



Format to prepare the syllabus of courses for the international week

The purpose of this document is to complete the information for the preparation of the syllabus of courses for the international week in the empty boxes.

Please complete the following mandatory fields requested in each of the boxes below:

I. General Information

Complete the following general information:

Name of the course:

Sem. Risks and Uncertainties in Rural Development

Teacher's name:

Maximo Torero Cullen

II. Introduction

Describe briefly, simply and synthetically what the course consists of and its formative scope. To do so, indicate what the course offers or provides to the student, mentioning its practical and theoretical usefulness.

Type the course introduction in the following box:

This seminar examines the economics of risk and uncertainty and their central role in shaping rural development outcomes. Building on the distinction introduced by Frank Knight and further developed in modern microeconomic theory, particularly by Pindyck and Rubinfeld, the course explores how economic agents make decisions under conditions where outcomes are uncertain and information is incomplete. While risk refers to situations in which probabilities can be assigned to future events, uncertainty arises when such probabilities are unknown or cannot be reliably estimated. This distinction is particularly relevant in rural economies, where farmers, households, firms and governments must make production, investment and consumption decisions in the presence of climate variability, market volatility, policy changes, technological uncertainty, pests, diseases and geopolitical shocks. The seminar analyzes expected utility theory, risk preferences, risk aversion, intertemporal decision-making, insurance and market failures, as well as the implications of uncertainty for investment, innovation, poverty traps and structural transformation. Particular attention is given to why risk and uncertainty are often amplified in rural areas due to incomplete markets, information asymmetries, liquidity constraints and limited access to risk-management instruments. The course also examines how policies, institutions, financial markets, early warning systems and technological innovations can reduce vulnerability, strengthen resilience and promote sustainable rural development in an increasingly uncertain world.

III. Final Learning Achievement of the Course

The final learning achievement is a precise and assessable statement of what a student is expected to be able to do at the end of the course. They are essential for guiding the teaching process, assessing student progress, and verifying the acquisition and application of knowledge.

To develop the learning achievement of the course, consider the following elements to develop the final learning achievement of the course:

Write the final achievement of the course in the following box:

By the end of the course, students will be able to apply microeconomic theories of decision-making under risk and uncertainty, including expected utility theory, risk aversion, and intertemporal choice models, to analyze how climatic, biological, market, policy and macroeconomic shocks affect agricultural production, investment behavior, resource allocation and rural livelihoods. Students will be able to evaluate ex-ante risk management strategies and ex-post coping mechanisms, assess the effectiveness of formal and informal risk-sharing arrangements, and critically examine policy and institutional interventions aimed at strengthening resilience, reducing vulnerability and promoting sustainable rural development under conditions of uncertainty.

IV. Learning Units

Learning unit 1: Core concepts of risks and uncertainty

Unit Learning Achievement:

Upon completion of Learning Unit 1, the student will be able to differentiate between risk and uncertainty, apply the fundamental concepts of decision-making under uncertainty, and analyze how risk preferences, expected utility, and information constraints influence economic behavior and resource allocation in rural development contexts.

Contents:

- Introduction to risk and uncertainty in economics: concepts and definitions.
- The distinction between risk and uncertainty (Knightian uncertainty).
- Expected utility theory and decision-making under uncertainty.
- Risk preferences: risk aversion, risk neutrality, and risk-seeking behavior.
- Measurement of risk and attitudes toward risk.
- Information, expectations, and uncertainty in economic decision-making.
- Sources of risk in rural economies: climatic, biological, market, policy, and macroeconomic risks.
- Economic implications of risk and uncertainty for production, investment, consumption, and resource allocation.

Activities and Evaluations:

- Guided discussion on real-world examples of risk and uncertainty in agriculture and rural development.
- Case study analysis of decision-making under uncertainty.
- Problem sets applying expected utility and risk preference concepts.

Learning unit 2: Risks in Agriculture and Rural Development

Upon completion of Learning Unit 2, the student will be able to identify, classify, and assess the major sources of risk affecting agriculture and rural economies, analyze their impacts on production, investment, household welfare, and market outcomes, and evaluate the vulnerability of rural systems to multiple and interacting shocks.

Contents:



- Characteristics of risk in agriculture and rural development.
- Climatic and environmental risks: droughts, floods, heatwaves, storms, climate variability, and climate change.
- Biological risks: pests, diseases, invasive species, livestock epidemics, and zoonoses.
- Market risks: price volatility, input cost fluctuations, exchange rate movements, and trade disruptions.
- Production risks: yield variability, technology failure, and resource constraints.
- Policy and institutional risks: regulatory changes, subsidies, trade policies, land tenure uncertainty, and governance failures.
- Macroeconomic and financial risks: inflation, interest rates, debt crises, and economic recessions.
- Geopolitical and conflict-related risks affecting agrifood systems.
- Covariate versus idiosyncratic risks in rural economies.
- Systemic risk, compound shocks, and cascading effects in agrifood systems.
- Vulnerability, exposure, sensitivity, and resilience in rural development.
- Case studies of major agricultural crises and their impacts on food security and rural livelihoods.

