

Preparing Future Chemical Engineering Faculty

AICHE EDUCATION DIVISION
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Becoming a great faculty candidate

What is a great faculty candidate?

What a school looks for in a candidate varies from school to school, depending on many things such as the school's main focus (research or teaching), the size of their department, or their culture. In general, a well-rounded faculty candidate has:

- Potential to do research and bring in funding
- Potential for collaboration with others in the department
- Ability and interest in teaching
- Service in professional organizations

In order to best convey your fit for the position, you will create an application package that contains a cover letter, your CV, a research statement, a teaching statement, and recommendation letters, as detailed in the Creating Your Application Package section. Your application or interview is thus evaluated on your:

- Research
 - Publication record
 - First author preferably
 - You have a better chance at getting interviews with 3-4 papers
 - One paper in a high impact journal may be more highly regarded than a couple papers in low impact journals
 - Research competence as demonstrated by conference proceedings, poster sessions, receiving any research awards or via your recommendation letters
 - Research relevance to the field, department and school
 - Subject area knowledge
 - Independent thinking from your past research advisors
 - Ability to fill a “gap” in the department
- Teaching
 - Teaching experience
 - Teaching competence as demonstrated in your Job Talk, receiving any teaching awards or via your references
 - Ability to teach specific courses that are in need of staffing
- Other
 - Leadership
 - Communication skills
 - Enthusiasm for and interest in the position
 - Compatibility with the department and school

Preparing for the career

You've decided you want to pursue an academic career after you obtain your PhD in a few years, but what can you do now to prepare for the career path?

Gaining research experience

You should be able to prove true depth in one area, but it's good to show collaboration and breadth and that you can do interdisciplinary work. Aim to publish in top tier journals; fewer high-impact papers may be better than several papers in low-impact journals. Diversify what you publish, publishing different material in conference proceedings and various journal papers. Do your best to publish any work you've done that is publishable, if not in a journal paper then in a different venue.

You may also seek out other specific opportunities to gain experience in research, such as:

- Assisting in writing proposals or grants
- Reviewing papers, grants or proposals
- Supervising undergraduate or other graduate students
- Presenting posters or talks at conferences or symposiums
- Strengthen relations with industry by visiting sites, collaborating on use of equipment or other resources, or interning

When conducting your research, make sure to consider how it will pave the way for your future research as a faculty member. Consider the following questions, as recommended in *Tomorrow's Professor* by Richard M. Reis:

- Can it be enthusiastically pursued?
- Can interest be sustained?
- Is the problem solvable?
- Is it worth doing?
- Will it lead to other research problems?
- Is it manageable in size?
- What is the potential to making an original contribution?
- If the problem is solved, will the results be reviewed well by scholars in your field?
- Are you or will you become competent in solving the problem?
- Will the necessary research prepare you in the area of demand or promise for the future?

Gaining teaching experience

As a graduate student, you may also want to seek out teaching experience beyond that of a typical TA, including developing and/or giving lectures or taking more responsibility of the course in some other way. If you are able, you could also consider teaching an extension course, a class during the summer, a course at another institution or in another department, or guest lecturing in a class. Also, be sure to consider how your current experiences can help you down the road; with the permission of your instructor, save the teaching materials from a class you TA to help you structure your own classes in the future.

Networking

As you prepare for an academic career, it is important to network in order to gather advice and broaden your support network and also to establish yourself in the field and build your list of contacts.

Broadening your support network

You may want to consider broadening your support network beyond your current advisor. As you prepare for a career in academia and then begin your application, interviewing and negotiating processes, seeking out advice from a variety of contacts helps by enriching your understanding with different perspectives and build relationships. You could contact:

- Other faculty members, such as:
 - Committee members
 - Teaching mentors such as instructors for courses you TAed or great instructors you had as a student
 - Faculty members from your current or previous institutions, even in different departments. In particular, senior faculty members who may have served on search committees or newer professors who recently went through the journey you are now beginning.
 - Faculty members who have careers you emulate, in terms of their career path or teaching or research achievements
- Centers on campus, such as teaching/learning centers or graduate career services
- Panelists from future faculty workshops you have attended at conferences or on campus
- Past graduate students from your department who sought and found faculty positions
- Peers who are also looking for faculty positions at the same time; these students can become your allies rather than your competitors. It's helpful to know their status from other schools that you haven't heard from or discuss shared experiences.
- Friends who have attended the schools you want to apply to
- Formal mentorship programs, such as the [AIChE Future Faculty Mentoring program](#)

Broadening your network within your field

It is also important to network to widen the opportunities available to you when you begin your job search. Having a larger network will not only help you to be aware of more job postings but will make you more known in the field, making it more likely for someone to vouch for you when your application is discussed. Unfortunately, searching for jobs can come down to who you know, especially the comparison is between someone who is known by a department and someone who is unknown. With so much information available on the Internet, it is possible to network by sending "cold emails:" emailing authors of papers you enjoy or reference, contacting faculty whose work you find interesting, etc. However, it is probably most beneficial to network at conferences.

- Before a conference...
 - Identify who you want to meet and determine opportunities where you can meet them
 - Plan your days (schedule in talks that are interesting and are given by people you want to meet) and nights (find social events to attend, which may be much more conducive to interesting conversations with new contacts)
 - Prepare materials:
 - Business cards
 - "Elevator pitch:" be able to describe yourself and your work in a few minutes. This is an important and productive way to introduce yourself to new people; don't be afraid to practice your pitch among your peers or with your research advisor.

