



INNOVATION & SCIENTIFIC ENTREPRENEURSHIP

PSL TRANSVERSAL COURSES



PSL's transversal course Innovation and Scientific Entrepreneurship is a high-level training course combining face-to-face and remote courses, designed for master, doctoral and post-doctoral students who want to learn the fundamentals of innovative design methods and develop their skills in the field of scientific entrepreneurship. Combining theoretical approach and workshops in small groups, it provides an opportunity to work on concrete business cases of valorization of inventions or scientific entrepreneurship projects.

LEARNING OUTCOMES

The objective of this transversal course is to acquire the skills to:

- **Design an innovation project:** acquire innovative design methods applied to the field of scientific entrepreneurship.
- **Build up a business model strategy:** study the main business models and know how to apply them to concrete situations.
- **Define an intellectual property strategy:** use IP contracts to protect and exploit the inventions on which the business idea is based.
- **Develop and balance the financial statements of a company:** know how to write a business plan on Excel and present its financial perspectives.

- 89 hrs of blended learning entirely taught in English
- 8 ECTS delivered at the end of the courses
- 4 modules from November 2021 to March 2022

ORGANIZATION OF THE COURSES

Except for the course "Reasoning and acting in the unknown" which takes place face-to-face during the PSL week, the courses have been designed in blended learning: a mix of asynchronous online learning sessions at the student's pace and synchronous online or face-to-face sessions with the teacher.

The transversal course, totalizing 89 hours, is organized around 4 main courses:

- Reasoning and acting in the unknown: introduction to theories and methods of design and innovation (3 ECTS, 30 hours face-to-face teaching)
- Business model thinking for impact entrepreneurship (3 ECTS, 17 hours synchronous teaching, 13 hours asynchronous teaching)
- Intellectual property law for scientific entrepreneurship (1 ECTS, 10 hours synchronous teaching, 2 hours asynchronous teaching)
- Corporate finance and business plan (1 ECTS, 15 hours synchronous teaching, 2 hours asynchronous teaching).

CURRICULUM

1. Reasoning and acting in the unknown: introduction to theories and methods of design and innovation (3 ECTS)

This 30-hour face-to-face course, held during PSL Week in November 2021, is an in-depth introduction to design theory. The theory of design (C-K theory) unifies theories of creativity and theories of knowledge and allows the development of methods and organizations adapted to the collective and constructive exploration of the unknown. These approaches are essential today for those who wish to train in the management of innovation, scientific entrepreneurship, and the management of contemporary transitions.

The course alternates between theoretical lessons in the morning and practical workshops in the afternoon. Practicing designers will also be invited to speak about their experience of design in various areas (business, science, art).

The course begins with a presentation of the challenges posed by reasoning in the unknown and design theory. From this theoretical basis, we will discuss changes in the organization of design, particularly in companies (history of R&D, recent development of "innovation" functions, etc.). We will deepen the question of expertise and knowledge structures adapted to generativity (in engineering, science, design). We will then deal with cognitive aspects (fixations, defixations) and the resulting leadership issues. We will then study the questions of evaluation and economic management and the forms of risk management in the unknown. Finally, we will address the issues of governance and management at the level of innovation ecosystems ("entreprise à mission, architects and colleges of the unknown).

2. Business model thinking for impact entrepreneurship (3 ECTS)

This course is structured around 6 synchronous sessions lasting one to three hours, and asynchronous online sessions using selected readings and videos produced by the teachers. It will begin with a definition of the concept of business model, and then introduce the four main business model analysis models: the Business Model Canvas, the RCOV, the Causal Loop and the Triple Layer Business model Canvas. These models will be used to analyze practical cases of impact companies. The course will continue with a presentation of ESG (environmental, social and governance) factors that will give rise to the production by learners of a wiki on the links between business model and impact entrepreneurship. Thanks to role plays, analysis of practical business cases and interviews with entrepreneurs, learners will then be asked to articulate the business model strategy in a business ecosystem and to anticipate the development dynamic of business models.

3. Intellectual property law for scientific entrepreneurs (1 ECTS)

This course, structured around 5 sessions of 2 hours, will focus on defining the fundamental concepts of intellectual property (patent, know-how, brands, etc.), in order to safeguard innovation vis-à-vis competition (and protect against possible counterfeiting) and enhance its assets.

Based on practical business cases, learners will be required to assess the patentability of an invention, to develop a protection and exploitation strategy, to identify the appropriate contracts and to determine the terms of collaboration with partners (industrial partners, licensors / licensees, sub-licensees). To do so, they will carry out concrete exercises (determining the intellectual property rights that apply to a technology, carrying out research on the state of the art, etc.). Some important theoretical notions will be presented in videos, and the synchronous sessions will deepen the fundamental points, work on practical cases and answer learners' questions.

4. Corporate finance and business plan (1 ECTS)

The course is constituted of 5 synchronous sessions of 3 hours and a set of online resources that must be consulted before class (pre-readings and videos of dynamic application presented on an Excel spreadsheet).

This course aims to present the major financial concepts that entrepreneurs are confronted with and to provide the basics for building up a business plan and estimate the financial viability of a project. In addition to an introduction to the main Excel tools and to the financial standards of presentation, the course has been designed to gradually familiarize yourself with the basics of financial statements (P&L, Balance sheet, cash flow). Each session, built around practical cases of entrepreneurial projects, allows the introduction of new concepts (investment, employees, VAT, stocks, debt, etc.). Quizzes are offered to verify that the concepts are well understood, and a final case study will be given for the final exam. To properly prepare for this exam, a homework assignment must be produced and returned between the 4th and the 5th session of the course.

CALENDAR

Period	Courses title	Teachers	Schools / companies	Rythm	Teaching hours	ECTS
22/11/21 to 26/11/21	Reasoning and acting in the unknown: introduction to theories and methods of design and innovation	Pascal Le Masson Benoît Weil	Mines Paris – PSL	Full week (9h – 17h)	30h	3
30/11/21 to 21/01/22	Business model thinking for impact entrepreneurship	Lionel Garreau	Dauphine – PSL	30 min to 3h per week during 6 weeks (Tuesdays and / or Fridays 9am-12pm)	30h	3
11/01/22 to 22/02/22	Intellectual property law for scientific entrepreneurship	Karla Balaa Laurie Bara Catherine Grosset-Fournier	- PSL Valorisation Andra - Attorney firm Grosset-Fournier & Demachy	2h per week for 5 weeks (Tuesdays 9 am-11am)	12h	1
14/03/22 to 31/03/22	Corporate finance and business plan	Alexis Joulié	Venturistic	6 hours per week during 3 weeks (Tuesdays and Thursdays 2 to 5 p.m.)	17h	1

EVALUATION

Students are assessed on:

- Attendance and participation during courses (15%)
- Completing knowledge quizzes (25%)
- Carrying out and defending a project as a team or individually (60%)

TEACHING LOCATIONS

- Mines Paris – PSL
- Dauphine – PSL
- PSL-Lab

ADMISSIONS

Target audience: PhD students, post-docs and master's level students, from all disciplines within PSL University, interested in innovation and entrepreneurship. B2 level in English required.

Application procedure: application letter and interview. File to be submitted online on the PSL Doctoral College website: collegedoctoral.psl.eu/en/docteur-training/course-catalog/

More information

psl.eu/programmes-gradues/enseignements-ouverture/formations-transverses/innovation

Contact

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