

Informal application guidelines for positions at DepMAP

The following document provides generic, informal guidelines for applicants to positions at the Department of Applied Mathematics (DepMAP), École polytechnique¹.

This is not an official document, but is intended to provide you with general information on what you should expect from the hiring process and how to shape your application.

1 The process and timeline

For information about the different types of positions existing at École polytechnique, please refer to section 3. The typical selection process for candidates to *Assistant Professor* positions is as follows:

- **Application** (Interview date – 8 weeks)
- **Invitation for interview** (Interview date – 4 weeks)
- **Job talk (video)** (Interview date – 2 weeks)
 - Candidates invited for an interview are requested to record and submit a seminar, including a research pitch and summary of past research (up to 10 minutes) followed by an in-depth seminar on a specific research topic of their choice (up to 30 minutes).
- **Interview**
 - Candidates may choose to be interviewed on-site or online.
Interview format: The interview will consist of a 10-minute presentation in front of the selection panel (*comité de sélection*, see section 1.1) focused on the candidates' future research agenda, followed by 20 minutes of discussions with the selection panel about research and teaching.
- **Decision and communication** (Interview date + 4 weeks)
 - The selection panel provides a ranked list of potential hires to the DepMAP and to the general board (*Direction de l'Enseignement et de la Recherche*) of École polytechnique for validation. The selection panel may choose not to list a candidate if it deems the candidate should not be hired. The DepMAP or the general board of École polytechnique may decide to apply changes to the ranked list before approval, though this kind of changes are rare. The final decision is then communicated to the candidates following the order of the approved list.

Remark: The hiring process at École polytechnique does not differ substantially from that of typical French institutions, such as other engineering schools, universities, *CNRS*, and *Inria*. Usually, all candidates are interviewed on the same day and should not expect to have one-to-one meetings with faculties or team members.

Note that the specific process for the position you will apply to may still differ from the above (you might or might not be asked to record your job talk, the length of the interview in front of the selection panel may vary,...). In any case, you will receive all the information by email after your application.

¹The Department of Applied Mathematics (DepMAP) coexists with the Center for Applied Mathematics (CMAP). The former is often referred to as “the department” and the latter as “the laboratory.” Essentially, the department is responsible for the teaching, whereas the laboratory focuses on research activity (though their boundaries are not always so sharp). The hiring of new faculty members with teaching duties is therefore managed by the DepMAP, though hired faculty also become members of CMAP after hiring.

1.1 Selection panel

At École polytechnique, the selection panel (*comité de sélection*) is composed of 6–10 members, half of which are external to the DepMAP. These members are responsible for selecting candidates that will be interviewed, interviewing the candidates, and providing a ranked list of potential hires to the DepMAP and the board of École polytechnique. At least one member is designated the gender equality and parity officer that acts to respect and advance Polytechnique’s Gender Equality Plan (more information at <https://www.polytechnique.edu/en/school/gender-equality-plan>).

1.2 File Submission

Candidates must submit their applications through the following link:

<https://candidatures-calliope.polytechnique.fr/calliope-fo/recherche/index.php?lang=en>

Calliope is the official candidacy platform of École polytechnique. The portal contains detailed information on all available positions as well as their selection criteria.

2 The application package

The following documents are required for your application:

Remark: Candidates applying to multiple positions are expected to submit a *unique research statement* to all applications. Their cover letter and teaching statement can, however, be tailored to each position.

2.1 Cover letter

The cover letter is a one-page letter meant to present you and your application. Though it often includes a (very short) introduction to your past research, teaching experience, and research agenda, you should avoid simply repeating information that is already on your CV, teaching statement, or research statement. The goal of the cover letter is to contextualize your application to the position and to let us know why you want to join the department and why you would be a good fit.

2.2 Teaching statement & Teaching plan

The teaching statement and teaching plan should be 2–4 pages long depending on your experience. Its goal is to present your teaching experience, teaching philosophy and approach, and include potential contributions to the department both in terms of existing and (potentially) new courses.

General guidelines and tips. The teaching statement typically involves a mix of biographical and philosophical aspects of your teaching. As such, it should include details on your teaching experience, teaching evaluations, didactic training, and methods you have deployed in the classrooms. At the same time, it should also reflect critically on this experience, explaining potential innovative approaches you would like to try and how it all relates to your teaching philosophy (i.e., how you think about teaching). Depending on how much teaching experience you have, you can consider different balances between these two aspects. Keep in mind that student supervision is also an important aspect of your teaching duties.

Your statement must also include a forward-looking portion, where you consider your potential contributions to the department. This includes courses you would be prepared to teach (and how you plan on doing so) as well as new courses you could propose in the near future. While preparing this portion, consider the thematic spectrum of the department and the position and make sure to clearly put forward how you see yourself fitting within the department.

You can find a list of existing courses at the DepMAP at <https://www.polytechnique.edu/en/education/academic-and-research-departments/applied-mathematics-department-depmap>.

