

NEWSLETTER  
UE STEAM  
SCHOOL



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ESCUELA DE ARQUITECTURA,  
INGENIERÍA Y DISEÑO



**UE**  
**STEAM**  
**SCHOOL**



**NEWSLETTER**





## CELEBRATION OF THE 10TH UE STEAM SCHOOL AWARDS. TEN YEARS MAKING PROGRESS IN THE PROJECT-BASED METHODOLOGY

Last Wednesday, the 28th of September, the 10th edition of the UE STEAM SCHOOL awards were held with a very special celebration. Present were judges from more than 25 leading businesses in the different disciplines, a record participation with over 100 projects, 30 candidates, and 12 finalists in the categories of Science (S), Technology (T), Engineering (E), Art (A), and Mathematics (M). The awards serve to honour and highlight the work, talent and dedication of these students and teachers who have backed the Project-based Learning methodology these last ten years.

The event, accompanied by a string quartet, gave students and professors the opportunity to speak with the business representatives during the exposition of their project posters. The projection of the videos summarising the projects was reserved for the auditorium along with the award ceremony for the different categories: The winning projects in the STEAM category were, in this order, Torre Tesla (S), SafeBreath (T), Pulsioxímetro (E), urban garden design (A) and FP hunter (M). In addition to these awards, the public was able to choose a popular award, won by the project Baldosa Fluorescente. The 10th awards also reserved a space for Cristina Hernández, director of ISDEFE, to reflect on the professional sector. She hit upon the benefits of the PBL methodology on university studies. This 10<sup>th</sup> edition was an indication of the growing interest in the methodology and the outstanding quality of the proposals presented, an inspiration for future editions.



“THE AWARDS SERVE TO HONOUR AND HIGHLIGHT THE WORK, TALENT AND DEDICATION OF THESE STUDENTS AND TEACHERS WHO HAVE BACKED THE PROJECT-BASED LEARNING METHODOLOGY”





## SUMMER WORKSHOP 2022: OBJECTS OF THE MUNDANE. BARTLETT PROSPECTIVE + UNIVERSIDAD EUROPEA. Madrid, July 11-22, 2022

This summer, from July 11 to 22, we held the first SUMMER WORKSHOP: OBJECTS OF THE MUNDANE, organised by Bartlett (B-Pro) together with Universidad Europea de Madrid, and with the collaboration of the robotic printing company, 3D Nagami. The results of the workshop have been incredible thanks to the talents of the students, of the professors, and the use of the best installations for digital manufacturing, such as the FabLab of the Universidad Europea and the large-scale 3D manufacturing robots of Nagami.



Both national and international students of varying profiles participated: student from advanced courses at the best schools of architecture in Europe, such as Bartlett School of Architecture, TU Delft, ETH Zurich, as well as students from Universidad Europea and other Spanish Universities, doctoral students and people in charge of the FabLabs at other institutions. The work of the workshop directors was excellent and a treat to have professors from Bartlett Prospective and Universidad Europea. In addition, there were lectures and exceptional sessions with professors from Bartlett Prospective, top specialists in design projects and digital manufacturing. The workshop took place in the installations of the FabLab at the Villaviciosa campus of the Universidad Europea, though there were some intermediate work sessions at the Official Association of Architects of Madrid (COAM) and at the spectacular installations of Nagami in Avila, where a large scale 3D print was made with recycled plastic and a robotic assembly during marathon work sessions. The workshop ended with a final critique session where students presented their projects and the superb results of these two weeks of intense work.

You are invited to view a summary of those two weeks at: <https://www.youtube.com/watch?v=Bg50nY6mRU8>

We are looking forward to the next "summer workshop" in 2023.



## PAST, PRESENT AND FUTURE OF THE UNIVERSE

Dr Rafael Bachiller, Director of the National Astronomical Observatory, gave the course opening master lecture in the School on September 28th. With broad and in-depth knowledge and an enormous capacity for communicating and connecting with the audience, his talk on the *Past, present and future of the universe* captivated professors and students alike. He pointed out that the Big Bang Theory explains many things but there are still great unknowns. What is dark matter? What is dark energy? Where is the antimatter? Will we be able to distinguish galaxies from antigalaxies?