- Updated resume/CV
- During the conference...
 - Stand out: ask questions, participate, introduce yourself
 - Create a business card workflow: immediately following an interaction where you exchange business cards (but after you've concluding your conversation and are taking a moment by yourself), write details on the back of the card, including when/how you met, what you discussed, and any potential follow-up
 - Keep in mind the end goal you want as outcome from an interaction
- After the conference...
 - Follow-up with any relevant contacts, mentioning where/how you met (it's nothing personal, but so many new connections are made at conferences that you may not be remembered by name only) and taking notes from the follow-up tips you wrote on the back of their card. Make sure your follow-up isn't a simple "thank you;" it's good to ask a specific question to keep a conversation flowing.
 - To create a meaningful relationship, keep in contact beyond the initial correspondence. Aim for contact every 6 weeks.

Networking can be difficult or awkward, trying to meet new people while making a name for yourself. To make it easier, keep this tips in mind:

- Imagine you are an interviewer. People love talking about their own work, so if you feel awkward discussing yourself, ask questions until you are ready or inspired to jump in.
- Survey the situations so you can identify the best ways to meet new people: identify popular social events and look for large hubs of conversation that will be less awkward to jump in to.
- Use your network to network. Don't be afraid to ask your advisor, peers or colleagues to help you make contacts. Anyone will be happy to introduce you to one of their contacts if you are interested.
- Make the best impression possible by constantly assessing the conversation. Pay attention to body language or verbal cues; keep your conversation long enough to be meaningful but short enough to not be bothersome.

References

- Adams, Robin. 2012. "Strategies for networking and presenting: an informal discussion." Purdue University.

Applying

Deciding where to apply

There are approximately 150 institutions in the US with chemical engineering programs, varying from top-ranked research institutions to undergraduate-focused schools without graduate programs. Of course applying for more positions means you have more opportunities to get hired, but it won't be possible to apply for every job opening, nor would it be productive. You aren't a match for every school or every type of position and creating your application package and tailoring it to each school is time-consuming. Therefore, some time must be devoted to determining where you should apply.

Types of schools

Every school is unique and there is a school out there that will fit you perfectly. When looking at schools, consider:

- **Compatibility:** Do you fit the job posting? Do you see yourself fitting into their faculty?
- **Demographics:** What does the current faculty or student body look like? Is there a strong women, minorities or LGBTQ community? Are there both domestic and international faculty and students? What does the age distribution of the faculty suggest; is there high turnover, are they attracting other young professors?
- **Department organization:** Are you open to working in a general engineering department (such as that at a smaller liberal arts school) or do you want to work in a chemical engineering department?
- **Family:** If you have a spouse or partner, what are the job opportunities for him/her in this location? If you have children, what is it like to raise children there?
- **Geographic location:** Do you prefer a big city or a rural area? Do you want to be in a particular area of the country? Don't apply to a school if you wouldn't even consider living in the area.
- **Institutional focus:** Do you want a research-centered school or a teaching-focused institution?
- **Ranking:** Do you need a top-rated institution or would a lower-ranked (and probably less intense or competitive) atmosphere? You want to feel challenged and pushed to succeed, but you don't want to feel overwhelmed or overly stressed.
- **Research areas:** Will you fit in to the school's research vision? Is there faculty there to support and collaborate with you? Outside of your field, do you find the schools research interesting and inspiring?
- **University personality:** Do you want a school with a distinctive personality, such as strong religious or political affiliations or a unique education approach? Would you prefer a selective institution or one that offers education to a broader section of the community?

Determine which of these aspects are important to you and narrow your focus accordingly. Don't be deterred from applying somewhere you feel passionately about even if the job posting doesn't fit perfectly. Conversely, if a job posting is a perfect fit for you but you haven't ever considered the corresponding institution, consider if it is worthwhile to you to pass up the opportunity to apply. Also, be weary of being too narrow-minded: it may be beneficial to apply to different types of schools because you may end up liking a different type of institution than you expect.

Types of positions

Besides considering what type of school, you also need to consider what type of position the posting is for. A “traditional” position is usually a tenure track position, where tenure depends mostly on research performance. However, there are several other types of positions now

- Tenure track based on research performance
- Tenure track based on teaching performance and scholarship
- Visiting professor - a short-term appointment of 1-3 years
- Adjunct professor - a part time, non-tenured position
- Lecturer - a non-tenured, teaching-heavy position
- Post-doctoral researcher/scholar – a short-term (1-3 years) position that is a bridge between being a graduate student and a faculty member
- Research associate – a non-tenured position that does not require teaching and is often paid for or linked to a specific faculty member; for example, if a post-doc decides to stay in their position permanently, they may become a research associate

Resources for researching schools

When you are scoping individual schools, you may find the following resources helpful:

- [AIChE’s list of ABET-accredited chemical engineering departments](#)
- [Carnegie Classifications](#) – Various classifications of institutions, including undergraduate or graduate instructional program, enrollment profile, size, setting, etc.
- Online Guide to Engineering School’s [list of schools offering degree programs in chemical engineering](#)

Finding job postings

- Websites
 - ChE specific:
 - [AIChE’s Chemical Engineering Progress \(CEP\)](#) – View the postings published in each issue of CEP online, but clicking the issue and then “Recruitment Classifieds” from the list on the right.
 - [Cachet](#) – Academic jobs for chemical engineers, maintained by Computer Aids for Chemical Engineering (CACHE)
 - [Academic 360](#) – Any academic position, not only faculty postings
 - [Academic Careers Online](#)
 - [Academic Keys for Engineering](#)
 - [American Society for Engineering Education \(ASEE\) Prism Classifieds](#)
 - [Chronicle of Higher Education](#)
 - [Engineering Education Job Postings](#)
 - [Higher Ed Jobs](#)
 - [Higher Education Recruitment Consortium \(HERC\)](#)
 - [University Jobs](#)
 - Check individual department websites for postings.

