UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH
Facultat d'Informàtica de Barcelona

SELF-ASSESSMENT REPORT FOR DEGREE PROGRAMME ACCREDITATION:

- Grau en Enginyeria Informàtica (GEI)
- Màster universitari en Enginyeria Informàtica (MEI)
- Master's degree in Innovation and Research in Informatics (MIRI)
- Master's degree in Artificial Intelligence (MAI)

Universitat Politècnica de Catalunya

Facultat d'Informàtica de Barcelona (FIB)

Barcelona, 27/11/2015

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Introduction

This document is the detailed self-assessment report (SAR) submitted for accreditation of four informatics degree programmes at the Barcelona School of Informatics (in Catalan, *Facultat d'informàtica de Barcelona*, FIB) at UPC-BarcelonaTech (*Universitat Politècnica de Catalunya*. UPC is a public institution dedicated to higher education and research, specialised in the fields of engineering, architecture and science**.**

The European Higher Education Area (EHEA) was meant to ensure more comparable, compatible and coherent systems for a quality higher education in Europe. Therefore higher education systems have to be quality assured.

Two main organisations play a relevant role in quality assurance processes for informatics degree programmes: ENQA (European Network for Quality Assurance in higher education) and EQANIE (European Quality Assurance Network for Informatics Education). The first one defines standards and guidelines for quality assurance in the EHEA, while the second one specifies them for informatics education systems. Consequently higher education institutions and quality assurance agencies across the EHEA can use common reference points for quality assurance. Institutions should have formal mechanisms for the approval, periodic review and monitoring of their programmes and awards. Accreditation aims to review the efficacy of a qualification process within a degree programme.

Two quality assurance agencies are involved in this accreditation process at FIB: AQU Catalunya (*Agència per a la Qualitat del sistema Universitari a Catalunya*) and ASIIN (*Akkreditierungsagentur für Studiengänge der Ingenieurwissenschaften, der Informatik, der Naturwissenschaften und der Mathematic*). FIB is applying for the accreditation of four degree programmes to AQU Catalunya. AQU, in partnership with ASSIN, has an agreement with respect to the Euro-Inf label accreditation. The Euro-Inf quality label is awarded to degree programmes at Bachelor's and Master's level that comply with the "Euro-Inf Framework Standards and Accreditation Criteria".

The four degree programmes submitted to AQU are:
- GEI (*Grau en Enginyeria Informàtica*): Bachelor Degree in Informatics Engineering
- MEI (*Màster en Enginyeria Informàtica)*: Master in Informatics Engineering
- MIRI: Master in Innovation and Research in Informatics
- MAI: Master in Artificial Intelligence

FIB also applies for the accreditation under the Euro-inf label with the GEI, MEI and MIRI programmes within the general area of informatics. MAI is an inter-university programme including UPC, UB (*Universitat de Barcelona*) and URV (*Universitat Rovira i Virgili*) offering a state-of-the-art education in the field of Artificial Intelligence. Arguably such field is playing a key role in today's IT. So FIB applies with the MAI academic programme for an internationalisation mention under AQU Catalunya.

This document provides information for both AQU accreditation and Euro-Inf label accreditation. Chapter 1 and 2 describes relevant information about FIB and the self-assessment report development. Chapter 3 provides the required evidences –as documents and pointers- to fulfill the requirements and criteria of the accreditation. Finally Chapter 4 describes the continuous improvement process plans and Chapter 5 lists the evidences.

AQU defines 6 standards for the criteria and requirements of programme assessment (2014, "Guide to the accreditation of recognised first and second cycle degree programmes"). EQANIE defines 5 guidelines for the criteria and requirements of programme assessment ("Euro-Inf Framework Standards and Accreditation Criteria", the 2011 version is used, but the new one

published, 2015, will be related). The connection between the two definitions is summarized in two tables:
- the table on the left shows Chapter 3 organised following the six AQU standards, and the connection with which EQANIE guidelines (or guidelines sections) are being dealt with.
- The table on the right shows EQANIE guidelines and the connection with the AQU standard section where they are being dealt with.

Standard AQU (S1,S2,S3,S4,S5,S6)	**Guidelines Euro-Inf (G1,G2,G3,G4,G5)**
Chapter 3. Standard 1 (S1)	G1 (1.1,1.2,1.3)
Chapter 3. Standard 2 (S2)	G1 (1.2)
Chapter 3. Standard 3 (S3)	G5 (5.1,5.2)
Chapter 3. Standard 4 (S4)	G3 (3.1,3.2)
Chapter 3. Standard 5 (S5)	G3 (3.2)
Chapter 3. Standard 6 (S6)	G2 (2.1,2.2, 2.3), G4 (4.1,4.2)
Chapter 3. Euro-Inf label (EI)	G3 (3.3, 3.4)

Guidelines Euro-Inf	**Standard AQU**
G1. Needs, Objectives and Outcomes	S1, S2
G2. Educational Process	S6 (6.1,6.2)
G3. Resources and Partnerships	S4, S5, EI
G4. Assessment of Educational Process	S6 (6.3,6.4)
G5. Management System	S3

The Self-Assessment Report has been in charge of a specific Internal Evaluation Committee (CAI, in Catalan, *Comitè d'Avaluació Interna*).

1. The Barcelona School of Informatics (FIB)

Formal data

Higher Education Institution **School**	UPC-Universitat Politècnica de Catalunya (Technical University of Catalonia) FIB-Facultat d'Informàtica de Barcelona (Barcelona School of Informatics)
Web address	http://www.fib.upc.edu/en.html
Quality Assurance System (QAS)	http://www.fib.upc.edu/en/centre/qualitat.html
SAR managers **SAR team**	Núria Castell (dean) Roser Rius (vice-dean of quality) CAI (Internal Assessment Committee)
Contact	degana@fib.upc.edu , 93 4017111 vd.qualitat@fib.upc.edu, 93 4017111

Degree programmes to accreditate

Name of the programme	RUCT code	Crèdits ECTS	Verification date	Accreditation year	Academic coordination/ Programme degreee manager
Grau en Enginyeria Informàtica (GEI)	GRAU00000407	240	29/07/2010	2016	GEI committee / Vice-dean head of studies
Màster universitari en Enginyeria Informàtica (MEI)	DGU000001058	90	19/09/2012	2016	MEI committee / Vice-dean for Postgraduate Courses
Master's degree in Innovation and Research in Informatics (MIRI)	DGU000001097	120	28/12/2012	2016	MIRI committee / Vice-dean for Postgraduate Courses
Master's degree in Artificial Intelligence (MAI)	DGU000001164	90	28/12/2012	2016	MAI committee / Vice-dean for Postgraduate Courses

Relevant information of FIB

FIB, since the academic year 1977-78, has been the teaching institution of UPC in charge of the higher education in the fields of Computer Science, Computer Engineering and other related domains. FIB is a pioneering school in university-level informatics in Spain and has been spearheading Catalonia's progress in the field since 1977. FIB mission is to contribute to society graduating top-quality professionals who will be required by organisations that seek to innovate and make progress.

It is located on the UPC's North Campus, which has the greatest concentration of research and innovation in IT in southern Europe and forms part of the Barcelona Knowledge Campus, an international campus of excellence.

FIB's teaching and research activity is recognised repeatedly in the most well-known rankings all around the world (evidence [96]). Focusing in the thematic rankings, which can show better the influence of FIB in the marks obtained, UPC appears in a leading position in Spain, and a quite strong position also in Europe and the World, in the Academic Ranking of World Universities (ARWU–Shanghai Ranking) in the field of Engineering, Technology and Computer Science (one of the two first in Spain, 101-150 in the world); in the QS World University Rankings by Faculty, both in Engineering and Technology (1st in Spain, 82nd in the world) and in Computer Science and Information Systems (1st in Spain, 51-100 in the world).

In addition to these rankings, we are also positively evaluated in a couple more rankings published recently and with a different approach. On one hand, the Ranking ISSUE (U-Ranking, Fundación BBVA) orders the Spanish universities under different scopes, ranking the UPC 2nd in Productivity, 2nd in Research and 1st in Innovation and Technological Development. On the other hand, there is the 1st Ranking University-Enterprise (*Fundación Everis*): UPC appears 1st in the field of Informatics and ICT (being the 61% of graduate students considered in that category Informatics Engineers).

The FIB institutional website (evidence [417]) is the main website to interface with all the relevant stakeholders (staff, alumni, current and prospective students, potential employers, and informatics societies). The website provides information about the School, the first cycle degree programme (Bachelor degree in informatics engineering, GEI, evidence [418]), and the second cycle degree programmes (evidence [419]). The school introduction summarises the main features: the school in figures (over 2000 students, over 300 graduates in the last full-year course, over 9000 graduates since 1979), the school's history with some relevant years with a brief overview (in Catalan), and employment opportunities in several sectors and professional fields.

A new Bachelor degree in Informatics Engineering (GEI) was introduced during the 2010-2011 academic year, based on the curricula designed in 2003 and in accordance with the rules stated by EHEA. In addition, three official masters where introduced during the 2012-2013 academic year: MEI (Master in Informatics Engineering), MIRI (Master in Innovation and Research in Informatics) and MAI (Master in Artificial Intelligence). The masters – except MEI – are taught entirely in English. The new curricula implies new teaching criteria: ECTS (European Credit Transfer System), focus on student participation, innovation in teaching methods, and use of modern educational technologies.

The informatics degrees are officially verified by the Spanish government and then authorised by the Catalan government before they can be deployed. Since the adaptation of the Spanish university system to the EHEA framework, the structure of university studies in Spain distinguishes Bachelor degrees (4 years of study, 240 ECTS, usually) and Master degrees (1-2 years, 60-120 ECTS).

The Spanish Government establishes specific rules for degrees on the so-called 'regulated professions'. Such professions (e.g. Medicine, Architecture or Engineering) have specific laws clearly defining its competences. Anticipating that Computer Engineers in Spain may also constitute a regulated profession in the near future, the Spanish Government has also defined

recommendations for the development of curricula for Bachelor and Masters informatics degrees. The interested reader can find more information at: Spanish university system, reference documentation, and Spanish Royal Decree.

Bachelor and Masters are regulated by the Spanish Government Royal Decree RD 1393/2007 (and by the RD 861/2010 modification). GEI and MEI were designed according with such laws, while MIRI and MAI are thematic masters.
GEI verification was on July 30th 2010, and MEI verification was on September 19th 2012. MIRI and MAI received the verification on December 28th 2012.

FIB governance (at School Governance in evidence [417]) is carried out by the dean as the highest executive authority, the dean's team, and the governing bodies: the School Board and The Standing Committee that performs executive functions, and specific bodies.

Each degree programme (the new ones at EHEA) has its own specific governing body:
- CAGEI as the GEI Academic Committee
- CAMEI as the MEI Academic Committee
- CAMIRI as the MIRI Academic Committee
- CAIMAI as the MAI Academic Committee

Other specific bodies are: a general Academic Assessment Committee, three Curricular Committees, a Quality Committee, and actually during the accreditation process an Internal Evaluation Committee. All these governance bodies are elected or appointed within staff (academic and support staff) and students. FIB Quality Assurance System (QAS) involves all this governance structure.

Academic and support staff related to FIB (evidence [417] at School) involves management support staff (Structure Areas), technical support staff (inLab FIB), and academic staff in charge of subject teaching requested to several departments (8 of the UPC departments). Management support staff engages 21 persons, and technical support staff engages 22 persons of the inLab team (which also involves additional academic, technical staff and students for the innovation, research and technology transfer activities). Academic staff was 223 (with docent assignment mainly at FIB) last academic year (their categories distribution is in chapter 4.1). The total number of students last academic year was 1784. It includes the 4 new EHEA degrees submitted for accreditation, Erasmus-Mundus degree programmes (see Masters), previous informatics degrees with students but no new entrance, and previous degree masters (see Previous Masters).

FIB community copes with recent resources decreases despite the concurrence with the new EHEA degrees deployment that implies important teaching requests related to the rising number of students and number of ECTS. Last recession years and investments reductions are a worrying situation, mainly for the decreasing in the academic and support staff. The evolution of academic staff is: from 244 in 2012-13 to 223 in 2014-15 (in evidence [95] and also more detailed in chapter 4.1). Evidence [95] also shows the evolution of number of students (enroled and graduated):

	Students	GEI graduates	MEI graduates	MIRI graduates	MAI graduates
2012-13	1467	27	-	-	-
2013-14	1665	118	4	7	14
2014-15	1784	163	9	26	15

The total number of students is rising according the new degree offer in the EHEA framework. GEI was introduced during the 2010-2011 academic year with students enroled at first and second course. First GEI graduates were in 2012-13. First graduates for new EHEA Masters' degrees were in 2013-14.

