



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2022/2023
MASTER'S DEGREE (MSC)	MANAGEMENT ENGINEERING
INTEGRATED COURSE	INNOVATION AND ENTREPRENEURSHIP C.I.
CODE	22247
MODULES	Yes
NUMBER OF MODULES	3
SCIENTIFIC SECTOR(S)	ING-IND/35, ING-IND/16
HEAD PROFESSOR(S)	PERRONE GIOVANNI Professore Ordinario Univ. di PALERMO
OTHER PROFESSOR(S)	MICARI FABRIZIO Professore Ordinario Univ. di PALERMO
	PERRONE GIOVANNI Professore Ordinario Univ. di PALERMO
	PIAZZA MARIANGELA Ricercatore a tempo determinato Univ. di PALERMO
CREDITS	18
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	2
TERM (SEMESTER)	Annual
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	<p>MICARI FABRIZIO Tuesday 08:00 10:00 Studio del docente, Edificio 8, primo piano</p> <p>PERRONE GIOVANNI Friday 15:00 17:00 Studio del docente. Gli studenti possono contattare il docente via email quando desiderano e riceveranno il supporto richiesto e/o appuntamento</p> <p>PIAZZA MARIANGELA Tuesday 15:00 18:00 Ufficio docente previa comunicazione email</p>

PREREQUISITES	The student needs basic knowledge of business and microeconomics.
LEARNING OUTCOMES	<p>For the "Tech Entrepreneurship" module</p> <p>Knowledge and understanding The student will acquire knowledge and methodologies to design, develop and evaluate business models in different industrial contexts. The student will be able to understand the effectiveness of a business model through a critical analysis of the same.</p> <p>Applying knowledge and understanding The student, through the development of applied case studies, will acquire applied knowledge to make business and/or managerial decisions needed to develop a start-up.</p> <p>Making judgments The student will acquire a methodology for the analysis of business models and their execution, and will be able to make business decisions independently and in groups.</p> <p>Communication skills The student will have acquired the ability to propose own ideas and activities in the group, thus using means to influence group members to change their leadership behaviour (Leadership).</p> <p>Learning skills The student will develop learning ability in the development of a business model of a company or a start-up. He/she will be able to learn autonomously operational modes in industrial environments not studied in class.</p> <p>For the "Strategic management and Open Innovation" module</p> <p>Knowledge and understanding: The student will learn the basic topics of the theory of the firm, networking strategy, social network analysis, and technology analysis in the open innovation perspective. The student will show - through deductive reasoning and references to real cases – the ability to understand the main issues pertaining to the inter-firm relationships and to the strategic decisions taken within the company. The student will also acquire knowledge and understanding about Open Innovation, Crowdsourcing and Social Network Analysis methodologies.</p> <p>Applying knowledge and understanding: The student will acquire knowledge to analyze the inter-firm relationships, such as alliances, joint ventures and M&A. In addition, the student will have acquired skills in analyzing Open Innovation contexts. These capacities are expressed both in the teamwork activities and case studies discussions in which students face issues related to the discipline, such as the theory of the firm, the networking strategy, the social network analysis and the open innovation. In particular, the student will acquire the critically analyze inter-firm relationships and Open Innovation strategies. Moreover, the student will acquire the ability to use Social Network Analysis software tool for network analysis.</p> <p>Making judgments: The course aims at developing the student's ability to make judgments, that is, the ability to critically evaluate the behavior of the individual firm in relationships with other firms. The student will acquire deep knowledge, both scientific and practical, of the relations between companies and they will be able to express opinions on management decisions concerning the organization and the management of the inter-firm relationships, the choice of the partners, the design of networks, and the acquisition of new knowledge and technologies through open innovation practices. The course aims to stimulate students' independent judgment through the critical presentation of scientific literature and case studies.</p> <p>Communication skills: The course aims to develop students' ability to communicate and interact with other individuals, to make complex managerial decisions, and to negotiate inter-firm relationships. Students will be able to communicate complex issues of strategic management, economics of organizations, and networking strategy, and technology analysis with competence and ownership of language. In other words, in relation to a particular strategic-managerial problem, students will be able to explain its nature and origins, while also suggesting possible solutions and thus showing communication and interaction skills, which are also useful for future work relationships. To this end, classroom discussions of real case studies are planned as part of the teaching activities. The student will also acquire skills in proposing ideas and activities in the group thereby using means to influence group members to change their behavior (leadership).</p> <p>Learning skills: In line with the topics of the course such as the theory of the firm, the networking strategy, the social network analysis and the open innovation, the students acquire learning skills, both from a theoretical and practical point of view. They will also acquire communication skills and independent judgment.</p> <p>For the "Product/process innovation" module</p> <p>Knowledge and understanding</p>

