

## A Soft Take-Off in the Direction of “Bologna”

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In the 2009-2010 academic year, ten new degrees have begun to be taught at the UPM (Universidad Politecnica Madrid), which is the first group of degrees that this university will offer within the framework of the EHEA (European Higher Education Area). One of these new degrees is the Building Engineering Degree, which was implemented in September 2009 in the EUATM (Escuela Arquitectura Técnica Madrid). It is the heir to the former Arquitecto Técnico Degree that will become extinct as the new degree is successively implemented. This paper unveils the strategy that the EUATM management board has designed and is developing, so that the complex process that involves the incorporation of Universidad Politecnica Madrid into the model of “Bologna”, takes place smoothly and with guaranteed success.

*Keywords:* innovation strategy, EHEA (European Higher Education Area), “Bologna” model

### Introduction

In September 2009, the EUATM (Escuela de Arquitectura Técnica de Madrid) introduced the former Building Engineering Degree within the framework of the EHEA (European Higher Education Area). This is a complex process of adaptation of the entire university structure as a whole to the new model that includes both the normative and formal content and especially, everything related to a profound change in the attitude of the participants in the process. The EUATM has opted for a soft take-off in the direction of “Bologna” that will allow us to land there smoothly and with assurance of success.

From the very beginning, the fundamental line of action to achieve this goal has been to try to get the cooperation of the majority of teachers with this purpose. The management team wants everyone to think that this is a task for all and provides the greatest number of people possible with the option to participate actively in the project, with different levels of contributions or involvement.

However, this baseline is not easy to follow. We are aware that for many colleagues, the new model is a threat to their way of working and their autonomy as teachers. There are many shadows that blur the potential benefits that methodological change enthusiasts try to show to those who are not.

They sometimes present us issues of a quasi-philosophical nature:

- (1) If we have to change, it is because our teaching was not good in the past. But we (teachers, students)

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still remain the same. So, is “Bologna” a kind of aura whose name, by itself, miraculously transforms deficiency into excellence?

(2) And if our teaching was good in the past, why must we change it?

Other particular complaints stress the more practical difficulties. We all know the most common:

- (1) Too many students to be able to carry out the changes in methodology;
- (2) A lack of adequate space and funding to improve resources;
- (3) Students are not prepared for a more autonomous learning process;
- (4) Lecturers’ dedication to teaching is not sufficiently recognized.

In sum, for some of our colleagues, “Bologna” is asking them to make an extra effort, but does not provide the compensation that one can expect in any fair exchanges. What can we argue to persuade non-believers?

### **Prior Actions**

We think that to deny or hide the difficulties is not the way to achieve our goal. Conversely, to ensure minimizing the negative effects of the shadows that we mentioned before, we have gradually developed short-range actions step by step and with a clear purpose, without provoking any head-on clashes.

We have put aside the big questions, which essentially boil down to give an all-round “Yes” or “No” to “Bologna”, because we think it is a completely sterile discussion that consumes large amounts of energy and is, therefore, very inefficient from the point of view of “sustainability”.

The prior actions we have undertaken relate primarily to establishing channels for dialogue and coordination at all levels to ensure the participation of a large majority of the UPM (Universidad Politecnica Madrid) lecturers in different tasks, so that they do not remain outside the process of becoming integrated into the EHEA.

And as far as students are concerned, we think it is dangerous to take up attitudes that offer them “everything for the students, but without the students”, and therefore, if success is to be achieved, it is vital to take into account their cooperation and views. However, in this particular process, we find a new difficulty, as students with more university experience are not only inexperienced in the new educational model, but will also not participate, because they will finish their studies in the degree previous to the 2009 Plan.

Three or four years prior to beginning the new degree studies, the EUATM developed several specific preparatory actions. Some of them were:

- (1) Promotion of educational innovation: Conferences on Educational Innovation and Teaching Experience and the appointment of an Assistant Dean for the Educational Innovation Office;
- (2) The setting-up of management advisory committees: teaching-learning committee, heads of departments committee and curriculum committee;
- (3) Building a coordinators network: semester and subject;
- (4) Development of a pilot project to adapt studies to the EHEA in 2008-2009 in two groups of the first year of the former “Arquitecto Técnico” degree;
- (5) Organization of training activities for lecturers, administrative staff and student mentors;
- (6) Dialogue with student representatives: Meeting and Participation Conferences in Ezcaray and Soto Del Real, maintained between management board and student representatives;
- (7) Calls for meetings between management board and lecturers;
- (8) Adaptation of classrooms and other physical spaces.