2. Self-Assessment Report development

Self-Assessment Report team

Person	Position	
Núria Castell	Dean	Academic staff
René Alquézar	Vice-dean/head of studies	Academic staff
Gemma Sesé	Vice-dean/head of studies for the selection stage	Academic staff
Ramon Canal	Vice-dean for Postgraduate Courses	Academic staff
Roser Rius	Vice-dean of Quality	Academic staff
Ramon Nonell	Academic secretary	Academic staff
Carme Murillo	Head of Management and Support Services	Support staff
José Manuel Diéguez	Head of the Decision-Making Support Area	Support staff
Albert Obiols	Support Staff for Quality	Support staff
Antonio Cañabate	Instructor	Academic staff
Àngela Nebot	Instructor	Academic staff
Joan Antoni Pastor	Instructor	Academic staff
Carlos García Calatrava	GEI student	Student
Mario Cavero	GEI student	Student
Sergio Moyano Díaz	MEI student	Student
Alberto Gutiérrez Torre	MIRI student	Student
Armand Vilalta	MAI student	Student
Elisabeth Margarit	Professional and member of FIB Quality Committee	Professional

Self-Assessment Report development process

On May the 7th, the UPC Vice-Rector for Studies and Planning presented the UPC degree programmes subject to an ex-post assessment process (accreditation) for the 2015/16 academic year. Degree programmes are subject to an ex-ante assessment process (known as validation) and then an ex-post assessment process (accreditation) that takes place either four years later (in the case of Master's degrees) or six years later (for Bachelor degrees). FIB must assess a Bachelor's degree (GEI) and three Masters (MEI, MIRI and MAI).

In June, FIB set up the school's team that is responsible for producing the self-assessment report. The team, listed above, consists of representatives from the school's various stakeholders, such as academic/programme coordinators, teaching staff, support staff, students and one professional. This team is the internal assessment committee (CAI, in Catalan, *Comitè d'Avaluació Interna*). CAI has a similar composition to another main FIB monitoring committee, the Quality Committee. Some of the CAI members are in both committees, so CAI started functioning as another step in the monitoring process. CAI was divided into three sub-committees that are responsible for three different fields: Bachelor matters, Master matters and global FIB matters. The first task was to systematically collect data, analyse it, and discuss the data and figures in order to meet the accreditation standards.

On June the 23rd, the UPC Vice-Rector for Studies and Planning met with the FIB Dean's team to decide on the possibility of an international label, the Euro-Inf label for GEI, MEI and MIRI.

On September the 7th, the UPC-Gpaq staff presented the self-assessment report guide. Throughout September, October and November, CAI sub-committees met weekly, either face-to-face or via e-mail.
The whole CAI committee met on September the 16th, on October the 7th and 28th, and finally on November the 25th, to draw up and review the report.

FIB made the self-assessment report publicly available from November 11th to November 20th. And, finally, the self-assessment report was validated by the School Board on December the 2nd.

Self-Assessment Report evaluation

All CAI members contributed to developing the self-assessment report with highly satisfactory compliance. The whole FIB community also contributed to meeting the needs of this task.

3. Assessment standards and criteria

STANDARD 1. PROGRAMME QUALITY. NEEDS, OBJECTIVES AND OUTCOMES

Introduction: design competences and stakeholders' needs

The programme's design (competence profile and structure of the curriculum) meets the requirements of the discipline and complies with the required level of study according to the qualification framework in the EHEA in Spain (in Spanish *Marco Español de Cualificación para la Educación Superior*, MECES).

The educational objectives are outlined by the description of the learning outcomes that graduates require for practising their profession. Competences are these learning outcomes. They are a combination of knowledge, skills (intellectual, practical, social, etc.), attitudes and values that enable individuals to carry out tasks and solve problems in specific academic, professional or social settings. Under the new EHEA framework, graduates should have achieved:

- Technical competences (domain-specific or specialist competences) that are closely linked to the demands of the professional areas associated with their degree. For EQANIE, they are Basis, Analysis, Design, Implementation, Technology and Methodology. And for ASIIN they are Specialist competences.
  FIB defined these competences according the Spanish Government recommendations for the development of curricula for Bachelor and Masters informatics degrees.
- Generic competences (other professional competences, social or soft competences) to connect with society. For EQANIE they are Other professional competences, and for ASIIN Social competences. UPC approved an agreement on 7 generic or transversal competences to be common for all UPC degrees: Entrepreneurship and Innovation, Sustainability and Social Compromise, Third Language, Effective Oral and Written Communication, Team Work, Solvent Use of the Information Resources, and Autonomous Learning. Furthermore, FIB defined two others: Appropriate Attitude towards Work and Reasoning.

The design of the four degree programmes were based on all these competences, which should be acquired across all disciplines and specialisations. In 2007, FIB defined a competences committee (evidence [102] at *GEI Protocol verificat pg 51*) that was in charge of working out a competences list to be fulfilled by graduates. This committee took into account stakeholders' needs by considering related organizations' points of view: graduates (FibAlumni), informatics professional association (COEINF), and informatics technologies festivity sponsors (Festibity). Furthermore, some surveys were conducted among 353 professionals, 79 academic staff and 150 senior students (JENUI 2009), which provided relevant information. A competences list was delivered in 2009 to the FIB governance bodies as an initial document for the particular committee that was going to design new degrees in accordance with EHEA. Each programme website provides information about each degree programme competences.

GEI competences (in evidence [418]) consists of the 9 generic competences and 8 common technical competences (CT1 to CT8). GEI also has technical competences for each specialisation.

Masters' generic competences consists of 6 of the UPC generic ones (except Third Language), the 2 FIB generic competences, and 2 more: Applying Informatics Techniques to New Application Areas, and Integrate, Describe and Explain Applicable Techniques. Masters' technical competences are:
MEI competences: 10 generals, 4 specific groups, and 1 for TFM (Final Master Thesis)
MIRI competences: 2 generals, 4 specific groups, and 1 for TFM (Final Master Thesis)
MAI competences 4 generals, 8 specific groups, and 1 for TFM (Final Master Thesis)

Each programme website also provides information about each degree programme's competences, as related to subjects:
GEI competences for degree subject in evidence [418]
MEI competences for degree subject in evidence [419]
MIRI competences for degree subject in evidence [419]
MAI competences for degree subject in evidence [419]

A common procedure to develop domain-specific competences consists in setting different competence levels (based on Bloom's taxonomy) and then assigning them to the corresponding subjects or courses in the programme.
To develop generic competences into a comprehensive integrated experience, we propose a definition of each competence in terms of dimensions (or competence aspects), which are further defined according to three-level objectives. These objectives are integrated into the subjects that are considered suitable for this purpose. Thus one subject may integrate dimensions belonging to different competences at different levels, which contributes to an integral educational experience. In evidence [418] for the Degree subject curriculum we can find information on Competencial maps and some related articles. In a recent competences assessment workshop a presentation underlined how FIB conducts competence assessment.

Introduction: competences equivalence to Euro-Inf learning outcomes

The previously designed competences at FIB are consistent with the programme's competence profile and learning outcomes for informatics programmes, which were formulated by EQANIE in "Euro-Inf Framework Standards and Accreditation Criteria" (the 2011 version is used, but the new one published, 2015, will be related).

Programme learning outcomes can be described as quality standards for knowledge, skills and competences, which graduates of an accredited course should have achieved as the educational basis for practicing their profession or for post-graduate studies. A wide range of degree programmes fall within the general area of informatics, but all their graduates should be aware of the wider spectrum of informatics.

We show in the next three tables the equivalence relation between EQANIE Euro-Inf learning outcomes and competences in the GEI, MEI and MIRI degree programmes.
We have considered the EQANIE 2011 version; but taking into account the EQANIE 2015 version, we want to point out a FIB result according to the new category: economic, legal, social, ethical and environmental context. A recent 2015 ranking, 1st Ranking University-Enterprise (*Fundación Everis*), focused especially on the competences and skills (including the generic competences) acquired by the graduates during their studies. It has been elaborated by a massive survey to Spanish companies, which have hired new graduate students over the last 5 years. In this ranking, the UPC appears 1st in the field of Informatics and ICT (with 61% of graduate students being considered in that category of Informatics Engineers); and this underscores their honesty, ethical commitment, interpersonal and communication skills, and their ability to work in intercultural and multidisciplinary environments.

Table that links EQANIE Euro-Inf learning outcomes with GEI competences:

Euro-Inf Learning Outcomes - Bachelor's Programme in Informatics Engineering

Euro-Inf Learning Outcomes																		
Underlying Conceptual Basis for informatics	**Common technical competences**								Generic competences									
Graduates having completed a First Cycle degree should have demonstrated the following:	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	G1	G2	G3	G4	G5	G6	G7	G8	G9	
knowledge and understanding of the key aspects and concepts of their informatics discipline, including some at the forefront of that discipline	X																	
an awareness of the wider spectrum of informatics disciplines																X		
Analysis, Design and Implementation	**Common technical competences**								Generic competences									
Graduates having completed a First Cycle degree should have demonstrated the following:	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	G1	G2	G3	G4	G5	G6	G7	G8	G9	
insight into possible application fields of informatics																X		
an ability to become familiar with new informatics applications																X		
appreciation of the need for deep domain knowledge in certain application areas; appreciation of the extent of this in at least one situation			X															
formalisation and specification of real-world problems whose solution involves the use of informatics		X																
understanding complexity of informatics problems and the feasibility of their solution				X														
knowledge of appropriate solution patterns																	X	
an ability to select and use relevant analytic and modelling methods																	X	
an ability to describe a solution at an abstract level				X														
an ability to apply their knowledge and understanding to the design of hardware and/or software which meets specified requirements				X														
knowledge of all phases of the software life cycle for building new, and maintaining and commissioning existing, software systems		X																
selection and usage of appropriate process models and programming environments for projects involving traditional applications as well as emerging application areas					X		X											
modelling and design of human-computer interaction														X				
creation and thorough testing of software systems								X										
familiarity with existing software and application systems and use of their elements								X										
Technological and Methodological Skills	**Common technical competences**								Generic competences									
Graduates having completed a First Cycle degree should have demonstrated the following:	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	G1	G2	G3	G4	G5	G6	G7	G8	G9	
an ability to combine theory and practice to complete informatics tasks				X														
an ability to undertake literature searches, and to use data bases and other sources of information							X											
the ability to design and conduct appropriate practical investigations (e.g. of system performance), to interpret data and draw conclusions														X				
awareness of relevant state-of-the-art technologies and their application				X														
recognition of the need for, and engagement in life-long learning															X			
Other Professional Competences	**Common technical competences**								Generic competences									
Graduates having completed a First Cycle degree should have demonstrated the following:	CT1	CT2	CT3	CT4	CT5	CT6	CT7	CT8	G1	G2	G3	G4	G5	G6	G7	G8	G9	
an ability to complete tasks from different application areas while taking into account the existing technical, economical and social context								X		X								
consideration of the economic, social, ethical and legal conditions expected in informatics practice								X										
awareness of project management and business practices, such as risk and change management, and understanding of their limitations									X									
ablity to function effectively as an individual and as a member of a team												X	X					
an ability to organise their own work independently															X			
an ability to formulate an acceptable problem solution using informatics in a cost-effective and time-efficient way													X					
essential knowledge of estimating and measuring cost and productivity													X					
ability to communicate effectively with colleagues, (potential) users and the general public about substantive issues and problems related to their chosen specialisation; communication competence to present ideas and suggested solutions convincingly in written and verbal form											X	X						

Table that links EQANIE Euro-Inf learning outcomes with MEI competences:

Euro-Inf Learning Outcomes - Master in Informatics Engineering

Euro-Inf Learning Outcomes																								
Underlying Conceptual Basis for informatics																								
Graduates having completed a First Cycle degree should have demonstrated the following:	CG1	CG2	CG3	CG4	CG5	CG6	CG7	CG8	CG9	CG10	CDG1	CDG2	CDG3	CTF1-12	CTEM	CB6	CB7	CB8	CB9	CTR1	CTR2	CTR3	CTR4	CTR5	CTR6
profound knowledge and understanding of the principles of informatics	X																								
either a deepened knowledge of a chosen specialisation or broadened knowledge of informatics in general															X										
critical awareness of the forefront of their specialisation																	X								
Analysis, Design and Implementation																									
Graduates having completed a First Cycle degree should have demonstrated the following:																									
specification and completion of informatics tasks that are complex, incompletely defined or unfamiliar																X									
formulation and solution of problems also in new and emerging areas of their discipline																	X								
application of the state of the art or innovative methods in problem solving, possibly involving use of other disciplines								X																	
ability to think creatively to develop new and original approaches and methods																				X					
Technological and Methodological Skills																									
Graduates having completed a First Cycle degree should have demonstrated the following:																									
integration of knowledge from different disciplines, and handling complexity			X					X			X														
comprehensive understanding of applicable techniques and methods for a particular specialisation, and of their limits														X											X
awareness of the limits of today's knowledge and the practical application of the state-of-the art technology																								X	
knowledge and understanding of informatics to create information models, complex systems and processes				X																					
ability to contribute to the further development of informatics														X	X				X						
Other Professional Competences																									
Graduates having completed a First Cycle degree should have demonstrated the following:																									
independent work in their professional field	X					X	X												X	X			X	X	
managerial abilities and effective functioning as leader of a team that may be composed of different disciplines and levels																	X					X			
effective work and communication also in international contexts																		X							
systematic approach to project management and business practices, such as risk and change management		X	X		X				X	X		X	X								X				

Table that links EQANIE Euro-Inf learning outcomes with MIRI competences:

