International Summer School

BSE Training

University of Bordeaux
Bordeaux **S**chool of **E**conomics
Pessac Campus

June 3 to 13, 2025

SUMMARY

Bordeaux School of Economics (BSE) is one of France's leading economics research centers. A joint research unit of the **University of Bordeaux, CNRS, and INRAE**, it brings together a community of around 160 researchers, engineers, technicians, and doctoral students.

The BSE project is based on the belief that research in the social sciences, and particularly in economics, is essential for better informing public decision-making in response to major contemporary challenges. By mobilizing the necessary human and material resources, BSE aims to position the Bordeaux university campus as a center of academic excellence in economic research, open to other scientific disciplines, and capable of making a significant contribution to public policy at the local, national, and international levels.

Whether addressing topics such as **climate change and biodiversity, the innovation strategies of socio-economic actors, issues of inequality between and within countries, or the dynamics of globalization and financial markets**, BSE members are committed to producing research that combines academic excellence, partnerships with socio-economic stakeholders, and outreach to the general public.

Director: Jean-Marc Figuet
Deputy director : Emmanuelle Augeraud-Veron

BSE Training

Innovative Methods and Tools for Research in Economics

This summer school offers an interdisciplinary training program combining **methodological courses** and **thematic courses** at the intersection of economics and data science. It is intended for Master's students, PhD candidates, early-career researchers, research professionals, and anyone wishing to deepen their methodological skills on current and cross-cutting topics.

Courses will be held on the Pessac campus (University of Bordeaux) and will be delivered in French or English depending on the instructors.

The 2025 program includes the following modules:

- **Household Economics and Law**: an original approach to analyze economic relationships within households and their social and legal implications.

- **Pollution and Health**: understanding the health and economic impacts of air pollution, with a focus on social inequalities.

- **Sustainable Finance**: introduction to core concepts, quantitative models, and digital tools (R and AI) to assess ESG performance and climate-related financial risks.

- **Defence Economics**: Introduction to defense economics: presentation of the main themes, analytical tools, state of the research field, recent developments and publication opportunities.

- **Natural Language Processing (NLP):** an introduction to text data analysis with Python, vectorization techniques, and the use of large language models.

- **Mendelian Randomization**: understanding the principles and applications of this method for causal inference in genetic epidemiology.

- **Maximum entropy modeling of species geographic distributions**: use of GIS tools to manage environmental data, map pollution, biodiversity, and urban development.

- **Mapping for Research**: a practical introduction to QGIS applied to economic and social sciences, with hands-on creation of thematic maps.

Each module can be taken independently, allowing participants to build their own learning path according to their interests and professional goals.

The summer school is a unique opportunity for training, knowledge updates, and interaction with international speakers in a friendly and stimulating environment.

Please note: module openings are subject to a minimum number of participants.
This annual event is a rare chance to meet researchers and experts in economics in a setting that fosters exchange and reflection.

Household Economics and the Law

Dates:	Course Location:
June 5 am & June 6 am (7h)	BSE, Pessac campus, University of Bordeaux
Instructor: Shoshana Grossbard	

Course Goals

- Understand the historical evolution of the household economy
- Analyze economic decisions in intimate relationships (marriage, cohabitation, work, consumption, investment in human capital)
- Explore economic exchanges between household members and their macroeconomic implications
- Apply decision-making models to family dynamics and marriage markets
- Examine marriage and divorce laws from an economic perspective

Program

Household Economics: a Historical Perspective
1. Modern Household Economics at Columbia and Chicago in the period 1960-1980
2. The outcomes of interest:
·marriage, cohabitation or ...?
·decisions that individual often make while in intimate relationships, such as labor supply, personal consumption, and investments in own or children's human capital
3. Household Economics prior to 1960

Types of Exchanges between Household Members
1. Extended Families
2. Nuclear Families
3. What is exchanged?
4. Macro-level implications, including effects of sex ratio

Modeling Decision-Making in Households and marriage markets. Applications to labor supply, household production, couple formation, fertility and more.