Activities and Evaluations:

- Guided discussion on major agricultural and rural risks across different regions and farming systems.
- Case study analysis of climate, market, biological, or conflict-related shocks affecting agrifood systems.
- Risk identification and classification exercises using real-world agricultural examples.
Group presentation assessing the vulnerability of a rural sector or value chain to multiple risks.
- Written assignment evaluating the impacts of a major shock on agricultural production, rural livelihoods, and food security.

Learning unit 3: Resilience tools to cope with risks and uncertainties

Unit Learning Achievement:

Upon completion of Learning Unit 3, the student will be able to analyze the concept of resilience in rural and agricultural systems, evaluate ex-ante risk management and ex-post coping strategies, and assess the effectiveness of financial, technological, institutional, and policy instruments designed to reduce vulnerability and strengthen resilience to shocks and uncertainties.

Contents:

- Definition and concepts of resilience in rural development and agrifood systems.
- Resilience, vulnerability, adaptive capacity, robustness, and transformation.
- The resilience framework: absorptive, adaptive, and transformative capacities.
- Ex-ante risk management versus ex-post coping strategies.
- Household and farm-level risk management strategies.
- Diversification of production, income sources, and livelihoods.
- Sustainable agricultural practices and climate-smart agriculture.
- Information systems, climate services, early warning systems, and digital agriculture.
- Financial resilience instruments: savings, credit, insurance, index insurance, and contingent financing.
- Social protection systems and safety nets as resilience mechanisms.
- Community-based risk management and social capital.
- Value chain resilience and supply chain risk management.
- Strategic reserves, food stocks, and market stabilization mechanisms.
- Disaster risk reduction, preparedness, anticipatory action, and crisis response.
- Institutional and policy frameworks for building resilient agrifood systems.
- Resilience measurement and indicators in rural development.
- Case studies of resilience-building interventions in agriculture and rural economies.

Activities and Evaluations:

- Guided discussion on resilience pathways in rural and agricultural systems.
- Case study analysis of successful resilience-building interventions in response to climatic, biological, market, or conflict-related shocks.



- Comparative assessment of ex-ante risk management and ex-post coping strategies.
- Written assignment analyzing the effectiveness of resilience instruments and policy interventions in reducing vulnerability and strengthening adaptive capacity in rural development contexts.

V. Teaching Strategies

The teaching strategies respond to the characteristics of the subject and the teaching methodology used by the teacher.

Below are some teaching strategies that can be selected. Write an "x" in the box corresponding to the teaching strategies you use in your course. If any of these strategies do not fit your course, add the strategy at the end of the list and describe it:

Teaching strategy	Type an x
Interactive presentation: <i>It consists of the explanation and demonstration of contents by the teacher, with the intervention of the students, either through questions or presentations of work prepared by the students.</i>	X
Exercise and problem solving: <i>It consists of asking students to solve exercises and/or problems by using formulas or algorithms, applying procedures and interpreting the results.</i>	X
Case studies: <i>It consists of an in-depth analysis of a fact, problem or real or hypothetical event in order to interpret it, generate hypotheses, diagnose it and solve it.</i>	X
Group dynamics: <i>It consists of activities of a different nature conducted collaboratively between two or more students, whose purpose is to learn how the groups interact and thus facilitate experiential learning.</i>	
Structured debates/discussions: <i>It consists of moderating a systematically organized discussion of divergent opinions between two or more students on a topic or problem.</i>	X
Role playing: <i>It consists of providing a real or simulated scenario in which students are required to assume fictitious or real roles with the intention that they can deploy all their abilities to resolve conflicts, as well as understand or experience a reality according to the role assumed.</i>	
Reflective dialogue: <i>It consists of the interaction of two participants who exchange ideas and opinions through a conversation with the purpose of reflecting critically and deeply on a specific topic. In this dynamic, students not only share their points of view, but are required to be open to listen and consider the other's perspective in order to build a more comprehensive understanding of the topics discussed.</i>	
Collaborative learning: <i>It consists of providing instructions for students in small groups to exchange information and work on a task until all participants have developed an understanding of it (not necessarily the same) and have completed it.</i>	
Peer learning: <i>It consists of promoting collaborative spaces between a pair of students who exchange their knowledge, information, experiences and problem solving, being guided by the teacher (for example: students exchange their solutions between pairs, on an activity or exercise, before the teacher presents it to everyone).</i>	
Active learning: <i>It consists of encouraging students' participation and continuous reflection through activities aimed at deepening knowledge through interaction with the content, which involves the analysis and synthesis of information.</i>	X
Inverted classroom:	



