

**University Studies
of Agricultural Engineering
in Europe;
*a Thematic Network***

Edited by
D. Briassoulis, P. Panagakis

Editorship
E. Nikopoulos

Agricultural University of Athens
Greece



Athens, March 2004

Proceedings of the 3rd USAEE Workshop

Dijon, March 27 - 28, 2004

THE IMPLEMENTATION OF ECTS IN ITALIAN UNIVERSITY DEPARTMENTS AND INSTITUTES OF AGRICULTURAL ENGINEERING

A. Comparetti, P. Febo, S. Orlando

Università di Palermo, Dipartimento I.T.A.F., Viale delle Scienze, 90128, Palermo, Italy
G. Scarascia Mugnozza

Università di Bari, Dipartimento PRO.GE.S.A., Viale Amendola, 165, 70125, Bari, Italy

1. Explain how ECTS has been or will be implemented in your country

The European Credit Transfer and Accumulation System (ECTS) is a student-centred system, based on the student workload required to achieve the objectives of a programme; these objectives are preferably specified in terms of learning outcomes and competences to be acquired.

After the experimentation of ECTS in ERASMUS European Programme, a system of credits, based on University education credits (CFU), was introduced in Italy by means of the D.M. (Law of the Minister of Instruction, University and Research) n. 509 of the 3rd November 1999 [1]. This new system of credits was set up in the academic year 2001-2002 and is still developing towards the final objective, which is the implementation of ECTS label in the Italian Universities.

Following the political decisions established by means of the Bologna Declaration, theoretically in a few years the ECTS will become the official Italian system of credits.

The implementation of ECTS needs some certification procedures: the availability of an Information Package in two languages (or only in English if the course is given in English); the use of ECTS credits, a learning agreement (list of the courses to be attended as agreed by the student and the Professor of the Faculty responsible for the ECTS); certificates of the examinations, e.g. documents certifying the recognition of correspondence between courses by the University, etc.

The incentives behind the implementation of ECTS in the Italian education cycles are the student mobility and the harmonization with education systems implemented in other countries of the European Union. In fact, the credit (as a measurement unit of the student workload) allows the comparison among the studies carried out in different countries and education systems and, therefore, the transfer and recognition of the results obtained during the studies abroad.

The ECTS will be implemented in the first, second and third level degrees, called "Dottorato di Ricerca" (corresponding to the Ph.D.) and in the Master degree programmes.

According to the D.M. of the 30th May 2001 the Italian Universities have to register and make available the data about the student careers, in order to send these data to the national data collection system of University students, so that the Universities themselves can issue diploma supplements in two languages (according to the D.M. n. 509).

2. Explain the structure of the administrative system related to ECTS at your faculty/university.

In Italy when Faculties issue new degrees, allocate the CFU to the various courses and other activities (practical training, degree thesis, etc.). The Degree Course Committee related to each degree has the task of recognising the credits acquired or to be acquired by the students during the compulsory and optional courses and other activities carried out abroad. The administrative secretariat is legally responsible for the procedure of academic recognition, because it implements the decisions of the Degree Course Committees.

Figure 1 shows the first and second level degrees offered by the Faculty of Agriculture of Palermo University, and the debits, in terms of CFU, due for passing from the first to the second level degree.