In next paragraphs, these actions are detailed.

### Promotion of Educational Innovation

Since 2005, Conferences on Educational Innovation and Teaching Experience (Blanco et al., 2005) have been scheduled in the UPM. The name means not only a growing interest in innovative attitudes, but also recognition of the expertise and dedication of lecturers whose teaching skills follow more traditional patterns. During these sessions, many colleagues began to hear and speak about other ways of teaching in an informal and non-dogmatic way (see Figure 1).

III Jornada Innovación Pedagógica y Experiencia Docente		Programa ▼
9:30	Acto inaugural -	
10:00	Conferencia Invitada:	
10:40	<i>E-Learning en la enseñanza del Inglés de Especialidad</i> - Trinidad Fernández	
11:00	<i>Punto de Inicio: Una herramienta de apoyo a la integración con éxito de los nuevos alumnos en los estudios de Ingeniería y Arquitectura</i> - Ana Casaravilla	
	<i>Punto de Inicio: Experiencias en el Aula de Física</i> - Jesús Gómez	
11:40	Pausa Café	
12:00	<i>Evaluación de la Plataforma Moodle como apoyo a la formación presencial en la asignatura de Construcción II</i> - David Caballol	
12:20	<i>Las Tecnologías de la Información y la Comunicación y su aplicación en las Enseñanzas Técnicas. Experiencia docente</i> - Isabel Bach; Nieves Navarro; Marta Sierra; Mariano de las Heras	
12:40	<i>Análisis de la influencia del curso de nivelación en los niveles alcanzados por los alumnos en primer curso de la Unidad Docente de Dibujo Arquitectónico</i> - José Manuel Calcedo; Sofía Herrero; Pablo Luis Mayor	
13:00	<i>OCW: Mirar lo que enseñan otros</i> - M <sup>a</sup> Ángeles Gilsanz	
13:20	<i>Trabajo personalizado en grupo de trabajo</i> - Jesús González; Sonsoles González	
13:40	<i>Impartición de clases prácticas siguiendo métodos basados en la investigación</i> - M <sup>a</sup> Luisa Pernaute	
14:00	<i>Una herramienta educativa</i> - Antonio Pendán	
	Clausura - Mercedes del Río, Subdirectora de Investigación, Doctorado y Postgrado	

Figure 1. III Conference on Educational Innovation and Teaching Experience.

### Setting-up of Management Advisory Committees

Also being set up at the same time was the Teaching-Learning Committee, a management advisory committee with the participation of lecturers from all departments and student representatives. This committee has strengthened its activity because of the launch of the graduate degree and now includes representation from the different degrees offered at the UPM, including the master's degree.

As a way of addressing the need to strongly encourage this particular segment of academic life, in 2008 the UPM Dean created the Office of Assistant Dean for Educational Innovation, working in conjunction with the Associate Dean of Academic Affairs and Faculty (Head of Studies) and the Associate Dean of Undergraduate Student Programs, to coordinate efforts aimed at improving learning, especially regarding incorporation into the EHEA.

Another committee that also regularly meets with management board is the Heads of Departments Committee. They discuss and develop strategies to encourage better teaching, especially regarding matters arising from the changes brought about by the introduction of the new model. It should not be forgotten that we often run into conflicts of jurisdiction between departments and school management, as in many cases, the university regulations are not fully adapted to the new situation. This mismatch can generate serious problems.

The committee that drafted the study plan for the Building Engineering Degree included democratically elected representatives from all sections of the UPM, and carried out exhaustive work. This effort led to the plan being approved by the ANECA (National Quality Evaluation and Accreditation Agency), with hardly any corrections and its immediate implementation in record time.

### Building a Coordinators Network

A coordination network has been established with two important figures: a teaching subject coordinator and a semester teaching coordinator, whose duties have been determined by the UPM Board. They are key pieces in the job of ensuring that the subjects comprising the degree curriculum are not widely-scattered islands, but form a real body with a sense of unity and common purpose.