Euro-Inf Learning Outcomes - Master in Innovation and Research in Informatics

Euro-Inf Learning Outcomes																		
Underlying Conceptual Basis for informatics	**Technical competences**							Generic competences										
Graduates having completed a First Cycle degree should have demonstrated the following:	CG1	CG2	CEC1	CEC2	CEC3	CGCB00 CEE1-5	CTFM	CB6	CB7	CB8	CB9	CTR1	CTR2	CTR3	CTR4	CTR5	CTR6
profound knowledge and understanding of the principles of informatics	X																
either a deepened knowledge of a chosen specialisation or broadened knowledge of informatics in general							X										
critical awareness of the forefront of their specialisation						X			X								
Analysis, Design and Implementation	**Technical competences**							Generic competences										
Graduates having completed a First Cycle degree should have demonstrated the following:	CG1	CG2	CEC1	CEC2	CEC3	CGCB00 CEE1-5	CTFM	CB6	CB7	CB8	CB9	CTR1	CTR2	CTR3	CTR4	CTR5	CTR6
specification and completion of informatics tasks that are complex, incompletely defined or unfamiliar								X									
formulation and solution of problems also in new and emerging areas of their discipline									X								
application of the state of the art or innovative methods in problem solving, possibly involving use of other disciplines					X												
ability to think creatively to develop new and original approaches and methods												X					
Technological and Methodological Skills	**Technical competences**							Generic competences										
Graduates having completed a First Cycle degree should have demonstrated the following:	CG1	CG2	CEC1	CEC2	CEC3	CGCB00 CEE1-5	CTFM	CB6	CB7	CB8	CB9	CTR1	CTR2	CTR3	CTR4	CTR5	CTR6
integration of knowledge from different disciplines, and handling complexity							X										
comprehensive understanding of applicable techniques and methods for a particular specialisation, and of their limits			X														X
awareness of the limits of today's knowledge and the practical application of the state-of-the art technology						X										X	
knowledge and understanding of informatics to create information models, complex systems and processes				X											x		
ability to contribute to the further development of informatics					X						X						
Other Professional Competences	**Technical competences**							Generic competences										
Graduates having completed a First Cycle degree should have demonstrated the following:	CG1	CG2	CEC1	CEC2	CEC3	CGCB00 CEE1-5	CTFM	CB6	CB7	CB8	CB9	CTR1	CTR2	CTR3	CTR4	CTR5	CTR6
independent work in their professional field	X								X			X				X	
managerial abilities and effective functioning as leader of a team that may be composed of different disciplines and levels	X													X			
effective work and communication also in international contexts										X							
systematic approach to project management and business practices, such as risk and change management	X	X											X				

1.1 Student admission.

Supply and demand in the computer science labour market shows that informatics degree graduates have good prospects and placements. But when considering the number of places offered and comparing them with incoming student figures, we can see that new strategies for attracting students are possible, primarily for those with better chances of graduating. For example, we can raise the cut-off grade, the female percentage in GEI, or increase the number of final enrolments in the master's. As a consequence, instead of past improvement plans for incoming students, we propose an improvement plan [447] to boost the knowledge and social recognition of the studies and the profession of computer engineering. It aims to promote and collaborate on initiatives which aim to promote the role of information technology in today's society, and the knowledge of techniques and tools that allow building computer systems. It seeks to tighten and expand contact with secondary schools to promote a better understanding of the profession and the scope of studies in computer science engineering, and to take the opportunity to especially influence the female group.

This plan is added to a consolidated effort, *I love Bits*, which is a newsletter for students, teachers and secondary schools. During the current year, we will launch the 8th electronic edition with 1,600 emails.

Bachelor degree (GEI)

The indicators corresponding to the last six cohorts of incoming students (evidence [97]) show a positive trend both in the first-option demand (422, 484, 508, 534, 574 and 617) and in the cut-off mark (6.04, 6.17, 6.67, 6.81, 6.94 and 7.81). Taking into account that the number of places available is 400, these figures are an example of the improved academic level of new students and of the effectiveness of promotional activities (secondary school activities, in Catalan *Activitats Secundària*: open days, teaching fairs, Ramon Llull Day, etc.). Unfortunately, increasing the percentage of incoming women (9%, 6%, 9%, 7%, 8% and 9%) seems to go beyond the scope of this program, as it would involve several external issues, such as the treatment of technology subjects at the early stages of secondary school (see improvement plan [447]) Attracting female talent is a UPC priority next years and FIB is represented by the head of management and support services in a working group (Woman 2.0 UPC).

Most incoming students have completed secondary studies within the science or the technology specialities. Therefore, they are appropriately qualified to begin the degree. Nevertheless, a number of students have completed higher level vocational training course studies (in Catalan, *Cicles Formatius de Grau Superor*) (17%, 21%, 10% 14%, 14% and 7%). These students have some shortcomings in the theoretical subjects. This is why they are offered an introductory support course (Intensive course from evidence [418]) prior to the start of the studies, which focuses on the study of foundations in physics and mathematics. Even though the percentage of these students has decreased, we think that it is motivated by the high demand of the sector, which we also believe that is somewhat cyclical.

In order to get the best incoming students, it is necessary to take into account the results from other global indicators, which have been obtained essentially from surveys addressed to new incoming students. According to these survey results (prepared with a FIB Business Intelligence tool that collects FIB data), 77.5% of new students reported having known about the degree from the centre's website, and 54.7% intend to continue completing a master's degree. Both indicators were taken into account in the strategies for attracting students for the degree (GEI) and the master's courses.

Results of the student satisfaction surveys (*indicadors de satisfacció,* at evidence [97]) show an upward progression in the score given to both subjects and academic staff; and around 90% of graduates would choose the same degree. Moreover, surveys of graduates show that the profile of graduates is what employers require, as 95.3% of graduates work. Of these, 74.1% do so in jobs that require the qualifications that they have (2014 data). This represents a significant increase when compared to the 63.6% figure for 2008.

Masters' degrees (MEI, MIRI, MAI)

Admission to the master's is performed twice per academic course. Undergraduate students can finish their studies in either February or June/July; so we offer them the possibility to continue in any of our master's programs with no delay. The target group of students in our master's comes from Informatics Engineering degrees at FIB or in other schools. Students coming from degrees in telecommunications, electronics, industrial engineering or similar are assigned extra preparatory courses before they can begin the master's program if their background is deemed unsatisfactory. The number of credits used in these preparatory courses is between 6 ECTS and 30 ECTS. The admission is denied If more than 30 ECTS are necessary, because it's not possible to equalise competences.

We have the final new enroled or registered students from evidences [98],[99] and [100] . And we have also information on the students who previously tried to enrol in these master's degrees (applicants). We can summarise in the following tables the maximum number of students that can be registered (capacity), the number of students that apply (applicants), the number of students admitted (admitted) and the number of students that eventually register and start the master's (registered) for each master's (MEI, MIRI and MAI):

MEI	**2012-2013**		**2013-2014**		**2014-2015**	
	Sept.	Feb.	Sept.	Feb.	Sept.	Feb.
Capacity	40		40		40	
Applicants	45	5	26	6	44	6
Admitted	36	2	23	3	36	5
Registered	20	0	15	2	21	4

MIRI	**2012-2013**		**2013-2014**		**2014-2015**	
	Sept.	Feb.	Sept.	Feb.	Sept.	Feb.
Capacity	80		80		80	
Applicants	36	11	45	20	55	15
Admitted	33	9	44	17	52	13
Registered	25	7	28	13	35	10

MAI	**2012-2013**		**2013-2014**		**2014-2015**	
	Sept.	Feb.	Sept.	Feb.	Sept.	Feb.
Capacity	40		40		40	
Applicants	44	3	31	-	51	10
Admitted	43	3	30	-	51	10
Registered	18	3	16	-	19	2

Registration figures are below capacity. We have been working in two directions: the first one is to increase the number of admitted students that end up registering. The other direction is in efforts to increase the number of applicants. Both efforts are related to the global FIB improvement plan [447] explained earlier in 1.1
Apart from that, given the change in the undergraduate program, we still do not have a regular egression of students that are potential candidates for following up a master's. Actually, our figures show that just 20% of the new master's students in 2014/2015 came from the Bachelor in Informatics Engineering at FIB (when entering GEI, 54.7% intend to continue completing a Master's degree). While this means that we are able to attract students from other universities and countries (40% of the new students in 2014/2015 are international), it means we still have room for improvement with the local ones. In this sense, the improvement plan [482] for the dual master's programme wants to engage GEI graduates by combining work with a master's degree.

1.2 Educational objectives. Teaching coordination

Agents involved in the coordination processes ensure that the objectives of the courses are feasible, implementable and consistent with the assigned competences. The bachelor's degree implies a larger coordination structure than the master's, because it involves more students, subjects and academic staff. For the moment, the master's can be organised in an easier way, but it can also be broadened when necessary.

All degree programmes have an Academic committee responsible for the final decisions that will be delivered to the Standing Committee for effective execution. For example, every semester subjects' teaching guides are checked.

In addition, generic competences or professional skills deserve specific coordination due to their transverse nature. This is called transverse coordination, and there has been appointed a coordinator for each one.

Bachelor degree (GEI)

Several coordination mechanisms have been devised for the Bachelor Degree in Informatics Engineering (GEI), which are clearly described on the website (evidence [418] at Degree coordination in Degree subject curriculum). The existence of these mechanisms is one of the strengths of the program. They have facilitated both the allocation of different levels of competence in all subjects, accessible to everyone, and the monitoring of their degree of achievement throughout the program (Competences for degree subjects at evidence [418] in Degree subject curriculum)

The academic staff responsible for the subjects constitutes the first level of coordination mechanisms, and this is usually a senior or expert professor. These are proposed by the department in charge of imparting a given subject, and it must be ratified by the school. They should be partners among the school and the instructors who teach the course, and they must coordinate the relationships with students. The rules governing the functions were approved by the Standing Committee of the School Board on 05/20/15 (see the corresponding Standing Committee minutes).

The common compulsory subjects of the GEI are divided into five areas, each of which has a coordinator. The coordinator's partners for each of these areas are those responsible for the subject, and their basic function is the vertical coordination of objectives, contents and activities of the subjects involved. Each speciality of the GEI has also been appointed a coordinator, who is also in charge of the vertical coordination with the common block.

To assure the uniform distribution of the subject load that a student may register for throughout the semester, there also exists what is known as horizontal coordination. The horizontal coordination corresponding to the first two semesters (early stage) is the responsibility of the Head of Studies for the Initial Phase (early stage), and the horizontal coordination of the other common compulsory subjects is performed by the Head of Studies. The speciality coordinator takes responsibility for the horizontal coordination of each of the five specialties

All coordinators meet at least once a year with both Heads of studies. The ultimate responsibility for the coordination of studies lies with the Head of Studies.

CAGEI (GEI Academic Committee) is the specific committee relevant to GEI teaching coordination with regular meetings (evidence [420] at "*Grups*" CAGEI). This academic committee and some (three) curricular assessment committee deliver agreements to the executive Standing Committee. Evidence [417], at School Governance Specific Committee, shows for each one the current composition and regulation. CAGEI minutes show decision-making process adapting regulations to academic needs (evaluation regulations, academic staff assignment to specific tasks like first course subject reponability)

Masters' degrees (MEI, MIRI, MAI)

All masters have the same coordination structure. The coordination is implemented in three different levels: at the course level, at the area level (i.e. group of courses in the same area) and global. For each master, we give the names of all these coordinators and their functions. The area coordinator is responsible for distributing the learning objectives and competences among the courses in the area. The global coordination ensures the coordination among areas and semesters. This global coordination is one of the tasks of the master's Academic Committee, and there is one for each Master: CAMEI (MEI Academic Committee), CAMIRI (MIRI Academic Committee) and CAIMAI (MAI Academic Committee). Academic committees regularly meets and deliver agreements to the executive Standing Committee (evidence [420] at "Grups" CAMEI, CAMIRI or CAIMAI).

Each master Academic Committee is composed of several professors (according to the departments involved in the master programme), the school management (Dean, Vice-Dean) and school staff (Head of the Decision Support office). The current composition and regulation for each Specific committee is shown at School Governance Specific Committees (evidence [417]).The duties of the Academic Committee include the coordination of areas and the supervision of the education objectives/competences/contents of the courses. No course can change any of the above without the explicit permission of the area coordinator and this committee.

1.3 Verification and Monitoring processes

Verification and Monitoring processes are complied with in the correct way and this has a positive impact on the programmes outcomes improvements. After a global analysis of the curriculum was performed, several areas requiring changes were identified, and the Monitoring process (and Modification process (substantial or not) or "*reverificació"*) was launched, in accordance with the classification provided by the paper "Processes for communication and / or evaluation of changes in the university degrees of Bachelor and Master "(12/04/4, AQU).

Bachelor degree (GEI)

After some suggested changes during the initial verification process, an official degree amendment was requested, which, on 12.19.2013, was favorably evaluated by AQU (it was related to three improvement plans proposed in 2012).

Master	Source of change	Suggested change	Status
GEI	Verification	More definition about planning competences along subjects	Done and publicly available
GEI	Monitoring Report with modifications (reverification)	Adaption to the rules for recognition of credits obtained in non-university higher education centers	Favorably evaluated and included in re-verification
GEI	Monitoring Report with modifications (reverification)	Equivalence between specialities and mentions	Favorably evaluated and included in re-verification
GEI	Monitoring Report with modifications (reverification)	Distribution of competences amongst subjects	Favorably evaluated and included in re-verification

Masters' degrees (MEI, MIRI, MAI)

Masters received the verification in 2012 and it involved several suggested changes to consider at verification.