- Ask around at conferences
- Your advisor/other faculty in the department may be aware of postings
- Your department head or his/her administrative assistant most likely receives emails about available positions

Creating your application package

Your application package may consist of several parts: a cover letter (or email), your CV, a research statement and a teaching statement. Allow yourself several months to develop and refine these materials, as this is the way the search committee will decide if you will receive an on-campus interview.

Make sure your package is submitted well before the due date and have a colleague or friend proofread your materials for clarity and errors. After you submit your package, consider following up after 3-4 weeks to ensure that the application was received.

[Matt Welsh](#), on the hiring committee in the Computer Science department at Harvard, says that a candidate applying to a top research university is usually first judged based on his/her publication record; next, the quality of recommendation letters; third, the research and teaching statements.

Welsh also explains [the application process from the hiring committee's point of view](#):

“Usually, the committee will meet several times, go through the applicants, rank them in various ways, and try to reach consensus on whom to invite for interviews. This can take a month or more. At first, a couple of interviews might be given out to the clear front-runner candidates that they really want to snag early (since good candidates' interview schedules fill up too). Then a few more weeks of deliberation happens while the rest of the interviews are sorted out. Keep this in mind: If you haven't heard from a school, but know they have started scheduling interviews (say, by looking at their online events calendar where it's usually pretty obvious who's giving a job talk), that may not mean that all of the interviews have been decided yet: it's usually a rolling process. Generally the first interviews start to get scheduled around February, but March and April is when things really get going.”

Cover letter

The cover letter is often neglected as an important piece of your application package, but it's important; it's your first impression to the search committee. A well-written cover letter may be enough to have the department consider you even if you are not a clear fit; conversely, a poorly written cover letter may be enough to disregard your application before the committee even sees the rest. If your package is submitted via email, this letter will probably be the body of the email you send with your application package attached.

Your cover letter should be long enough to include all of the important points demonstrating why you fit the job posting and to impress the search committee, but concise and to the point. You want your letter to be engaging, exciting and to make you stand out, but its main purpose is to be clear about your intentions and your application package. It is recommended that letters are generally ~1 page, or 3-4

paragraphs, long. Of course, proofread your letter several times for both clarity and spelling/grammatical errors.

First paragraph: Introduction

First, make sure to convey basic information about yourself (name, current position, degrees) and mention the specific job you are applying for and where you came across the job posting. The first paragraph is the first impression of your first impression, where you make your initial claim of why you are a strong candidate.

Body: Describe yourself and why you fit the position

The body of the cover letter should go more in-depth as to why you are an outstanding candidate and it should speak to the school specifically, describing why you fit in that position at that university.

First, introduce your application package, briefly noting your accomplishments in research, teaching and service. Tailor your emphases based on the school you are contacting; if it is a research institution, focus more on your research accomplishments before mentioning teaching experience, but if it's a teaching institution, discuss more of your teaching experiences before acknowledging your research plans. Discussion of your research may include why your research is novel and interesting and a brief (very brief) introduction to your research statement. Mention any awards you've received or particularly impactful journal articles you have published. Discussion of your teaching experience should include a brief statement of your teaching philosophy and note any teaching experience you've had that went beyond the traditional teaching assistantship. You may also want to mention other standout aspects of your package, such as leadership roles or side projects. If you have any concerning aspects of your package, such as not getting along with your research advisor or large gaps in employment history, you may choose to discuss them here, rather than letting the search committee judge these issues on their own without your input.

Next, use part of your letter to address the specific institution and position. It is rare to find a job posting that fits you exactly, so make sure to explain sufficiently how you fit any aspects of the posting that do fit you. Demonstrate that you've researched the school, department and faculty members in detail (because you have, right?). Mention how you may fit in the department and the institution and what unique qualities you have to bring to the department. If you have a specific connection to the school, such as attending it for undergraduate or growing up in the area, you may mention it here.

Final paragraph: Wrap-up

Thank the search committee in advance for their time in considering your application and include your contact information for follow-up. Mention any upcoming conferences you will be attending or presenting at and say that you will be available to meet or be interviewed during those conferences. You may want to include an enclosure statement following your signature, mentioning what is enclosed with your letter or attached to the email.

CV

Your curriculum vitae (CV) should be organized, well-designed and comprehensive. While a resume should be limited to one page, a CV has no length requirements and should be a detailed summary of

your relevant academic career up to this point. Make sure your CV is clear and attractive, making good use of formatting and columns, is free of typos and errors, and has been reviewed by your advisor.

