



UNIVERSITÀ DI PISA
Department of Computer Science

Master's degree in
Business Informatics
(2 years, 120 ECTS)

(Class LM-18: Informatics)

Contact for information: businessinformatics@di.unipi.it

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1 Brief Presentation

The two year Master Program in Business Informatics has been designed to meet the growing demand for professionals with an interdisciplinary skill both in informatics and in business to satisfy the increasing demand by companies to compete using analytics methods. The program is focused on Business Intelligence techniques to support decision making. The interdisciplinary competence covered by the Business Informatics degree is intended to overcome the cultural divide between IT and management. In fact, as reported by several studies and publications, there is a shortage of trained professionals who can integrate the various skills and approaches necessary to overcome the traditional distrust of management in involving computer professionals in decision-making. This is because computer professionals tend to be regarded as bearers of important but highly specialized knowledge, which may either seem difficult to apply or which has little relevance to the needs of organizations.

Those who successfully complete their degree in Business Informatics will be able to engage in activities that require the use of advanced methods in terms of design, development and management. This will also include estimations, testing and the management of innovative operational information systems or decision support systems. They will become experts of:

- Information and communication technology supporting business and operational goals (operational information systems), management to make good business decisions (decision support information systems), and business services on the Web.
- The fundamentals of economics and management science.
- Enterprise organizational models, typical functions, primary and support activities.
- The role of management planning and controlling systems.
- The Business Intelligence methods and tools to design, plan, implement and manage applications to provide managers with information synthesis for deciding more effective tactics and strategies to increase their competitive edge.
- Decision support systems based on operations research models in production and distribution logistics.
- Methods and tools for analyzing business processes and the redesign of such processes eventually using the technology of Web services.

Finally, Business Informatics graduates will have the skills necessary to access more advanced levels of university education, such as the PhD in Computer Science at the Università di Pisa.

2 Program Overview

This Master Program is offered by the Department of Computer Science, in cooperation with the Department of Economics and Management of the Università di Pisa, and it has the following structure:

- Compulsory subjects with 48 ECTS credits from the *Informatics* area.
- Compulsory subjects with 6 ECTS credits from the *Operations Research* area.
- Elective subjects with 18 ECTS credits from the *Business Economics* area.
- Elective subjects with 24 ECTS credits from the *Business Economics, Business Law, Informatics, Mathematics, Operations Research, and Statistics* areas.
- Elective subjects with 9 ECTS credits, from a list defined every year by the Master Program Council.
- A thesis with 15 ECTS credits.

The program offers a wide range of courses taught in English, including at least 42 ECTS credits for mandatory courses.

The final thesis may be associated with an internship in public or private companies.

3 Study Program

The study program depends on the applicant BSc area, but in all cases it will have at least 48 ECTS credits of Informatics, with 36 in the field of the fundamentals of Business Intelligence, and it will be designed to give an interdisciplinary expertise in informatics and business to understand the needs of organization's activities in order to exploit new opportunities offered by information technology.

Only courses marked with an asterisk are offered in English.

Compulsory Subjects from the *Informatics* area (48 ECTS)

- **Decision Support Information Systems***

(INF/01 ECTS 12 SID 426AA)

- (Module 1: Decision Support Data Bases (6 ECTS))
- (Module 2: Model-Driven Decision Methods (6 ECTS))

- **Data Mining***

(INF/01 ECTS 12 DM 420AA)

- (Module 1: Foundations (6 ECTS))
- (Module 2: Advanced Topics and Applications (6 ECTS))

- **Business Performance Analysis***

(INF/01 ECTS 12 APA 417AA)

- Module 1: Business Process Modeling (6 ECTS)
- Module 2: Business Intelligence Laboratory (6 ECTS)

- **GR1: Elective courses from Table 1 (12 ECTS)**

Area	Course	Description			
		SSD	ECTS	Abbr	Code
Informatics	ICT Risk Analysis*	INF/01	6	ARI	416AA
	Database Structures and Algorithms*	INF/01	6	BSA	411AA
	Business Intelligence and Performance Management*	INF/01	6	BIPM	566AA
	Laboratorio di applicazioni internet	INF/01	6	LAI	253AA
	Laboratorio di basi di dati	INF/01	6	LBD	254AA
	Laboratorio di gestione di progetti software	INF/01	6	LGS	423AA
	Software Services*	INF/01	6	SS	389AA
	Sistemi informativi territoriali	INF/01	6	SIT	260AA
	Peer-to-Peer Systems*	INF/01	6	P2P	261AA
	Technologies for Web Marketing*	INF/01	6	TWM	537AA
Web Mining and Social Network Analysis*	INF/01	6	WMR	427AA	

Table 1: GR1: Elective Courses from the *Informatics* area (12 ECTS)

Compulsory Subject from the *Operations Research* area (6 ECTS)

- **Logistics***

(MAT/09 ECTS 6 LOG 255AA)

