

# BUILDING ENTREPRENEURIAL SKILLS THROUGH UNIVERSITY-BUSINESS COLLABORATION: THE CASE OF THE TECNOCAMPUS



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## SUMMARY

The Campus Emprenedor (Entrepreneurial Campus) is part of TecnoCampus – a university and technology park based in the Catalan city of Mataró. The uniqueness of this campus is its integration of a business and startup community with a university to create a dynamic ecosystem that promotes entrepreneurship and business growth for local economic and social development. The Entrepreneurial Campus brings together programs and activities that promote entrepreneurial culture and facilitate the development of intra- and entrepreneurial competences alongside the creation of startups with social and sustainable impact.

The University has 41 professors and staff dedicated to entrepreneurship and innovation and provides more than 25 distinct resources of entrepreneurial support and training – such as education and training, challenges, spaces networking, and internationalization. These resources are aligned around the pillars of innovation, impact, community, and internationalization. This entrepreneurial university pathway supports students through the stages of awareness and education, pre-incubation, incubation, and acceleration, on a journey that starts in the classroom and ends at the business and technology park (see Figure 1). TecnoCampus offers mandatory and optional entrepreneurial courses, entrepreneurship-focused study-abroad programs, and a Master’s Degree in Entrepreneurship and Innovation.

Student skills linked with entrepreneurial competences are developed in coordination with TecnoCampus Job Board, through workshops, educational cooperation agreements or internships, industry-specific talent forums and, ultimately, through job offers. TecnoCampus uses various indicators to evaluate the impact of its programs, including the percentage of final degree projects which focus on entrepreneurship, the number of projects and participants in the pre-incubator stage, and the number of successful startups within our incubators.

*Affiliated center*

## CONTEXT



*TecnoCampus Networking TecnoChallenge*

TecnoCampus is in Mataró, the capital of the Maresme region. It is located 20 kilometres north from the city of Barcelona and has 128.956 inhabitants (Idescat, 2022). The University has three schools: Engineering and Technology, Business and Social Sciences and Health Sciences, all affiliated to Pompeu Fabra University. With a total of 3,936 students enrolled for the academic year 2021-2022 (TecnoCampus, 2023a), it is a private university, with a strong commitment to the local economy and local economic development. As a result of a public-private alliance, the Mayor of Mataró is also the president of the TecnoCampus Mataró-Maresme Foundation. This organization was created by the Mataró City Council to oversee TecnoCampus from the start of the project. The TecnoCampus Strategic Plan 2023-2026 (LeadtoChange, 2023) establishes the entity's mission to create value around learning, research, entrepreneurship, and innovation.

Every student within our technology and business schools takes a mandatory course in entrepreneurship and all students across all schools have access to curricular and non-curricular entrepreneurial education and training. The chairs of Social Economy, Aging and Quality of Life, and Circular Economy and Sustainability – all have strong links to the entrepreneurial community.

The Master's Degree in Entrepreneurship and Innovation develops the skills of potential entrepreneurs to think creatively and empower them to transform an idea into a commercial product. From an interdisciplinary approach, it focuses on the analysis, management, and assessment of innovative processes. This 60 ECTS programme is aimed at businesspeople and potential entrepreneurs that want to create a new company or drive innovation within existing companies. There are also four entrepreneurship-focused study abroad programs, developed for international students and professionals by the HUB4T, TecnoCampus Center for Postgraduate Studies and Lifelong Learning. These programs are Entrepreneurship in Digital Environments, Investment School, Digital Marketing Entrepreneurship, and Circular and Sustainable Tourism. It is a core part of the University's strategic plan to connect students to the business park and its entrepreneurial business.

# METHODOLOGY & IMPLEMENTATION

The institutional model for the development of entrepreneurship draws on an action plan aimed at enhancing research, innovation, and knowledge transfer. Programs and activities follow the six axes of entrepreneurial competences, - transfer, incubators and differential spaces, entrepreneurial support, internationalization, and financing. The Entrepreneurial Campus concentrates on programs, activities, and training that promote an entrepreneurial culture, the development of entrepreneurial competences, and the creation of startups with social and sustainable impact.