Economic analyses of laws related to marriage and divorce

Prerequisites and Requirements

- None
- Participants must bring their own laptop

Pollution and health:
Evaluating risks and responses

Dates:	Course Location:
10/06 pm & 11/06 am (8h)	BSE, Pessac campus, University of Bordeaux
Instructor: Piero Basaglia	

Course Goals

- Understand the mechanisms of air pollution and its main sources.
- Analyse the effects of air pollution on human health.
- Explore methodologies for assessing the health and economic impacts of pollution.
- Understand how air pollution impacts society via other channels, such as productivity effects and biodiversity loss.
- Explore the link between pollution exposure and social inequalities.
- Develop a critical understanding of public policies addressing air pollution.
- Overview of useful data sources for empirical assessments of air pollution impacts on society.

Program

(1) Introduction
·Definition and classification of air pollutants.
·Anthropogenic and natural sources of air pollution.
·Exposure and dispersion of pollutants in the environment.
·Biological mechanisms of health impacts.
(2) Empirical evaluation
·Econometric and data challenges in assessing pollution impacts.
·Model air pollution impacts in a causal quasi-experimental framework.
·Model exposure inequalities.
·Economic evaluation of national and international pollution control policies.

Prerequisites and Requirements

- Basic knowledge of statistics and econometric analysis is recommended.

Sustainable finance

Dates:	Course Location:
June 12am & pm (7h)	BSE, Pessac campus, University of Bordeaux
Instructor: Selma Boussetta and Tushar Saini	

Course Goals

- Understand the fundamental principles of sustainable finance, including key concepts, regulations, and market trends.
- Explore the role of financial markets in addressing climate change and sustainability challenges.
- Design quantitative models (regression, time-series, optimization) to assess SFDR based ETFs performance.
- Evaluate financial impact of carbon risk and policy (Paris-Agreement) intervention on stock returns.
- Integrate ESG metrics into portfolio optimisation and risk management.
- Using AI for code debugging and writing coding prompts.

Program

(1) Introduction

- Definition and scope of sustainable finance.
- Key regulations (SFDR, EU Taxonomy, Paris Agreement).
- The role of investors and financial institutions in sustainability.
- Challenges in measuring sustainability and ESG performance.
- Apply quantitative models to assess sustainable finance performance and carbon risk.
- Optimise ESG-integrated portfolio using statistical tools and AI-assisted techniques.

(2) Empirical evaluation

- Quantitative risk assessment using statistical measures.
- Estimating carbon transition risk premium.
- Portfolio optimisation using ESG rating via linear programming.

Prerequisites and Requirements

- No prior knowledge of sustainable finance is required, but familiarity with financial markets is helpful.
- Basic knowledge of statistics and econometric analysis is recommended.
- Students should review the course material in advance and ensure R is installed on their devices.

Defence Economics

Dates:	Course Location:
June 12 am & 13 am (7h)	**BSE, Pessac campus, University of Bordeaux**
Instructors : Jean Belin & Julien Malizard	

Course Goals

- Be able to produce publications based on their research topic, in connection with the field of defense
- Master the economic literature relating to defense issues.
- Understand recent and long-term developments in armed conflicts and defense systems

Program

- Introduction to defense economics: presentation of the main themes, analytical tools, state of the research field, recent developments and publication opportunities.
- Economics of conflict: definitions, measurement indicators, historical and contemporary dynamics, explanatory factors.
- Economics of defense systems: analysis of defense budgets, the arms industry, human resources, arms exports, R&D, innovation and financing constraints.

Prerequisites and Requirements

- None
- Participants must bring their own laptop

Introduction to natural language processing (NLP) in python

Dates:	Course Location:
June 3 am & pm (7h)	**BSE, Pessac campus, University of Bordeaux**
Instructor: Olha Nahorna	

Course Goals

Natural language processing (NLP) is a subfield of linguistics, computer science, and artificial intelligence aimed to process automatically language end textual data.
The objective of the course is to initiate participants with the basics of processing of textual data through practical applications in python environment.

