

other positions, email faculty with similar research interests notifying them that you are applying and drawing their attention to your application.

When you get to the interview stage, prepare by researching details of the department and institution before putting together a list of questions tailored to the specific place. You will be given the opportunity to ask questions and you should not waste this; it enables you to learn important information and demonstrate how much you know about the institution. For example, you may wish to ask questions about teaching or the tenure process, or more specific questions like, “I noticed that you don’t offer an algebraic geometry course every year. Is this something that you would be open to adding to your curriculum?”

When you are giving a job talk, practice and prepare. In most settings, you should have a short description of your research that you can deliver to anyone in five minutes or less. If you are interviewing for tenure-track positions, you should have multiple versions of this: one for those with some familiarity with your field, one for mathematicians in all fields, and one for non-mathematical people that you may meet (like Deans!). If you are giving a job talk, which is often a colloquium-style general audience talk, ensure that your talk is accessible to mathematicians far from your field. A great way to do this is to invite your fellow classmates or postdocs, from all fields, to a practice talk. If the talk is virtual, you will have to determine the best method of delivery: slides, handwritten on a tablet or projected via a document camera, or some combination. If you are planning on using a camera that records you at a blackboard, test it and focus it early. If it is too far away or out of focus, it will be difficult to read the board. You should also test your camera and microphone in advance.

For a virtual interview, be prepared with fully charged devices in a well-lit, relatively private and quiet space. Some institutions may even offer you funding to access such a space (e.g., funding to check into a hotel room for a two-day interview). You should be given a schedule ahead of time and can suggest your own edits, based on the realities of your own home life. You should also be sure to get an emergency contact phone or email in case of an internet outage or other technical difficulty.

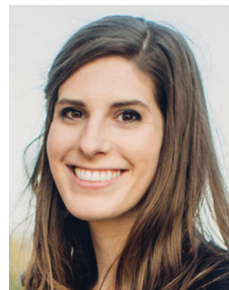
After submitting your application or after interviewing, be patient! It seems that everything is moving at a different speed in the virtual world. Just because you don’t hear anything immediately doesn’t imply bad news.

Post-market

Did you get an offer? Great! Congratulations! If your interview was virtual, see if you can get an opportunity and funding to visit the campus. Enjoy basking in the glow of employment! If you get more than one offer, be considerate in your decision time: other applicants next in line are waiting for you to accept or reject the position. If you did not get an offer, keep your head high. The job market can be

absolutely defeating, and there is an unfortunate amount of luck needed during the process. You have gleaned valuable experience just going through the application cycle. No matter what the outcome, reflect on the process. You may be on the market again in a few years. If you had new ideas to include in your research statement or teaching statement, add them now! You can revise your materials again in a few years when you need them, which will be easier than starting from scratch. Include any job talks that you gave on your CV. Thank your letter writers for their time and effort. You also may have discovered things that you are looking for in a job or location (or, new deal breakers) as you talked to faculty at different institutions. Keep these in mind for future applications!

While the full consequences of the COVID-19 pandemic are yet to be understood, it is clear that skills navigating the virtual world are necessary in the current market. It is important to make yourself visible online, and supplement this visibility with evidence of your technical competency. While this may feel like one more daunting thing on top of a mountain of job application to-dos, I hope that we as a community realize the difficulty of this process and come together to support each other now more than ever.



Kristin DeVleming

Credits

Photo of Kristin DeVleming is courtesy of Kristin DeVleming.

Applying for a Postdoctoral Research Assistant Professorship

Dick Canary

In this brief article, I will offer advice on how to apply for a postdoctoral assistant professorship at a research-oriented university. I will base my advice on my experience supervising the postdoctoral hiring process at the University of Michigan in the academic years 2005–2007, 2008–2011,

Dick Canary is a professor of mathematics at the University of Michigan. His email address is canary@umich.edu.

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and 2015–2020. However, one should be aware that every department and hiring committee will have their own methods and priorities. This advice will reflect my own idiosyncratic viewpoint.

Before Applying

The most important part of the application process is what you have accomplished before you apply. The main goal of your graduate career should be to produce a good mathematical result, prepare yourself to begin an independent research program, and to hone your skills as an instructor.

In your own graduate program, you should take advantage of any opportunities to discuss your research with faculty other than your advisor, postdocs, and other students. I also recommend attending relevant conferences in your field whenever possible. These efforts will pay off intellectually, by exposing you to new ideas and broadening your research horizons, and practically, by introducing you to potential collaborators, employers, and letter writers.

At conferences, I encourage you to engage with senior mathematicians. The best way to do so is to ask them about some facet of their work or the talk they just gave that is related to your own research (since all of us love to talk about our own work), which may naturally segue into a discussion of your work. In discussions of postdoctoral candidates, my colleagues often advocate for applicants that they have met and been impressed by at conferences.

The Application

I will now give advice on individual portions of the application, in roughly the order that I would look at them when reading a file as a member of a hiring committee. You should ask your advisor and others whose opinion you respect to look over your application documents and offer their advice.

Recommendation letters

A typical application will require three research recommendation letters and one teaching recommendation letter. You may consider adding one or two additional research letters if you are certain that they will add something to your file. You should discuss your choice of letter writers carefully with your advisor, as they will likely have some impression of which of their colleagues is a conscientious letter writer. It is good to have letters from prominent mathematicians, but only if they know your work well enough to comment knowledgeably on it. Lukewarm letters from great mathematicians can backfire. I would also encourage you to meet to discuss your research, possibly remotely, with each of your letter writers and to make an effort to carefully explain your research and its motivation in the sort of general terms which are appropriate for a recommendation letter.