Teaching at DepMAP. Depending on the program, courses are structured in a variety of ways at École polytechnique. Indeed, the pedagogical year may be divided into 3 periods of 10 weeks (for the “engineering cycle”²) or 2 semesters of 15 weeks (for the Bachelor program). Courses may last 6 weeks, 9 weeks, or an entire semester with classes ranging from 1.5 to 2 hours.

²The “engineering cycle” (*cycle ingénieur*) is the traditional, flagship program of Polytechnique. Other programs include the Bachelor, second-year master (M2), and Masters of Science and Technology (MScT).

For instance, a typical course of the “engineering cycle” lasts 9 weeks (with an additional week for exams) and is composed of 9 full classes (*cours magistral*), taught to the entire class (ranging from 20–70 students for specialized courses, to 500 students for first-year classes), and 9 recitations (PC, *petite classe*), taught to groups of up to 30 students. Depending on the type of course, each class may last from 1.5 to 2 hours. A particularity of Polytechnique is that most recitations are taught by professors (permanent or adjuncts) rather than teaching assistants (TAs).

All professors of École polytechnique are responsible for 128 hours-equivalent-TD (hTD) of teaching³. One hour of recitation is worth 1 hTD whereas one hour of a full class is worth 1.5 hTD. Thus, a teaching a complete class is worth 45 hTD ($9 \times 2h \times 1.5 + 9 \times 2h$). Considering that administrative and advisory responsibilities also accumulate hTDs, a professor at Polytechnique will be responsible for the equivalent of 2 complete classes per year. Typically, however, recitations are taught by other professors (e.g., junior or adjunct professors), so that the normal teaching load is closer to 3 courses per year.

2.3 Research statement & Research plan

The research statement and research plan should be 3–5 pages long depending on your experience. Its goal is to present and contextualize your past research (beyond what is already presented in the CV) and show how it connects to the research you plan to do moving forward. You should also discuss how your past and future research fits with the position and how it complements that already being done within the DepMAP. Identifying potential collaborations within the DepMAP is encouraged.

The typical research statement has two parts:

- Past research experience (2–3 pages)

General guidelines and tips: This first part should feature a cohesive narrative of your past research in which you describe your themes, contributions, and publications. Include also important achievements in terms of third-party funding (grants, fellowships) and (international) cooperations. Keep in mind that this is not an exhaustive list of your accomplishments (that is what the CV is for). Instead, you should curate your important contributions considering the position, the department, potential collaborations, and what supports your future research plans (see next). Indeed, keep in mind that the feasibility of your research plan will in part be judged based on what you have accomplished until now. That being said, be mindful that not all readers are experts in your field and that if you do not explain things clearly they might not be able to properly assess your achievements. On the other hand, some readers will be experts, so beware of not “overselling” your contributions (or the impact of your research plan, see below).

- Future research plans (2–3 pages)

General guidelines and tips: This is your actual research plan. Here, you should describe (i) your main research directions, (ii) the methods you will use to achieve them, and (iii) their potential outcomes and impact. Keep your plan focused on 3 to 4 thematic foci, making sure to anchor them on your prior research (as described above) and connecting them to the orientation of the position and department. Explicitly mention potential collaborations inside and outside the DepMAP, reflecting on how they can enrich your research goals. You do not need to provide extensive methodological details (this is not a grant application), but you should include a description of your overall approach to tackling each research direction [(ii)]. The feasibility of your plan will be judged based on your past research as well as how convincing your approach to the problem is. In terms of impact [(iii)], consider short- (1–3 years), medium- (4–7 years), and long-term (10 years) horizons. In other words, the research plan is mix of research goals that are readily attainable and the broader vision of your research program. Conclude your plan by reflecting on potential funding opportunities for your research and planned (or already submitted) grant proposals.

Candidates can reach out to members of CMAP (<https://cmap.ip-paris.fr/en>).

2.4 CV

The academic CV is not a résumé: it is supposed to be a long, comprehensive list of your achievements. An academic CV includes (often in this order):

1. Personal information: name, e-mail address, website/ORCID/Google Scholar URL (optional)

³TD: *Travaux Dirigés*, basically what is called a “recitation” in English. At Polytechnique, you will also hear this type of class being referred to as a PC (*petite classe* meaning “small class”).

2. Academic positions (if any): month/year, job title, institution, location. You may include both academic and non-academic positions, but they should be clearly separated.
3. Education: academic degrees, advisor and topic of thesis and dissertation
4. Fellowships and awards (if any): year, name of the prize, awarding institution, location
5. Grants (if any): duration (month/year), funding agency, type of funding, project title, financial volume, role. If you played a key role in a project (e.g., assisting in proposal writing), you may also list them here as long as you clearly specify it in your role.
6. Publications: you must include a complete list of all your publications. You may at this point list some highlights (5–10 main publications) and refer to the full list at the end of your CV. You may include a remark describing the ordering policy for multiple authors publication. If the list is long, you can include summary statistics.
7. Softwares and programming skills: list softwares and code bases you have developed or substantially contributed to, providing repositories if available. Describe your programming skills and experience as well as preferred programming languages.
8. Invited talks: you may also include conferences to which you were invited, but decided not to participate, describing the reasons for doing so in a separate subsection.
9. Academic self-administration (if any): participation in committees, assemblies, TPC (technical program committee)... Include month/year, committee, role.
10. Teaching/Supervision: university, type of event (class, tutorial), student level, course title, semester/year, number of students. Include also supervision of bachelor/master theses and PhD students (even if you acted as a “technical supervisor” rather than the main advisor).
11. Membership to scientific associations: name of professional society, function (if any) with month/year
12. Referee activities: list of journal/conferences.
13. Languages (optional): include language skill level. Note that knowing French is not a prerequisite for the position.

