

# ParisTech

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**CHRISTIAN LERMINIAUX**  
President of ParisTech

## EDITORIAL

In a world that is constantly changing, competency-based learning is instrumental when it comes to training tomorrow's engineers, as it allows staff and students to associate knowledge and expertise acquired through study with the skills required by potential employers. This approach helps students realise that they are developing transferable skills that will serve them in a wide range of settings.

The ParisTech schools are in the process of renewing their accreditation with the CTI\* and over the past few months have been actively working on ways to improve their engineering programs, in which competency-based learning plays a pivotal role.

In line with its mission to enhance the training programs on offer at its member schools, ParisTech has provided crucial support. For example, the network's Education Committee and the RACINE team, who provide training on teaching practices for academic staff, have organized a number of workshops and training sessions on the competency-based approach to give staff the opportunity to talk to experts and try out tools for themselves. Great news for engineering programs across the network!

\*French national committee responsible for accrediting engineering schools

## FEATURE

# Competency-based learning: A promising educational approach



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Project Manager for Teaching Practices, RACINE

**VINCENT JOSSE**  
Apprenticeship Director at the Institut d'Optique

**Competency-based learning is a major topic on this year's RACINE ParisTech staff training program. What are the benefits of this approach?**

**JBL:** Competency-based learning (CBL) or competency-based education (CBE) is about equipping people to apply knowledge and competencies (hard and soft skills) acquired through learning to real-world situations. Done well,



it can be a useful framework for training programs and continuous improvement. It helps engineering students make connections between their different study modules, and thus makes the learning experience more meaningful. From the point of view of staff, competency-based approaches improve the overall consistency of teaching and contextualize learning.

**How has the Institut d'Optique implemented competency-based learning? What difficulties have you encountered?**

**VJ:** We began exploring CBL in 2020. It's a team effort. Some ten lecturers and professors are involved, two of which have been granted special leave to work on the topic. We're

tackling each level in small groups and our aim is to involve as many people from the teaching community as possible, for example by arranging themed training days and events. We also have support from partners like the ParisTech network, the Université Paris-Saclay and the Institut Villebon-Georges Charpak, with whom we work together and share ideas.

In 2020, we also created a new training semester for our trainees, based on an innovative teaching method. This created a positive dynamic and acquainted a significant number of staff with competency-based approaches in education and learning. In 2022, in collaboration with all members of our socio-professional network, we revised the competency descriptions for our



programs, which among other things meant analyzing professional status and opportunities for employment or further study. This helped us establish a clear rationale for our competency-based approach, define a framework for training, and review our RNCP\* sheet in preparation for the CTI\*\* accreditation. We're now prototyping and conducting tests on some programs.

We've encountered two major difficulties along the way. Firstly, we had to clarify terminology. The word "competency" has a thousand different definitions and sparked countless debates. Aligning demands from the various institutions and actual usage in the field wasn't an easy task. We had to agree on what terms and definitions to use. The second challenge was getting faculty on board. We addressed this by providing a clear rationale and allowing staff to try out the methods for themselves. Most of the initial reservations have now been overcome.

### How does RACINE plan to raise awareness of CBL among academic staff, and what training will be provided?

**JBL:** Our team started by doing some training themselves. Key examples included a training session with Yvan Pigeonnat (INP Grenoble) and a day of training on CBL at CY Université.

In 2023, we organized a series of three webinars with four speakers (including experts from the CTI) who are recognized for their skills and expertise by universities and graduate engineering schools alike. A total of 190 people attended. The RACINE team also took part in a workshop organized by ParisTech in which the network's members brainstormed ideas relating to CBL, focusing on learning and assessment contexts.

We then added a workshop to our 2023/2024 staff training catalogue. The workshop, titled "Competency-based learning – What are the implications for my teaching practice?", first ran in February 2024. Four instructors were involved: Valérie Camel (AgroParisTech), Saïda Mraïhi (Arts

et Métiers), Sarah Lemarchand (Télécom Paris) and Fabienne Bernard (Institut d'Optique). The workshop was very well received – so much so that a second session has already taken place this year.