When choosing someone to write a teaching letter for you, it is best if you can find someone you have worked successfully with, e.g., a course coordinator or someone who has observed your teaching. I think it is also preferable

to choose someone who has experience writing teaching recommendation letters, since some faculty have never done this before and may produce ineffective letters.

Your CV

Your CV should be concise and easy to read. It should include your undergraduate degree, your PhD date (and advisor), publications, presentations, teaching experience, any awards or honors that you have received, and any service or outreach activities you have taken part in.

Statements

The first statement I look at is the teaching statement. In this statement, I hope to encounter enthusiasm for teaching and respect for students. I like discussions of specific classroom activities that have been successful for the applicant. This is also an excellent opportunity to discuss in more detail any service and outreach activities that you have engaged in. I interpret engagement in these activities as a sign of enthusiasm for teaching. If some aspect of your research is suitable for undergraduate research and you are interested in supervising undergraduate research as a postdoc, this is a good place to mention this. Your teaching statement will not be as long as your research statement, but it should be just as carefully written. A sloppy teaching statement raises concerns for me when I am on a hiring committee. (If you are not enthusiastic about teaching, I recommend seeking outside assistance and putting more effort into it, since it is a lot more fun to teach successfully than it is to teach unsuccessfully.)

Your research statement should begin like a colloquium and end like a research seminar. Many members of the hiring committee will only read the first page of your statement and your goal in that page should be to give them the impression that you would be interesting to interact with even if you are not directly in their field. This is a good place to emphasize connections of your work to other fields and other areas which you are interested in exploring. The next portion of your statement should include a discussion of the motivation for your thesis work, suitable for non-experts, and a careful statement of your results. One natural way to finish the statement is with a discussion of problems which you hope to pursue in the future. It is better if these problems are not simply incremental improvements on your thesis results.

I have very little experience with diversity statements since the University of Michigan does not yet require one and I am way too old to have written one as part of my own application process. That being said, I would again be looking for enthusiasm and respectful discussion in such a statement. As in the research statement, it may be appropriate to reference work which influenced your viewpoint. It is a place to highlight any outreach activities you have engaged in, or hope to engage in, which promote diversity in mathematics. These could include working with existing organizations like the Math Alliance, SACNAS (Society for Advancement of Chicanos/Hispanics and

Native Americans in Science), NAM (National Association of Mathematicians), and others, or participating in diversity initiatives in your department, university, or local schools. You may also take the opportunity to highlight anything about your own background which may contribute to a more diverse environment in the department you hope to join. However, you should feel under no obligation to discuss your own background. (If you are not enthusiastic about promoting diversity, I encourage you to consider how much more fun and intellectually stimulating it is to interact with the entire spectrum of humanity, rather than with just a selected portion.)

The cover letter

The primary use that I make of the cover letter is in determining which of my colleagues to consult about a given applicant. At the University of Michigan, we require that a senior faculty member offer to mentor a postdoctoral applicant before a job offer is made. So, it is very helpful if you list one or more faculty members who you look forward to interacting with. I also recommend that you write to the faculty that you have named in your letter, letting them know that you have applied. This email exchange is often a bit awkward, for both you and the faculty member. However, if the faculty member is interested in your application, but not aware you are on the market or not on the committee, it can make the crucial difference in your getting an offer. I always make a point to look at all the files of candidates who write to me.

After the Offer

Once you receive an offer of a position, you should think about whether there are other jobs that you would prefer. If so, you should write to the hiring committees of those positions as soon as possible and let them know that you have an offer with a deadline. You may also consider withdrawing your applications from jobs which you are no longer interested in. If you receive an offer of a one-year or one-semester position at a research institute or program, you can approach the school which made you a longer term postdoctoral offer about deferring their offer. This may or may not be possible, but there is no harm in asking. Finally, go celebrate with friends and family.

Good Luck!

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Dick Canary

Credits

Photo of Dick Canary is courtesy of Martin Bridgeman.

Letters of Recommendation for a Liberal Arts Position

Peter McNamara

When I started applying for jobs in the final year of my PhD, I struggled with how well-intentioned people would give conflicting advice about what makes an application compelling. I only later realized how much the evaluation of applications varies depending on the target school and that each piece of advice is limited by the background of the person giving it; my advice should be considered in this same light. My perspective comes from reading many applications (we get several hundred for any opening in mathematics) to Bucknell University, a liberal arts university where teaching is primary but research is a close second, with a continuing and active research program expected. I do not claim that my opinions represent those of my department nor of schools like Bucknell.

I want to focus on how to solicit recommendation letters that will most help your application, and common red flags that letter writers should avoid. For advice on other parts of your application see, for example, [Che19,Tym20] for different and insightful liberal arts perspectives.

Advice for Applicants

Job advertisements for positions at Bucknell ask for three letters of recommendation, at least one of which substantively addresses teaching; our peer schools often have similar language, perhaps with slight differences in the numbers. Many applicants send us more than three letters, which is also considered appropriate. So whom should you ask for these recommendations?

Choosing your teaching reference is the most perilous choice and it can hurt your application if the letter or letters give us little information or do not convey quality

Peter McNamara is a professor of mathematics at Bucknell University. His email address is peter.mcnamara@bucknell.edu.

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