2.5 Recommendations

You will be asked to provide name and contact of 2 to 5 references (for an Assistant professor: 2 to 3 references; for a Professor or Monge: 2 to 5 references). Should you be selected for an interview, we will contact them directly requesting a recommendation letter. You should ensure beforehand that they have agreed to write you a recommendation letter and inform them that they will be required within a limited time window after your application. You are responsible for ensuring that we receive all required recommendation letters in a timely fashion once they are requested.

3 Types of positions at École polytechnique

There are essentially four types of positions at École polytechnique: *Assistant professor* (“Professeur assistant”), *Monge tenure-track professor* (“Professeur Monge”), *Professor* (“Professeur”), and *Full professor* (“Professeur de classe exceptionnelle”). These are teaching-research positions (“enseignante-chercheuse” or “enseignant-chercheur”) that include a teaching load as well as research responsibilities (see 2.2).

3.1 Assistant professor

This position is a tenured (permanent) position at early post-PhD level (typically 1 to 7 years after the PhD). It is equivalent to a “Maître de conférences” position in French universities. Traditionally, *assistant professors* at CMAP are expected to change institutions in order to become *professors*. It is therefore not possible to be promoted to *Professor* internally from this position: doing so requires applying again to another institution. Nevertheless, note that these positions are tenured (permanent), as opposed to typical assistant professors position in, e.g., the US.

Salary range: salary is indexed on experience and the minimal salary (no experience after the PhD) is around 42 700€ (gross, yearly). This value goes up approximately 2 800€ (gross, yearly) every 3 years.

3.2 Monge tenure-track professor

This corresponds to a tenure-track position as is understood in the US or other European countries. The recruited individual is appointed to an *assistant professor* position (see 3.1) with a fixed-term contract (6 years split into two three-year contracts). Towards or before the end of this 6-year period, the *Monge tenure-track professor* goes through an evaluation process that can result in their promotion to tenured *Professor* (as in 3.3).

During their first 3 years, a *Monge tenure-track professor* enjoys a reduced teaching load of 88 hTD instead of 128 hTD (see more details in 2.2).

Salary range: salary is indexed on experience and the minimal salary is around 51 550€ (gross, yearly). This value goes up approximately 2 800€ (gross, yearly) every 2 to 3 years up to roughly 65 600€ (gross, yearly).

3.3 Professor

This position is a tenured (permanent) position for experienced individuals and corresponds to a typical full professor position in the US or other European countries. It is equivalent to a “Professeur des universités” position in French universities. The main distinction with an *assistant professor* position are higher salaries and additional administrative responsibilities.

Becoming a professor at École polytechnique (and more generally, in France) requires obtaining a habilitation to supervise research (“Habilitation à diriger des recherches,” more currently known as HDR⁴). For that reason, an *assistant professor* that holds an HDR is often compared to an *associate professor* from the US or other European countries.

Salary range: salary is indexed on experience and the minimal salary is around 51 800€ (gross, yearly). This value goes up approximately 4 200€ (gross, yearly) every 2 years up to roughly 77 300€ (gross, yearly).

3.4 Professor CE

CE (“classe exceptionnelle”) is a special distinction awarded to some professors. In French it is called “Professeur de classe exceptionnelle” and is equivalent to such positions in French universities. The main distinction with a *professor* position are higher salaries and additional administrative responsibilities.

Salary range: salary is indexed on experience and the minimal salary is around 67 900€ (gross, yearly). This value goes up approximately 4 300€ (gross, yearly) every 2 years up to 89 500€ (gross, yearly).

4 FAQ

1. *Should I contact CMAP members to establish collaborations plan?*

Integration within the lab is an important factor for the selection committee. The candidates are encouraged to find from the lab website potential collaborator. They can contact the lab members to see which collaborations could happen.

Collaborations at the scale of the Polytechnique Institute of Paris are also encouraged.

Note that on interview day, candidates will *not* have time to meet and discuss with the team.

2. *Where should I submit my application?*

on <https://candidatures-calliope.polytechnique.fr/calliope-fo/recherche/index.php?lang=fr>

3. *Is a French translation of my doctoral diploma needed?*

Translations are not needed for documents in French or English. We require translations for any other language.

⁴The HDR is a higher education diploma (similar to a masters or a doctorate) that can be obtained after defending a doctorate. It typically involves the preparation of a manuscript that is defended in front of a jury.

4. *Do I need to provide reference contacts for letters of recommendation?*
Yes, your references will be contacted to request letters of recommendation.
5. *Should I write the teaching/research statement and teaching/research plan separately?*
No, they should both be integrated in a single document.