Course Syllabus
INNOVATION POLICIES

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Office Hours: M 08-8:45am & 1-2pm
Class Hours: M 9-1:00pm

1 Course Description

The course introduces students to the topic of innovation as a major force for economic growth and innovation policies aimed at promoting technological development and innovation. The goal of the course is to familiarize students with government policies to support innovation, to guide them through the empirical research on these topics, and let them explore interesting research questions on their own.

During the course, we study some general questions on innovation activities of firms, such as the link between R&D, innovation, and productivity, and the ways of organizing for innovation, in particular, knowledge sourcing strategies; we then discuss how government intervention, more specifically, patent protection, government funded R&D, and trade reforms, influences firms' innovation output. We also review and discuss the empirical research on these topics.

By completing this course the students should be able to: 1) understand relevant determinants and performance implications of firm innovation activities; 2) explain and discuss the public policies for stimulating innovation and their underlying rationale; 3) now how to find sound empirical research on these issues and how to interpret it, and 4) know how to assess the impact of these policies using methods from the empirical studies.

2 Course Goal

The main goal of the course is for the student to understand the rationale, working and evaluation of innovation policy instruments. With regard to the rationale and working, we will focus on both a general vision of economic rationales that justify the intervention of governments in the promotion of knowledge, and on specific factors influencing innovation policy. With regard to evaluation, we will focus on an econometric evaluation of innovation policies measures.

3 Course Structure

The course combines lectures with the execution of a number of tasks, some of which take the form of assignments. The tasks are presented in three broad stages. The first of these stages covers a general outlook on the role of innovation for economic growth and productivity. The second stage shifts attention to the rationales behind innovation policies. The third and final stage looks at policy evaluation.

4 Method of Instruction

The course follows the problem based learning (PBL). Instead of ingesting knowledge, students construct their own knowledge! This is done in seven straightforward steps, which revolve around a specific task (or "problem"). These tasks, which will be uploaded the day before the session on Moodle, present a situation, problem or an assignment that you will need to solve as a group. The solution process is structure in seven steps[1]:

- Reading the task and clarifying the concepts
- Defining the problem
- Analysing the problem: brainstorming to collect prior knowledge and best guesses
- Analysing the problem: structuring your knowledge
- Formulating learning goals
- Self-study: identifying sources, studying, preparing report for post discussion.
- Reporting back to the group.

A further overview of the PBL skills and roles can be seen here.

It should be noted that the task "bridges" two class meetings. In the first meeting, commonly referred as *pre-discussion* you will go through steps 1-5: reading and understanding the task, gathering your knowledge, and identifying gaps to be filled. These gaps become the learning goals that you will tackle individually during the self-study between two group meetings. Finally, you and your fellow students will report back during the next group meeting, commonly referred as *post-discussion* about what you have learned. This should allow you to "complete" the task.

This process will be facilitated by three people with special roles, two of which will be selected from among your group and will change every group meeting. Firstly, one of you will become the *discussion leader* for one group session. During this session, the discussion leader is not supposed to solve the task, but instead, her or his task is to give as many people as possible a chance to contribute to the discussion. Conversely, the discussion leader will also need to make

[1] At the beginning, you will stick very closely to these seven steps. But as you get more experienced in the PBL process, the division between the individual steps will lessen. Make sure you complete each step, nonetheless!

sure the discussion stays on-topic and the group does not lose track of the task.

Secondly, one student among you will be selected to be the group's *secretary* for the session. The *secretary* will prepare the minutes of the discussion, capturing the main points for steps 1-4 as well as all learning goals from step 5. She will also capture the main results from the *post-discussion* of last session's tasks. The minutes for the session should be uploaded to the student portal no later than 24 hours after the session. (Remember: some of your fellow students may need the notes in order to do their self-study!).