Master	Source of change	Suggested change	Status
MEI	Verification	More definition of a mentoring/tutorship program	The master coordinator is responsible for tutorship on-demand
MEI	Verification	Include more metrics of success in the results report	Introduced the computation of this metrics in the quality system.
MEI	Verification	Clearly differentiate between part-time and full-time students and their restrictions on the number of credits they can register	Done

Master	Source of change	Suggested change	Status
MIRI	Verification	Include action verbs in the descriptions of the competences	Done. Ready for next verification/accreditation
MIRI	Verification	Make more emphasis on entrepreneurship	Modified the curricula of the courses involved
MIRI	Verification	More information on support and orientation of new students	New website and welcome event implemented
MIRI	Verification	More definition of a mentoring/tutorship program	The master coordinator is responsible for tutorship on-demand
MIRI	Verification	Introduce actions to increase the number of graduated students	Done. Waiting for results
MIRI	Monitoring Report with modifications (reverification)	Include new specialisations in the master	One specialisation added (Data mining and Business Intelligence)

Master	Source of change	Suggested change	Status
MAI	Verification	Include action verbs in the descriptions of the competences	Done. Ready for next verification/accreditation
MAI	Verification	Make more emphasis on entrepreneurship	Modified the curricula of the courses involved
MAI	Verification	More information on support and orientation of new students	New website and welcome event implemented
MAI	Verification	More definition of a mentoring/tutorship program	The master coordinator is responsible for assigning a tutor to the new students.
MAI	Verification	Introduce actions to increase the number of graduated students	Done. Waiting for results
MAI	Verification	Include more metrics of success in the results report	Introduced the computation of this metrics in the quality system.

STANDARD 2. RELEVANCE OF THE PUBLIC INFORMATION. TRANSPARENCY AND PUBLICITY

FIB website (evidence [417]) provides public information, complete and published entirely in Catalan, and mostly in English and Spanish. This website has been updated constantly, but now is going to be adapted (see improvement plan [478]) to the latest technological developments as well as review the aesthetic aspects and coherence between different language versions. The aim is that those tools of communication will be more attractive to the targeted stakeholders.

The annual accountability that you can find in the annual Academic Report is public at the website (Annual reports). In every annual report there is all the information, the organisation and decided measures during an academic year. For example last academic year (in Catalan, Memoria 2014-15).

2.1 Reliable, complete and up to date programme's information

Relevant information relating to FIB degree programmes is complete and up to date at the website (evidence [417]).

For enroled students in each degree programme, there exists a specific website: evidence [418] for GEI and evidence [419] for Masters. It contains the information on the specific organisation (syllabus, final or thesis project, exams, timetables, calendar). The information is updated before the start of the academic year, and much of the teaching information is updated each semester. Maintenance and information issues are treated daily.

Enroled students have also access to different intranets for some reserved information. One of them allows them to access their registration and produce official certificates (we call that e-secretary) and it is handled by UPC. Other two intranets offer them access to the virtual classrooms: one is hosted by UPC (Atenea), and the other by the FIB *(Racó*, and *Racó* mobile). They incorporate various educational tools adapted to the implementation of degrees within the EHEA (warnings, notes, calendars, and assignments).

2.2 Relevant and readily accessible information to all stakeholders

FIB website (evidence [417]) ensures easy and universal access to all relevant stakeholders. Therefore transparency and publicity are assured.

For prospective students we have I love bits website for new GEI students, and a new one for Masters that contains the information, structure and organisation of EHEA masters. We have put an special effort to generate a clear outline of the target audience and goals of the program, its structure and distribution of the subjects in semesters. It also includes the employment opportunities, admission process, funding possibilities, living in Barcelona information, international rankings and opportunities.

Process of programme monitoring and, where applicable, accreditation of degree programmes for the UPC is available at UPC website (VSMA that means, in Catalan, *Verificació Seguiment Modificació Acreditació* or verification, monitoring, modification and accreditation of degree programmes). FIB outcomes of programme monitoring (evidence [101]) and also the verification ones (evidence [102]) are there available and also at FIB QAS (evidence [417] at School Quality system).

A personalised contact point is in operation since 2011 for the communication of technical issues. It is expected that it will be offering full service to all areas shortly. This is a tool to optimise all processes involved in responses to queries and/or incidents sent through electronic media such as email, online forms, etc. that are increasing notoriously. This personalised contact point for the telematics queries aims to optimise resources, to increase the response

capacity of the organisation, and to prevent the following encountered inconveniences: queries and/or repeated incidents addressed to different areas, allocation of resources concurrently caused by repeating the same query to different areas, no user information about the status of their query while it is resolved.

2.3 The Quality Assurance System public information

According to the commitment to transparency required to university institutions in the framework of the EHEA, universities must have policies and systems of internal quality assurance. FIB QAS (Quality Assurance System) is formally established and publish (evidence [417] at School Quality system).

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STANDARD 3. EFFICACY OF THE MANAGEMENT SYSTEM. THE QUALITY ASSURANCE SYSTEM

FIB has among its goals the quality assurance of its academic programs. In that sense. The adaptation of its degrees to the EHEA was considered by the School as an opportunity to design and implement an internal Quality Assurance System (QAS). This quality assurance system has been defined in the framework of the Program AUDIT, according with the guidelines established by AQU, and is in compliance with the principles of legality, publicity, transparency and participation. FIB received a global positive evaluation of its internal QAS designed in the framework of Program AUDIT, as it's attested in the certificate issued by AQU in June 2009.

Implementation of QAS settle on FIB organisation and structure. All these governance structure performs the FIB Quality Assurance System (QAS). This organisation and decision-making processes are adequate for enabling the programme outcomes to be accomplished. FIB processes are repeated regularly, mostly every academic year (some of them every semester and some longer than yearly). Dean's team and governing bodies are in charge of starting, monitoring, assessing and supplying documentary evidences for all the processes. FIB staff carries out with the different tasks, and minutes of the bodies' meetings become known to the target groups. All these operating procedures bring about transparency to all these guided processes with continuous improvement plans. QAS designed processes evolve continuously as the different governing bodies adapt to new conditions. This evolution makes FIB ordinary work flexible and versatile. But an improvement plan is proposed in order to review the processes and to establish some kind of protocol to standardise rules and regulations dealing with formal communication and exchange of information between governing bodies and with target groups (improvement plan [479])

FIB governance (at School Governance in evidence [417]) is carried out by the dean as the highest executive authority, the dean's team, and the governing bodies: the School Board and The Standing Committee that performs executive functions. Decision-making processes based on a continuous improvement processes rely on the School Board (minimum two yearly meetings) and the Standing Committee as the executive one that meets bimonthly.
Minutes of these meetings are public (School Board minutes and Standing Committee minutes) and are the evidences of a plan-do-check-act periodic cycle between dean's team and, mainly, the Standing Committee.

Each degree programme has its own specific body: CAGEI, CAMEI, CAMIRI and CAIMAI. Other specific bodies are: a general Academic Committee, three Curricular Committees, a Quality Committee, and actually during the accreditation process an Internal Assessment Committee.

All FIB members (students and teaching and support staff) could run in the election of the School Board and the Standing Committee with the Regulations of the FIB as the procedure to follow. Then all the other committees' members are elected or named. Regulations and up to date composition for all these committees are pubic (evidence [417] at School Governance Management.

3.1 The QAS and degree programmes design

School Board is the collegiate body with the highest authority over internal regulations and the control and expression of the position and aspirations of the School. Therefore this is the QAS body in charge of programme design approvals (evidence [420] at "*Grups*" *Junta de Facultat (JF*) and Junta de Facultat assemble and summarise historic and recent administrative acts).

3.2 The QAS and degree programmes results

Standing Committee is the executive body with bimonthly meetings (evidence [420] at "*Grups*" *Comissió Permanent (CP)* and Comissió Permanent assemble and summarise historic and recent administrative acts). Two of these meetings, usually on spring and autumn season, are called for a meeting related to the corresponding two School Board meetings. In these cases a compilation of information and outcomes, in particular learning outcomes, and stakeholder satisfaction are presented. Standing Committee feeds on specific bodies. Each degree programme has its own specific body: CAGEI as the GEI Academic Committee, CAMEI as the MEI Academic Committee, CAMIRI as the MIRI Academic Committee, and CAIMAI as the MAI Academic Committee. Minutes of their decisions are available at evidence [420] at "*Grups*" CAGEI, CAMEI, CAMIRI and CAIMAI.
All these committees obtain information from a FIB Business Intelligence tool that collects FIB data.

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3.3 The QAS and degree programmes monitoring

All the governance bodies are concerned with monitoring processes, but specifically the Quality Committee (CQ in Catalan, *Comissió de Qualitat*) ensures continuous enhancement of programme quality through the analysis of objective data.

CQ composition includes personnel not related to FIB: two UPC personnel not assigned to FIB, and two non UPC personnel that comes from firms related to informatics. It has two ordinary meetings per year and it delivers improvement proposals to the standing committee. Minutes of its decisions are available at evidence [420] at "*Grups*" *Comissió de Qualitat* (CQUAL).

3.4 The QAS and degree programmes accreditation

All the governance bodies are concerned with the accreditation process, but specifically an ad-hoc committee is created: CAI (in Catalan, *Comitè d'Avaluació Interna*), evidence [420] at "Grups" *Comitè d'Avaluació Interna de la FIB* (CAI)). It is an internal assessment committee responsible of the Self-Assessment Report.
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3.5 The QAS and continuous improvement processes

Dean's periodic election is the natural regulated and periodic process for re-examining needs, objectives and outcomes, educational process, resources and partnerships, and management system. The final mandatory management report of dean's team (and also the yearly management reports) displays the decision-making history (evidence [420] at "Grups" *Junta de Facultat (JF)*).

STANDARD 4. RESOURCES: ACADEMIC AND SUPPORT STAFF SUITABILITY

4.1 Staff composition, competence and qualification

Academic and support staff (management and technical) deal with the accomplishment of programme outcomes.

Management support staff is structured in areas (Structure Areas) in order to respond effectively to user requests and to meet high standards in the mission of FIB. A summary of last academic year tasks is published in the annual report, in Catalan, Memoria_2014-2015 pages 126-127.

Technical support staff (inLab formerly LCFIB, in Catalan *Laboratori de Càlcul de la FIB*) provides the wide informatics services needed. These services include administrative procedures, TIC support tools, and campus services. Most of them are governed by rules of use that must be considered and respected (see Code of conduct and Rules). inLab FIB, as an innovation and research lab based in FIB, integrates the technical staff with academic personnel and students to provide solutions to a wide range of demands that involve several areas of expertise. It has more than three decades of experience in developing applications using the latest ICT technologies, collaborating in different research and innovation projects and creating customised solutions for public administrations, industry, large companies and SMEs using agile methodologies.

FIB request academic staff in charge of subject teaching to several departments (8 of the UPC departments), and they were 223 persons last academic year. They were academic staff with docent assignment mainly at FIB, and their categories distribution were:

		Catedràtics universitat	*Titulars universitat*	*Catedràtics escoles universitàries*	*Titulars escoles universitàries*	*Agregat*	*Col·laborador Permanent*	*Ajudant*	*Associat*	*Altres*	*TOTAL*
PDI en 1ª assignació	2014-2015	29	95	3	9	43	14	-	26	4	223

		Full professors	Associate professors	Assistant professors	Part-time academic staff	TOTAL
Academic staff with docent assignment mainly at FIB	2014-2015	29	98	66	30	223

Professors with permanent positions in Spain can be employed by the national Spanish Government (civil servants) or by the regional government, and they correspond to Full professors, Associate professors, and Assistant professors.

Academic staff meet the qualifications requirements for programme delivery, and they have sufficient and recognised teaching, research and, where applicable, professional experience. Merit-based salary increases for teaching and research at public universities in Catalonia are regulated. These increases, or premiums, are an annual individual consolidated amount allotted by each university's board and are subject to a positive evaluation by AQU. Merits in research are evaluated according to six-year periods of research, while merits in teaching are evaluated according to five-year periods.

Evidences [425] [426] [427] [562] and [563] have restricted access and describes:
- Number of academic staff with teaching and research experience for each department and for each degree programme.
GEI: 241 academic staff (84% PhD), 770 merits in teaching positively evaluated, 371 merits in research positively evaluated
MEI: 29 academic staff (93% PhD), 85 merits in teaching positively evaluated, 50 merits in research positively evaluated

MIRI: 81 academic staff 96% PhD), 267 merits in teaching positively evaluated, 178 merits in research positively evaluated
MAI-UPC: 19 academic staff (100% PhD), 67 merits in teaching positively evaluated, 40 merits in research positively evaluated.
MAI-UB: 12 academic staff (100% PhD), 22 merits in teaching positively evaluated, 21 merits in research positively evaluated.
MAI-URV: 7 academic staff (100% PhD), 40 merits in teaching positively evaluated, 17 merits in research positively evaluated.

- Number of academic staff in four categories A B C or D in both teaching and research (UPC defined the four categories from A to D according to several indicators): 79.1% of FIB academic staff has A or B categories in both teaching and research (39.3% has A in teaching and A in research).
- Academic staff involved in projects with companies (70)
- Academic staff involved in projects: at 2015 748 projects (103 of them European projects); 207 academic staff involved
- Academic staff research activity
39% supervise GEI degree final projects, 18% supervise Masters' final thesis, 41% supervise PhD thesis, 60% publish in JCR_SJR.