Lastly, in March 2024 we ran another workshop, aimed at encouraging inter- and intra-school synergies in the application of competency-based practices. The workshop was called "Working together to manage and implement competency-based approaches in our institutions" and drew on the collective intelligence of those present: deans of studies, program directors, and leaders and members of various competency-related working groups. It too was highly praised by participants.

### You've taken part in the events and training sessions organized by ParisTech. How have you benefited from these? In what ways have they helped your school make progress on this topic?

**VJ:** The three CBL webinars organized by RACINE in 2023 – especially the sessions with Benoît Escrig and Didier Erasme and the

seminar organized by ParisTech – helped us reflect on our strategy. The events were open to a wide audience and were instrumental in helping attendees understand and assimilate the key concepts of CBL. We found the sessions with members of the CTI very helpful, because they provided a more people-centric, less institutional perspective.

The RACINE workshops, where we were in smaller groups, gave staff from different schools an opportunity to meet and share ideas. That created a great dynamic between the schools. We realized we were all in the same boat and more or less at the same stage. It also became clear that there's no single answer – each school has its own way of doing things. The key is to make a start!

\*RNCP: French national directory of professional certifications

\*\*CTI: French national committee responsible for accrediting graduate engineering schools

## ZOOM



**GÉRALD PEYROCHE**  
Director of the Institut Villebon  
– Georges Charpak

### The Institute is approaching its 10<sup>th</sup> anniversary. Tell us what you've achieved so far.

The Institute was set up with a clear goal in mind: to help students from diverse backgrounds access top positions in public- and private-sector organizations, by offering inclusive science and technology programs. Our undergraduate Science & Technology degree is one example.

We've seen excellent results: an 80% success rate over three years, with 95% of students continuing to further study, and our first alumni entering the labor market and securing their desired job.

Why? We put it down to our non-conventional teaching formats and the personal support provided by the teaching team, student tutors from graduate engineering schools and mentors from partner companies.

This support boosts students' engagement and wellbeing, encourages them to stay in education, and helps them plan for the future. The multidisciplinary nature of our courses contributes too, giving students a fresh perspective on each subject and even helping them master areas they previously found challenging. The paths chosen by our graduates are not always what you might expect based on their prior educational record – studying here opens up doors despite the initial challenges these students face.

On our undergraduate program we regularly experiment with more unconventional teaching practices. Over 60 have been tested already, with very positive results. For some, we've had time to conduct research that has proven their impact on student success. Beyond the undergraduate program, we're carrying out action research at the recently created Educational Experimentation Center (CEP). To date, over 200 people from a wide range of higher education institutions have been involved, and more than 50 papers and presentations have been prepared for international conferences.

Our only regret is that we don't yet have many spin-offs in more traditional higher education settings. This is due to the time lag between experimentation and implementation, and the difficulties inherent in scaling up.

### More good news – the Institute's status as a GIP (Public Interest Group) has just been renewed. What's the roadmap for the years ahead?

Our goal is very clear: we want to strengthen and develop the Educational Experimentation Center. The aim is for the center's activities to benefit external organizations as well as members of the GIP. For example, in Clermont-Ferrand, the CEP is going to help create a graduate engineering school focused on sustainable development.

The Institute's business model is fragile – to achieve our goals, we need €350,000 of annual funding on top of the funds contributed by the members of the GIP. This means we are very dependent on investments from the corporate sector. The members of the GIP play a key role here, leveraging their reputation and networks to attract interest from companies – for example, it was the ParisTech Foundation that successfully raised the sponsorship money for the creation of the Institute!

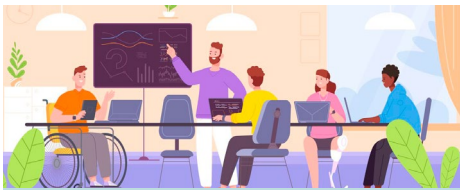
# THE LATEST FROM PARISTECH

## COMMUNICATION

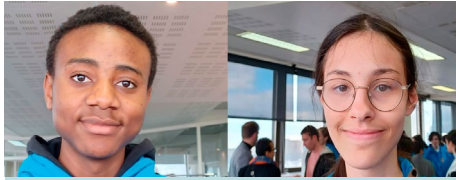


French magazine *Le Monde des Grandes Écoles et Universités* has published a special issue dedicated to ParisTech. Read about ParisTech's ongoing efforts to showcase France around the world as a center of excellence for engineering by creating a united community driven by strong values and a shared vision for the future of engineering, and discover how the network is helping train a new generation of engineers committed to developing sustainable solutions. The [digital version of the magazine](#) is available on the ParisTech website.