It was a tremendously stimulating beginning to the new academic course at the School with degrees in all the areas that define the acronym STEAM: science, technology, engineering, arts, and mathematics. It was an authentic privilege for the School to have Dr Rafael Bachiller give this talk, which is likely to encourage future scientific vocation.

The massive turnout of professors and students are a reflection of his splendid intellectual endeavours, always open to new ideas and to expand horizons. Students from the technical degrees will play a fundamental role in responding to the immense challenges facing our planet.

## UNIVERSIDAD EUROPEA RECEIVES ITS NEW STUDENTS ON “WELCOME DAY”

Universidad Europea organised a welcome event addressed to new students that have joined the Villaviciosa de Odón, Alcobendas, Valencia and Canary Island campuses. This is a special event in order for the recent arrivals to get to know the university firsthand, as well as the classmates with whom they are going to share the university experience from the very first day and where they will achieve their personal and professional goals. The welcome event, held on the 16th and 19th of September, consisted of a full programme of orientation activities with the purpose of immersing them in the university spirit.

In total, about 3000 people participated in these activities, in which the basic keys to begin and integrate into university life was transmitted. These included student networking sessions and several talks about the different degrees.

In particular, the School of Architecture, Engineering and Design welcomed 2000 new students. All of them were able to get information about the library, internships, quality and project-based learning, university life, and international mobility.





## PBL METHODOLOGY: MONDRAGON POLITECHNIC

Last June, the staff at the STEAM school received some training sessions on the PBL methodology from Nekane Errasti, Maialen Aginagalde and Urtzi Markiegi, professors at the University of Mondragon. The sessions, focussed on the application of this methodology at Mondragon, ended with an exchange of know-how and best practices between staff from both schools. It was an opportunity to continue progressing in this unified methodology with another university expert in project-based learning.

“THE SESSIONS BECAME AN EXCHANGE OF KNOW-HOW AND BEST PRACTICES BETWEEN STAFF FROM BOTH SCHOOLS...”



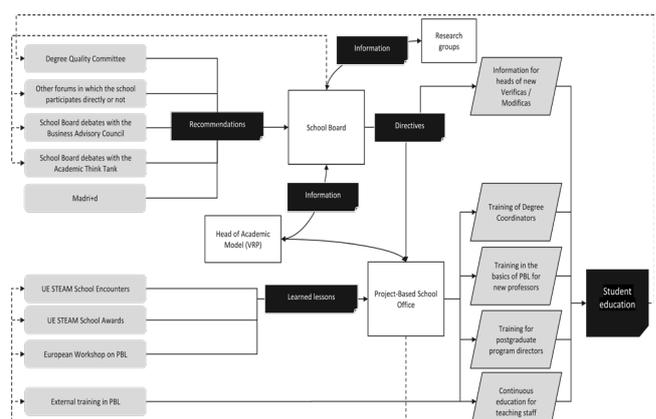
## ADVANCE COMPUTING CENTRE (CCA)

At the beginning of the academic year 22/23 we made available to all of our students a new infrastructure consisting of a distributed computing cluster with a total 314 nuclei and more than 10,000 CUDA nuclei with total distributed compute capability of three teraflops. Furthermore, the new CCA includes a relational and non relational database server, a private virtual host server, a web server, and various advanced simulation machines which will allow students and professors to carry out projects that require lots of computing power.

## PROJECT-BASED LEARNING 2.0

After ten years successfully applying project-based learning (PBL), in which we are already a reference in Europe, and after a meeting with the Academic Think Tank, a laboratory of ideas made up of senior professors at the School, they have recommended a review of the methodology. The School Board decided to conduct a thorough review and take a qualitative leap forward. The School Board and the Project-based School Office worked closely in July with three important sources: internal benchmarking from the UE STEAM Encounters School that held their 5th edition in July; external benchmarking provided by three professors that visited prestigious European universities and evaluated their methodology; and external experts that analysed the maturity level of the School's methodology. The combination of lessons learned and the recommendations have been invaluable.

The working group is still active and continues with the aim of defining the already dubbed *project-based learning 2.0*. It is an improved version of the methodology that should reflect the project concept and typology, the pillars and dimensions of the Universidad Europea academic model and its relationship with the professional world. *PBL 2.0* will be the cornerstone of the School's Knowledge Map.