Masters' academic staff has a higher mean number of merits in research positively evaluated and a higher mean number of projects:

	Global	MEI	MIRI	MAI
Mean number of merits in research	1,7	1,7	2,20	2,1
Mean number of projects	0,85	0,83	0,95	0,97

Evidence [182] is the official public website for scientific production of UPC researchers.

4.2 Staff deployed effectively

There is sufficient teaching staff in the School, and staff assignment is adequate for them to carry out their duties and attend the students.

These three last years the evolution of academic staff distribution in categories is: from 31 to 29 full professors, from 101 to 98 associate professors, from 62 to 66 assistant professors, and from 50 to 30 part-time academic staff:

		Catedràtics universitat	Titulars universitat	Catedràtics escoles universitàries	Titulars escoles universitàries	Agregat	Col·laborador Permanent	Ajudant	Associat	Altres	TOTAL
PDI en 1ª assignació	2014-2015	29	95	3	9	43	14	-	26	4	223
	2013-2014	30	98	3	9	37	15	3	26	8	229
	2012-2013	31	98	3	9	29	20	4	39	11	244

As we pointed out before, FIB community copes with these resources decreases despite the concurrence with the new EHEA degrees deployment that implies important teaching requests.

4.3 Staff opportunities for continuous improvement

The institution offers support and opportunities for enhancing teaching quality. Evidence [103] is the ICE (in Catalan, *Institut de Ciències de l'Educació*) website where it can be found the UPC formation planning for academic staff with a wide offer of courses.

FIB has a high participation of academic staff to several courses (evidence [158], with restricted access) mostly since the new EHEA degrees were deployed and mainly devoted to innovation and new methodologies.
FIB has also academic staff participating in research and projects about innovation in teaching methods, and use of modern educational technologies according the EHEA framework.

STANDARD 5. RESOURCES: LEARNING ENVIRONMENT EFFICIENCY

FIB resources provide adequate support for the learning process as shown in survey satisfaction for academic and support staff and students. Learning facilities and learning equipment are well assessed for all of them (*Indicadors de satisfacció* on evidence [95] for academic and support staff, and on [97] [98] [99] [100] for GEI, MEI, MIRI and MAI students respectively). In the grading scale from 1 to 5 (totally agree) the results show good assessment from academic staff (most of question results from 3.1 to 4.2), for support staff (most of question results from 3.2 to 4.1). For academic staff the worse result is for students' dedication, and for support staff the worse is services coordination. Students have a high punctuation for global satisfaction (GEI 3.8, MEI 3.7, MIRI 3.6 and MAI 3.5). In this case, a minimum punctuation point out for MIRI and MAI students in relation to the website.

5.1 Learning facilities adequacy to enable the programme outcomes to be accomplished

Before enroling the FIB, academic support services involves:
- For prospective students specific websites were developed (I love bits and Masters new website)
- For GEI admission FIB receives a official list form the government. And for Masters admission, the master coordinator evaluates the curriculum and qualifications of each candidate during the admission process. He/she may assign specific extra preparatory courses if the CV of the applicant shows a lack of previous knowledge in the applicant.
- Welcome orientation event is the day of their first registration and there is a special event where FIB's dean and part of dean's team welcome the students. Apart from the welcome, we give them specific information of usual administrative procedures and tutorship.

Just enroled the FIB, academic support services involves:
- Tutorship. FIB offers a tutoring program that provides guidance to students, and is based on mentoring given by an instructor. The tutorship is specifically performed in each degree: in the GEI by the FIB intranet *Racó* (*Pla d'Acció tutorial,* in Catalan) and is willingly, in the MEI by the master coordinator, in the MIRI by the specialisation coordinator together with the master coordinator, and in the MAI by the professors of the master together with the master coordinator.
Regarding GEI, tutorship involved processes are coordinated from the FIB intranet *Racó*. Tutors have in their *Racó* site information about the students (registered subjects, timetable, e-mail address), as well as files that can be useful to prepare the tutorship meetings. In the past six cohorts, only interested students have asked for a tutor (70, 63, 78, 68, 37, 48). About 20 instructors have acted as tutors for these students.
- Students associations. FIB has a delegation of students (DEFIB at http://defib.upc.edu/) which is responsible for resolving general and academic-related doubts that the students may have. FIB students will have access to a wide range of associative, cultural, sport and leisure offers (evidence [417] at University life Associations)
- Equal opportunities. FIB facilitates the stay in the college of all those who suffer disabilities and ensure equality towards other students. This is done through the Office for Equal Opportunities (https://www.upc.edu/igualtat/discapacitat) , which is responsible for giving advice and training both to impaired people and staff. In Masters students with special needs are

handled directly by the master coordinator with the help of the university services responsible for attending students with special need.

Degree students can also receive personalised attention of some school Dean team members (Vice Dean Head of Studies, Vice Dean Head of Studies of the Initial Phase and Vice Dean of Students). Interested students can visit them within the schedule available on the FIB website or arrange a meeting/clarify doubts at other times by telephone or by email (Telephones and timetables)

During the studies at FIB, several learning facilities are:
- Online teaching platforms. Basically FIB uses Atenea (UPC moodle adaptation) and *Racó* as the own FIB intranet. MAI degree also uses UB and URV intranets.
- Specific support tools. The school has also developed some specific tools for teaching. This is the case of Jutge.org (https://jutge.org/), LearnSQL (https://learnsql.fib.upc.edu/moodle/) and RACS platforms (https://racso.lsi.upc.edu/juez/). They are automatic assessment tools of computer programs, SQL statements and formal languages, respectively. Used in some subjects of programming and databases, they are not only limited to evaluating students' assessments but also to give feedback and help them to detect committed faults.
- Institutional repository Upcommons that stores magazine articles, research reports and participation at conferences of UPC research staff members, final degree projects of UPC students and academic materials and past exams from UPC teaching staff.

Finally, just before graduating, some professional guidance is available at the website (evidence [417]):
- Educational cooperation agreement allow students to apply and complement their knowledge acquired during the degree through internships with companies that collaborate with the FIB (evidence [417] at University-Enterprise placement). Students can also develop their Degree Final Project in that context.
- Business seminars. These short courses taught by industry and services professionals allow degree students to catch up on the latest ICT advancements. These courses take place once a year.
- Forum TIC. The yearly Forum of Information and Communication Technologies is an event organised by students of the FIB and ETSETB (Telecommunication Engineering School at UPC) where a number of information technology companies), including leading multinational corporations of IT sector make presentations, conferences and bring students into the world of work through personal interviews and CV.
- Jobs bank. The school has a job bank (evidence [417] at University-Enterprise job bank) which is updated on a daily basis and is widely used among the students; they can find there job offers and/or internships along with their details (information such as the company name, the location where the job would take place, timetable, requisites and contact information so that people interested can apply for it). Any question regarding jobs/internships can be addressed to the External Projects and Relations Area (evidence [417] at University-Enterprise placement).

And just graduated, the association "FIB Alumni" (and the UPC alumni, evidence [104]), offers professional orientation, seminars and meetings to keep in touch with FÏB when graduated.

5.2 Learning equipment adequacy to enable the programme outcomes to be accomplished

FIB offers various material resources that support students during their learning trajectory:
- Lecture rooms (small, medium-sized or high-capacity) equipped with a computer connected to the network and a projector and wireless coverage.
- Laboratories. Different types of labs can be distinguished; computer labs -sufficient in most classes- and teaching laboratories, for subjects that require specific and/or more technical tools. Degree students have access to 21 computer labs with a total of 373 computers (five rapid access points, 343 PCs and 30 iMacs). On-line request for free labs is available from the

website. A detailed list of services (at evidence [417]) is provided by inLab (formerly known as *Laboratori de Càlcul de la FIB*, LCFIB). inLab is an innovation and research lab based on the FIB to provide a learning lab specialised in informatics engineering, to build a professional environment focused on the development and training of the talent of our students, and to develop R+D multidisciplinary projects.
- UPC library with group work and study rooms. At evidence [107]) a satisfaction survey shows a high punctuation (overall 4.0 for all items) for FIB students, but also a decreasing in the global use of the library.
- Additional material: technological equipment loan (requested at inLab (FIB) or UPC library)

STANDARD 6. QUALITY AND ASSESSMENT OF THE EDUCATIONAL PROCESS

Planning, delivery and assessment are adequate to enable achievement of the learning outcomes, and are consistent with the intended ones which correspond to the appropriate level for the programme in the EHEA within adequate rates. Bachelor degree (GEI) and Masters' degrees (MEI, MIRI and MAI) were designed in accordance with EHEA curricula that implies new teaching criteria: student participation, innovation in teaching methods, and use of modern educational technologies. For all four programmes, as an incentive for excellence, students' mobility is supported and promoted as well as participation of students in educational activities University-Business cooperation. The goal of these activities is to complete the training received by students at the University.

FIB students can take part in various mobility programmes (at Mobility in evidence [417]). Each one is based on a number of agreements with other universities, and universities or institutions from different countries. All these agreements allow the student to make a stay in a foreign university to go to lectures, do the final project/thesis or accomplish a double degree. The School is constantly working to secure more agreements in order to offer students a wider range of destinations to choose from. We want to point out in [417], Mobility programs, Double degree, and Internships and other activities abroad.

The framework for FIB students participation in educational activities University-Business cooperation, is called educational cooperation agreements (Placements at University-Enterprise in evidence [417]). This kind of activities are extracurricular for Masters' degrees, and for GEI mandatorily associated with the accomplishment of the Degree final project in a company.

The evaluation method of all the degree subjects is public in the teaching guide and accessible through the FIB web pages. According to the European Higher Education Area (EHEA) framework, for each subject, a sufficient number of assessment activities of varied types are planned that allow both the summative and the formative evaluation of the students. All the assessment activities are consistent with the specific goals and generic competences assigned to the subject in the curriculum, as it is specified in detail in the teaching guides of the subjects. The evaluation method of each subject is reviewed each semester by the Academic Committee of the Degree in Informatics Engineering at the request of the professor responsible for the subject, who proposes the required modifications for a better adaptation to the target learning outcomes.
The evaluation methods used include exams, assignments, lab sessions, projects, and presentations. The evaluation method is tailored to the course objectives and competences. The Academic Commission of each master is responsible for checking the procedures so that each course does reliably and accurately evaluate the learning objectives and competences.

Bachelor degree (GEI)

6.1 Planning and delivery adequacy to enable achievement of the programme outcomes

With regard to the structure and organisation of the GEI curriculum (degree subject curriculum at evidence [418]), the public information included has been complemented with tables relating competences and subjects, and competencial maps defining several aspects of the competences (dimensions) in terms of objectives at three levels. This information corresponds to the analysis of the coordination in the curriculum (indicated as improvement proposal in the first monitoring report) mainly in the topic of the coordination of the generic competences and their progress throughout the subjects with the new model of several dimensions (at 3 levels each) for competence.

The teaching methodology and activities of each subject are described in detail in the teaching guide (Syllabus at evidence [418]) and reviewed each semester by the CAGEI at the request of the instructor responsible for the subject, who proposes the required modifications for a better adaptation to the target learning outcomes.
In the case of the Bachelor's thesis (TFG in Catalan, Degree final project at evidence [418]), there exists an initial training module on project management (Thesis management course) that allows the student to establish precisely the goals and scope of his/her work, plan it and think about the technical competences that will be needed to carry it out, all of this under the guidance of his/her project supervisor and with the help of the project management professors. The Degree final projects are related to the specialisation that the student has chosen and must cover some of the technical competences of that specialisation, in addition to the generic ones. Assessment of cross-disciplinary competences is based on rubrics (http://www.fib.upc.edu/en/estudiar-enginyeria-informatica/treball-final-grau/indicadors.html).

The external professional practices are mandatorily associated with the accomplishment of the Degree final project in a company and share with it the same training activities (project management module), supervision and assessment. At information for students, they can find as well, the Educational Cooperation Agreement and the Working plan documents.

6.2 Learning assessment adequacy to enable achievement of the programme outcomes

The evaluation method of all the degree subjects is public in the teaching guide and accessible through GEI website (Syllabus at evidence [418])

In the case of the Degree final project, the assessment is divided in three stages (initial, intermediate and final) where different actors participate (professor of the project management course, project supervisor and final evaluation committee). Both the technical and the generic competences are assessed, the latter by means of evaluation forms at the three stages, with a weighting of 60% and 40% respectively. All the information about the Degree final project and its evaluation is public and accessible (Degree final project at evidence [418], and Degree final project academic regulation).

GEI Degree final project during 2014-15 academic year were 108 and are publicly listed in the annual report (in Catalan, Memoria_2014-2015 page 227-232).

The external professional practices are mandatorily associated with the accomplishment of the Degree final project in a company and share with it exactly the same evaluation method.

Materials involved in the last evaluation of some students (academic year 2014-2015) have been collected for some selected subjects of the curriculum (evidence [420] at "Grups" CAE):

- IC: Introduction to Computers (compulsory course in the initial phase, first year).