### Pilot Project

In 2008-2009, there was a pilot project to adapt the studies to the EHEA in two groups of the first year of the former Arquitecto Técnico Degree (one morning shift group and another afternoon shift group), with 60 students each. Students were registered on a voluntary basis and committed to following all the subjects regularly (see Figure 2). Each group had its own teaching coordinator, and the general coordination of the experience was carried out by the Educational Innovation Office. The findings and conclusions have been disseminated and considered for the subsequent adaptation of the degree studies to the “Bologna” model (Casaravilla, Chávarri, & Losada, 2009).

**ESPACIO EUROPEO DE EDUCACIÓN SUPERIOR**  
**EXPERIENCIA PILOTO EN PRIMER CURSO**

En los Grupos **5** (de mañana) y **9** (de tarde) se desarrollará una experiencia piloto de adaptación al EEES

La matrícula en los Grupos 5 y 9 se realizará según el orden de llegada de los alumnos hasta completar el número de 60 en cada grupo

- ✚ Los alumnos que deseen participar en la experiencia piloto de forma voluntaria, deberán matricularse de PRIMER CURSO COMPLETO (todas las asignaturas excepto *Estructuras I*).
- No se admitirán cambios de grupo posteriores a la matriculación.
- ✚ La metodología docente, objetivos y criterios de evaluación serán específicos.
- ✚ Se desarrollarán metodologías activas y participativas y se fomentará el proceso de evaluación continua y formativa del alumno.
- ✚ La matriculación en un grupo piloto conlleva un compromiso de participación activa del alumno en el proceso de aprendizaje.
- ✚ Los alumnos participantes en el curso piloto podrán solicitar que les sean reconocidos hasta un máximo de 3 créditos en materia de libre elección.

Figure 2. Pilot project announcement.

### Training Activities

We have also organized training activities for lecturers and administrative staff in educational subjects such as methodology, assessment in different computer applications and virtual learning platforms (see Figure 3).



Figure 3. Assessment workshop. (2009, February)

### **Dialogue With Student Representatives**

It is said that one of the most important features of the EHEA is changing the role from teacher to student, i.e., the shift of emphasis from the act of teaching to learning. Therefore, the way students accept the new learning process is a priority. In the EUATM, the participation of students is motivated persistently, though it is not always easy to get a large group of students involved in school activities. We are particularly working with student representatives as part of a permanent dialogue, to integrate them into all the governing and advisory bodies of the school. For 19 years, meeting and participation conferences have been held annually with students, in which the management team, heads of departments and representatives from professional associations and academic authorities meet with delegates and student associations for three or four days, outside the city, to discuss and reflect on all matters of interest for the teaching/learning process and the future of students (see Figure 4).



*Figure 4.* Meeting and participation of a conference in Soto Del Real. (2009, December)

### **Meetings Between Management Board and Lecturers**

Before the beginning of each semester of the new degree, meetings between management board and all lecturers take place (three up to present) to obtain information concerning their needs, the resources required for teaching their respective subjects and possible suggestions for improving the overall quality of the UPM.

### **Adaptation of Physical Spaces**

The high number of students who want to come to UPM causes many of the problems we are facing to implement the new educational model. We have difficulties in adapting our structure and resources, both in regard of physical spaces and other equipment, and the lack of lecturers in order to be truly effective and achieve our goals. Some classrooms and other physical spaces have undergone some minor rehabilitation, but with a restricted budget, they intended primarily for smaller groups of students, workshops and group mentoring rooms. Regarding lecturers, we hope to be able to count on the efforts of all of them to strengthen the small teacher/student ratio.

### **Ongoing Activities**

As stated above, the EUATM started to deliver the Building Engineering Degree in September 2009 to a total of 470 students, which were divided into seven groups, four in the morning shift and three in the afternoon. Simultaneously, the former Arquitecto Técnico Degree, which will become extinct as the new degree is successively implemented, continues to be taught on all years, including four groups of the first year.

Some of the activities detailed above are still ongoing, although some of them have taken new approaches

as the “Bologna” framework has become fully effective:

- (1) Student integration program (PIA program);
- (2) “Horizontal” and “vertical” coordination;
- (3) School planning, learning plans;
- (4) Integrated approach to foreign language (ISI program).