“The goal of the School is to be the best STEAM school in Europe because of its application of the project-based learning methodology.”

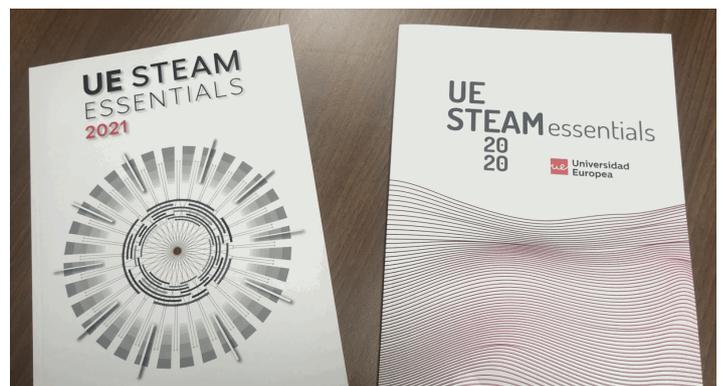


## 20 ISSUES OF UE STEAM ESSENTIALS

In 2020 the school decided to launch a series of UE STEAM Essentials *white papers* to spread awareness of current affairs that, because of their complexity, were not available to everyone.

A technical committee was created, initially made up of professors from the School of Architecture, Engineering and Design, and later joined by professors from the Universidad Europea de Valencia and the Universidad Europea de Canarias. This committee decides the topics to be addressed and the authors that will develop them. These authors, both from the university and from the industry, are chosen for their expertise and ability to write in a clear, entertaining, and understandable way.

On September 27th we celebrated the twentieth issue of the series, published in the spring of this year. Since its launch, the UE STEAM Essentials *white papers* have had an excellent response. Universidad Europea is proud to contribute towards the dissemination of information on the topic of technologies and disciplines that are shaping today's society. All of UE STEAM Essentials can be freely accessed on our website if you want to know more about:



- Electric Vehicle: Present and Future (June 2022)
- Crypto Assets, Blockchain y NFT's (May 2022)
- 5G: The Immediacy of Technology (March 2022)
- Proximity Mobility in the Age of Digital Urbanism (February 2022)
- City and Data: New Urban Realities of the Informational Dimension (January 2022)
- Cognitive assistants in systems engineering (December 2021)
- Sustainable energy transition (November 2021)
- Hydrogen as a new energy vector: present and future (October 2021)
- Cybersecurity and critical infrastructures (July 2021)
- Blockchain (May 2021)
- Systems of systems (April 2021)
- Do robots need ethics? (March 2021)
- Quantum gravity (January 2021)
- 3D printing: Revolutionizing manufacturing (November 2020)
- Graphene: Concept and applications (October 2020)
- Big Data: The data revolution (July 2020)
- Artificial Intelligence: Present and future (July 2020)
- Nanotechnology (September 2020)
- Industry 4.0: The fourth industrial revolution (May 2020)

“FOR UNIVERSIDAD EUROPEA IT IS A PRIDE TO CONTRIBUTE TO THE DISSEMINATION OF KNOWLEDGE IN THE TECHNOLOGIES AND DISCIPLINES THAT ARE SHAPING CURRENT SOCIETY.”



## MEETING OF THE BUSINESS ADVISORY COUNCIL: THE PROFESSIONS OF THE FUTURE

On September 28, the Business Advisory Council (CAE) of the STEAM School met again at our campus to debate about the professions of the future and how to approach the challenge, from the university, for future professions that are still unknown. The CAE consists of top level industrial managers and professionals such as GESTAMP, AIRBUS, EMT, Bureau Veritas, Telefonica, SAS, ENAGAS, INDRA, the Royal Academy of Engineering, IBM, Microsoft, and SENER, among others.