	<p>At the end of the course, the student will have acquired knowledge and methodologies to assess the need for innovation in a manufacturing company. He will be able to identify existing critical issues in products and / or business processes and will have the methodological tools to design a pre-competitive research and / or development intervention aimed at improving the competitive position of the company. Will know the general criteria of European, national and regional policies in support of industrial research.</p> <p>Ability to apply knowledge and understanding</p> <p>The student will be able to prepare pre-competitive research and / or development projects. Autonomy of judgment</p> <p>The student will have acquired an analysis methodology capable of verifying the criticalities of products and business processes and consequently of evaluating the needs for innovation. It will also be able to critically assess which regulatory instrument is most suitable for supporting the research and development activity to be pursued.</p> <p>Communication skills</p> <p>The student will be able to communicate with competence and language properties in relation to the problems of innovation and research. He will be able to effectively support a comparison on the research and development project prepared with a hypothetical evaluator.</p> <p>Learning skills</p> <p>The student will be able to independently develop the search for the most suitable regulatory tool to support innovation for each specific case.</p>
ASSESSMENT METHODS	<p>For the "Tech Entrepreneurship" Module</p> <p>The evaluation consists of the following tests:</p> <ul style="list-style-type: none"> • Real case study of a startup business model (60%) • Oral exam (40%). <p>Real case study of a business model. Students are divided into groups of 4-5. They are assigned a real case study of a start-up. Students are asked to represent the business model of start-ups through the Canvas method and to carry out a critical analysis. Students present to the teacher the analysis of the business model through a single and group presentation. The real case study is used to evaluate how student learnt about the Canvas method and their ability to use it to make a critical analysis of a real case.</p> <p>Business game. Students are divided into groups of 4-5 and they take part in a business game in which simulate the implementation of a business model. The business game is used to assess the execution skills of what they have learned. The game business is also used to assess soft skills such as the ability to work in a team, the ability to make decisions under stress, the leadership skills.</p> <p>Oral exam. The oral exam focuses on what the students have developed in class.</p> <p>The evaluation is an overall assessment that accounts for abovementioned test in the percentages shown above.</p> <p>The student gets one of the following evaluations:</p> <p>Excellent 30-30 cum laude. The student shows an excellent understanding of the topics studied, excellent properties of language, excellent modeling capabilities, excellent ability to frame real arguments in the studied theory, excellent ability to bind the arguments with each other and develop a critical analysis in the field of business strategies and models, excellent ability to use quantitative tools to make business decisions. The student during the course developed autonomy and good interpersonal skills and leadership.</p> <p>Very good 26-29. The student shows an excellent understanding of the topics studied, excellent properties of language, good modeling ability, good ability to frame real arguments in the studied contexts, good ability to bind the arguments with each other and develop a critical analysis in the field of business strategies and models, good ability to use quantitative tools to make business decisions. The student during the course developed autonomy and interpersonal skills and leadership.</p> <p>Good 24-25. The student shows a good understanding of the topics studied, good properties of language, satisfactory modeling capacity, satisfactory capacity to frame real arguments in the studied contexts, satisfactory ability to bind the arguments with each other and develop a critical analysis in the areas of business strategies and models, satisfactory ability to use quantitative tools to make business decisions. The student, during the course, has improved its autonomy and its interpersonal skills and leadership.</p> <p>Satisfactory 21-23. The student shows satisfactory knowledge of the topics studied, satisfactory properties of language and modelling and satisfactory capacity to frame real arguments in the studied contexts. The student shows scarce ability to bind the arguments between them and develop a critical analysis in the field of business strategies and models, nor ability to use quantitative tools to make business decisions. The student, during the course, did not improve its autonomy and its interpersonal skills and leadership.</p> <p>Sufficient 18-20. The student shows sufficient knowledge of the subject studied, sufficient properties of language, sufficient capacity of modelling problems. The student shows no ability to frame real arguments in the studied contexts, and no ability to tie the topics to each other and to develop a critical analysis in the field</p>

of business strategies and models, nor ability to use quantitative tools to make business decisions. The student, during the course, did not improve its autonomy and its interpersonal skills and leadership.
Not sufficient. The student highlights of not having the minimum knowledge of the topics studied in the course; he/she expresses using unsatisfactory language properties, and highlights not to have acquired sufficient capacity of modelling business problems