Finally, each session also has a tutor, that's me -*your professor*-, who will take a fairly passive role if things are going well. My task is to monitor the discussion and join in only when needed, e.g. when the discussion is going in a wrong direction or gets focused on a trivial point, when the group is proceeding based on faulty knowledge, or when group members behave uncooperative. Even if I do not interfere during the discussion, I may invite you to do a small feedback round at the end of the sessions. The purpose of this feedback round is to reflect on how the group discussion is going.

The discussion leader and secretary are positions that you can volunteer for. Usually, I will ask volunteers for the next session at the end of each session. This way, the responsible persons will be able to prepare for their job- by pre-reading the task, thinking of good ways to structure the discussion or notes; thereby ensuring that the next meeting goes well. The allocation of roles should rotate and in the rare event that there is no volunteer, I can assign a student choosing from those that have not undertaken that role.

In most cases, this takes the form of a group discussion on a specific piece of literature, and based on specific starting questions formulated in the tasks below. Students are encouraged and expected to go beyond the starting questions, and make sure that all relevant aspects of the assigned literature and optional readings are covered in the discussion. It is expected of the students that they read the material before the beginning of the sessions for which the material is assigned. Also, in those cases (i.e., most) where more than a single reference is assigned, students are encouraged to discuss the inter-linkages between the references, i.e., not just discuss the references in isolation of each other.

4.1 Summary of the PBL

- **Group Pre-discussion (30 minutes approx)**: In the student portal you will find a task, which will be uploaded the day before the session. The objective of the pre-discussion is the collective definition of a *problem statement*- based on the assigned task - and a set of *learning goals* that need to be accomplished to tackle the problem students are facing. The learning goals can be set as questions (most of the task provided come with questions, you can set them as learning goals). During the discussion the students must be sure that they understand all the concepts involved in each task.
- **Individual work**: After the pre-discussion, students must work individually and develop answers to the questions raised in the pre-discussion meeting. This should be done through the application of previously acquired concepts, through the analysis of the required and

suggested literature and through extra individual research. The students must read the required material before the post-discussion session and bring their ideas, arguments, answers and insights ready for the discussion. Failure to do so will prevent the whole group from accomplishing the learning goals and will lower the participation grade. In summary, students are expected to be well prepared for every meeting. This also means that they should be ready to raise questions and critical remarks during the group meetings.

- **Group Post-discussion (1h.15 min approx)**: Students will present to the group the answers they came up with. After debating the insights, the group is going to develop a collective answer to the questions raised in the pre-discussion session. The leaders must manage the participation of the group and the timings of the session such that the objectives of the post-discussion are successfully achieved on time. They must conclude the post-discussion listing the main ideas developed by the group to address the problem statement.
- **Readings** In each task the student will be given a set of selected literature to study before the post-discussion.

5 Method of Assessment

The final grade for this course is based on two components:

- Participation in class discussion: 4 group meetings (tasks) (60%)
- Final exam (40%)

The final grade is the weighted average of these components, Grades are scale from 1 to 10. Final grades will be rounded to the nearest decimal, but grades between 5.3 and 5.4 will never be rounded up to 5.5 to prevent students with failing grade from passing the course due to rounding.

5.1 Participation

As you have noticed, the method of assessment relies on the active participation of all group members and students are graded in every session. The professor grades participation based on its frequency and its constructiveness, and its overall contribution to the learning of the group. Keep in mind that this kind of participation will require many different kinds of input: a correct understanding of the task, a diverse collection of prior knowledge, a sensible structuring of such knowledge and the identification of knowledge gaps, self-study and a good preparation of the reporting phase in the following session. This gives enough opportunities for all to contribute. Ask me if you are unsure if you are performing well in class.

For student participation to be graded, it is of course essential that classes are attended. The success of the course depends on collaborative exchange for learning, and it is therefore essential that students regularly attend sessions. If you are unable to attend a session, please inform me before the session, if possible. Students are entitled to one "free" missed group meeting on the condition that they inform the professor before the session and have legitimate justification for

this missing session.[2] Failure to inform the professor of the first absence, to have a legitimate justification fir missing the session, or to substantiate the reason for missing more than one session, will result in assignment of the lowest possible grade (1.0) for the missed session. Excused absences will be excluded from the final calculated participation grade.