The teaching method for the subject is the Pygmalion method described by the Institute of Education Sciences of the UPC, summarised as 10 points (see Atenea for detailed information, as the course guide is merely a summary.

- IES: Introduction to Software Engineering (compulsory course in the second year). The subject is structured around theory and problem-solving classes. In the theory classes the lecturer will explain the main subject content. Lecturers typically use slides that students should obtain before class. In problem-solving classes, course content (whether presented in class or studied independently) will be studied by completing problems. This will sometimes require problems to be resolved (or at least attempted) before class, so that the best solutions can be collectively analysed and discussed in class. On other occasions, the problem will be both set and resolved in class.

- G: Graphics (compulsory course within the Computing speciality, third year). The teaching methodology is based on weekly theory classes (2h) and lab (2h). In the theory classes will introduce the concepts, equations, algorithms and techniques of the course contents, and exercises that help to assimilate the concepts and facilitate the development of practices that are performed in the lab sessions. The lab will consist of the teacher in introducing the scripts practices, structured sessions, and specific concepts required for their development. Students must complete the design and implementation of various applications related to the contents of the course. To facilitate their development, applications will be supplied skeletons will be partially programmed.

- CPD: Data-Processing Centers (optional complementary course in Computer Engineering and Information Technologies specialities, third/fourth year). Each week during the academic year there will be one class of theory and another one of laboratory 2 hours each. The theory class is presented by the teacher, including theoretical concepts, practical examples and treining exercises resolution. The laboratory classes will be discussion and elaboration of scenarios. Classes will be highly participatory, in which students will have assigned tasks before class (studying some kind of software, architectural solution, ...), so it must provide what is learned during discussions / brainstorming explaining things in class when necessary. The laboratory classes will be held in classrooms with whiteboard and projector, as well as a computer student in order to make presentations, test software or search for information. There are custom projects, in groups of up to 4 students (to be determined) that will develop a design of a data center with specific characteristics (constraints, objectives, resources available) for each different group. Part of the work will also do an audit of DPC designed by other groups. All the work done by each student will join the portfolio of the student, which is a tool for evaluating the course. In addition, depending on the availability of each course will be visits to DPCs real and / or lectures by experts.

Furthermore, we have also collected evidences (evidence [420] at “Grups” CAE) of the materials involved in the evaluation of the Degree final project (TFG, in Catalan) and, in particular, in the compulsory Project management course (GEP, in Catalan) given at its initial stage.

6.3 Students' study progress rates adequacy

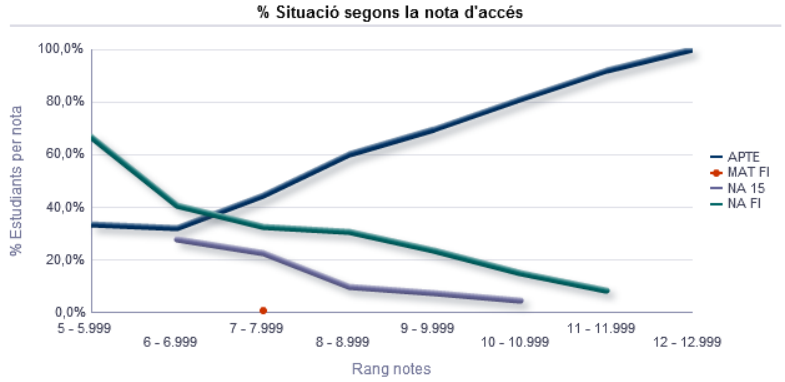
The performance of the students from the second year up to the end of the Degree subject curriculum continues to be correct, stable and homogeneous, with an attainment rate around 85%, but the performance at the first year (also called “Initial Phase”) remains in a success rate clearly inferior to the desired value in order to fulfil the target rates of the academic indicators stated in the document of the Degree verification. Specifically, the target of a drop-out rate under 38% is not being satisfied yet; we only have available the result of this indicator for the course 2014/15 which was 54.6% (evidence [97]).

However, thanks to the introduction and consolidation of the re-evaluation mechanism and other complementary plans (tutorial plan, revision of the planning and assessment method of some

subjects), the students' performance at the Initial Phase follows a growing trend which is clear in the latest years (presented and analysed at CP, evidence [420] at "Grups" CP):

Curs inici	# Estudiants promoció	Abandonament any inici + 1	Abandonament any inici + 2	Abandonament any inici + 3	Abandonament any inici + 4	Taxa abandonament
2015	445					**0,00%**
2014	430	23,89%				**23,89%**
2013	416	26,92%	38,70%			**38,70%**
2012	421	28,33%	41,90%	42,86%		**42,86%**
2011	409	31,30%	46,94%	49,39%	53,79%	**53,79%**
2010	414	34,54%	53,62%	55,07%	55,31%	**59,90%**

This positive trend, together with the increase of the admission cut-off mark, enables us to think that it is feasible to accomplish the target drop-out rate in the mid-term, since the statistical studies we have undertaken up to now show a clear correlation between the performance at the Initial Phase and the admission mark, as you can see in the following graph:



Having the admission mark represented in the X axis, the blue line ("APTE") shows the percentage of students succeeding at the Initial Phase, while the other two show the percentage of students failing in their first year ("NA 15", purple line) or in the Initial Phase ("NA FI", green line).

Concerning the rest of global academic indicators of the Degree, the goals are being achieved, despite the outcomes are of little significance yet because of the reduced number of graduates so far. Specifically, the efficiency rate has been maintained over 90% in the first three years of graduates, whereas the stated goal was just to be over 68%.
The graduation rate in the course 2014/15 (the only one for which we already have results) was 16.5%, somewhat higher than the minimum goal of 14%. We must wait to have a more stable volume of graduates in the next courses in order to obtain more meaningful values of these academic indicators.

6.4 Graduates' occupation rates adequacy

Still there are few official results about the employment of our graduates, since the number of graduates has been 27 in the course 2012/13 (who entered to the Bachelor Degree in its second year), 118 in the course 2013/14 and 107 in the course 2014/15. The more recent employment satisfaction survey was that of the 2014 edition (evidence [97] at *Indicadors de satisfacció*) in which the employment rate was 95.3% and the adequacy rate was 74.1%. In this same survey, the mean of the assessment of the utility of the theoretical education was 5.3 and the mean of the assessment of the utility of the practical education was 4.6, both in an assessment range from 1 to 7. The context information that is provided to us by the graduate association "FIB Alumni" and the companies in the ICT sector which we collaborate with confirm a very high employment rate of our graduates and their excellent reputation in the ICT professional environment.

Masters' degrees (MEI)

6.1 Planning and delivery adequacy to enable achievement of the programme outcomes

The curricula have been designed so that all learning objectives and competences are achieved. The analysis performed by the evaluation of the final master thesis and the feedback of the employers show that the MECES level is achieved and that students are proficient in the competences taught in the master programme.

6.2 Learning assessment adequacy to enable achievement of the programme outcomes

The evaluation method of all the degree subjects is public in the teaching guide and accessible through the FIB web pages
http://www.fib.upc.edu/en/masters/mei/assignatures.html

Materials involved in the last evaluation of some students (academic year 2014-2015) have been collected for some selected subjects of the MEI curriculum (evidence [420] at "Grups" CAE):

- VPEI-MEI. The course aims to promote the entrepreneurial spirit of the participants while establishing the process for developing a business plan that goes around an innovative business idea. For this reason, the process of developing the business plan will be done around one or more within three main innovation concepts. The three axes for the development of an innovative business idea around which the matter will evolve, are: the identification of long-term market trends as a source of innovation, technology benchmarking as an innovative inspiration and ethical business model as the core of innovative thinking.

- ISDCM-MEI. In this course the student has to get to know new transfer protocols for the Internet, how to structure network applications and how to design and deploy services for web distributed applications. It must also gain the ability to deal with security problems in the network and, in particular, on the web, and gain insight into the problems of secure access to the information, privacy and digital rights. Finally, students will become familiar with the systems of distribution and management of multimedia content, including knowledge of protocols, standards and mechanisms for representation, exchange, security and interoperability.

MIRI Final Master Thesis during 2014-15 academic year were 13 and are publicly listed in the annual report (in Catalan, Memoria_2014-2015 page 243).

6.3 Students' study progress rates adequacy

FIB Masters in the new EHEA framework started in 2012. There is few academic years to analyse results evolution. They involve a short number of students and very few of them are graduated.
Evidence [98] shows academic results figures for MEI :

		2012-2013	2013-2014	2014-2015
MEI academic results	Egress rate (%)	95%	89,5%	90,3%
	Attainment rate (%)	91%	81,6%	77,2%
	Drop-out rate (%)	-	-	-
	Graduated rate (%)	-	-	-
	Efficiency rate (%)	-	88,9%	98,6%

Concerning these global academic indicators rates are high enough, but we must wait to have a more stable volume of graduates in order to obtain more meaningful values.

6.4 Graduates' occupation rates adequacy

Evidence [98] shows academic results figures for MEI :

		2011-2012	2012-2013	2013-2014
MEI graduates	Women	-	-	0
	Men	-	-	4
	Total	-	-	4

And 2014-15 figures:

		2014-2015
MEI graduates	Women	2
	Men	7
	Total	9

Masters' degrees (MIRI)

6.1 Planning and delivery adequacy to enable achievement of the programme outcomes

The curricula have been designed so that all learning objectives and competences are achieved. The analysis performed by the evaluation of the final master thesis and the feedback of the employers show that the MECES level is achieved and that students are proficient in the competences taught in the master programme.

6.2 Learning assessment adequacy to enable achievement of the programme outcomes

The evaluation method of all the degree subjects is public in the teaching guide and accessible through the FIB web pages
http://www.fib.upc.edu/en/masters/miri/syllabus.html

Materials involved in the last evaluation of some students (academic year 2014-2015) have been collected for some selected subjects of the MIRI curriculum (evidence [420] at "Grups" CAE):

- CPDS-MIRI. This course aims at providing the foundations about computing as a collection of tasks that may be executing simultaneously and potentially interacting with each other. These tasks can be executed on a single or multiple processors or distributed across a network. The course presents the models, challenges, algorithms and systems focusing on three main aspects/modules: concurrency (multiple computations interacting with each other), parallelism (multiple cores or processors), and distribution (multiple computers across a network). Following a set of introductory sessions, the course has three modules: concurrency (mandatory), parallelism (optional) and distribution (optional). The student has to select one of the two optional modules (parallelism or distribution). The lectures are complemented with programming exercises to illustrate the problems and evaluate the solutions.

- AMMM-MIRI. The task of building mathematical models that represent real-world problems and using existing tools for solving such models is an ubiquitous task in computer science. Knowledge about such tools and algorithms allows one to weigh up the balance between how precisely we formalize the problem and how tractable the resulting model is. With an special emphasis on their application to concrete computer science problems, this course will review some of these mathematical models and algorithms. First of all, we will review the basics of (integer) linear and non-linear programming. Then, metaheuristic algorithms will be presented as an alternative to the previous methods for combinatorial optimization problems. Other mathematical elements with strong impact in computer science, such as graphs or computation and use of eigenvalues/vectors, will also be covered throughout the course.

MIRI Final Master Thesis during 2014-15 academic year were 9 and are publicly listed in the annual report (in Catalan, Memoria_2014-2015 page 243).

6.3 Students' study progress rates adequacy

FIB Masters in the new EHEA framework started in 2012. There is few academic years to analyse results evolution. They involve a short number of students and very few of them are graduated.
Evidence [99] [shows academic results figures for MIRI:

		2012-2013	2013-2014	2014-2015
MIRI academic results	Egress rate (%)	92%	96%	95,5%
	Attainment rate (%)	87%	91,6%	91,7%
	Drop-out rate (%)	-	-	12,5%
	Graduated rate (%)	-	-	50%
	Efficiency rate (%)	-	98,5%	96%

Concerning these global academic indicators rates are high enough, but we must wait to have a more stable volume of graduates in order to obtain more meaningful values.

6.4 Graduates' occupation rates adequacy

Evidence [99] [shows academic results figures for MIRI:

		2011-2012	2012-2013	2013-2014
MIRI graduates	Women	-	-	1
	Men	-	-	6
	Total	-	-	7

And 2014-15 figures:

		2014-2015
MIRI graduates	Women	5
	Men	21
	Total	26

Masters' degrees (MAI)

6.1 Planning and delivery adequacy to enable achievement of the programme outcomes

The curricula have been designed so that all learning objectives and competences are achieved. The analysis performed by the evaluation of the final master thesis and the feedback of the employers show that the MECES level is achieved and that students are proficient in the competences taught in the master programme.

6.2 Learning assessment adequacy to enable achievement of the programme outcomes

The evaluation method of all the degree subjects is public in the teaching guide and accessible through the FIB web pages
http://www.fib.upc.edu/en/masters/mai/syllabus.html

Materials involved in the last evaluation of some students (academic year 2014-2015) have been collected for some selected subjects of the MAI curriculum (evidence [420] at “Grups” CAE):
- CI-MAI.The aim of this course is to provide the students with the knowledge and skills required to design and implement effective and efficient Computational Intelligence solutions to problems for which a direct solution is impractical or unknown. Specifically, students will acquire the basic concepts of fuzzy, evolutionary and neural computation. The student will also apply this knowledge to solve some real case studies.