For the "Strategic management and open innovation"
Students' knowledge, skills, and application abilities are evaluated along 3 different tests. The final grade is the result of the weighted average of the grade of the 3 tests according to the related weights:
1)Case study presentation (teamwork) – 20%
Students are divided into groups. The lecturer assigns each group a case study, taken from a real case, on a company's open innovation strategy. The case study is accompanied by a list of questions that asks students to reflect on the information and formulate a response to it. Students analyze the case and prepare a presentation in which they describe the case, provide a critical analysis based on theory and classroom readings, and answer the lecturer's questions. The case study aims to assess the students' ability to analyze real-world contexts and allows students to learn strategic behaviors in real cases. The presentation of the case study also allows for the assessment of soft skills such as teamwork ability, communication abilities, ability to synthesize and critical analysis skills.

2)Business simulation (teamwork) – 30%
Students are divided into groups. The lecturer assigns to the groups a case study, taken from a real case, in which two companies negotiate an inter-organizational relationship. Students analyze the business information assigned, and each student plays a role in the group. On the day of the business simulation, which takes place in the classroom, students analyze data from their assigned company and simulate a meeting with the company's group with which to negotiate the terms of an inter-organizational relationship. The business simulation related to the negotiation of the agreement is observed by the lecturer. Then students prepare a presentation in which they present the agreement reached and justify it to the lecturer based on the theories studied. The business simulation makes it possible to assess students' acquired knowledge, ability to apply it in real-world contexts, the ability to make managerial decisions using the acquired knowledge, and the ability to integrate knowledge acquired in other courses in their curriculum. In addition, business simulation allows for the assessment of soft skills such as teamwork ability, negotiation skills, autonomous decision-making, and leadership.

3)Individual case study development – 50%
The lecturer assigns each student a real case on an inter-firm relationship (alliance, joint venture, M&A, etc.) taken from business and management journals. Each student will develop a case study, presenting facts and figures related to the case study assigned. Students will have to enrich the data through research related to, for example, the value of the transaction, managers' statements, etc. In addition, depending on the theoretical topics covered during the course, the student should highlight in the case study the strategic motivations behind the governance choices of the two companies involved in the deal, highlighting their advantages and disadvantages.
The final evaluation takes into account all the 3 previous tests. The student gets one of the following evaluations:
Excellent 30-30 cum laude. The student shows an excellent understanding of the topics studied, excellent properties of language, excellent ability to frame real arguments in the studied theory, excellent ability to bind the arguments with each other and develop a critical analysis, excellent ability to use quantitative tools to make business decisions. The student during the course developed autonomy and good interpersonal skills and leadership.
Very good 26-29. The student shows an excellent understanding of the topics studied, excellent properties of language, good ability to frame real arguments in the studied contexts, good ability to bind the arguments with each other and develop a critical analysis, good ability to use quantitative tools to make business decisions. The student during the course developed autonomy and interpersonal skills and leadership.
Good 24-25. The student shows a good understanding of the topics studied, good properties of language, satisfactory capacity to frame real arguments in the studied contexts, satisfactory ability to bind the arguments with each other and develop a critical analysis, satisfactory ability to use quantitative tools to make business decisions. The student, during the course, has improved its autonomy and its interpersonal skills and leadership.
Satisfactory 21-23. The student shows satisfactory knowledge of the topics studied, satisfactory properties of language and satisfactory capacity to frame real arguments in the studied contexts. The student shows scarce ability to bind the arguments between them and develop a critical analysis, nor the ability to use quantitative tools to make business decisions. The student, during the