A CV may include any of the following categories (Finding a Job in Your Field, Anthony & Roe, 1984):

- *Education* - For each school attended: degree(s) earned, GPA, dates of attendance
- *Research Experience* - Your research advisor, title and a brief description of your thesis/dissertation
- *Industry Experience* - Internships
- *Teaching Experience* – Courses you've taught, teaching assistantships or relevant workshops, courses or accreditations
- *Activities/Leadership Experience* - For organizations at the department, school or institutional level
- *Service* - For professional organizations
- *Membership* - In professional organizations or scholarly societies
- *Areas of Expertise* – Areas of concentration, specific skills or knowledge unique to you, relevant courses
- *Publications* – Include journal papers or book chapters, sorted by date, and bold or italicize your name in the author list, particularly if you are not first author
- *Presentations* - May include workshops, conferences or poster sessions)
- *Awards* – Fellowships, scholarships, or research, teaching or academic distinctions; these could instead be included in the corresponding section (for example, if your thesis received an award, include it in your Research Experience section)
- *Certification* – Any special training, licensure or professional certificates
- *References* – A list of your 3-4 references, including contact information, so the search committee may obtain recommendation letters

Your CV should explicitly list all relevant experiences, but can also be used as a vehicle to give more insight into you as a person, especially your research and teaching philosophies. For example, under a Teaching Assistantship entry, instead of listing solely the duties you performed (“lectured to class of 200, graded exams”) you could also include how the experience shaped you become a better teacher (“learned the importance of linking material to past courses to improve transfer and encourage a global view of chemical engineering”). This links your research and teaching statements to your CV and presents you as a person, as opposed to a solely a list of achievements.

Research statement

The research statement may be the bulkiest component of your application package. Its purpose is to present a narrative of your research career: explaining the research you are currently doing, proposing the work you plan to do as a faculty member and tying the two together to describe a comprehensive research career. Your statement should demonstrate the motivation for your work, show that you have a solid track record on research in the past and prove that you are able to think beyond your current work to continue in the future.

The length of the research statement varies based on the institution; an R1 institution may prefer a longer statement (9-10 pages) while a teaching institution may be okay with a shorter statement (2-4 pages). The statement should be like a mini research proposal, including relevant figures, tables and references, especially to your own work. It is important to be clear and precise in presenting your

projects, but it is okay to let your personality show through and demonstrate your passion for the subject. Your statement will help the search committee to evaluate your ability to communicate, solve problems, innovate and fit into the research community at the institution and in chemical engineering as a whole.

In general, the statement should include the following:

Motivation

You should start with a clear statement of the problem you are addressing and how your work contributes to the field as a whole. You should stress the importance of your work and also touch on how your work will fit into the engineering community and the institution specifically. You may introduce your research questions, which will be addressed in more detail in the subsequent sections.

Current work

Describe your current work, done as part of your thesis/dissertation and/or post-doctoral appointment, emphasizing what is novel and important and how it leads in to the work you want to do in the future.

Future work (3-4 projects)

This section will encompass the majority of your statement. You should include not only the “big picture” view of your research direction, but also descriptions of a few projects that could be accomplished within several years of starting as a faculty member. One project may be an extension of your current work, while the rest will show that you can think beyond your current project, independently of your advisor. It is okay to present exciting improbable ideas, as long as they are balanced out by realistic doable projects. If you are having trouble thinking of projects, consider:

- Taking your current research a step further or in a different direction
- Projects that solve common industry problems
- Developing new, creative ways to solve existing problems
- Different applications of your current work to different problems
- Reading journals in your area and identifying gaps that you can fill
- Brainstorming with your advisor

Be sure to stress how the projects are related, which will reinforce your research goals as a whole and make your statement clearer and more memorable. It may be beneficial to identify possible funding sources, potential collaborations at the institution or facilities you could make use of at the institution. This further convinces the search committee of your ability to fit in at that institution and demonstrates that you are thinking ahead.

You should also begin considering your start-up costs: costs to buy equipment, run a lab, employ students, keep your lab supplied, etc. You may not want to include these details in your research statement, but you will need to have [an estimate](#) of this at your interview and it will be part of your package should you get the job.

Teaching statement

Your teaching statement should be more than a presentation of your teaching experience; it should present your teaching and learning philosophy as a whole: how you approach teaching, what you've learned from past experiences, and conscious efforts you have made to improve student learning and your teaching. Your passion for teaching should be obvious, even if you are applying to a research-centered institution.

The length of the teaching statement may vary based on the institution you are applying for; teaching-focused institutions may want a statement to be 3-4 pages in length while research-centered schools may be okay with a statement that is 1-2 pages.

At a minimum, your statement may include:

- A discussion of your teaching philosophy
- Relevant, concrete experiences that have either shaped your philosophy or demonstrated application of your philosophy
- A brief mention of classes you are willing to teach and what you'd like to teach
- If possible, identify ways to tie your research into your teaching, either by developing an elective course based on your research or providing students with research opportunities

However, if you are more interested in teaching or are applying to a teaching-focused institution, you may want to consider demonstrating your passion with any of the following additions to your statement:

- Any understanding or knowledge of teaching pedagogy and how you apply that to your teaching, considering both how you teach (such as inclusion of active learning or team projects) and also how students learn (such as learning styles, conceptual understanding vs. rote memorization). If you would like to learn more about teaching and learning for your teaching statement, consider reading *Journal of Engineering Education (JEE)* or *Chemical Engineering Education (CEE)* journal papers or [Rich Felder's Random Thoughts](#).
- Extensive teaching experience beyond a traditional teaching assistantship including:
 - Anything you have implemented into a course
 - Courses or projects you structured or developed
 - Interesting techniques you have tried
 - Undergraduate researchers you have mentored or advised
- Professional development efforts, like:
 - Relevant workshops
 - Courses taken in education or engineering education
- Evidence of quality, such as:
 - Teaching awards
 - Favorable teaching evaluations
- Evidence of scholarship, such as:
 - Engineering education papers
 - A portion of your thesis devoted to educational scholarship
- Your interest in any specific educational initiatives at the institution

Recommendation letters

Your CV should list 3-4 references that the department may contact for recommendation letters. Your reference should include your PhD research advisor and post-doctoral advisor(s). It may also include as other people you've worked closely with, including your thesis committee, professors you served as a TA for, or well-known faculty in your field that you've worked with. You may include an industry collaborator as a reference, but at least $\frac{3}{4}$ of your letters should be from academia; academics are more likely to be known by the search committee and industry letters tend to be more "fluffy" ([Matt Welsh](#)). It's also good to have a letter from someone outside your home department or home institution, if possible, to show your potential for collaboration and interdisciplinary work. If you aren't sure of who to add as a reference, ask your advisor for suggestions.