- INLP-MAI. This course is an introduction to most relevants problems involved in Natural Language Processing, the most relevant techniques and resources used and the theories they are based on. The course includes an overview of Natural Language applications. The course is focused on the two most relevant approaches to Natural Language processing: knowledge based and empirical (both statistical and machine learning).

- ATCI-MAI. The aim of this course is to present to the students, different advanced techniques in computational intelligence. Once acquired the basic knowledge of fuzzy, evolutionary and neural computation in the CI-MAI course, the students are ready to go through more interesting and powerful computational intelligence approaches such are hybrid techniques: neuro-fuzzy and genetic-fuzzy systems, fuzzy inductive reasoning, fuzzy and heterogeneous neural networks and neural networks trained by means of evolutionary algorithms, as well as recurrent neural networks and incremental methods for neural networks construction.

MAI Final Master Thesis during 2014-15 academic year were 7 and are publicly listed in the annual report (in Catalan, Memoria_2014-2015 page 242).

6.3 Students' study progress rates adequacy

FIB Masters in the new EHEA framework started in 2012. There is few academic years to analyse results evolution. They involve a short number of students and very few of them are graduated.
Evidence [100] shows academic results figures for MAI:

		2012-2013	2013-2014	2014-2015
MAI academic results	Egress rate (%)	95%	97,1%	97,3%
	Attainment rate (%)	91%	85,5%	89,5%
	Drop-out rate (%)	-	-	-
	Graduated rate (%)	-	-	-
	Efficiency rate (%)	-	97,8%	97,5%

Concerning these global academic indicators rates are high enough, but we must wait to have a more stable volume of graduates in order to obtain more meaningful values.

6.4 Graduates' occupation rates adequacy

Evidence [100] shows academic results figures for MAI:

		2011-2012	2012-2013	2013-2014
MAI graduates	Women	-	-	2
	Men	-	-	12
	Total	-	-	14

And 2014-15 figures:

		2014-2015
MAI graduates	Women	1
	Men	14
	Total	15

INTERNATIONALISATION

UPC belongs to a network of European universities called CLUSTER. This participation implies the direct access of students from the UPC to the different universities belonging to the network. Also UPC belongs to the network CINDA where participates many countries from Latin America. See University networks at Mobility in evidence [417].

FIB has established different agreements with universities or institutions from different countries, and is constantly working to secure more agreements. The School, its teaching staff and its courses are internationally recognised for their quality and for continuous innovation in the design of curricula and teaching methodologies. This spirit of excellence has placed the School at the forefront of delivering IT courses at university level. Thanks to its efforts, it has academic exchange and double degree agreements with 150 prestigious universities worldwide (see Partner universities at Mobility in evidence [417]).

FIB has incorporated an international and intercultural dimension into the purpose, function and delivery of its education.

Internationalisation of the MAI educational programme

Artificial Intelligence (AI) research is interdisciplinary by nature and draws on computer science, mathematics, statistics, biology, neuroscience, cognitive science, linguistics, ethics, psychology and law. Research in AI at the consortium of Catalan universities supporting this program spans knowledge representation and reasoning, machine learning, natural language processing, autonomous agents, computer vision robotics, and visualisation.

MAI degree programme emphasis on practical techniques, and a solid theoretical background, for designing and constructing intelligent systems, enabling graduates from this course to apply their skills in a variety of settings. These skills are in high demand in the market. Graduates of this program have a good overview of the main AI techniques and an in-depth understanding of how to apply these techniques in at least one area within multi-agent systems, reasoning, data analytics and natural language processing. And graduates also have the skills to carry out AI research in academic and R&D environments and to identify how AI techniques can provide intelligent solutions to IT problems in companies and organisations.

MAI is taught entirely in English. This program is addressed to national and international students who wish to acquire advanced knowledge in AI in order to occupy positions of responsibility in industry, the public sector and academia in Catalonia, Spain or abroad. The program covers many research areas related to the design, analysis and application of AI.

The admission requirements for the UPC's official masters can be found at What are the requirements to enrol in a master's degree?. But candidates must provide proof of their English proficiency. The Academic Committee is in charge of final decisions on student admission. It bases its decisions on the following:

- Final average grade for undergraduate degree that provides access to the master's degree
- Suitability of the candidate's previous degree. Holders of bachelor's degrees in Informatics, Computer Science, Information Technology, Computer Engineering, etc. will be given preference
- Academic performance on the previous degree
- Experience in innovation and research projects
- Additional university degrees

MAI, as well as the other EHEA degree programmes at FIB, has a wide range of mobility facilities (at Mobility in evidence [417]), both for students and academic staff.

MAI, as a new EHEA degree programme, is a 90 ECTS programme (three semesters full time) and it is based on a previous one (https://postgrau.upc.edu/ai/gimaster/courses,120 ECTS). This previous one had two dual degree partner universities:

- Master's Programme in Information Systems and Computer Engineering (MEIC), Technical University of Lisbon, School of Engineering (IST) in Portugal.

- Master's Programme in Machine Learning and Data Mining (MACADAMIA), Aalto University of Science and Technology (formerly, Technical University of Helsinki, TKK) in Finland.

with two dual Agreements

- Dual agreement between UPC and Technical University of Lisbon, School of Engineering (IST) in Portugal.
- Dual agreement between UPC and Aalto University of Science and Technology (formerly, Technical University of Helsinki, TKK) in Finland.

Now FIB is adapting these agreements to the new MAI degree programme, studying the implementation of double diploma agreements (improvement plan [483])

Internationalisation of MAI academic staff

The academic staff, MAI Faculty, concerns an important academic group from UPC, UB and URV. They
They meet the qualifications requirements for programme delivery, and they have sufficient and recognised teaching, research and, where applicable, professional experience:
MAI-UPC: 19 academic staff, 67 positively evaluated merits in teaching, 40 positively evaluated merits in research periods
MAI-UB: 12 academic staff, 22 positively evaluated merits in teaching, 21 positively evaluated merits in research periods

Internationalisation MAI results

The Master on Artificial Intelligence from the academic course 2012-2013 has changed: now it is a course of 90 ECTS (MAI90) instead of 120 ECTS (MAI 120). But it maintains the number of international graduates (3 in 2011/12, 3 in 2012/13, 5 in 2013/14), and the number of international students that enrols the programme (54 in 2012/13, 50 in 2013/14, 44 in 2014/15). (Evidence [428])

EURO-INF LABEL (GEI,MEI,MIRI)

Partnerships. Stakeholders' needs

FIB creates knowledge in order to contribute significantly to the progress of society with innovative initiatives as well as to the development of information technologies.
Meeting the needs of companies helps to prepare more effectively the professionals with skills that society needs. The collaboration between FIB and organisations, institutions and companies makes possible sharing interests and projects, and is often established in the terms listed below, even though we are always open to new innovative proposals:

1. Short Industrial Seminars
A company may consider participating in our Industrial Seminar Program, the short seminars given by professionals from leading companies to students (evidence [417] at University-Enterprise). The seminars are offered between the last week of January and the second of February. They last 9 hours, distributed in sessions of 3 hours. Labs are available in case instructors are interested in providing practical sessions in the seminar.

2. Participation in courses
Another alternative is to consider a possible collaboration in the different courses offered at FIB.

3. Scholarships and Awards
We encourage companies or other institutions to offer scholarships and/or awards to some of the best students. evidence [419} at Grants and financial aid, and evidence [418] at Awards.

4. Placements via Educational Cooperation Agreements (to work in Spain or abroad)
Through Educational Cooperation Agreements, the University gives companies the opportunity to take on students in their final years so that they are able to gain practical professional experience. They will not be subject to contractual employment obligations and they may be entitled to tax deductions. Students who sign an educational cooperation agreement are subject to the following time restrictions:

- Eighty hours per month during the academic year (October-May). Exceptions are made to this limit when the agreement involves completing a thesis. There no restrictions outside the academic year (June to September).
- A total of 900 hours over the calendar year. The academic year for agreements starts on 15 September and ends on 14 September the following year.

Students who sign an agreement must have passed at least half of the credits on the degree they are studying. They must also take out a student insurance policy to cover the term of the agreement. The remuneration students received is paid directly by the company.
Additional information about Educational Cooperation Agreements is found at Placement (evidence [417] at University-Enterprise).

5. Sponsoring the IT Forum (*Fòrum de les Tecnologies de la Informació*)
One of the most interesting activities in order to give visibility to a company among students is to participate in the IT Forum (evidence [417] at University-Enterprise). The objective of the Forum is twofold: to bring students to the business world of the most important companies in the sector, and to provide these companies the opportunity to know our future engineers and receive their CVs. There are different activities and modalities of participation at the Forum, in which a company can find: exhibition stands, company presentations, the forum magazine, workshops, coffee-colloquium, conferences. Forum TI is open to any type of activity that the company may propose and which may be of interest to students of the UPC.

6. Sponsoring Festibity (http://www.festibity.com/)
Festibity is a major annual IT event that is held every year in May by FIB Alumni, gathering more than 500 professionals. With time for talks, round tables, awards and networking, it is intended to serve as a meeting point for businesses, universities and professionals from the IT sector. Every year it focuses on the role of IT on a given topic.

7. Collaboration through inLab FIB
inLab FIB is an innovation and research laboratory based at FIB, integrated in the CIT UPC Technology Center, that integrates academic personnel from different UPC departments and its own technical staff to provide solutions to a wide range of demands that involve several areas of expertise.
- inLab Talent Program Sponsorship. We ask enterprises to consider the option of sponsoring our inLab Talent Program. The main benefits of the program are that promotes the recruitment of talented graduates, a better and faster adaptation to the company culture and a better success ratio of new employees. Further information about the inLab Talent Program Sponsorship can be found at http://inlab.fib.upc.edu/en/information-for-companies
- inLab Open Innovation Labs. Companies can establish a university laboratory which allows UPC students to get involved and participate in developing projects for those companies. Such laboratories follow an open innovation schema, where participants will work in collaboration with the company under combined supervision of both the company and inLab professionals. Examples of possible tasks are prospection and technological evaluation, prototype development, creation of transversal software, best practice analysis, etc.
- R+D Projects. We offer expertise in several areas to develop research and development projects, either directly with companies, or as partners in R+D projects within H2020 or other frameworks. Other ways of collaboration can be built through industrial doctorates.

8. UPC 21 (http://www.upc.edu/upc21)
Further collaboration with the FIB and UPC can be articulated via the UPC 21 social outreach, sponsorship and patronage program though Enterprise Chairs, laboratory sponsorships, donations, or other forms of collaboration

9. Tax Incentives and CSR
Many of these activities listed above can benefit from tax incentives for companies and contribute to their Corporate Social Responsibility (CSR) goals.

Financial resources

UPC is a public Spanish University and is funded by the national and regional governments (see legal framework). Public universities are state-owned but granted a considerable degree of independence when it comes to self-government. Public universities are subject to Spanish administrative law as any other public body of the state. Public university staff, lecturers and professors are, mainly, granted civil servant status, which serves as a tenure.

The UPC budget (see UPC 2015 budget) is managed at two levels: a centralised budget and a delegated budget for each school and department. The UPC central administration manages the centralised budget. This budget includes the teaching and support staff salaries, major investments and financial operations for all the university.

The schools are provided with a delegated budget for some current expenses like teaching and lab material. Additionally, schools are allowed to keep a share of some incomes like Educational Cooperation Agreements or classroom rental. These are the three main income accounts for the FIB delegated budget:

- FIB receives an assignment as one of the UPC schools, for current expenditures. Next table shows the last recent years assignment (government' austerity measures brought about yearly decreases in the assignment):

	2012	2013	2014	2015
FIB Assignment (euros)	196.468,26	125.739,69	89.795,15	88.148,00

- Educational Cooperation Agreements establish a tax for university management that last years yielded to FIB:

	2011	2012	2013	2014
ECA (euros)	98.880	105.120	107.600	102.472

- And these recent years FIB received over 20.000 euros from rents of classrooms and common places (for example for online tests like TOEFL and the School bar).

FIB yearly expenses includes:

	2014
Ordinary expenses	40506,41
TIC investments (1)	21841,59
TIC investments (2)	37480,15
inLab	51458,91
Grants	20872,88
Teaching material	14955,87
Laboratories material	15000

In addition to previous regularly incomes and expenses, FIB has incomes for specific investments: industry funding programs and governmental (national or international) funding programs. For example: AGAUR grants (International Master's programme for MEI, MIRI and MAI), specific projects (IT Forum, inLab Talent, inLab crowdfunding), industry donations (Everis, Google ,Social Point). FIB 2014 budget shows over 165.000 euros in specific investments.

FIB School Board approves the budget and is published in the annual report (in Catalan, Memoria_2014-2015 page 177).

4. Continuous improvement process

Continuous improvement process assessment

Monitoring process performed improvement plans, some of them finished at present and some others still in work (in Chapter 4 there is an assessment of the continuous improvement proposals). The current analysis in the accreditation process performs new improvement plans for each degree programme.