Program

1.Learn NLP Fundamentals, such as tokenization, lowercasing, lemmatization, stemming, POS tagging, etc.
2.The basics of text vectorisation, word and sentence embedding will be presented following practical examples helping to explore the potential of these techniques.
3.Participants will use available pretrained language models to get familiar with tasks such as named entity recognition, question-answer systems, sequence classification, sentiment analysis
4.Several use-cases and best practices of using large language models (LLM) will be also presented through practical examples.

Prerequisites and Requirements

- python
- jupyter notebook

Mendelian randomization: theory & application

Dates:	Course Location:
June 5 am (4h)	BSE, Pessac campus, University of Bordeaux
Instructor: Ilana Caro	

Course Goals

- Discover the basics of genetic epidemiology
- Discover the basics of mendelian randomization
- To be able to use publicly available database and conduct a two-sample mendelian randomization

Program

- Basic concepts in genetic association studies
- Genome Wide Association Studies (GWAS)
- Mendelian Randomization: principles, methods & recent advances in illustrations
- My first MR in practice

Prerequisites and Requirements

- Basics in R.
- Participants must bring their own laptop.

Maximum entropy modeling of species geographic distributions

Dates:	Course Location:
June 13pm (4h)	BSE, Pessac campus, University of Bordeaux
Instructor: Ousmane SEYDI	

Course Goals

The objective of this course is to enable participants to familiarize themselves with the tools and steps necessary to model the potential range of an invasive species using R software and Maxent.

Through a step-by-step guided tutorial, participants will learn how to:
- Use QGIS to visualize spatial data (study area, species occurrences, bioclimatic variables);
- Extract occurrence data for an invasive species in France;
- Apply Maxent in R to generate a map of potential habitat suitability;
- Interpret the results obtained.

Program

1. Introduction to habitat modeling
- Key concepts
- Presentation of the case study

2. Data preparation
- Downloading and visualizing bioclimatic variables in QGIS
- Importing and exploring invasive species occurrence data

3. Modeling with Maxent in R
- Installing the packages
- Data formatting for Maxent
- Launching the model
- Interpreting the outputs

4. Discussion & outlook
- Limitations of the approach
- Possibilities for improvement and adaptation to other cases

Prerequisites and Requirements

- Have basic knowledge of R programming
- Have **QGIS** installed on their computer for spatial visualization
- Participants must bring their own laptop.

Mapping for research: an introduction

Dates:	Course Location:
June 13 am (4h)	**BSE, Pessac campus, University of Bordeaux**
Instructor: Guillaume Pouyanne	

🔵 **Module in French**

💡 Course Goals

- Understanding what Geographic Information Systems can contribute to the practice of economic science research.
- Introduction to the use of Geographic Information Systems.

💡 Program

- **Use of cartography in economic research**
  - Represent
  - Measure
  - Test

- **Guided exercise: constructing a socio-economic school map**
  - Presentation of the questions and available data
  - Establish a program of cartographic manipulations
  - Carry out the manipulations

💡 Prerequisites

- None
- Participants must bring their own laptop
- Participants must have QGIS 3.22.13 (Bialowesa) software, which can be downloaded free of charge here: https://download.qgis.org/downloads/

Training Instructors

Guillaume Pouyanne
- Bordeaux School of Economics -

Assistant professor H. D. R.
- Spatial economics, Urban economics, Land and real estate economics, Transport economics

Ilana Caro
- BPH, University of Bordeaux-

Post-doc
- Genetic, strokes

Piero Basaglia
- Bordeaux School of Economics -

Assistant professor
- quasi-experimental methods, applied microeconometrics, environmental economics, health economics, economics of innovation, financial economics

Selma Boussetta
- Bordeaux School of Economics -

Assistant Professor of Finance
- Financial markets, Sustainable finance

Olha Nahorna
- Bordeaux School of Economics -

Research engineer
- data processing and analysis, Natural Language Processing, Text mining, Machine Learning algorithms.