Make sure to contact all of your references before including them on the list and to keep them in the loop about where you are applying and why. Give them copies of your application materials so they can better tailor your recommendation to the position you are seeking.

One potential problem that may arise is if you don't get along with your advisor. Not including your advisor as a reference is a red flag and it's likely that the search committee will contact your advisor anyway. It's best to be up front about the situation, perhaps including a brief explanation in your cover letter, and being prepared to answer questions about it at the interview.

Sample package materials

- University of Miami Graduate School's [Conducting an Academic Job Search](#)– CV, cover letter, teaching statements, interview questions
- [Landing an Academic Job: The Process and the Pitfalls](#) – job postings, CV, cover letter, interview itinerary, offer letter
- Matt Welsh's Application Materials
 - Job Applications – CV, cover letter, research statement, teaching statement
 - [Job Talk](#) – Job talk slides
- Chronicle's [The Basics of Cover Letter Writing](#) – Cover letter
- [Quintessential Careers](#) – CVs

After submitting your application

After you submit your application package, you may want to begin readying yourself for the interview, so if you receive an interview you are already prepared. This includes:

- Reading papers related to your research statement so you can get even more up to speed on the area
- Looking over potential interview questions (see the Questions You May Be Asked section)
- Consider questions you have for the school (see the Questions to Ask section)
- Researching the school: the location, their mission, their sources of pride
- Researching the department in more depth than you did for your applications:

- Research: what research areas they focus on, what the faculty members do, their sources of pride (recent discoveries, awards, patents, etc.), what faculty members you could collaborate with
- Teaching: classes that are taught, gaps in the curriculum that you could fill, textbooks commonly used for classes
- Labs: potential opportunities to use existing equipment/space, special facilities or centers
- Campus resources: sponsored programs, university press
- Reach out to any colleagues you know working at the schools you have applied to
- Consider your research and teaching needs in more depth, including:
 - The spaces/resources you would need for your lab
 - The number of graduate students or research assistants you would need to be successful
 - The budget you need for start-up costs
- Creating your seminar (see the Job Talk section)

Interviewing

Your interview will be a full-day event, consisting of a seminar (also known as a job talk) and several meals and talks with faculty. You may also be asked to teach a sample class, possibly in lieu of a seminar, especially if you are interviewing at a teaching-centered institution.

Before the interview

If (when!) you get an interview, here are some tips to prepare for the day.

- Be prepared with materials: backup slides for your talk, on a USB stick and/or printed out, along with printed copies of your CV, recent papers, and research/teaching statements
- Bring your luggage on the plane (don't check it) so there is no risk of losing it
- Don't be afraid to ask for information: request a copy of your day's itinerary so you can prepare accordingly. Ask who will be attending the job talk, how much time you have, where you will be staying, what transportation will be provided, or if there is anything extra to bring.
- If your itinerary does not include a meeting with students, you may request one; talking with students give you a unique insight and perspective on the institution

If you receive multiple interviews, do your best to schedule your highest priority interviews after a couple lower priority interviews, giving you a chance to have some practice, but not so late in your schedule that you are worn out.

During the interview

You may be most nervous for your research seminar, but remember the entire day you are being evaluated and interviewed (no pressure). Keep these tips in mind during the interview:

- Your interview begins as soon as you meet any department representative; if someone is picking you up from the airport, wear business casual on the plane
- Wear business attire to the interview and pay attention to the details in your appearance: cut the tacking in your suit jacket or skirt, make sure there is nothing in your teeth, take some care to be well-groomed.
- Your day will be packed full; carry a water bottle and some backup snacks and don't be afraid to ask for restroom breaks when needed
- Even though there is an itinerary prepared for you, this is your interview and you need to take control in order to have the best experience possible. Be mindful of time guidelines and do your best to stick to the schedule.
- Don't do anything new on interview day: no new clothes, technology or unrehearsed slides.
- Find a balance: show interest and be enthusiastic, but don't be too agreeable or spineless and don't be too arrogant or hard to please. Don't be too passive while letting the interview happen to you, but don't be too aggressive in bombarding with questions or talking only about yourself.
- This is also a chance for you to evaluate if you fit in the department; you should be evaluating them as much as they are evaluating you! Take note of the work environment, collegiality between faculty member and your overall impression. Consider if this is somewhere you want to work.

- Bring a notebook to take notes, but be mindful of taking too many notes. You don't want to become disengaged from the conversation or seem like a student sitting in a lecture.
- You will likely have all of your meals with faculty or students. Don't order anything too messy (like spaghetti) or difficult to eat (like salad), as you will likely be engaged in conversation the whole time. Refrain from eating anything too heavy and don't drink alcohol (beyond maybe one glass of wine), even if others are drinking.
- Remember to enjoy your visit! Don't lose your personality while trying to impress; be engaging, have fun and show that you can fit into the department socially as well.