	<p>course, did not improve her/his autonomy and its interpersonal skills, and leadership. Sufficient 18-20. The student shows sufficient knowledge of the subject studied, sufficient properties of language. The student shows no ability to frame real arguments in the studied contexts, and no ability to tie the topics to each other and to develop a critical analysis, no ability to use quantitative tools to make business decisions. The student, during the course, did not improve her/ his autonomy and its interpersonal skills and leadership.</p> <p>Not sufficient. The student highlights not having the minimum knowledge of the topics studied in the course; he/she expresses using unsatisfactory language properties and highlights not having acquired sufficient capacity of understanding business problems.</p> <p>For the "Product/process innovation" module</p> <p>The evaluation takes place through the presentation of a group project and through a written test with equal weight for the purposes of evaluation. The written test consists of 3 open-ended questions for which, over a period of 2 hours, students must report on the main topics of the course, with particular reference to the themes of innovation in the manufacturing industry, the regulatory tools in support of innovation, technology cycles and R&D funding. The open questions aim to assess the possession of the skills and knowledge acquired during the course and also the ability to analyze and develop solutions relating to the field of innovation.</p> <p>The test score, expressed out of thirty, evaluates the level of learning and the ability to apply the main tools provided by the course.</p> <p>The adopted scale is: excellent rating 30 - 30 cum laude, very good from 26 to 29, good from 22 to 25, sufficient from 18 to 21.</p>
TEACHING METHODS	Lecturers, Class discussion, Case study presentation (teamwork), Business contest and simulation (teamwork).

MODULE PRODUCT/PROCESS INNOVATION <i>Prof. FABRIZIO MICARI</i>	
SUGGESTED BIBLIOGRAPHY	
Melissa A. SCHILLING: "Gestione dell'Innovazione", McGraw-Hill, 2005	
AMBIT	50368-Ingegneria gestionale
INDIVIDUAL STUDY (Hrs)	96
COURSE ACTIVITY (Hrs)	54
EDUCATIONAL OBJECTIVES OF THE MODULE	
The aim of the class is to provide an amount of knowledge and methodologies to evaluate the opportunity and/or the necessity of innovation in the manufacturing industry. As well, tools for preparing and evaluating an R&D project will be provided. Finally, frameworks for R&D projects at EU and Italian level will be studied.	

SYLLABUS

Hrs	Frontal teaching
3	Innovation: concepts, phases, R&D
2	R&D Department in a Company and in a Research Institution. How to support creativity and inventors
3	Innovation models. Technology life cycle and innovation diffusion.
2	Technology value: dimensions.
2	First movers, early followers, late entrants.
2	Projects portfolio
10	Project financing. European and Italian framework.
6	Industrial research: rules and procedures.
4	Research project costs.
Hrs	Practice
10	R&D projects analysis
10	Preparing an R&D project

MODULE TECH ENTREPRENEURSHIP

Prof. GIOVANNI PERRONE

SUGGESTED BIBLIOGRAPHY

Slide del corso;
Alexander Osterwalder and Yves Pigneur, Business model Generation, Wiley; Allan Afuah, Business models: A strategic approach, McGraw Hill;
Allan Afuah, Business model innovation: Concepts, Analysis and Cases, Routledge
Lista di letture consigliate nel corso

AMBIT	50368-Ingegneria gestionale
INDIVIDUAL STUDY (Hrs)	96
COURSE ACTIVITY (Hrs)	54

EDUCATIONAL OBJECTIVES OF THE MODULE

The course aims at providing students with theoretical knowledge and practices related to the design, development and implementation of business models of high tech companies. The course is divided into three modules: theoretical aspects, construction of case studies, analysis and discussion of real business cases. The first part of the course provides the basic knowledge for the development, analysis and implementation of a business model. In the second part of the course, the student having learned the necessary theoretical knowledge, as a group, engages in the analysis of a real business case. Finally, in the last part of the course the student, in groups, will analyze and discuss a real business case of an high-tech startup.

SYLLABUS

Hrs	Frontal teaching
2	Introduction
4	Business models: concepts and components
4	Business models analysis methodology
5	Traditional Tech business models
6	Digital Tech business models
4	Tech manufacturing business models
3	IoT and big data business models
4	Biotech and MedTech Business models
3	Circular economy business models
5	Business models financing – Entrepreneurial finance
Hrs	Practice
14	Discussione di casi in aula

MODULE STRATEGIC MANAGEMENT AND OPEN INNOVATION

Prof.ssa MARIANGELA PIAZZA

SUGGESTED BIBLIOGRAPHY

Lecture's notes and course slides.