Tushar Saini
- Michael Smurfit Graduate Business School, UCD -

PhD Candidate (3rd year)
- Climate Finance, Sustainability, Carbon Offsets, Climate Transition Risk, Carbon Emissions

Shoshana Grossbard
- San Diego State University -

Professor emerita in economics
- economics of the household, economics of marriage, economics of the family

Ousmane SEYDI
-LMAH - Université Le Havre Normandie

CPJ
- Differential equations, Epidemiology and Ecology modelling, Population dynamics, adaptative dynamics of infectious diseases, invasive species

Jean Belin
- Bordeaux School of Economics -

Assistant professor
- Defense economics, Financing innovation, Corporate finance and financial constraints

Julien Malizard
Chaire Economie de défense -IHEDN

Holder of the Chair of Defense Economics-IHEDN
- the macroeconomic effects of defense spending

Module planning

	Module	Nb hours	Speaker	Fee	June 2025															
					3 AM	3 PM	4 AM	4 PM	5 AM	5 PM	6 AM	6 PM	10 AM	10 PM	11 AM	11 PM	12 AM	12 PM	13 AM	13 PM
Application	**Household Economics and the law**	7	**Shoshana Grossbard**	200 €					■		■									
	Pollution and health	8	**Piero Basaglia**	200 €										■	■					
	Sustainable Finance	7	**Selma Boussetta / Tushar Saini**	200 €													■	■		
	Defence Economics 🇫🇷	7	**Jean Belin / Julien Malizard**	200 €															■	
Methodology	**Introduction to NLP in python**	7	**Ohla Nahorna**	200 €	■	■														
	Mendelian Randomization	4	**Ilana Caro**	150 €						■										
	Maximum entropy modeling of species geographic distributions	4	**Ousmane Seydi**	150 €																■
	Mapping for research 🇫🇷	4	**Guillaume Pouyanne**	150 €															■	

Registration & contact

[Register here](#)

by May 16th, 2025

Contact :
bse.training@u-bordeaux.fr

How to come

salle de séminaire (H2-116)