Alongside the entrepreneurial pillars of innovation, impact, community, and internationalization, TecnoCampus encompasses programs and activities that facilitate the development of entrepreneurial competences identified in EntreComp - the European Entrepreneurship Competence Framework (Bacigalupo et al., 2016). The University has implemented an education and training program that takes students from the classroom to the business park, transforming their business ideas into startups with triple impact (ie. economic, social, and environmental). As seen in Figure 1, resources and initiatives which support students are organized into categories such as education and training, challenges, awards, mentorship, other tools, spaces, networking, and internationalization. Most of the resources in columns one and two are dedicated to both intra and entrepreneurial students, while columns three and four are exclusively for those who have created startups.

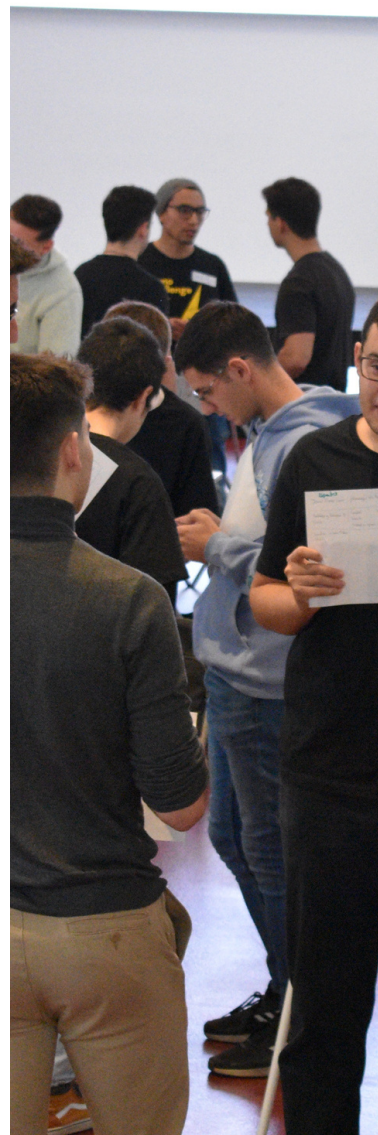


Figure 1: Resources and initiatives which support students' entrepreneurship

Specific initiatives include bootcamps, challenges and real case studies, gamification, outdoor training, peer coaching, digital simulations, co-creation, and even role-playing games. The main methodologies which underpin these initiatives are Design Thinking and Lean Startup. TecnoCampus also employs a practical methodology for the development of entrepreneurship and innovation projects called ToolBoard Canvas, created by the entrepreneurial professor and researcher Jaume Teodoro. Drawing on Design Thinking, the canvas consists of a manual, a book, and a card game. ToolBoard Canvas holistically integrates the client, other stakeholders, the team, the problem, the solution, and the market; from challenge to opportunity, from opportunity to solution and from solution to market (Teodoro, 2023). Outlined below are just some of the entrepreneurial resources that have been developed for TecnoCampus students:

**(i) TecnoChallenge:** The TecnoChallenge is an intensive, weekend-long event, where students solve current real challenges from TecnoCampus Entrepreneurial Community. This event fulfils a triple objective: to develop entrepreneurial competencies among students, to enhance company-university collaboration, and to solve real challenges with effective solutions that can be implemented immediately afterwards. In 2022, the activity evolved from the development of new business ideas, to the solving of key challenges from our three main ecosystem stakeholders: the University, startups, and established companies. Students are drawn from undergraduate and master's programs, from across the three schools to work together in multidisciplinary teams.

Student teams are formed by the organizers according to career, level, language, and gender criteria. There are two open calls, one to define the challenges and another for the registration of the students. The organizers select the three most innovative challenges, one from a startup from our incubators, one from an established company within the Business Park, and one from an area of the University. One week before TecnoChallenge, there is an introductory workshop, where members of the teams get to know each other and select their challenge. The stakeholders pitch and interact with the three or four teams that choose their challenge and accompany them throughout that week and over the course of the event itself.