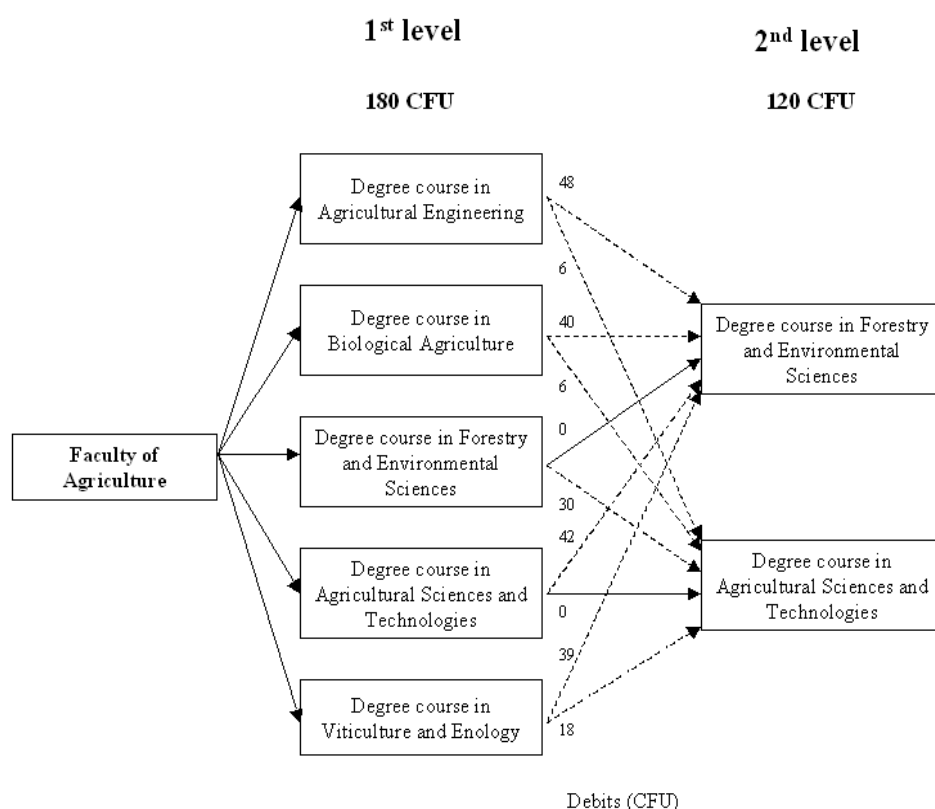


Figure 1. Degree courses offered by the Faculty of Agriculture of Palermo University.

3. Explain how ECTS is used at your faculty/university

It is common practice to set up a learning agreement between the student, the home institution and the host institution. This learning agreement consists of the list of courses and related programmes which the student can attend and whose examinations he will give in the host institution. The Degree Course Committee has the task of evaluating the correspondence among the courses offered by the host institution and those offered by the home institution; this evaluation is mainly based on the comparison of the course programmes.

The administrative responsible for the learning agreement is the administration secretariat, that will implement the decisions of the Committee. The Italian Universities often provide an

information package about CFU (and sometimes also ECTS) and the conversion table for grading, agreed with various foreign Universities.

Conversion tables for grading applied by Italian Universities can be different from one to another. For example, Palermo University has agreed with some Universities of other countries the conversion table shown in Table 1.

The D.M. n. 509 of the 3rd November 1999 defines the measurement unit of the student workload (CFU). In a year the total student workload is 60 CFU, which are considered equivalent to 60 ECTS; each CFU represents 25 hours of learning, both as aided learning (contact hours, practical activities, seminars) and as individual studies for examinations, corresponding to 1500 hours a year. Generally 1 CFU is equal to 10 hours of aided learning and 15 hours of individual study.

The reasons behind the amount of CFU assigned to the various courses are not only cultural, aimed at providing the student with the specific knowledge needed in the subject, but also, in some cases, political, due to the power balances among the various scientific areas existing in the Faculty that has established the degree.

For example, since the academic year 2001-2002 the Faculty of Agriculture of Palermo University has allocated the CFU shown in Table 2 for the first level degree called "AgroIngegneria" (Agricultural Engineering). Table 3 shows the first and second level degrees offered by the Faculty of Agriculture of Bari University, called Agricultural Sciences and Agricultural Engineering Sciences.

Table 1. The conversion table for grading applied at Palermo University.