## DIVERSITY



The alumni survey run by the Diversity Committee closed on 15 February. Its aim was to find out what former students think of the diversity training they received during their time at the ParisTech schools, and whether they encounter issues relating to diversity in their day-to-day work. The survey was answered by 110 former students from the past 15 years, representing over 10 different countries. More than 35% of respondents said they encounter issues relating to intercultural management. As well as internationality, a number of other topics were mentioned, including the value of gender equality and women in the workplace, and how diversity is addressed in recruitment processes.



The secondary school pupils taking part in the “Ambition Sciences” ParisTech/[ENCPB mentoring partnership](#) have had a busy year. An impressive 12 events have taken place, including a tour of Arts et Métiers and Chimie ParisTech – PSL, and experimentation sessions in the cutting-edge laboratories of the Lycée Pierre-Gilles de Gennes. To conclude the program, the pupils eagerly prepared a presentation to tell their parents all they've learned during the exciting and rewarding year. [Amal](#) and [André](#), final-year secondary pupils from Paris's 19<sup>th</sup> arrondissement, told us how valuable the partnership has been for them.

## EDUCATION



A seminar on the [ecological transition at the ParisTech schools](#) took place at Mines Paris – PSL on 7 March. The event brought together some forty people from across France, including researchers, external experts (Projet Celsius, Labos 1Point5) and administrative staff, students, and members of student associations from all seven ParisTech schools. The discussions and presentations covered changes to education programs, the growing focus on sustainable and social development in research, the governance strategies of the different institutions, and how they are motivating and encouraging all their members to play their part in the transition.

## INTERNATIONAL



The [ParisTech International Admission Program](#) is back! The first phase has been to promote the program in our partner countries: Argentina in April, with trips to the University of Buenos Aires, the National University of Córdoba and the National University of the Littoral, during which the ParisTech delegates met with various departments

and presented the admission process to students. Trips to Brazil and China then took place in May. Students can apply from 1 June. The program has been expanded beyond the original partner countries – [Argentina](#), [Brazil](#), [China](#) and [Colombia](#) – and is open to candidates [anywhere in the world](#), in particular in [Asia](#). The application deadline is 19 September 2024.

You are a top bachelor student in S&T or engineering?

Discover [ParisTech International Admission Program](#)

Register for the webinar [on June 11, 2024](#)



Shortly after the 2024 ParisTech International Admission Program opens on 1 June, the ParisTech schools are running an online event to explain the application process and present their engineering programs to potential candidates. The event is on 11 June and is open to students anywhere in the world. It will be an ideal opportunity to ask questions about the program and meet representatives from the network's seven schools. Save the date: 11 June, 2pm (Paris time). [Sign up here](#).

## INTERNATIONAL ACTIONS

### International Agreements

Renewal of the framework agreement with PU Javeriana (Colombia)

Renewal of the double-degree agreement with PU Javeriana (Colombia)

SMILE agreement (student exchange) with the National Polytechnic Institute (Mexico)

### International Missions

Promotional trip to Argentina 22–26 April 2024

Promotional trip to China 16–21 May 2024

Promotional trip to Brazil 13–24 May 2024

### Visiting Delegations

Visiting delegation from the National University of Córdoba (Argentina) 26 April 2024



**AgroParisTech**

**AgroParisTech has launched a new science podcast**

Called “Parlons Sciences !” (Let’s Talk About Science), the podcast features AgroParisTech scientists who are helping build the world of tomorrow. Listeners will learn about the scientists’ latest research papers – all of which can be freely accessed via [AgroParisTech’s HAL portal](#).