“IN A FUTURE DOMINATED BY ARTIFICIAL INTELLIGENT, IT IS ESSENTIAL TO TRAIN PROFESSIONALS WITH A SOLID TECNICAL BASIS AND EXCELLENT SOFT SKILLS THAT FACILITATE ADAPTATION”



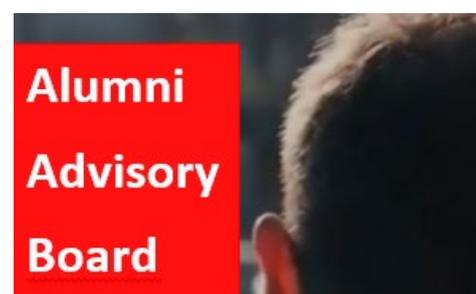
## RENEWAL OF ACADEMIC THINK TANK

Last June 30th we renewed the Academic Think Tank, the academic advisory body. We are welcoming four new members and wish to thank the outgoing members for their collaboration this last year. We made the most of them to develop a work session guided by a dynamic expert and with the general theme “The STEAM School over the next 10 years”. We gathered key topics to focus our thoughts and ideas for the following meetings. Research, talent, sense of belonging, and PBL methodology are topics that came out of that session and which will be tackled in future sessions.

## MEETING OF THE NEW ALUMNI ADVISORY BOARD

After consolidating our professional advisors (Business Advisory Board) and prominent professors (Academic Think Tank), we have included in the STEAM School the advice of those that know us best, our alumni. Last May 31<sup>st</sup> we held the first meeting of the Alumni Advisory Board (AAB) in which we debated how to add more value for our students at the STEAM School. Fifteen former students attended and all the members of the School Board. Many very interesting proposals were made and will be reviewed by the School Board to assess their implementation.

“15 FORMER STUDENTS AND ALL THE MEMBERS OF THE SCHOOL BOARD...”





## RESEARCH PROJECTS FINANCED BY THE UNIVERSITY

As in previous years, Universidad Europea announced grants for research projects for the year 2022, defined in the University's Plan to Promote Research.

With these grants, the university hopes to lend continuity to its science policy, which is committed to the development of quality R&D+i and promoting the professional research development of its faculty.

It should be noted the interest for developing and strengthening research in areas as diverse as Artificial Intelligence, Psychology, the Social Sciences, Judicial Sciences, Communication, and Education, which encourages relationships between the different areas of our university.

The active research groups from the STEAM School that were given grants appear on the right:

- "Development of new ecological binding systems for the process of Metal Injection Moulding". IP: ALICIA PÁEZ PAVÓN.
- "Study of High Sensitivity traits and their relationship with psychological and contextual variables in adults and young adults in Spain". IP: MARÍA DE LA LUZ MORALES BOTELLO.
- Study of cellular and subcellular interactions of graphene-based nanomaterials. Analysis of the toxicity and internalisation in human cells". IP: ARISBEL CERPA NARANJO.
- "Study of photoluminescence, biocompatibility and biodegradability of particles based on nanoporous silicon structures in biological media." IP: DARIÓ GALLACH PÉREZ.
- "Identification of factors that affect the right ventricle in ischemic and non-ischemic cardiomyopathy". IP: HÉCTOR ESPINÓS MORATÓ (UEV).
- "ProRealSim v.1.0 meter for the evaluation of the realism in simulated clinical environments". IP: GLEYVIS CORO MONTANET.
- "Málaga Go – Gamifying the city. Relationship between emotion and videogames to improve the view of cultural heritage for players". IP: CARLOS MORENO MARTÍNEZ.

## DR. MARCOS LÓPEZ-CANIEGO JOINS OUR FACULTY

The STEAM school is proud to include among its faculty Dr Marcos López-Caniego. Expert in astronomy and processing signals, he has contributed to more than 200 scientific publications and collaborated in space missions such as the James Webb, Hubble, Planck and Euclid. Worth highlighting are his studies on filtration, detection and characterisation of galaxies and galaxy clusters from data extracted from Cosmic Microwave Background (CMB). His enormous experience will greatly benefit teaching and research at our School, especially by directing final degree projects in Physics and Computer Sciences.