5.2 Final Exam

The course concludes with a final two-hour exam (date, time and location to be announced). The exam will be "close-book:" hard copies or notes or literature are not allowed. Electronic devices (e.g. computers, smart phones, e-readers) are not allowed. The exam will feature one comprehensive problem, to which you will need to respond in (hand-)writing.[3] During the last session, you will have an opportunity to ask questions related to the exam.

5.3 Inspection

Your participation grade will be announced at the end of the course, before Monday March 09, 2020.

The grades on the Final Exam will be announced within 15 working days of its submission: An inspection hour for the written exam will be held within 5 working days after the publication of the final grade. The inspection will take place in a video call. You will be able to submit a complaint regarding the Final Exam, the grading guidelines, or your individual grade to the examiner at this time.

6 Literature

This course uses a selection of articles, chapters and reports as *required* literature. Each task will contain required and suggested literature which will help the student to contribute with richer insights during the group meetings.

7 Virtual Campus

You will be able to find the following information on Student Portal (Moodle):

- Course-related announcements
- Course manual (yes, that is the syllabus you are now reading!)
- Literature information
- Lesson slides
- Tasks (and minutes from meeting sessions)
- Partial grades

[2] "I was up late last night preparing an assignment for another course and am too tired to attend the session" is not a legitimate justification. Legitimate reasons for missing a session related to events or circumstances beyond the student's control, such as experience of severe/contagious illness, accidents, etc.

[3] If you are unable to write answers by hand, e.g. due to an injury, please alert the administration as soon as possible to request a special exam arrangement.

8 Required Materials

- Course notes available on the student portal. Books. Stata.

9 Office Hours

Office hours are times when you can meet with me to discuss the tasks, the material being presented in class or other related interests you have. If you need to visit me, please email me or book a meeting here.

10 LinkedIn Skills and Endorsements

Upon successful completion of this course, I will endorse you for the following skills on LinkedIn:

- Economics of Innovation
- Innovation Policies
- R&D policies

For the 3 students with the highest grades I will also provide a recommendation on LinkedIn. For example, last year I wrote something like this:

Karol was a student in my class on Innovation policies taught in the Master's programme in Economics and Organizations during the spring 2018 semester at UAB. Karol performed excellently in every aspect of this course and her scores were well above average compared to her peers in the master's program. In fact, Karol had the highest scores of all. Karol always participated actively in class and worked independently in summarizing the scholarly literature, collecting data, analysing and reporting her results.

Make sure that you are in connection with me on LinkedIn!

11 Course Policies

11.1 During Class

I understand that the electronic recording of notes will be important for class and so computers will be allowed in class. Please refrain from using computers for anything but activities related to the class. Phones are prohibited as they are rarely useful for anything in the course. Eating and drinking are allowed in class but please refrain from it affecting the course. Try not to eat your lunch in class as the classes are typically active.

11.2 Attendance Policy

Attendance is expected in all sessions.

11.3 Academic Integrity and Honesty

Students are required to comply with the university policy on academic integrity. Don't cheat. Don't be that guy. Yes, you. You know exactly what I'm talking about.

12 Schedule

NB: The symbol (M) before a reference means mandatory reading; no mark means complementary reading (it is left up to the student's decision to read it or not). The complementary literature will help the student to contribute with richer insights during the group meetings.