In the [first episode](#), we join eco-anthropologist Samuel Roturier and ecologist Thierry Spataro for a journey into the boreal forests of Sweden with their reindeer, lichen and indigenous population – the Sami, and hear about the role of fire in this picture-perfect landscape.



**Arts et Métiers**

**New report by Arts et Métiers Think Tank concludes that research and industry need engineering graduates with PhDs**

France’s *Grandes Écoles d’ingénieurs* (graduate engineering schools) and the prestige of the diploma they award do not have a ready equivalent outside France. Elsewhere, engineering programs are run by universities, and completing a PhD is the highest form of academic achievement, but in France only 6% of engineering graduates pursue their studies at PhD level. The perceived superiority of *Grande École* programs is so deep-rooted that PhDs are undervalued and associated with a lack of employability.

The [new report](#), co-led by Rémi Bastien and Michael Pereira, breaks down prejudices and underlines how engineering graduates can benefit from doing a PhD. It can be consulted on the school’s website.



**Chimie ParisTech – PSL**

**Chimie ParisTech – PSL puts environmental issues in the spotlight for SEES week**

“Students for Ecology and Solidarity Week” (SEES), held from 25 to 29 March this year, is a national initiative and very popular at Chimie ParisTech – PSL, where there is a strong commitment to environmental and social initiatives. Other examples include the creation of a compulsory first-year module on the role of engineers in the environmental transition, and the activities of student association Éco-sciences. As part of the new module, former student Maxence Cordiez (class of 2014), gave a talk on energy in the Moissan lecture hall. Écosciences also played an active role in the SEES event, coming up with an exciting program of events for the CPéeeene community including games, gardening workshops, a clean run, a film screening and a talk by ocean preservation association Bloom.



**École des Ponts ParisTech**

**Mélanie Perroud appointed Head of Digital Transformation at the École des Ponts ParisTech**

Her mission is to harness the potential of digital technologies to advance the school’s “*Ponts Ambition 2030*” strategy which aims to transform the school and prepare it for a new future.

Assuming a cross-functional role, she will work with all the school’s departments and seek to identify opportunities to better support individuals as they work towards the organization’s collective goals.

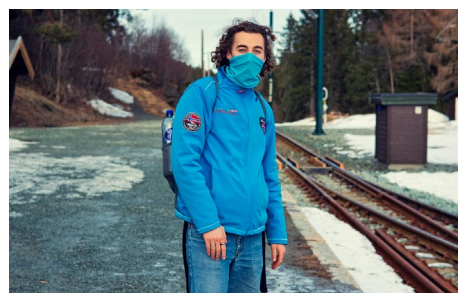
Visit the [school’s website](#) to read more about her background and new role.



**Institut d’Optique**

**Two alumni from the Institut d’Optique named on the Forbes “30 under 30” list**

Manon Loustau and Tinou Seguin, who graduated from the Institut d’Optique’s Innovation & Entrepreneurship program (FIE), were selected for the “Industry and Manufacturing” category of the Forbes’ 30 Under 30 Europe Class of 2024. Manon and Tinou created their startup, Libu (Talence), in 2019. Libu is developing a dynamic LED lighting solution designed to improve employees’ health, sleep and wellbeing at work by taking into account their circadian rhythm. The startup recently raised 1 million Euros to accelerate its growth. Congratulations!



**Mines Paris – PSL**

**Crossing Europe by train: Robin Nizou’s ecotrip to Norway**

As part of [ATHENS](#) week, which allows students from Mines Paris – PSL to complete a one-week short course elsewhere in Europe, Robin set himself the ambitious goal of traveling to Trondheim by train. His aim was to spark discussions on how we travel and encourage people to adopt more sustainable forms of transport. The project was made possible by the Fondation Mines Paris and supported by the school’s Directorate for Education, underlining the school’s desire to support initiatives that reflect its own environmental commitments.

**ParisTech,**

**A network of leading graduate engineering schools**

ParisTech is a network of leading graduate engineering schools that offer research-based engineering programs with a strong international focus and close ties with industry. Founded over 30 years ago, it promotes the engineering programs of its member schools in France and worldwide.

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