### Student Integration Program (PIA Program)

For the students of this first year, in the student integration program, special activities have been devised to provide information about what the EHEA means and the best way to follow this different way of learning. The mentoring program in which advanced students act as mentors for new students has been very successful. This year, some new circumstances have arisen, because the mentors themselves do not take a leading role in the “Bologna” process, but simply act as guides for the newcomers. To be able to perform their role adequately, they have received a training workshop on the developments of the new teaching/learning model.

### “Horizontal” and “Vertical” Coordination

We are developing an ambitious educational innovation project, involving 20 teachers from all the areas of knowledge of building engineering coordinated by the practicum lecturers. Its main objective is to define the technical, scientific and empirical concepts in each range of subjects, so that the contents have a clear vertical coordination throughout the degree avoiding duplications and gaps, and secondly, to adapt and rationalize the academic content of the degree curricula to meet the graduates’ professional profile.

Likewise, the main duty of the semester coordinator is to coordinate the teaching of all the subjects in a horizontal sense, i.e., with the objective of making the programming consistent with the competencies which set out in the curriculum, particularly regarding the compatibility of the schedules for the proposed activities, the total estimated student work for the entire semester and the best methodological resources to facilitate the acquisition of general competencies.

### School Planning, Learning Plans

The school teaching planning is published annually (4th edition 2009-2010) (*School Teaching Planning of the Academic Year 2009-2010*, 2009). This contains all relevant information about the UPM’s academic life, students, organization and scheduled events and also professional information of particular interest for students finishing their degree (see Figure 5).

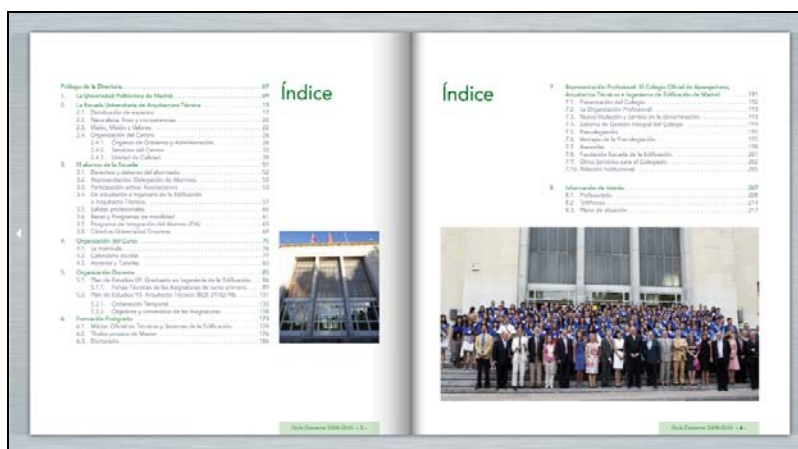


Figure 5. School teaching planning. (2009, September)

Moreover, in this year, the learning plans have been developed in detail for all subjects in the first two semesters of the new degree. A general model was drawn up in order to serve as the basis for all the plans of the different subjects. The learning plans include, at least, a description of the subject, expected learning outcomes and their measuring indicators, the table of contents, the individual or group training activities planned—both in-class or out-of-class, the timetable, the background methodology for the actions planned, the learning/teaching resources and the general assessment system.

Three types of subjects were being identified, according to the percentage of in-class activity versus the total amount of student work (25%, 33% and 50%, respectively). These steps allow standardizing certain parameters throughout the degree semesters and prevent the student from feeling lost in excessive vagueness, without diminishing the autonomy of departments to adopt relevant decisions concerning teaching.

Finally, subject and semester teaching coordinators are the link between all lecturers who teach the same subject, or those who teach in the same semester period, respectively, and the Associate Dean of Academic Affairs and Faculty, who is ultimately responsible for the degree. Acting with the confidence afforded by their peers, the coordinators watch that the agreed planning in the learning plans is met to the benefit of the quality of learning, i.e., the ultimate goal of the curriculum.

#### **Integrated Approach to Foreign Language (ISI Program)**

The UPM encourages its graduates to reach a good level of proficiency in the English language, which is now a growing demand in the workplace and a basic requirement for engineers, architects, scientists and researchers in general, since it has become the true “lingua franca” that enables globalization and knowledge transfer (Tel2L Project: Teaching subjects through the medium of a foreign language, 1997-2000). The level required is B2, equivalent to CFC (Cambridge First Certificate) in English, or upper intermediate level. English has also become a compulsory subject, “English for professional and academic communication”, for obtaining any degree in the UPM.