Meetings with faculty

Throughout the day, your time will be filled with several meetings. Be prepared to meet with graduate students, administrators, and faculty one-on-one or in groups. As you participate in these meetings, keep in mind:

- As you approach conversation, it may be safe to assume two things: anyone you talk to may have a major influence over hiring you and no one will be familiar with your work. ([University of Miami's Conducting an Academic Job Search](#)) Do your best to impress and connect with everyone you meet and be prepared to explain your past and future plans (unfortunately, even with as much work as you put into your statements, not everyone will have read them).
- Your main aim should be to seek genuine engagement with each person; ask questions and engage in conversation, don't focus on trying to impress. Forming a meaningful connection will be more impactful than hearing you list your accomplishments.
- Conduct yourself as a colleague. Be professional. Be respectful of boundaries, but confident. Remember that the faculty members will be your peers, not your advisors.

Job Talk

Your talk should demonstrate that you've done solid research in the past and have a compelling vision for the future. It is also an opportunity to show that you are capable of teaching and communicating ([10 Tips to Help You Get a Faculty Job](#)).

Creating your job talk

Although you have likely given several talks about your current research, the job talk is unique in that you most demonstrate how you are paving the way to your future work that you will hopefully do at this institution. Also, as opposed to your most recent extensive talk – your dissertation defense – most of the audience will not be familiar with your work, so it is important to speak to an audience with varying levels of familiarity.

Most likely, you will have 45-60 minutes for your talk, but be sure to leave at least 5-10 minutes for questions; faculty members may ask questions as you progress or they may save them for the end. In terms of content, your job talk should address at least these three components:

1. **Setting up the problem:** Your problem scope, background information, your research questions, the importance of your field of study, the impact of your work, the motivation for your work

2. **Current work:** Your dissertation and/or postdoctoral work, demonstrating your achievements and expertise.
 - The content will likely differ from your defense or conference talks: you want enough detail that you demonstrate your expertise and abilities but not so much that it is overwhelming to anyone outside of your field. Those in the field need to be convinced of your skills, but those outside of your field need to be able to follow. If you are debating including certain details, remember you have time to go into more depth in your one-on-one meetings.
 - Those who are in your field will be judging your content; those outside of your field will likely judge your teaching capabilities.
3. **Future work:** Your research focus when you begin your faculty position.
 - Beyond a description of your larger scope of research, you may include a brief explanation of the projects outlined in your research statement.
 - When possible, explain how your work relates (and will relate) to the faculty in that department.

In terms of design of your presentation:

- Use a simple slide template with eye-pleasing colors
- Avoid slides full of text; make sufficient use of images, graphs, charts or tables
- Feel free to go beyond PowerPoint when you can, utilizing of props or videos
- PowerPoint animation is useful to create visually appealing slides, but keep it to a minimum to avoid distraction

Practicing your job talk

Practice your talk in advance with people who will give you helpful constructive criticism and/or in front of an unfamiliar audience. The first time you give your talk will be the “worst talk you ever gave and ever will in your entire life,” the second will be pretty good, the third will be great and the Nth time will be boring to both you and your audience ([Jeannette Wing's Tips for the Interview Process](#)). Don't memorize your talk, but it may be useful to memorize the first few sentences, tricky transition sentences, dense facts, or catchy phrases.

Consider practicing a few “versions” of your talk ([Jeannette Wing's Tips for the Interview Process](#)):

- The actual 45-60 minute version
- A 5 minute version, to be used in one-on-one meetings with faculty who may have missed your talk
- A 5 minute version, to be used with a dean or department head who cares more about how you will serve and fit into the department
- A short 1 minute version, known as the “elevator pitch,” best used in social situations or when you only have a few minutes with someone

Giving your job talk

Make sure to bring backup technology (extra batteries for your clicker, USB drives with your slide files) and hardcopies of your slides and pens in case anyone wants to follow along and take notes.

Before you start, look at the audience, smile, and take a deep breath. Be engaging and enthusiastic and don't be too rehearsed; they are hiring a person, not a research portfolio ([Phillip Guo's Reflections on my tenure-track assistant professor job search](#)). Pay more attention to your audience than your slides, using eye contact and taking cues from them to inform your delivery: pay attention to head noddors, puzzled expressions, blank stares or people dozing off. However, if the audience seems mostly receptive, don't be offended if there are some people not paying attention or falling asleep; it's bound to happen no matter how interesting you are.

Be conscious of your pacing: make sure to be respectful of your time constraints but don't talk too quickly. If you are pressed for time, it may be best to skip some slides (perhaps an aspect of your current work or a proposed future project) than to rush through something important. You can always go back to the skipped topic if prompted.

Regarding the age old question of using "we" versus "I" when referring to work you did: say early on "the work I am presenting was carried out with X group at Y university," then be gracious and use "we" in your following slides ([Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty](#)).

At the end, indicate clearly that you are done to avoid an awkward silence. Include a concluding slide, thank your audience and open the floor for questions.

When answering questions:

- Don't interrupt, listen carefully and respectfully
- If you don't know an answer, don't fake it, admit that you don't know and say you will get back to them – and then do get back to them, once you have a chance.

Alternatives to the job talk

Instead of a job talk, you may be asked to do a chalk talk. This is a more informal version, not a slide presentation with more emphasis on future research.

You also may be asked to teach a sample class, in addition to or instead of your job talk. You may be given a specific course or topic or a textbook to reference. This class is certainly useful in showing your mastery of content knowledge, but is perhaps more important in demonstrating how you teach. Be sure to go beyond a traditional lecture format; don't be afraid to include activities, ask questions or to call on the faculty members as if they are students.

After the interview

After your busy day, you will be exhausted, but do your best to jot down notes on the highlights of your day. In particular, write down who you talked with and what you discussed. Especially if you have multiple interviews, the details may be quickly forgotten.