⊙ **MAP**

Campus Montaigne–Montesquieu

université de BORDEAUX
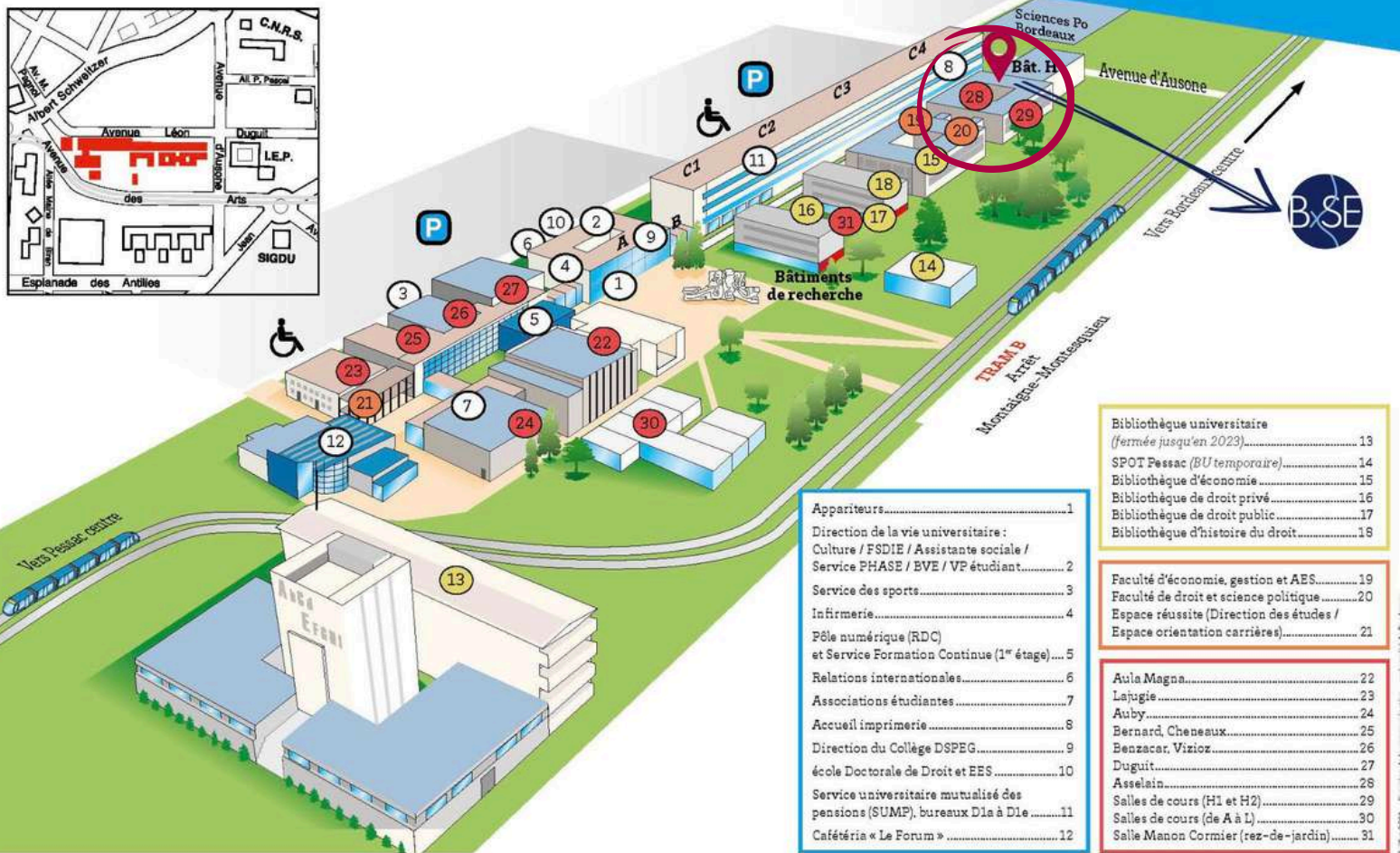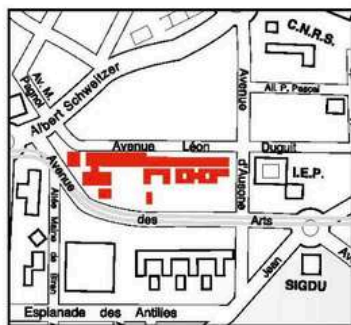
Appariteurs...1
Direction de la vie universitaire :
Culture / FSDIE / Assistante sociale /
Service PHASE / BVE / VP étudiant.............. 2
Service des sports..3
Infirmerie... 4
Pôle numérique (RDC)
et Service Formation Continue (1er étage)... 5
Relations internationales..................................... 6
Associations étudiantes......................................7
Accueil imprimerie 8
Direction du Collège DSPEG............................. 9
école Doctorale de Droit et EES 10
Service universitaire mutualisé des
pensions (SUMP), bureaux D1a à D1e 11
Cafétéria « Le Forum » 12

Bibliothèque universitaire
(fermée jusqu'en 2023)...................................... 13
SPOT Pessac (BU temporaire)........................ 14
Bibliothèque d'économie 15
Bibliothèque de droit privé................................ 16
Bibliothèque de droit public 17
Bibliothèque d'histoire du droit 18

Faculté d'économie, gestion et AES............. 19
Faculté de droit et science politique 20
Espace réussite (Direction des études /
Espace orientation carrières)..........................21

Aula Magna...22
Lajugie 23
Auby...24
Bernard, Cheneaux...25
Benzacar, Vizioz..26
Duguit..27
Asselain...28
Salles de cours (H1 et H2)................................29
Salles de cours (de A à L).................................30
Salle Manon Cormier (rez-de-jardin)......... 31

ⓘ **Come to BSE**

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