*TecnoCampus Networking TecnoChallenge*

There are around 50 participants each year. TecnoChallenge takes place on a November weekend, close to the Global Entrepreneurship Week. Teams work on their solutions using Design Thinking and guided by facilitators. They present a video and a final pitch in front of a panel (comprised of the owners of the challenge and entrepreneurial staff). The panel have prior access to each team's online file with all the milestones achieved during the event. The evaluation criteria includes: 1) successful solution to the challenge; 2) practical implementation possibilities; 3) degree of innovation/uniqueness of the solution; 4) effective teamwork, including commitment, values, enthusiasm, and technical knowledge; 5) social and environmental impact, alignment with the UN Sustainable Development Goals (SDGs); 6) communication skills: pitch and video. The winning initiative for each category receives a cash prize and collaboration on the implementation of the solution with the owner of the challenge. The involvement of the challenge stakeholders allows them to get to know the students and is a great opportunity for them to identify student talent.

**(ii) Creatic Award for University Entrepreneurship:** Organized by TecnoCampus and the City Council of Mataró, the Creatic Awards are an incentive for innovative and/or technology-based business projects, offering financial, logistical and acceleration support. There are five categories: 1) Best business initiative in the field of technology and innovation; 2) Best project led by women; 3) Best project with social impact; 4) University entrepreneurship award; and 5) Best entrepreneurial project for vocational education and training students. The University entrepreneurship award is aimed at undergraduate, and masters' students enrolled in the current academic year, who present an entrepreneurial project through the submission of an executive summary. The selection criteria for this particular award include 1) singularity of the idea; 2) market orientation of the value proposition; 3) business model; 4) degree of project development; 5) social and/or environmental impact and alignment with the SDGs. This final criterion, introduced for the 22nd edition of the awards in 2022, recognises triple impact and responsible entrepreneurship. The prize for this award consists of a cash prize, a grant for travel expenses to an international entrepreneurship event, participation in an entrepreneurship program, and access to the Pre-incubator for one year. The prizes are awarded in November, at the Night of Entrepreneurship, an annual meeting point for business, academia, civil society, and the civil administration of Mataró and Maresme.

**(iii) Pre-incubator:** The Pre-incubator is a program for supporting projects developed by students or alumni with a value proposition, a business model, and a time to market of less than a year. It's a free program, available for 9 months. Alongside access to the plug and play open space, the team receives tutoring and expert support to assess and validate the idea. The Pre-incubator is physically located on the same floor as the main Incubator (Incubadora) and aims to bring the reality of startups closer to entrepreneurial students, whilst also facilitating interaction and networking opportunities. TecnoCampus has five incubators, the non-aligned or agnostic main incubator called Incubadora, and four incubators with specific specialisms (or verticals): Antena TrenLab (urban mobility), Reimagine Textile (textile), ThinkIn 3D (additive manufacturing) and Apollo (logistics and technology). The first four incubators only admit startups (previously incorporated legal entities) and have a monthly fee, while Apollo is a project launcher program, offered by TecnoCampus and the company Bytemaster, to teams free of charge.

**(iv) Entrepreneurial Breakfasts:** On the last Monday of each month the entrepreneurial community gets together to learn about training and support opportunities, future events, and to share experiences. It is the primary meeting point for matching, networking, and sharing inspiration. While it primarily focuses on entrepreneurial and intrapreneurial students and alumni, it also brings together faculty, staff, businesses, and other participants. Its goal is to raise awareness about available entrepreneurial support resources, to gather feedback from students on the value of these resources, and to create new resources which better match their needs. These events also promote networking and synergies and help to consolidate the entrepreneurial community. The standard breakfast agenda has seven sections: 1) entrepreneurial resources, presented by their coordinators; 2) entrepreneurial students, who share their experiences from events, challenges, and programs; 3) startup pitches, where alumni and students present their startups and, the path they took to get there, and any advice they may have for those who are at an earlier stage; 4) events, where we look at future events and programs linked to entrepreneurship and innovation; 5) "I look for...", a space to ask for resources, partners, employees, or any other entrepreneurial need 6) M.I.M.O, a caring and effective feedback method, where the participants add value and express what they want to keep, incorporate, improve, or omit for the next breakfast; and 7) open networking coffee (sometimes preceded by other dynamics, such as speed dating).



