UNIVERSITÀ DI PISA

BUSINESS AND PROJECT MANAGEMENT

ANDREA BONACCORSI

Academic year	2022/23
Course	ARTIFICIAL INTELLIGENCE AND DATA ENGINEERING
Code	875II
Credits	9

Modules	Area	Type	Hours	Teacher(s)
BUSINESS AND PROJECT MANAGEMENT	ING-IND/35	LEZIONI	90	ANDREA BONACCORSI

Programma (contenuti dell'insegnamento)

Business and Project management
Prof. Andrea Bonaccorsi
Ing. Alessio Falchi

Academic Year 2022-2023
Outline of the course

The course has the goal of introducing students to the complexity of management of modern companies. It may be considered a short version of an MBA programme, tailored to the needs ot students in Computer Engineering and Business Informatics.
This means that students will be led to understand in depth the performance and technical requirements that IT systems must meet in the business context.
The course will be based on a succinct, yet rigorous, analytical foundation in Microeconomics.
Based on previous experience and interaction with students, this year the course will cover the topics with the following sequence

1. first we will examine the strategic, long term decisions of firms (where, why and how to compete), based on rigorous foundations in microeconomics and strategic management
2. second, we develop the quantitative methods to define and measures the economic and financial performance of the firm (balance sheet, cost accounting, management accounting)
3. then we will go through the main functional areas (marketing and operations, with some coverage of purchasing, logistics, quality and lean management).

The course will be supplemented by a new module on Project Management (20 hours), which will offer the foundations of the management of complex business initiatives, as well as the practical skills needed to run projects in the field of IT and software development in the business context.

Outline **1. Microeconomics and Strategy** Elements from Microeconomics
- Cost functions
- Market demand. Market elasticity
- Market structure (competition, monopolistic competition, oligopoly, monopoly)

What is strategy External analysis
- PESTEL model
- Porter five forces.
- Industry concentration. Definition and measurement of market power
- Market structure. Industry dynamics. Mobility barriers
- Alternative views of strategy. Disruption. Blue ocean

Accounting profitability firm performance, and business models
- Shareholder value
- Economic value creation
- Balanced scorecard
- Triple bottom line
- Business model. Business Model Canvas (BMC)

Cost leadership vs differentiation. Generic strategies. Strategic groups.
- Strategic management and financial performance

2. Financial management Principles of accounting
- Balance sheet

- Economic and financial variables
- Management accounting

Cost concepts
- Fixed vs variable cost. Regimes of variability
- Break even point
- Full costing vs partial costing
- Overhead and rules of allocation. Cost vs profit unit.

Job order costing
- Cost allocation to projects and job orders
- Rules of allocation
- Risk management

Financial indicators
- Financial structure indicators
- Liquidity indicators
- Profitability indicators

Investment appraisal and capital budgeting
- Net Present Value (NPV) and Discounted Cash Flow (DCF)
- Internal Rate of Return (IRR)
- Weighted Average Cost of Capital (WACC)

3. Marketing
Market segmentation, targeting and positioning
- Variables for segmentation (profile, psychographic, behavioral)
- B2C vs B2B
- Perceptual maps. Targeting, positioning and mobility in conceptual maps.
- Repositioning

Value through products and brands
- Product policy
- Brand policy
- BCG matrix
- Product Life Cycle (PLC)
- New Product Development (NPD). Stage gate model.

Value through services, relationships, experiences
- Service characteristics
- Service marketing mix
- Gaps model
- Relationship marketing
- Experiential marketing. Customer journey.
- Nonprofit and social marketing

Distribution
- Channel strategy
- Channel management
- Retailing
- Physical distribution

Communication I. Mass communication techniques
- Promotional mix
- Advertising strategy
- Sales promotion. PR. Sponsorship.
- Direct marketing. Guerrilla marketing

Communication II. Online communication
- Internet users. User generated content (UGC)
- Digital marketing
- Search engine optimization (SEO)
- Social media
- E-mail marketing
- Metrics

4. Strategy and marketing in the digital age
Economics of network and digital industries

- Network externalities
- The cold start problem
- Economics of platform competition
- Case studies of digital companies

Artificial intelligence and digital strategies

- Impact of AI on firms
- Case studies of industries under disruption from AI. Fintech

Scaling

- Inbound marketing
- Growth hacking
- Case studies of unicorns and fast-growth digital firms

Project management
This section of the programme will run in parallel to the main course. It will be run by Eng. Alessio Falchi, a Senior executive and Director with an extensive experience in large engineering and IT projects in several countries, currently located in Switzerland.
The lectures of Eng. Falchi will be run online on Saturdays.

A Textbook from McGraw Hill textbooks designed for the AIDES MSc Program, Computer Engineering, University of Pisa.
ISBN 9781307671469
(the specific Edition and date of publication will be defined after the first lecture)
Slides + Supplementary readings Examination
The examination will be written and oral.
The written examination will be based on a voluntary option between

1. Written examination
2. Short paper

The written examination is a 3-hour series of quantitive exercises based on the coverage of the overall programme, included Project management. It is evaluated out of 30 points.
The short paper is an original piece of work. Two types of short papers

- Survey of the literature
- Application of text mining techniques

The survey of the literature should cover some of the most recent applications of AI and Data science to business problems. A preliminary list of reference is offered. The choice of the topics will be done by sharing a Google Drive list in which students will qualify for a given option. In case of multiple candidatures the topic should be splitted in a interesting and fruitful way.
The application of text mining techniques will be done after a series of seminars by Dr. Simone Barandoni, PhD student at the Artificial Intelligence National Doctorate, in collaboration with Eng. Filippo Chiarello, Researcher at DESTEC. The seminars will cover an introduction to text mining, the construction of queries, and application work on Python.
The use of text mining techniques will be made on a Sandbox of data provided by the faculty

- Patents
- Publications
- Social media

Both short papers and text mining applications must be delivered the day of the written examination, so that they can be evaluated before the oral exam.
The oral examination will cover the entire outline of the course.

Bibliografia e materiale didattico
Prof. Andrea Bonaccorsi **Project management**
Ing. Alessio Falchi

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