After heading back home, write to your hosts and thank them for their time and hospitality. You may also consider reaching out to any faculty members you had a particularly meaningful conversation with.

Also, be prepared to answer any follow-up questions quickly (where else are you applying, how interested are you in our school) and have an estimate for your start-up costs.

So what happens if you don't get a job offer? As hard as this can be, remember it is not a reflection of you as a person, it just means you didn't fit the positions. You may be able to ask the university for feedback as to why you didn't get the position, helping you to determine what you can do to improve your package. Consider doing a post-doc for the next year, giving you a chance to better your application, publish more or gain more experience teaching.

Questions you may be asked

Following is a list of potential interview questions that you may be asked by the search committee, formally or informally. While it is important to consider possible questions you may be asked, don't practice your answers so much that you sound rehearsed. Also, be careful when giving opinions of research/theories/methodologies; of course you want to be confident in and assured of your own views, but you also don't want to offend anyone in the department, especially if you aren't completely knowledgeable with their research.

- Research
 - Did you encounter any obstacles or problems research? How did you get through it?
 - Explain your research in layman's terms.
 - How does your work compare to others in the field?
 - How has your advisor influenced your work?
 - How many papers do you think you will publish in the next few years given the teaching load?
 - If you were starting your dissertation over, what would you do differently?
 - Tell me about your research. (Don't assume everyone attended your job talk or read your statement.)
 - What are other people at your current institution doing?
 - What are your plans for funding?
 - What are your research plans for the next 5-10 years?
 - What contribution does your work make to the field?
 - What could an undergrad learn from working in your lab?
 - What do you think are the biggest problems in your field today?
 - What do you think is the most significant advance in your field in the past years?
 - What facilities do you need to carry out your research plans?
 - What impact does your research have on someone outside of your field?
 - What is next? What is your research plan?
 - What is the biggest contribution you have made to the field?
 - What is the most interesting part about chemical engineering besides your own area?
 - What is your biggest strength or weakness as a researcher?
 - What makes your research unique?
 - What theoretical framework did you use in your research?
 - What was the biggest challenge in your PhD research?
 - Where do you see the field in the next 5-10 years? How will you help it get there?
 - Who do you consider to be the best people in your field?
 - Why did you choose your research topic?
 - Why didn't you use the X approach in your research instead?

- Teaching
 - Are you a good teacher? Why?
 - Give a specific example of how you motivated a classroom or an individual.
 - How do you handle difficult teaching situations?
 - How do you motivate students?
 - How has your research influenced your teaching?
 - How have you used technology in your teaching?
 - How would you adjust your teaching style to students at this institution compared to your current institution?
 - How would you encourage a student to major in the field?
 - How would you structure teaching a class in your first semester?
 - How would you teach Course X? What textbooks would you use? What goals would the course achieve?
 - If you could develop a course, what would it be?
 - Tell us about your teaching experience.
 - What classes have you taught before?
 - What courses would you like to teach? What courses can you teach?
 - What is good teaching?
 - What is your basic teaching philosophy?
 - What is your biggest strength or weakness as a teacher?
 - What is your ideal courseload or class size?
- Your fit in the institution
 - How can you strengthen the department's current research?
 - How does your work fit in the department's current research?
 - What are you looking for in a school?
 - What collaborations do you envision having at this institution?
 - What contribution would you make to the department?
 - What institutional issues interest you?
 - What qualities do you bring to our school and how did you develop these?
 - Why did you apply to our school?
 - Why should we hire you?
- Personal attributes
 - How did your graduate school experience shape you?
 - How would moving to our university affect you personally?
 - How would you describe your doctoral program?
 - What are some of your other special strengths or interests?
 - What do you do in your spare time?
 - Why did you decide to go into academia?
 - Why did you take X years to finish your dissertation? (Particularly if you took longer than average)
 - Why do you only have X publications? (If you have less than average publications)
- Other
 - Are you willing to be involved in take on other responsibilities (such as serving on committees)?
 - If you have more than one offer, how will you decide?
 - What do you think is the optimal balance between research and teaching?
 - What is the biggest challenge to higher education today?

Note that you are not legally obligated to answer personal questions such as those related to your family life, relationships, religion or political views. If you are asked these questions and don't feel comfortable answering, you can redirect the conversation back to discussing your work. It may be beneficial to discuss your partner/spouse, however, because the department may be able to assist in finding a job for your partner. In fact, if they are intent on hiring you, they may go out of their way to ensure that your partner/spouse is hired in the area.

Questions to ask

When you attend your on-campus interview, you will have the chance to talk with many different faculty members, staff or graduate students. Remember that your interview is a two-sided conversation; you are evaluating the department as much as they are evaluating you. Here is a list of questions to consider asking, in order to determine if the department is a right fit for you and to judge the environment.

- Do you collaborate with anyone?
- Do you like it here?
- How is your research funded?
- How would you compare this school to other comparable institutions?
- Is collaboration encouraged?
- Is there any special research support?
- What are class sizes like?
- What are the students (undergraduates, graduates) like?
- What are your students working on?
- What courses are you teaching?
- What do you do outside of work?
- What do you perceive the strengths and weaknesses of the department to be?
- What is it like living in this town? What do people do for fun here?
- What is the department's vision for the future?
- What is the teaching load like?
- What is the tenure process like?
- What makes you stay at this school?
- What new areas are of interest to the department?
- What research are you doing?
- What surprised you most about working here?
- What would you change about the department, if you could?
- Why did you choose to work at this school?

Negotiating offers

Now that you've received at least one offer (congratulations!), it's time to celebrate. And then it's time to negotiate.