*TecnoChallenge 2022*

**(v) Start-UPFlama:** TecnoCampus and the University Pompeu Fabra (UPF) developed this joint entrepreneurial program, which promotes entrepreneurship by harnessing the creativity, initiative, and knowledge of undergraduate and postgraduate students and alumni. It helps them to create innovative companies that bring wealth and well-being to society. The program consists of three phases: 1) Business Model Canvas 2) Training 3) Legal constitution and first steps. After phases 1 and 2, the teams pitch in front of a panel and the winners obtain a cash prize and an incubation opportunity. Start-UPFlama awards four prizes: Best business project, Best innovative idea, Best impact project, and Best evolution within the program. TecnoCampus then leads on phase 3, incubating these four winner teams through a six-month process, with individual tutoring and coaching, and access to all the entrepreneurial resources of the campus.

**(vi) Start for Future (SFF):** The SFF is a European alliance of twenty incubators and universities, with the partnership of EIT: Urban Mobility, Manufacturing and HEI Initiative. SFF has four main programs: Academy, Open Incubation, Open Incubator and Regional Innovation Valleys. These programs have three main stakeholders: universities and incubators, students and startups, and corporates. The Open Incubation Program has three phases: 1) Learn - a cross university, project based, entrepreneurship program for student teams that runs for 3 months; 2) Match & Start - a pre-acceleration two-month sprint program for individual talents and early-stage startups; and 3) Develop and Co-create - an incubation six-month program in partner ecosystems. All phases are online, in English, and aligned to six themes:

circular economy, energy, food, health, manufacturing and mobility. TecnoCampus students participate in all three phases. Within the Develop and Co-create strand there is a special focus on co-incubation with a team being incubated at the same time in both the TecnoCampus and one other incubator (such as Strascheg Center for Entrepreneurship from Hochschule München University of Applied Sciences in Germany, or the University of Economics Varna Accelerator in Bulgaria). Local and European teams and startups have opportunities for market entry, pilot projects, co-creation with industry and investment. The program offers individual mentoring and coaching, access to a pool of industry experts and co-creation partners, open sessions, a grant for prototyping, a mobility voucher, and international co-creation summits.

**(vii) International Network of Entrepreneurial Universities:** TecnoCampus leads a network with eight Latin American universities from Argentina, Chile, Colombia, and Peru. These entities share a vision of entrepreneurial education and culture, based on three axes: a strong commitment to innovation and entrepreneurship, their university role as engines of regional development and innovation, and an innovative and unconventional approach to teaching and learning models. The Network's current action plan for 2022-2023 has six priorities: 1) Business training for teachers, staff and students; 2) Methodologies and tools for entrepreneurship management; 3) Presentation of projects to calls for the financing of the Network; 4) Indicators of university entrepreneurship; 5) Financing for entrepreneurs; and 6) Communication strategy and positioning of the Network.

**(viii) PAE Point:** TecnoCampus supports teams of students and alumni mature enough to establish a legal entity through the PAE Network (Entrepreneurship Service Point) of CIRCE (Information Center and Business Creation Network). The teams receive information and advice on different forms of legal entities and all the procedures are carried out electronically from the PAE Point located in the park.

## ANALYSIS AND EVALUATION

The University has 41 people dedicated to entrepreneurship and innovation within the institution, including 21 professors and researchers and 20 associated staff members. This represents around 10% of the 426 employees of the whole university. At the Business School, there is a Research Group Applied to the Financial, Economic and Social Environment (GRAEFES), with a research strand dedicated to entrepreneurship made up of four researchers. There are also two entrepreneurial researchers from the Technology School. In 2021-2022, 4 scientific articles and 1 book related to entrepreneurship were published by these researchers. There were 195 ECTS dedicated to entrepreneurship and innovation in the last academic year, including mandatory and optional entrepreneurial subjects for undergraduates and postgraduates. Students who opt for intrapreneurship or entrepreneurship, can choose from the more than 25 training initiatives and resources listed above that the University provides to support their development (Moyano, 2023).