Bachelor degree (GEI)

Master	Source of change	Suggested change	Status
GEI	Monitoring Report	Global coordination structure	Done
GEI	Monitoring Report	Results assessment with *reavaluacions*	Done
GEI	Monitoring Report	Increase enrolment, especially women	Partially done. New FIB improvement plan about informatics knowledge
GEI	Monitoring Report	Website update	Done. New improvement plan for website upgrade
GEI	Monitoring Report	QAS processes revision	Partially done. New improvement plan for QAS revision and implementation
GEI	Monitoring Report	Promote English taught subjects	Done. New improvement plan for consolidate or give up an English taught cohort

New improvement plans for GEI degree programme concern:
- Possibility of a double specialisation
- Internationalisation mention for students with 25% of ECTS of subjects taught in English
- New double degree agreements to obtain both a bachelor and a master degree

Masters' degrees (MEI, MIRI, MAI)

Masters received the verification in 2012, later than GEI. So monitoring process have less periodic reports because they have less academic years to evaluate, and basically involved increasing information or the number of students.

Master	Source of change	Suggested change	Status
MEI	Monitoring Report	Develop a master thesis guide	Done and publicly available
MEI	Monitoring Report	Increase the course description in the syllabus	Almost complete. Due on July 2016
MEI	Monitoring Report	Increase the number of registered students	Registered students are on the rise. Plans in promotion and communication have proven successful. New FIB improvement plan [] about informatics knowledge

New improvement plans for MEI degree programme concern:
- Implementation of a dual master programme
- New double masters' degree agreements

Master	Source of change	Suggested change	Status
MIRI	Monitoring Report	Develop a master thesis guide	Done and publicly available
MIRI	Monitoring Report	Increase the course description in the syllabus	Almost complete. Due on July 2016
MIRI	Monitoring Report	Increase the number of registered students	Registered students are on the rise. Plans in promotion and communication have proven successful. New FIB improvement plan [] about informatics knowledge

New improvements plans for MIRI degree programme concern:

- Study the reorganisation of compulsory courses into two semesters
- Find a mechanism to recognise courses taken in previous undergraduate
- Promote creation of more seminars
- Study the content of compulsory courses
- New double masters' degree agreements
- Renaming some subjects

Master	Source of change	Suggested change	Status
MAI	Monitoring Report	Develop a master thesis guide	Done and publicly available
MAI	Monitoring Report	Increase the course description in the syllabus	Almost complete. Due on July 2016
MAI	Monitoring Report	Increase the number of registered students	Registered students are on the rise. Actions in promotion and communication have proven successful. New FIB improvement plan [] about informatics knowledge

New improvement plans for MAI degree programme concern global changes. Artificial Intelligence is a fast-paced and challenging field and its results are present in our everyday life. After few years of activity the Master Program on Artificial Intelligence (MAI) is prepared to promote some changes to adjust the programs and update contents to the actual and near future research and professional trends within the field. To offer an integrative and cutting-edge approach to the field a more flexible academic structure to cope with those changes. We expect our graduates to be familiar with the basics of several advanced areas of AI and with the current research directions. Therefore it is necessary to provide means to adapt the program in a seamless fashion.

The intended changes touch all aspects of the academic and social life of the program. With the proposed changes the programme is willing to offer the students new options:
- Data Science. This option is intended for students willing to become specialists in the analysis of Data Science. It instructs the students in Statistics, Machine Learning, Data Mining, and Advanced programming techniques for dealing with Data Science. It may offer a range of application domains as for example Information Retrieval, Bio-Informatics, Computer Vision, and others.
- Assistive Technologies and Care Services. This option is intended for students willing to become specialists in the design and development of Assistive Technologies. It instructs the students in Machine Learning, Robotics, Human Computer interfaces, and advanced programming techniques. It may offer a range of application domains in line with the existing EU projects where researchers of the thee Universities do participate.

New improvements plans for MAI degree programme concern:
- To recognise credits from other programs
- To create new intensifications (Data Science, Assistive technologies and care services) and subject complements for them
- To review structure and contents of existing intensifications (up-date, share subjects, extend subject number of credits, update format and contents)
- Change the mandatory nature of the subject Intelligent data analysis applications in business
- Renaming some subjects

Improvement proposals list

M.447.2015	**Increase knowledge and interest of computer engineering profession** **Standard:** Standard 1 **Purpose:** To boost the knowledge and social recognition of the studies and the profession of computer engineering **Objectives:** To promote and collaborate in initiatives which aim to promote the role of information technology **Scope:** FIB **Responsible:** Vice-dean for Communications **Priority:** Medium **Re-verification:** No **Term:** 2015/17 academics year **Indicators:** Number of secondary schools contacted and number of girls interested **State:** In process **Description:** We have started expanding contact with secondary schools to promote a better understanding of the profession and the scope of studies in computer science engineering, and to take the opportunity to influence especially the feminine group

M.478.2015	**Website upgrade** **Standard:** Standard 1 **Purpose:** FIB website has to be the tool of communication more attractive and informative to the targeted stakeholders. **Objectives:** To adapt website to the latest technological developments. To review the aesthetic website aspects to improve information and satisfaction **Scope:** FIB **Responsible:** Dean's team **Priority:** High **Re-verification:** No **Term:** 2015/16 academic year **Indicators:** Check list (actual and new information) to verify. Computer and mobile access. **State:** In process **Description:** A committee has started to define actual and new information to cover

M.481.2015	**QAS revision and implementation** **Standard:** Standard 3 **Purpose:** To review QAS processes and to standardise and to allow flexibility **Objectives:** To standardise rules and regulations dealing with formal communication and exchange of information between governing bodies and with target groups **Scope:** FIB **Responsible:** Vice-dean of quality **Priority:** Medium **Re-verification:** No **Term:** 2015/16 academic year **Indicators:** Number of processes standarisated **State:** In process **Description:** Started a initial standardisation of committees minutes

M.482.2015	**Consolidate English taught subjects** **Standard:** Standard **Purpose:** To consolidate English taught subjects **Objectives:** To increase students enrolling English taught subjects by adding an internationalisation mention for students with minimum 25% of ECTS of subjects taught in English **Scope:** GEI **Responsible:** Vice-dean/head of studies and CAGEI **Priority:** Medium **Re-verification:** No **Term:** 2015/17 academics years **Indicators:** Number of English taught subjects and number of students for internationalisation mention **State:** In process **Description:** Number of students interested in subjects taught in English decreases because it's not useful to accredit third language. So a new incentive is necessary.

M.483.2015	**Possible GEI double specilisation** **Standard:** Standard **Purpose:** To allow double specialisation with minimum number of over ECTS **Objectives:** Students could reach a double specialisation identifying groups of subjects to share **Scope:** GEI **Responsible:** Vice-dean/head of studies and CAGEI **Priority:** Low **Re-verification:** Yes **Term:** 2015/17 academics years **Indicators:** Define the feasible double specialisations and the subjects implied **State:** Not started

M.485.2015	**Study the implementation of a dual master programme** **Standard:** Standard **Purpose:** A dual master programme allows students to combine seamlessly their jobs and master through a tight collaboration between the companies and the university **Objectives:** Evaluate the suitability and implementation details of a dual master programme. **Scope:** MEI **Responsible:** Vice-dean for Postgraduated courses and CAMEI **Priority:** Medium **Re-verification:** Yes **Term:** 2015/17 academics years **Indicators:** Check UPC regulations and possibilities of implementing such a program **State:** Not started

M.484.2015	**New double degree agreements** **Standard:** Standard **Purpose:** To promote student's mobility in both senses **Objectives:** Evaluate the suitability and implementation details of double diploma agreements with foreign institutions. **Scope:** GEI MEI MIRI MAI **Responsible:** Vice-dean/head of studies and CAGEI CAMEI CAMIRI CAIMAI **Priority:** High **Re-verification:** Yes **Term:** 2015/17 academics years **Indicators:** Number of new contacts and number of agreements **State:** In process **Description:** We already established contacts with the Centro de Investigación en Computación (CIC-IPN). There is the idea to recover previous agreements with Instituto Técnico Superior (IST) and A. Aalto (A!), both CLUSTER members.

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M.486.2015	**Renaming some subjects (MEI, MIRI, MAI)** **Standard:** Standard **Purpose:** To update names of subjects **Objectives:** To Adapt the names of the subjects to current terminology in the area of research. **Scope:** MEI MIRI MAI **Responsible:** Vice-dean/head of studies and CAMEI CAMIRI **Priority:** Medium **Re-verification:** Yes **Term:** 2015/17 academics years **Indicators:** Number of changed names **State:** Not started

M.487.2015	**MIRI reorganisation semesters and contents of compulsory courses** **Standard:** Standard **Purpose:** First semester compulsory courses are very crowded in the first semester and almost empty on the second semester **Objectives:** To balance the number of students, we want to evaluate the possibility to move some compulsory courses for some specialties to the second semester without affecting the learning outcomes **Scope:** MIRI **Responsible:** Vice-dean/head of studies and CAMIRI **Priority:** Medium **Re-verification:** No **Term:** 2015/16 academic year **Indicators:** Number of compulsory courses that can be moved **State:** Not started

M.488.2015	**MIRI: find a mechanism to recognise courses taken in previous undergraduate studies** **Standard:** Standard **Purpose:** Compulsory courses in the master were planned for graduate students that have previously finished a Bachelor in Computer Engineering. Now, the master attracts students from neighboring areas that have already taken similar courses but they would benefit from taking more computer engineering fundamental courses. We want to find a mechanism so that any student can have a personalised set of compulsory courses so that we can guarantee their proficiency in all the areas covered by the initially planned compulsory courses. **Objectives:** Reduce the amount of redundant courses for students coming from other Bachelor degrees than Computer Engineering **Scope:** MIRI **Responsible:** Vice-dean/head of studies and CAMIRI **Priority:** Low **Re-verification:** No **Term:** 2015/17 academics years **Indicators:** Evaluation of the legal framework and experience in other masters at UPC **State:** Not started

M.489.2015	**Creation of more seminars for MIRI** **Standard:** Standard **Purpose:** To promote **Objectives:** To **Scope:** MIRI **Responsible:** Vice-dean/head of studies and CAMIRI **Priority:** Low **Re-verification:** No **Term:** 2015/17 academics years **Indicators:** Define **State:** Not started

M.490.2015	**MAI: recognise credits from other programs.** **Standard:** Standard 1 **Purpose:** The modern master academic programs should allow flexibility to adapt to the academic needs of students. **Objectives:** Give options to students delve into issues not offered by the program. Allow students to take up [9..12] ECTS from other programs Official Master **Scope:** MAI **Responsible:** Vice-dean for Postgraduate Courses **Priority:** Medium **Re-verification:** No **Term:** 2015/16 academic year **Indicators:** Number of credits and subjects **State:** Not started

M.491.2015	**MAI: new intesifications** **Standard:** Standard **Purpose:** It has been identified the need of new intensifications: Data Science, and *Assistive Technologies and Care Services*. These new intensifications aims to train students in the intelligent processing of large volumes of data, and to prepare students for the development of smart technologies and services in health care, as well as research in the field of disability and mHealth **Objectives:** To update the Master's academic contents in an emerging area in research and the market **Scope:** MAI **Responsible:** Vice-dean for Postgraduate Courses and CAIMAI **Priority:** High **Re-verification:** Yes **Term:** 2015/17 academics years **Indicators:** Definition of the new intensifications with existing and new subjects **State:** Not started

M.492.2015	**MAI: review structure and contents of existing intesifications** **Standard:** Standard **Purpose:** To review structure and contents of existing intensifications. **Objectives:** To update and share subjects, extend subject number of credits, update format and contents **Scope:** MAI **Responsible:** Vice-dean for Postgraduate Courses and CAIMAI **Priority:** High **Re-verification:** Yes **Term:** 2015/17 academics years **Indicators:** Provide a mechanism to update the contents of the Master and not to lose the pulse of the development of the professional issues in the area **State:** Not started

M.493.2015	**MAI: change the mandatory nature of a subject** **Standard:** Standard **Purpose:** To change the mandatory nature of the subject Intelligent data analysis applications in business **Objectives:** To **Scope:** MAI **Responsible:** Vice-dean for Postgraduate Courses and CAIMAI **Priority:** High **Re-verification:** Yes **Term:** 2015/17 academics years **Indicators:** **State:** Not started

5. Evidences

Codi	Evidència
95	Quadre de comandament del centre
96	Observatori de rànquings
97	Quadre de comandament del Grau en Enginyeria Informàtica
98	Quadre de comandament del Màster universitari en Enginyeria Informàtica
99	Quadre de comandament del Màster universitari en Innovació i Investigació Informàtica
100	Quadre de comandament del Màster universitari en Intel.ligència Artificial
101	Informes de seguiment i avaluació de les titulacions (IST i IAST)
102	Memòria i informe de verificació de les titulacions
103	Pla de formació del PDI
104	Pla d'actuació institucional per facilitar la inserció laboral
105	Llistat de laboratoris i tallers avaluats pel SPRL
106	Enquestes als ocupadors
107	Fitxa d'indicadors i ús de la biblioteca
158	Formació realitzada pel PDI del centre
182	Producció científica del PDI del Centre
183	Qualificacions de les assignatures de les titulacions del centre curs 2014_2015
417	FIB website
418	GEI website
419	Masters' website
420	Committees' groups in "Racó"
425	Fitxa d'indicadors del PDI de la FIB
426	Valoració professorat règim de dedicació FIB
427	Experiència professional PDI FIB
428	Fitxa d'indicadors de la titulació: Internacionalització
562	Relació de projectes competitius i no competitius del PDI de la FIB
563	Activitat investigadora del PDI de la FIB