	Insufficient	Sufficient	Satisfactory	Good	Very good	Excellent
ECTS		E	D	C	B	A
Bruxelles						
Austria	5	4	3	2	1	1 dist
Belgium	7,8,9	10	11,12,13	14,15,16	17,18	19,20
Denmark	0,3,5	6	7	8,9	10,11	13
Finland		40-49	50-59	60-69	70-79	80-100
France	7,8,9	10,11	12,13	14	15	16-20
Germany	5,6 Ungenugend	4-,4,4+/3,7 Ausreichend	3-/3,3 3, 3+/2,7 Befriedigend	2-/2,3 2, 2+/1,7 Vollbefriedigend	1-/1,3 Gut	1, 1+ Sehr Gut
Greece	2,3,4	5	6	7	8,9	10
Italy	17	21	26	28	30	30 e lode
Ireland	Fail	Pass D 40-49%	3rd C 50-54%	2 nd /II B 55-61%	2 nd /I B+ 62-69%	I A 70-100%
The Netherlands	1-5,4	5,5-6,4	6,5-7,4	7,5-8,4	8,5	9,10
Poland	2	3	3	4	5	6
Portugal	1-9	10,11	12,13	14,15,16	17,18	19,20
Spain	Suspensio	Aprobado 5	Aprobado 6	Notable 7,8	Sobresaliente 9	Mhonor
Sweden	U Fail	G=Pass	G=Pass	G=Pass	VG=Pass with Distinction	VG=Pass with Distinction
United Kingdom	Fail	Third pass E 35-39% D 40-52%	Lower 2 nd C 53-57%	Upper 2 nd B- 58-62%	Upper 2 nd B+ 63-69%	I A 70-100%

Table 2. Compulsory courses and other activities and related CFU for the first level degree called "AgroIngegneria" (Agricultural Engineering) offered by the Faculty of Agriculture of Palermo University.

First level degree: Agricultural Engineering

First year

	Integrated courses	Courses	Hours	Area	CFU
1	Mathematics and computer science	Fundamentals of mathematics	60	Basic courses	9
		Fundamentals of computer science	30		
2	Botany	Agricultural botany	30	Basic courses	6
		Systematic botany	30		
3	Chemistry	General and inorganic chemistry	50	Basic courses	9
		Organic chemistry	40		
4	Physics		60	Basic courses	6
5	Topography and cartography	Topography and cartography	50	Agricultural engineering	9
		Fundamentals of geography and geomorphology	30		
6	Agronomy and fundamentals of soil science	Agronomy	60	Agricultural science	9
		Fundamentals of soil science	30		
7	Rural buildings and land planning		75	Agricultural engineering	9
8	EU Foreign language		30	-----	3
	TOTAL				60

Second Year

	Integrated courses	Courses	Hours	Area	CFU
9	Zootechny	General zootechny	30	Agricultural science	9
		Special zootechny	50		
10	Fundamentals of entomology and plant pathology	Agricultural zoology and entomology	60	Agricultural science	9
		Fundamentals of plant pathology	30		
11	Herbaceous crops and irrigation		50	Agricultural science	6
12	Fundamentals of hydraulics		60	Agricultural engineering	6
13	Agricultural economics and politics	Agricultural economics	60	Agricultural economics and assessment	9
		Agricultural politics	30		
14	Fruit tree cultivation		60	Agricultural science	6
15	Management of greenhouse cultivation		60	Agricultural science	6
	TOTAL				51

Third year

	Integrated courses	Courses	Hours	Area	CFU
16	Food technology and fundamentals of microbiology	Food technology	50	Food Science	9
		Food microbiology	40		
17	Agricultural and industrial mechanics and mechanisation		60	Agricultural engineering	6
18	Agricultural hydrology		50	Agricultural engineering	6
19	Rural assessment		60	Agricultural economics and assessment	6
20	Plants for food processing and ergonomics and safety	Plants for food processing	30	Agricultural engineering	6
		Ergonomics and safety	30		
21	Plants for irrigation and drainage		75	Agricultural engineering	9
	TOTAL				42

Other instruction activities

Activities	CFU
Optional	9
Degree thesis	9
Practical training	9
TOTAL	27

Total first level degree	180
---------------------------------	------------

Table 3. First and second level degrees in Agricultural Sciences and Agricultural Engineering Sciences offered by the Faculty of Agriculture of Bari University.