The majority of the programs affiliated with the TecnoCampus utilise satisfaction surveys, such as the MIMO method, to gather feedback and continuously improve their offering. In 2022, there were 2 workshops for entrepreneurial professors and researchers from the three schools and 1 workshop also involving associated entrepreneurial staff members, to promote community, synergies, and feedback. At last year's TecnoChallenge, a pilot study was carried out focusing on the generation of social capital and the role of gender, which also produced recommendations for the next challenge.

One other key area of the Campus is the TecnoCampus Quality Service whose objective is to develop a Quality Plan for the institution (TecnoCampus, 2023). This Service is responsible for planning, setting objectives, evaluating, measuring, and making proposals for improving quality. The Service focuses on both the university and the business park areas. The Internal Quality Management Systems (SGIQ) has the users at the center of their improvement plans focusing on students, startups, and companies. All the main directors of the University and the business park areas are included as members of the TecnoCampus Quality Commission. Their role is to approve the annual Quality Report, assess the key performance indicators, and monitor key improvement proposals (TecnoCampus, 2023b).

The entrepreneurial program at the University is evaluated using various indicators, as reported by TecnoCampus in the Academic Year 2021-2022 (TecnoCampus, 2023a). These indicators include:

- 1,962 internship offers published: This indicates the University's commitment to providing students with practical experience and exposure to the working world.
- 1,030 educational cooperation agreements signed (internships): This further highlights the university's efforts to provide students with opportunities to gain real-world experience in their field of study.
- 639 job offers published: This suggests that the university is successful in connecting students with potential employers and helping them secure jobs after graduation.
- 9 industry-specific talent forums: These forums provide a platform for students to network with professionals in their field and learn about job opportunities in their industry.
- 42 career guidance sessions: These sessions are aimed at helping students identify their career goals and develop strategies for achieving them.
- 27 Skills program sessions: These sessions may focus on developing specific skills that are in high demand in the job market, such as coding or project management.
- 313 final degree projects in entrepreneurship (33%): This indicates that a significant proportion of students are interested in entrepreneurship and are pursuing projects related to starting and running their own businesses.



*TecnoCampus Entrepreneurial Breakfast*

- 17 Projects, with 48 participants in the Pre-incubator: The Pre-incubator program provides support and resources to students who are interested in starting their own businesses, which can help increase the likelihood of success.
- 21 startups in the incubators, including students and regional entrepreneurs: This suggests that the university is successful in fostering a culture of entrepreneurship and providing the necessary resources and support for students who have created startups.
- 76 companies created (and 106 jobs created): This is a concrete measure of the impact of the University's entrepreneurial program on the local economy and job market.
- 118 hosted businesses (93% park occupancy): This indicates that the University has successfully created a supportive environment for businesses to grow and thrive.
- 799 workers employed by the park businesses: This further highlights the positive impact of the University's entrepreneurial program on the local job market.

According to the Transfer, Innovation and Business Area of TecnoCampus, the success rate of our startups is 75%. Some success stories amongst local entrepreneurs, students and alumni include Minoryx Therapeutics, Verkami, Net Rivals, Inviertis, Bambai and Exheus.

## REFLECTIONS & CONCLUSIONS

The original impetus for the Entrepreneurial Campus comes from an institutional commitment to entrepreneurship and innovation, which is also reflected in the strategic plan of the University 2023-2026. This has led the institution to promote entrepreneurship and employability consistently across all three of its schools. There are a whole range of training and support opportunities available to students and alumni that aim to cross the gap between education and industry. They are all aligned with the four pillars of entrepreneurial university: innovation, impact, community, and internationalization, as well as to the institutional model for the development of entrepreneurship.

A unique characteristic of this campus is its integration with a business and startup community that promotes entrepreneurship and business growth for local economic and social development. Another characteristic is the public-private alliance between the University and the City Council of Mataró.

By 2023, we are expecting a major change in the organization of the University. Our three schools will become four departments. Namely, Cultural Industries, Business, Health, and Technology. A few of our current challenges and milestones include the development of tools capable of scaling our training provision to the entrepreneurial community, such as an online learning platform and app. The institution is developing a communication strategy to inform and promote the use of the 25 entrepreneurial resources available to both students and alumni. Going forward, the University is currently looking for complementary key performance indicators aimed at improving the measurement of entrepreneurial competences and the creation of further high quality entrepreneurial training initiatives and academic programs.

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