Más información en  
link [»orcid.org/0000-0003-1016-9283](https://orcid.org/0000-0003-1016-9283)





## UEM FORMULA STUDENT RACING CLUB COMPETES AGAIN AT SILVERSTONE AND BARCELONA

COVID-19 has affected the Formula Student Racing Club for the past two years and the loss of students with experience. The challenge for the 21/22 season was to relaunch the club, enlist new students, and work closely together with the same goals. Work on the race car was divided into departments in order to have more control over the tasks being carried out. Competing at Silverstone was a logistic challenge in itself. It is a competition of constant emotions where both race cars and participants are pushed to the limit. This is where some problems arose in the vehicle from which we obtained much feedback on the design and manufacture that was of great help in correcting errors before participating in the FSS competition



in Barcelona. This last competition fulfilled expectations. The race car passed all the safety tests, the static events (Cost, Design, and Business Plan) and we were finally able to enjoy the dynamic events where the race car competed with other universities on the acceleration, endurance, skidpad and autocross events. In the words of the team leader, Rodrigo Caban, 'participating in the UEM Formula Student you take away a lot more than you can imagine. You learn and apply in a practical way the contents you are getting in class, and confront problems that, to resolve them, you must carry out an individual research task that provides a real perspective of the world of work. You have to learn how to manage stress and work in a team in all sorts of circumstances providing constant development of social and emotional skills.' »

“YOU HAVE LEARN TO MANAGE  
STRESS AND WORK IN A TEAM”  
Rodrigo Cabana (Team Leader)

## DATATHON WITH GOOGLE AND MAKING SCIENCE

Last June the first edition of the Business & Data Challenge organised by the Universidad Europea in collaboration with Making Science and Good Cloud Education took place. For three days, the participants worked together, both in person and online, on sets of data and proposed innovative solutions to offer the best client experience, to facilitate the search and discovery of products, and the best recommendations. The winning team, made up of students in the Mathematical Engineering degree at the STEAM School, presented an investment project for student residences based on their use and maximum exploitation throughout the year.





## CELEBRATING OUR 20TH ISSUE OF EUROPEAN RESEARCH REVIEW IN ARCHITECTURE (REIA)

REIA is a platform for disseminating research in the field of architecture and related areas. In this way, the Universidad Europea de Madrid takes on the mission of encouraging research in order to expand our knowledge.

We are celebrating 10 years (20 issues) by organising a special event with the presence of a significant number of researchers, theoretical scientists, doctoral candidates, historians, critics, architects, etc.; in short, with so many of those, who over the years, have made original and rigorous contributions to architectural knowledge.

“...A FORUM OF BEST PRACTICES AMONG TEACHING STAFF AT LEADING EUROPEAN UNIVERSITIES IN PBL METHODOLOGY...”

## IV EUROPEAN WORKSHOP ON PROJECT-BASED LEARNING

On Friday November 25th, the IV Edition of the European Workshop on Project Based Learning was held. This is a forum of best practices among teaching staff at leading European universities in PBL methodology. The event was organised by the UE STEAM School and held in person at the Villaviciosa de Odón campus. It included three roundtables and a final debate. The guest teachers and participants shared experiences and got an update on the latest in PBL, demonstrating that our Schools are still a reference in this methodology.

## EXPANSION OF THE PHYSICS LAB

With the arrival of the fourth-year physics degree and faced with the need to improve the space devoted to lab practice, we will shortly have a new space where the experiments that cover the learning objectives of both the fourth- and the third-year studies will be located: experiments regarding electromagnetism, solid state physics, electronic instrumentation, quantum physics, nuclear and particle physics.

For this purpose, a dark room has been created where the majority of quantum, optical and laser physics will be carried out. There is a workbench and four cabinets to house a safe where sensitive materials will be kept, such as radioactive isotopes. Experiments that require darkness will be carried out in this space, such as the Zeeman Effect, electron diffraction and those experiments that require the use of a laser.

Outside the room there is a screen for projecting images of the equipment available both in the dark room and the adjacent research area. There is also an area with a U-shaped workbench where experiments using X-rays, spectrophotometers of solid samples, and the AFM equipment will be carried out. This area will be a specialised workspace and focussed on sensitive and delicate experiments.

Third-year experiments, such as ferromagnetic hysteresis, magnetic induction, hot bodies, Planck's law, the Hall Effect, and measuring the speed of light will be carried out in different space.

The last area will be for experiments that correspond to the four-year course, such as one- and two-electron fine-structures, capacitance of metals, the Compton Effect, spin resonance, and the Balmer series, among others.

There are also workbenches in accordance with the type of analysis to be carried out. There is suitable space for equipment and sufficient space for computers and other necessary devices.