First level degree: Agricultural Sciences		
First year		
	Integrated courses	CFU
1	Mathematics	6
2	Physics	6
3	General and inorganic chemistry	6
4	Fundamentals of organic chemistry	3
5	Agricultural genetics	6
6	Plant biology	6
7	Fundamentals of agricultural economics	6
	TOTAL	39
Second year		
	Integrated courses	CFU
8	Fundamentals of agronomy	6
9	Herbaceous crops	6
10	Agricultural engineering	9
11	Soil chemistry	6
12	Agricultural mechanics	6
13	Agricultural zoology and entomology	9
14	Agricultural physiology and biochemistry	6
15	General zootechny	6
	TOTAL	54

Third year

	Integrated courses	CFU
16	Plant pathology	6
17	Special zootechny	6
18	Fruit tree cultivation	9
19	Food technology	6
20	Agricultural politics, economics and rural assessment	9
21	Agricultural microbiology	6
	TOTAL	42

Other instruction activities

	Activities	CFU
	English language	6
	Integrated activities	8
	Computer science	3
	Optional	15
	Degree thesis	4
	Practical training	9
	TOTAL	45

Total first level degree	180
---------------------------------	------------

Second level degree: Agricultural Engineering Sciences

First year

	Integrated courses	CFU
1	Computer science	6
2	Fundamentals of hydraulics and irrigation	6
3	Cartography and geographical information systems	6
4	Computer aided design	4
5	Rural assessment	6
6	English language	3
7	Management of water resources	5
8	Agricultural mechanisation and automation	6
9	Machines and plants for food processing	6
10	Agricultural biotechnology	3
11	Food technology	3
12	Optional	6
	TOTAL	60

Second year

	Integrated courses	CFU
13	Rural land analysis and planning	6
14	Greenhouses and buildings for food processing	6
15	Ergonomics and safety	6
16	Waste treatment and by-product recycling	6
17	Process quality and certification	3
18	European Union legislation	3
19	Economics and management of enterprises	5
20	Optional	9
	TOTAL	44

Other instruction activities

	Activities	CFU
	Degree thesis	12
	Practical training	4
	TOTAL	16

Total second level degree	120
Total first and second level degrees	300

4. ECTS label & accreditation

An ECTS label can be awarded by European Union to the Italian Universities properly applying ECTS in the first and second level degree courses.

In Italy some Universities have applied since the academic year 2002-2003 for an ECTS label (e.g. Tuscia University of Viterbo has applied for the first level degree called “Technologies for Forestry Environment and Industries”), while other Universities plan to apply later for an ECTS label. Until now in Italy no degree course in Agricultural Engineering has been ECTS accredited.

5. How is ECTS entered in the records of students going abroad

Until now within the Agricultural Engineering studies the correspondence among the courses carried out at the host Universities and those offered by the domestic Universities is based upon specific agreements between the host and domestic university.

However the ECTS has not been fully implemented in Italy. In fact, the Italian Universities can freely issue degree courses without being compelled to apply the ECTS system. Therefore, some administration procedures are needed for selecting the courses to be carried out abroad which can be compatible with the Italian CFU, as well as for recognising the amount of credits corresponding to the course examinations passed abroad. In Italy each degree course has a fixed amount of credits (CFU) that the student can acquire, freely choosing among courses offered by any University (including foreign Universities). E.g. in the degree courses offered by the faculties of Agriculture of Palermo and Bari Universities the amount of CFU free to the student’s choice is 9. This is the only possibility that the student has to partially create his own curriculum.

6. Describe shortly the problems identified with regard to the current ECTS approach and procedures and offer suggestions for improvement of ECTS

In Italy the credit system is relatively new and, therefore, until now ECTS has not been implemented.

The law that implemented the CFU system of credits in 1999 (D.M. n. 509) also made the Italian Universities free of issuing their own degree courses; this fact resulted as an obstacle to the implementation of ECTS in Italy. In fact, the amount of first and second level degrees has highly increased and some of them, in spite of having similar names, have different curricula. In our opinion the implementation of ECTS in the European Union could be improved by Thematic Networks like the USAEE, establishing the minimum contents of curricula and courses and the corresponding ECTS.

References

[1] A. Comparetti, P. Febo, S. Orlando, Research Activities in Italian University Departments and Institutes of Agricultural Engineering, 2nd USAEE Workshop, Palermo, Italy, 26-27 September 2003.