A Graduate Program in Business Informatics: Experiences at the University of Pisa

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European Computer Science Summit 2009
Motivations and history

• Decline of enrolments in traditional informatics programs experienced in late ‘90s tackled by promoting interdisciplinary programs

• Surveys indicated the need for graduates with skills both in Informatics and Business Economics in order to develop applications to support decision making

• Tight connections with the research topics carried out by the Departments of Informatics, Economics, and Business Economics in:
  • datawarehousing, data mining, marketing, business information systems
Motivations and history

In 2002, the graduate program *Informatica per l’Economia e per l’Azienda* was thus designed to prepare graduates both • to master the information technologies, and • to understand the needs of organizations with a specific training in *Business Intelligence for decision support*

The program was in the 23/S Informatics class and granted access to the Italian State Exam for IT Professional Engineer as well as to Ph.D. programs in Informatics.
Graduate program structure

• An inter-faculty program
  • Faculty of Science & Faculty of Economics

• Two curricula for a total of 180 credits
  • 1 credit = 8 h of teaching in frontal lessons (12 h for labs) + 17 h of individual study (13 h for labs)

• One curriculum for undergraduates in
  • Informatics

• One curriculum for undergraduates in:
  • Economics,
  • Business Economics,
  • Statistics for Business Economics
Curriculum for undergrad. in Informatics

- Compulsory subjects (46 credits)
  - 10 credits in Microeconomics
  - 10 credits in Business economics
  - 5 credits in Statistics
  - 21 credits in Business Intelligence
    - Databases for decision support (5 credits)
    - Enterprise Information Systems (5 credits)
    - Data Mining (5 credits)
    - Laboratory of Business Intelligence (6 credits)
Curriculum for undergr. in Informatics

- Compulsory subjects (46 credits)
  - 10 credits in Microeconomics
  - 10 credits in Business economics
  - 5 credits in Statistics
  - 21 credits in Business Intelligence

- Elective subjects (56 credits)
  - 25 credits from one of
    - Economics, Business Economics, Business Law
  - 10 credits from any of
    - Economics, Business Economics, Business Law
  - 5 credits in Management Information Systems
  - 10 credits in Informatics
  - 6 credits in any area

- Thesis (18 credits)
Notable accomplishments

• Quality Assurance Accreditation
  • wrt. CRUI guidelines, inspired by ISO 9001 norms
  • annual self-assessment & peer review (2003-2007)

• Awards
  • Regione Toscana (European Social Fund) grant for Expert in Business Intelligence module

• Satisfaction of students
  • Evaluation questionnaires at the end of each semester
    – At the end of each semester, for each course
    – Range 1 (very negative) to 4 (very positive)
    – Overall average: always greater than 3.
Notable accomplishments: enrolments

New enrolments: **180**
Withdrawals: **23 (13%)**

**56 enrolments (31%)** from other **16** universities

**21 enrolments (12%)** of undergraduates not in Informatics
Notable accomplishments

- Internships for thesis preparation
  - Not compulsory, three to four months in public or private companies
  - Agreements with more than 30 companies, mostly in Milan and Rome, so not just in the Pisa area
  - Software houses, but also companies in the area of consulting, auditing, fashion, mobile telephony, manufacturing, retail, and supermarket chains.

- Satisfaction of graduates
  - Self-evaluation report 2006 conducted interviews
    - 65% total match between job and the training received
    - 22% partial match, 13% no match
  - Internship much appreciated (33 out of 47, i.e., 70%)
    - entry point for stable employment
Notable accomplishments

- Number of years to graduate
- Number of months to find a job

Graduates: 47

Avg n. of months to find a job: 1
A new version of the graduate program

• New law in 2008 about University programs
• Design of an inter-class program
  • LM-18 Informatics &
  • LM-91 Techniques and Methods for the Information Society
• Two curricula, as before
• Enriched compulsory subjects in Business Intelligence (36 credits)

Decision support databases
Data-driven decision methods
Data mining: foundations

Data mining: advanced topics
Business Process Modeling
Business Intelligence Lab
Credits in the new graduate program

2002

- Informatics: 26%
- Elective: 15%
- Business Economics: 8%
- Thesis: 5%
- Other: 8%

2009

- Informatics: 46%
- Elective: 40%
- Business Economics: 13%
- Thesis: 8%
- Other: 40%
Conclusions

• An interdisciplinary graduate program to prepare professionals with both
  • the theoretical foundation and practical knowledge in informatics with a business perspective,
  • and specific skills in Business Intelligence techniques to develop decision support systems,
• attracts new students that make up for the decline of enrolment in Informatics,
• attracts highly motivated students looking for opportunity in a specific cultural area,
• graduates are highly sought after in the job market.
Conclusions

• Special attention to:
  • *Organizational issues*: appropriate (and resource-consuming) coordination of the management of the graduate program.
  • *The design of the syllabuses*: lack of funding, resources and time meant that ad hoc interdisciplinary courses could not always be prepared.
  • *The workload of supervising theses*: due to the high number of enrolled students compared to the number of researchers working in informatics and business topics. Internships have been very effective in mitigating this issue.