To help students meet these requirements, several types of steps will be taken in the EUATM. Among them there is the integrated approach to foreign language (Casaravilla, 2009). From the beginning of the studies in Building Engineering, this initiative introduces the tuition of different subjects using the English language gradually and without mandatory enforcement. From the first semester of the new degree, all subjects are taught partly in English in one of the seven groups of students, with a total of 65 students registered voluntarily. The program is especially aimed at students having an elementary or intermediate language level and aims to achieve a two-fold objective: For students to become familiar with English terminology in various scientific and technological subjects and to improve their skills and competencies in English communication within the context of the EHEA (see Figure 6).

The program is not only an individual experience for each teacher with their students in their subject, but also a global initiative for the entire semester’s teaching and will, therefore, be coordinated from the Educational Innovation Office.

Group activities are promoted in all subjects, especially when students with a better level of English can help the other students in the language-related tasks. Leader groups can benefit from extra positive marks. Cooperative work also enables other transversal skills to be developed, not just communication skills, thereby enabling students to improve their academic training.

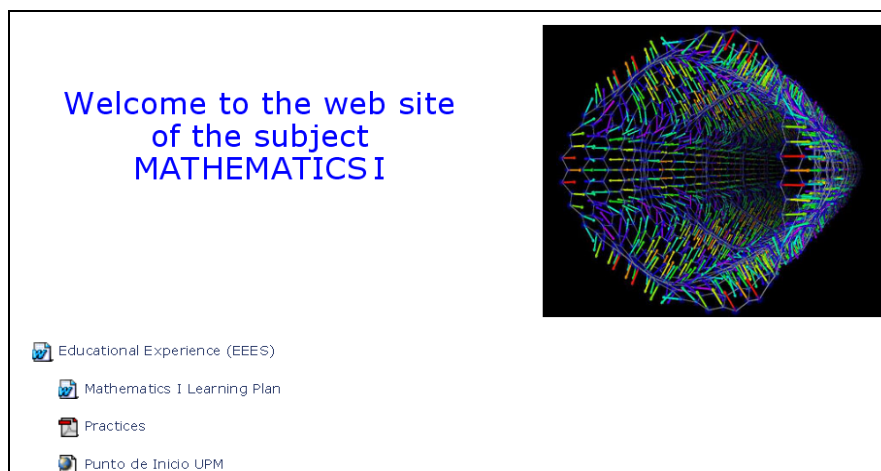


Figure 6. First semester subject heading (moodle platform).

However, as it is said, bilingual education is about getting education, not about becoming bilingual, and therefore, no priority is given to know English over the subject matter. Regarding assessment, students can achieve extra positive scores for a proper use of the second language, but inappropriate language or grammar mistakes will not be penalized in the assessment of tests or activities.

Other actions:

- (1) The membership and functions of advisory committees have been changed to suit the new reality;
- (2) Lecturers' training activities are still in course at the present time. Very often the teachers are the more experienced peers in innovative methods;
- (3) Assessments of the different experiences are made, and conclusions are drawn from them;
- (4) Interdisciplinary teaching teams have been organized to analyze the new situations from different perspectives.

And, of course, all kinds of dialogue channels always remain open with all sections of the UPM, with the school management giving priority to a receptive mind and total transparency in decision making.

### Conclusion

We believe that incorporation into the EHEA is a very important process for Spanish culture that supposes a new step forward towards further integration into the European environment. It is not bereft of difficulties, more so at the present time, when the economic situation makes things even harder, and the way of addressing these barriers will decide the level of our success.

In the EUATM, we have adopted a smooth take-off to “Bologna”, because we know that our point of departure is built on solid foundations, and we are aware that we are going to a higher place and aware of the difficulties associated with the rise. It would not be useful for anyone to leave a large number of colleagues behind, abandoned on the road, rejecting this adventure, because the launch has been sharp, misdirected and without a clear goal.

So we are taking small steps towards that goal, with the full conviction that with each step, the whole team will become stronger, as we add together everybody's energy and finally overcome the obstacles.



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