Research papers:

- Afuah, A., & Tucci, C. L. (2012). Crowdsourcing as a solution to distant search. *Academy of management review*, 37(3), 355-375.
- Alchian, A. A., & Demsetz, H. (1972). Production, information costs, and economic organization. *The American economic review*, 62(5), 777-795.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management*, 17(1), 99-120.
- Chesbrough, H. (2012). Open innovation: Where we've been and where we're going. *Research-Technology Management*, 55(4), 20-27.
- Coase, R. H. (1937). The nature of the firm. *economica*, 4(16), 386-405.
- Das, T. K., & Teng, B. S. (2000). A resource-based theory of strategic alliances. *Journal of management*, 26(1), 31-61.
- Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of management review*, 14(1), 57-74.
- Felin, T., & Zenger, T. R. (2011). Information aggregation, matching and radical market-hierarchy hybrids: Implications for the theory of the firm. *Strategic Organization*, 9(2), 163-173.
- Felin, T., & Zenger, T. R. (2014). Closed or open innovation? Problem solving and the governance choice. *Research policy*, 43(5), 914-925.
- Franke, N., Keinz, P., & Klausberger, K. (2013). "Does this sound like a fair deal?": Antecedents and consequences of fairness expectations in the individual's decision to participate in firm innovation. *Organization science*, 24(5), 1495-1516.
- Howe, J. (2006). The rise of crowdsourcing. *Wired magazine*, 14(6), 1-4.
- Koka, B. R., & Prescott, J. E. (2002). Strategic alliances as social capital: A multidimensional view. *Strategic management journal*, 23(9), 795-816.
- Koka, B. R., & Prescott, J. E. (2008). Designing alliance networks: the influence of network position, environmental change, and strategy on firm performance. *Strategic management journal*, 29(6), 639-661.
- Mazzola, E., Acur, N., Piazza, M., & Perrone, G. (2018). "To own or not to own?" A study on the determinants and consequences of alternative intellectual property rights arrangements in crowdsourcing for innovation contests. *Journal of Product Innovation Management*, 35(6), 908-929.
- Piazza, M., Mazzola, E., Acur, N., & Perrone, G. (2019). Governance considerations for seeker-solver relationships: A knowledge-based perspective in crowdsourcing for innovation contests. *British Journal of Management*, 30(4), 810-828.
- Roemer, E. (2004). *Real Options and the Theory of the Firm*. University of Bradford, School of Management.
- Williamson, O. E. (1973). Markets and hierarchies: some elementary considerations. *The American economic review*, 63(2), 316-325.
- Williamson, O. E. (1979). Transaction-cost economics: the governance of contractual relations. *The journal of Law and Economics*, 22(2), 233-261.

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INDIVIDUAL STUDY (Hrs)	96
COURSE ACTIVITY (Hrs)	54

EDUCATIONAL OBJECTIVES OF THE MODULE

The course aims to offer an overview on the economic theory of the firm, the different governance structures of inter-organizational relationships, and the open innovation and firm network strategies by combining requirements of theoretical rigor with practical applications and analysis of real cases. In particular, the main theories of firm such as Transaction Cost Economics and Resource Based View will be studied during the course. In addition, the course studies inter-organizational relationships between firms and the main forms of governance of inter-firm relationships, such as alliances, JVs, outsourcing and M&A. The course further aims to provide knowledge for the analysis of the Open Innovation paradigm. Specifically, the practices, collaboration models, and strategies of Open Innovation will be investigated during the course. Finally, the course aims to offer knowledge related to networking strategies and social capital developed by companies through inter-organizational collaborations.

SYLLABUS

Hrs	Frontal teaching
1	Course introduction
12	Theory of the firm (es. Transaction Cost Economics, Property Right Theory, Agency Theory, Real Option Theory, Resource Based View)
4	Strategic Inter-firm relationships: Alleanze, JV, Outsourcing, M&A
12	Open Innovation
4	Social capital e Social network analysis
Hrs	Practice
4	Classroom discussion - Theory of the Firm
2	Classroom discussion - inter-firm relationships
4	Classroom discussion - Open Innovation
1	Classroom discussion - Social Capital
2	Social network analysis

Hrs	Others
3	Case study presentation (teamwork)
5	Business simulation and presentation (teamwork)