UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Service Science

2627-2-FDS02Q019

Learning objectives

This course falls under the learning area "statistics and computer science" of the Data Science degree course, focusing on digital entrepreneurship.

A parallel can be drawn between the design of innovative services in established organizations and the creation of start-ups. In both scenarios, the knowledge acquisition and management processes are crucial. The focus is on existing users and processes for established organizations, whereas in the start-up case, the focus is on users who are still "unknown" and processes to be created from scratch. The course will address the problems related to the design of innovative services in both scenarios.

Upon successful completion of this course, students will be able to:

1. Knowledge and Understanding
   Demonstrate a solid understanding of service design principles in both established organizations and start-up environments.
   Understand the role and importance of knowledge acquisition and management in creating and delivering innovative services, particularly in a startup context.
   Recognize the differences in innovation processes between mature businesses and start-up contexts.

2. Applying Knowledge and Understanding
   Apply appropriate methodologies and technologies to design services aligned with specific business strategies.
   Address knowledge management issues.
   Design and implement knowledge-harvesting processes to improve service offerings based on customer needs and feedback.
   Utilize data analysis to support the development of innovative services and business models.
   Intercept feedback from customers to validate and possibly rapidly evolve a start-up's business model.

3. Making Judgements

Critically assess whether a service meets user needs and identify areas for growth or improvement.
Evaluate the relevance and effectiveness of business model assumptions in start-up settings.
Select and use suitable performance metrics to assess the success of entrepreneurial initiatives.

4. Communication Skills
   Communicate effectively with various stakeholders, including team members, business partners, and users, regarding service innovation strategies and decisions.
   Present service and business model designs in a clear and structured manner, supported by data, indicators, and strategic reasoning.

5. Learning Skills
   Develop autonomous learning skills to continue exploring new tools, techniques, and theories in service innovation and entrepreneurship.
   Adapt to evolving organizational and technological contexts through reflective practice and iterative development.

The contents of the course may vary; the teacher will communicate any changes via the course website..

Contents

- Service Science: the focus is on the relationship between Service Science, service design methodologies, information and knowledge management systems, and knowledge harvesting processes in uncertain scenarios;
- Business strategies of service companies: the role of collaboration and value co-production in the business processes of service companies with the focus on validating the business model assumptions in start-up firms
- The Lean Start-up approach to maximise knowledge acquisition in innovative scenarios
- The Sprint approach to minimize the time it takes to get knowledge
- Laboratory on the design of service systems;

Detailed program

- Introduction to Service Science
- The services characteristics and the delivery process
- The Service sector Porter value chain
- The role of information and knowledge to innovation of services
- Service systems design (from engineering model to interpretative model)
- Business strategies of service companies
- Evolution of business processes
- The role of value co-production (network companies)
- Knowledge-based services (crowdsourcing and open innovation processes)
- Case Studies
- The difference between an idea and a business opportunity
- Why do ventures require dynamic leaders who understand vision, strategy, risk, and tactics?
- Differences between a start-up and a mature firm (or between an innovative project and a project in a well-known scenario)
- The knowledge harvesting problem
- MVP (Minimum Viable Product)

- Validated learning, Build-measure-learn cycle. How to shorten the feedback loop in a start-up
- How to prevent endless loop: the sprint approach
- Business Model Canvas vs Business Plan
- Lab. Designing an innovative service/start-up

Prerequisites

Even a basic knowledge of the main technologies and applications used in e-commerce and social media is useful.

Teaching methods

The course is taught in English and includes classroom lectures and laboratory exercises. The laboratory exercises can be performed in a computer laboratory or in a classroom using a personal computer.

The lectures are dedicated to the study of the theoretical topics related to the course. Approximately 70% of the course (about 34 hours) will be delivered as "Traditional Lectures".

The lab exercises aim to design a knowledge-based service. About 30% of the course (about 11 hours) will be delivered in this form of "Interactive Teaching".

Some of the hours of frontal lessons may be replaced by testimonies and expert dialogue sessions. In this case, the testimonies will take place approximately in the last weeks of the lessons, based on the availability of the people involved.

The lessons and lab activities will be held in person.

Assessment methods

Students must be registered to take the learning verification (i.e., the exam). It is mandatory to register by the official deadline. Registration usually closes 3 working days before the examination day.

The examination is an oral exam. The oral exam will focus on the topics covered in class. The student, with the teacher's agreement, can replace part of the oral exam with a project discussion. The project must be agreed in advance with the teacher.

The examination is the same for both attending and non-attending students.

There are no midterm assessments.

The oral exam aims to assess the student's theoretical knowledge of the topics covered in the course. The ability to reason and deepen the issues proposed during the examination, the methodological rigor of their development, and the ability to use theoretical knowledge to solve practical business cases will be evaluated.

The final grade for the oral exam will be determined based on the following components:

- Knowledge of Course Topics (40%). The student demonstrates accurate recall and understanding of the

core concepts, theories, and material covered throughout the course. This includes the ability to explain relevant ideas and apply them to standard cases.

- Understanding of Knowledge Harvesting in Unknown Scenarios (40%). The student shows the ability to apply learned concepts to new, unfamiliar, or hypothetical situations. This involves identifying key issues, reasoning through uncertainty, and appropriately adapting knowledge.

- Argumentation, Clarity, and Terminology (20%). The student presents responses clearly and logically, supports their reasoning effectively, and uses appropriate subject-specific terminology throughout the exam.

The final grade is derived from the weighted average of the three components. Rounding and qualitative judgment (e.g., consistency across criteria) may be applied in borderline cases.

Textbooks and Reading Materials

- Ries, Eric. The lean startup: How today's entrepreneurs use continuous innovation to create radically successful businesses. Currency, 2011.
- Fitzsimmons, James A. (2010). Service management: operations, strategy, and information technology. New York, NY: Mc Graw Hill.

Sustainable Development Goals

INDUSTRY, INNOVATION AND INFRASTRUCTURE