“WHEN YOU EXAMINE INTELLIGENTLY EVEN THE MOST USELESS EXPERIMENTS, THESE CAN LEAD TO THE MOST SENSATIONAL DISCOVERIES”

(Max Planck)



## MARÍA GÓMEZ PISTONO, AT QATAR AIRWAYS

If a year ago I was shown a preview of what my life would be today, I would not have believed it. My name is Maria, UEM alumni with a degree in Aerospace Engineering, having graduated last June 2022. UEM gave me many of the tools that I needed to open the doors that lead me to my ideal profession today. With a grant from Iberia Express in 2021, I discovered the desire to know the world could not be limited to a couple of exchanges and that my professional future was in the industry that encourages us to fly: commercial aviation. I began my career as an analyst at Revenue Management.

A year later, UEM offered me the opportunity to study my last semester at Embry Riddle Aeronautical University, the number one university for aviation in the world. There I did my last degree subjects. The more I explored, the more I learned, and the more opportunities came my way. The experience inspired me to continue growing in the profession and I am now in Doha, where I moved just after graduation to work. I belong to the strategic and planning team for fleets and networks at Qatar Airways, the most highly valued airline in the world. As the Universidad Europea says, "Go further".

## PABLO DIEGO PASTOR, AT FOSTER & PARTNERS

I studied the Fundamentals of Architecture at UEM, all in English. I did my fourth year at TU Delft, Holland, with Erasmus and on finishing the Bachelor's, I did a Master's for Certification at UEM. Shortly after, I went to Bologna to study a architecture course devoted to expositions. Today I am working for Foster & Partners in their London headquarters. My job at the studio is very diverse. At first I was in a team in charge of preparing international tenders, I am now working on small-scale projects located in England. This way I can see the different stages of a project. Furthermore, the studio won a tender last year to build the Gay Pride Pavilion and this year an internal tender was organised to recycle the materials of the pavilion. My proposal won and I appear with the scale model in the photo.

I was chosen for the Madrid World Construction Capital as one of the '35 under 35' in Spain.



THE SCHOOL IS A UNIQUE  
EXPERIENCE, TOTALLY  
INTERNATIONAL AND THE  
WHOLE WORLD IS NEAR.



## RAÚL ÁLVAREZ, ON THE ASTON MARTÍN RACING TEAM

Raúl Álvarez, a graduate of Mechanical Engineering at Universidad Europea de Madrid, is now working at the successful Aston Martin Formula One racing team and spoke to us about his experience and how his time at Universidad Europea helped him to prepare. Raul is currently working as a design engineer for composites, which is responsible for transforming the aerodynamic surfaces that the department of Aerodynamics is designing into physical manufacturable parts. His favourite memory of Universidad Europea is having worked for many years on the Formula Student team where he spent many hours during his degree designing parts and working in the Manufacturing department.

After all that effort he felt fulfilled on seeing the race car compete on several occasions at such iconic racetracks as Silverstone. After doing a master's degree in Motorsport Engineering at Oxford Brookes University, Raul describes his professional stage as an "incredible period of joy seeing the car you have been working on cross the finish line in first position."

## ALBERTO REQUES DEL RÍO AT SAN FERNANDO ROYAL ACADEMY OF FINE ARTS

Alberto Reques del Río, graduate in Architecture, received a scholarship from the "Real Academia de Bellas Artes de San Fernando - Fundación Arquitectura COAM".

The judges have awarded the scholarship to Alberto Reques del Rio unanimously. He graduated in Architecture from Universidad Europea de Madrid. The judges highlighted Alberto's proposal for having met the following criteria: originality of the proposed topic, the feasibility of the project, the profile of the research candidate, language skills, and prestige of the foreign institution that has accepted him. The scholarship is for nine months and will receive a stipend of 15,000 euros to cover the costs of the research project chosen.

Sigfrido Herráez and Tomás Marco, directors from the San Fernando Royal Academy of Fine Arts handed the scholarship to Alberto at the headquarters of the COAM\* and the Fundación Arquitectura COAM.

The goal of this individual and indivisible annual scholarship is the development of a research project, previously proposed and accepted by a prestigious institution of international recognition and based abroad (university, academic institution, or creative research centre). This scholarship provides a stipend of 15,000 euros that the beneficiary will use for research, including travel expenses, tuition at the institution chosen and the cost of room and board.

\*Official Association of Architects of Madrid