- **Session 1**: Introduction and Overview:
  - What is innovation?
  - why do we care about innovation?
  - Group pre-discussion task 1: What are possible innovation indicators? how do we measure innovation?
  - Lecture references:
    - (M) Cirera, Xavier; Maloney, William F.. 2017. The Innovation Paradox: Developing-Country Capabilities and the Unrealized Promise of Technological Catch-Up. Washington, DC: World Bank. Access here.
    - (M) Goñi, Edwin, and William F. Maloney. 2017. Why Don't Poor Countries Do R&D? Varying Rates of Factor Returns across the Development Process.? *European Economic Review* 94 (C):126-47.
    - (M) Griffith, Redding, Van Reenen (2004) Mapping the two faces of R&D: Productivity growth in a panel of OECD countries. *The Review of Economics and Statistics*. Access here
    - (M) Minniti and Venturini (2017). R&D policy, productivity growth and distance to frontier. *Economics letters*. Access here.
    - (Advanced) Hall, B. H., Mairesse, J., & Mohnen, P. (2010). Measuring the Returns to R&D. In Handbook of the Economics of Innovation (Vol. 2, pp. 1033-1082). North-Holland. Access here
- **Session 2**: Drivers of innovation and innovation policies:
  - what drives innovation?
  - Innovation Policies: The rationales. why governments should intervene?
  - Group discussion task 1
  - Group pre-discussion task 2: what are the main drivers of innovation?
  - Lecture references:
    - (M) Griffith, R., Huergo, E., Mairesse, J., & Peters, B. (2006). Innovation and productivity across four European countries. Oxford review of economic policy, 22(4), 483-498.
    - (M) Hall, B. H. (2002). The financing of research and development. Oxford review of economic policy, 18(1), 35-51.
    - Crépon, B., Duguet, E., & Mairessec, J. (1998). Research, Innovation And Productivity: An Econometric Analysis At The Firm Level. Economics of Innovation and new Technology, 7(2), 115-158.
- **Session 3**: Ex-post assessment of innovation policies
  - A policy Framework to understand innovation/industrial policies
  - Group discussion task 2
  - Group pre-discussion task 3: How Effective are innovation policy subsidies?
  - Lecture references:
    - (M) Cerulli, G., & Potì, B. (2012). Designing ex-post assessment of corporate RDI policies: conceptualisation, indicators and modelling. World Review of Science, Technology and Sustainable Development, 9(2-4), 96-123.
    - (M) Becker, B. (2015). Public R&D policies and private R&D investment: A survey of the empirical evidence. Journal of Economic Surveys, 29(5), 917-942.
    - (M) Zúñiga-Vicente, J. Á., Alonso-Borrego, C., Forcadell, F. J., & Galán, J. I. (2014). Assessing the effect of public subsidies on firm R&D investment: a survey. Journal of Economic Surveys, 28(1), 36-67.
    - (M) David, P. A., Hall, B. H., & Toole, A. A. (2000). Is public R&D a complement or substitute for private R&D? A review of the econometric evidence. Research policy, 29(4-5), 497-529.

    - Aiginger, K., & Sieber, S. (2006). The matrix approach to industrial policy. International Review of Applied Economics, 20(5), 573-601.

- **Session 4**: Intellectual Property Rights and firms
  - Do patents encourage more innovation?
  - Group discussion task 3
  - Group pre-discussion task 4: How Effective are R&D Tax incentives?
  - Lecture references:
    - (M) Beneito, P., Rochina-Barrachina, M.E. & Sanchis, A. Econ Polit (2018) 35: 579. International patenting decisions: empirical evidence with Spanish firms Here
    - (M) Heidi L. Williams. (2013) Intellectual Property Rights and Innovation: Evidence from the Human Genome Journal of Political Economy 2013 121:1, 1-27
    - Do patents promote innovation? The Economist
    - The history of Stark Bro's
- **Session 5**: Summary and Further topics on innovation policies
  - Innovation policy and experiments
  - Human capital investments
  - Group discussion task 4
  - Lecture references:
    - (M) Bloom, N., Van Reenen, J., & Williams, H. (2019). A toolkit of policies to promote innovation. Journal of Economic Perspectives, 33(3), 163-84.
    - (M) Bravo-Biosca, A. (2019). Experimental Innovation Policy. In Innovation Policy and the Economy, Volume 20. University of Chicago Press.
    - John Van Reenen (2019) Can Innovation Policy Restore Inclusive Prosperity in America? Access here

13 Weekly task or learning goals

Each task will be uploaded the day before the group session. You may check the course updates on Moodle.