN/324/2009) nurodo, kad visi šių studijų programų studentai privalo gauti pakankamai žinių apie įmonių institucinę ir teisinę sistemą, įmonės, organizavimo ir valdymo sampratą. Taip pat nurodomos papildomos temos apie žemės ūkio bei miškininkystės ekonomiką, sociologiją ir politiką. Visos šios temos yra įtrauktos į bakalauro studijų programas skirtinguose fakultetuose skirtingais būdais: dalyko svarbą ir trukmę (pagal ECTS kreditų kiekį) bei tipologiją (privalomas ar pasirenkamasis modulis). Šiuo tyrymu stengiamasi išanalizuoti esamą situaciją vertinant informaciją pateikiamą Ispanijos universitetų Žemės Ūkio bei Miškininkystės fakultetų tinklalapiuose. Gauti rezultatai demonstruoja, skirtumus mokymo pasiūloje pagal ECTS kreditų keikį bei dalykų tipologiją: Žemės ūkio studijų programose privalomojų dalykų kiekis varijuoja nuot 4 iki 22,5 kreditų, o pasirenkamųjų nuo 0 iki 180. Tuo tarpu Miškininkystės studijų programose nuo 6 iki 18 kreditų privalomuosiuose dalykuose ir nuo 0 iki 10,5 pasirenkamuosiuose. 93% „Žaliųjų inžinerijų“ studijų programų numato profesines praktikas institucijose arba įmonėse nuo 4,5 iki 24 kreditų, 25% studijų programose profesinė praktika yra privaloma.
Raktiniai žodžiai: ekonomika, žemės ūkio politika ir teisė, žemės ūkio ir miškininkystės studijos, žaliosios inžinerijos studijos.

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