Teaching strategy	Type an x
<i>It consists of establishing pre-class activities for the review of conceptual materials and information (e.g., through videos, infographics, readings and other didactic resources), which allows students to prepare for a practical and active classroom session through collaboration, discussion and problem solving.</i>	
Experiential learning: <i>It consists of developing conditions for students to experience real or simulated situations (for example: debates, national or international learning visits, immersive experiences, internships, among others) that allow them to feel or perform actions and share them with their peers to strengthen their learning.</i>	X
Service learning: <i>It consists of preparing students to apply the contents and tools provided by the course to the real needs of the community in order to develop a sense of social responsibility and, thus, improve their environment.</i>	
Spaces for creation: <i>It consists of facilitating physical or virtual spaces for students to create projects or prototypes based on computer programs or physical tools (for example: game labs software, design software, innovation labs, 3D printers, laser cutters, among others).</i>	
Design thinking: <i>It consists of the development of solutions or products focused on the needs of users, through strategies and tools (for example: empathy map, user journey, Canva, among others) that allow students to develop their empathy to understand the environment, generate ideas and solutions, as well as prototyping solutions or products that can be tested and adjusted to achieve user satisfaction.</i>	
Problem-based learning: <i>It consists of posing a complex real-world or hypothetical problem formulated by the teacher, with the intention that students (usually in groups) gather more information and analyze the problem in order to propose solutions.</i>	X
Research-based learning: <i>It consists of connecting teaching with research through the application of scientific concepts, theories and methods in order to generate new knowledge about a particular aspect of reality or the exploration of an unknown phenomenon in order to suggest theoretical or methodological guidelines for its approach.</i>	X
Project-based learning: <i>It consists of the design and development of projects (generally in groups of students) with the purpose of having the student manage a set of planned, interrelated and coordinated activities to achieve an objective within a given time frame.</i>	X
Challenge-based learning: <i>It consists of providing a situation or general context in a social or physical environment so that students can collaboratively choose a challenge to be solved based on the learning of the contents offered by the course.</i>	
Gamification of learning: <i>It consists of developing a physical or virtual learning environment by applying the principles and elements of the game in order to encourage student motivation and participation.</i>	
Write other strategies not contemplated in the previous list that you need to detail:	

VI. Evaluation System

In this section, write the names of the evaluations to be used in the course in a manner consistent with the final learning achievement of the course, as well as the percentage of weighting that each type of evaluation will have in the final score, which should add up to 100%.

In order to evaluate learning, a series of activities and means are recognized that allow the collection of evidence of student performance throughout the course, for example: Group presentation, presentation, debate, dynamics, simulations, essays, final work, reports, reports, prototypes, designs,

solving tasks, solving cases, program development, partial exam, final exam, graded assignments
reading quizzes, self-evaluations, questionnaires, among others.

Then write the considerations for the evaluations (optional), the name of the evaluations, the weighting percentage (%) and **comments (optional)**:

Considerations for evaluations (optional)

<i>Evaluation name</i>	<i>%</i>	<i>Comments</i>
<i>Exam</i>	40	<ul style="list-style-type: none"> • <i>The grade is individual.</i> • <i>Practical application of theoretical content and problem solving will be evaluated.</i>
<i>Participation</i>	20	<ul style="list-style-type: none"> • <i>The grade is individual.</i> • <i>Participation and clarity of ideas will be evaluated.</i>
<i>Final exam</i>	40	<ul style="list-style-type: none"> • <i>The grade is individual..</i> • <i>Practical application of theoretical content and problem solving will be evaluated.</i>

VII. References

This section should indicate the sources and resources of information, indicating the required and recommended readings. It is necessary to consider that this material must be available to the students and must contemplate safe and reliable links that are unlikely to change domain, for example, DOI, handle, reliable websites, etc. Likewise, avoid considering class handouts, teacher's notes, evaluations, among other teacher's own work materials that are not referenced.

Then, write in the corresponding box the bibliographic references to be used in the course.

Mandatory: list the references that you consider mandatory for the course.

Core References
1. Risk, Uncertainty and Profit Knight, F. H. (1921). <i>Risk, Uncertainty and Profit</i> . Boston: Houghton Mifflin Company.
2. Microeconomics Pindyck, R. S., & Rubinfeld, D. L. (2018). <i>Microeconomics</i> (9th ed.). Boston: Pearson Education.
3. Coping with Risk in Agriculture Hardaker, J. B., Lien, G., Anderson, J. R., & Huirne, R. B. M. (2015). <i>Coping with Risk in Agriculture: Applied Decision Analysis</i> (3rd ed.). Wallingford, UK: CAB International.
4. World Bank World Bank. (2014). <i>World Development Report 2014: Risk and Opportunity: Managing Risk for Development</i> . Washington, DC: World Bank.
5. Christopher Barrett and Mark Constanas Barrett, C. B., & Constanas, M. A. (2014). Toward a Theory of Resilience for International Development Applications. <i>Proceedings of the National Academy of Sciences</i> , 111(40), 14625–14630.

Recommended: list the references that you consider suggested for the course





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