**GR2: Elective courses from the *Business Economics* area (18 ECTS)
(Table 2)**

Area	Course	Description			
		SSD	ECTS	Abbr	Code
Business	Analisi dei processi	SECS-P/07	6	AP	129PP
Economics	Analisi e contabilit dei costi	SECS-P/07	6	ACC	039PP
	Analisi e gestione dei costi	SECS-P/07	9	AGC	265PP
	Analisi e ricerche di marketing	SECS-P/08	9	ARM	202PP
	Economia aziendale II	SECS-P/07	9	EA2	018PP
	Economia e gestione delle imprese	SECS-P/08	9	EGI	049PP
	Economia politica	SECS-P/01	9	EP	149PP
	Internet marketing	SECS-P/08	6	IM	152PP
	Organizzazione aziendale	SECS-P/10	6	OA	096PP
	Pianificazione e controllo gestionale	SECS-P/07	9	PCG	278PP

Table 2: GR2: Elective courses from the *Business Economics* area (18 ECTS)

GR3: Elective courses from the *Business Economics, Business Law, Informatics, Mathematics, Operations Research, and Statistics* areas (24 ECTS) (Table 3)

Area	Course	Description			
		SSD	ECTS	Abbr	Code
Business Economics	Analisi dei processi	SECS-P/07	6	AP	129PP
	Analisi e contabilit dei costi	SECS-P/07	6	ACC	039PP
	Analisi e gestione dei costi	SECS-P/07	9	AGC	265PP
	Analisi e ricerche di marketing	SECS-P/08	9	ARM	202PP
	Economia aziendale II	SECS-P/07	9	EA2	018PP
	Economia e gestione delle imprese	SECS-P/08	9	EGI	049PP
	Economia politica	SECS-P/01	9	EP	149PP
	Internet marketing	SECS-P/08	6	IM	152PP
	Organizzazione aziendale	SECS-P/10	6	OA	096PP
	Pianificazione e controllo gestionale	SECS-P/07	9	PCG	278PP
Business Law	Diritto dell'informatica	IUS/05	6 6	DIR	058NN
Informatics	Algoritmica e laboratorio	INF/01	12	AIL	008AA
	Analisi dei dati	INF/01	6	AD	414AA
	Basi di dati	INF/01	6	BD	244AA
	Ingegneria del software	INF/01	6	IS	271AA
	Intelligenza artificiale: tecniche di base	INF/01	6	IAB	422AA
	Logica per la programmazione	INF/01	6	LpP	009AA
	Programmazione I e laboratorio	INF/01	12	PRL	007AA
	Reti mobili cellulari	INF/01	6	RMC	384AA
	Reti di calcolatori e laboratorio	INF/01	6	RCL	274AA
Mathematics	Matematica discreta	MAT/01-02	12	MD	006AA
	Ricerca operativa	MAT/09	6	RO	029AA
	Simulazione	MAT/09	6	SIM	259AA
	Network Optimization Methods*	MAT/09	6	MOR	533AA
Statistics	Analisi esplorativa dei dati	SECS-S/01	6	AED	203PP
	Modelli probabilistici per le decisioni economiche ed aziendali	SECS-S/06	6	MOD	153PP

Table 3: GR3: Elective courses from the *Business Economics, Business Law, Informatics, Mathematics, Operations Research, and Statistics* areas (24 ECTS)

4 Study Plan

A recommended pattern of study follows, based on the program requirements above. Areas of interest for the selection of subjects are shown in italics.

The allocation of courses by each year is only an indication. The 120 ECTS credits required for graduation can be earned in less than two years.

The student at the time of enrollment is required to submit his study plan to be approved by the Course Board of Studies, and it may be updated annually.

Year	First Semester	ECTS	Second Semester	ECTS
First	<i>GR2: Subjects from the area Business Economics</i>	9	<i>GR2: Subjects from the area Business Economics</i>	9
	<i>GR3: Subjects from the area Business Economics, Law, Informatics, Mathematics, Statistics</i>	9	<i>GR3: Subjects from the area Business Economics, Law, Informatics, Mathematics, Statistics</i>	9
	Logistics*	6	<i>GR3 Subjects from the area Business Economics, Law, Informatics, Mathematics, Statistics</i>	6
	Decision Support Information Systems*: (Module I) Decision Support Data Bases (Characteristic)	6	Decision Support Information Systems*: (Module II) Model-Driven Decision Methods (Characteristic)	6
	Total	30		30
Second	Data mining*: (Module I) Foundations (Characteristic)	6	Data mining*: (Module II) Advanced Topics and Applications (Characteristic)	6
	Business Performance Analysis*: (Module I) Business Process Modeling (Characteristic)	6	Business Performance Analysis*: (Module II) Business Intelligence Laboratory (Characteristic)	6
	<i>GR1: Subjects from the area Informatics</i> (Characteristic)	12	<i>Elective subjects</i>	9
			Thesis	15
Total	24		36	

5 Requirements for Admission

Applicants must hold a first cycle degree in Computer Science or Computer Engineering, or a degree with at least 40 ECTS credits in the following areas: Management, Economics, Informatics, Physics, Mathematics, Statistics.

In the case of other degrees, or academic qualifications obtained abroad, exceptions may be made only with a resolution of the Master Program Admissions Committee, on the basis of the specific background of the candidate.

Information on how to apply for the Master Program can be found at:

<http://matricolandosi.unipi.it/index.php?page=default&id=35&lang=it>

In order to gain admission to the Master Program, the candidate must exhibit personal qualifications, as well as an adequate command of the English language.