Your offer

Your offer is much more than just your salary. It will also include:

- Starting date
- Your start-up package, based on what you asked for in your research statement
- Available support staff (secretarial, computing, lab techs)
- Support for summers (for how many months/years)
- Support for students (how many and for how long)
- Moving expenses
- Release from teaching responsibilities (when, how many semesters, sabbaticals)

What to ask before negotiating

It's clear that the university wants you to work there, but you need to ensure that the job will fit your needs. Feel free to ask many questions up front so there are no obstacles or surprises later. Once you get the job, you may want to ask more detailed questions about:

- Research facilities
- Office space
- Expectations for outside funding
- Secretarial support
- Typical teaching load
- Teaching assistant support
- Lab technician support
- Committee service requirements for new faculty
- If the department offers a mentor to advise new faculty
- Tenure processes

Answers to these questions can give you a basis for what you may expect in your contract and more importantly, what to expect once you start the job.

How to negotiate

Remember: as you negotiate, an important shift has occurred: while interviewing, you were an applicant seeking a job and now, you are someone that has the job. Be confident and clear in your requests, but don't be too aggressive; this process sets the tone for a long working relationship. Also, the department chair is on your side; he/she wants you there and wants you to be happy. When negotiating:

- Be reasonable but bold and strategic
- Don't fixate on a dollar amount, but rather if your needs are being met
- Present your requests clearly
- Make a list of what you need and explain why

- Use productivity as your rationale (for example, “if I have guaranteed full support for one graduate student in my first two years, I will be able to accomplish more research and have more time to apply for grants”)
- Choose your battles: is your request a need or a want?
- Take into account the institution and funds available (a large R1 institution will have more funds than a smaller school) and the cost of living in the area
- Don’t be afraid to ask for help from your advisor or colleagues; they will know whether your offer is reasonable or not
- Consider trade-offs: if you can save money by sharing equipment with another department, perhaps you can use that extra money to hire an undergraduate researcher
- If you have more than one offer, it is fair to use the other offer as justification (“another school offered me X, which I believe will serve me because of Y; can you match that?”) as long as you are respectful
- Whenever you send a counteroffer back, you must be willing to accept their offer if they agree to your all conditions, unless you are waiting to hear back from another school and they are aware of that. It isn’t fair to renegotiate something that has already been agreed upon by both parties.

If your requests are rejected, consider asking how other faculty in your position may have obtained additional help or what other resources are available to you. Also, try learning from the experience: you may consider asking for justification - was your request out of line or is it a matter of available resources?

What to negotiate

There are many resources available to look into comparable salaries. Salaries of public universities are often listed on the Internet or may be available on the [American Association of University Professors](#). If the salary seems unreasonable and would make the difference between you accepting and not accepting the offer, consider saying something like “This is a fine opportunity, although the salary seems perhaps a little lower than what is paid for comparable jobs here. Can we discuss this?” ([Negotiating That First Offer](#)). There may be less wiggle room in negotiating salary, particularly in public universities ([Negotiating That First Offer](#)). However, you may be able to negotiate other aspects of your offer, such as:

- Your decision date, if you are waiting to hear back from other schools
- Your start date, if you have other commitments or need to finish your dissertation
- Reduced teaching load for 1-2 years while you establish your research program, such as:
 - Co-teaching a class
 - Teaching a class previously taught by someone willing to lend course materials
 - Reducing the number of different courses
 - Teaching a smaller class
 - Receiving additional TA help
- Paid attendance at a conference in your first year
- Summary salary for your first summer or a guarantee that they will pay your salary if you don’t have a grant by then
- Support for at least one graduate student or post-doc for the first year
- When your start-up package will be available (will it be spread out over two years or all at once?)
- How long your package will be available for, in case you don’t spend it all immediately

- Fund covering various aspects of your start-up package, including lab equipment and supplies (be sure to estimate a reasonable “burn rate” for how quickly you will go through commonly used supplies)
- Lab space
- Moving expenses
- Job hunting assistance for a partner/spouse
- A return trip to the school (perhaps with your family) to find housing

References & Further Reading

Books

- *A Ph.D. Is Not Enough: A Guide to Survival in Science* by Peter J. Feibelman
- *Academic Job Search Handbook* by Julia Miller Vick
- *CV Handbook: A Curriculum Vitae Owner's Manual* by Will Coghill-Behrends and Rebecca Anthony
- *Finding a Job in Your Field: A Handbook for Ph.D.'s and M.A.'s* by Rebecca Anthony and Gerald Roe
- *Get It Done: Write a Cover Letter* by Jeremy Schifeling
- *On the Market: Strategies for a Successful Academic Job Search* by Sandra L. Barnes
- *The Art and Politics of College Teaching* by Karl D. Hostetler, R. McLaran Sawyer, and Keith W. Prichard
- *The Chicago Guide to Your Academic Career: A Portable Mentor for Scholars from Graduate School Through Tenure* by John A. Goldsmith, John Kolmos and Penny Schine Gold
- *The Woman's Guide to Navigating the Ph.D. in Engineering and Science* by Barbara B. Lazarus, Lisa M. Ritter and Susan A. Ambrose
- *Tomorrow's Professor: Preparing for Academic Careers in Science and Engineering* by Richard M. Reis. There is also an accompanying [website](#).

Websites & Documents

- [10 Tips to Help You Get a Faculty Job](#)
- [15 Things to Consider as You Prepare for Your Faculty Interview](#)
- [Academic Cover Letters](#)
- [Columbia University's Tips for Applying to Faculty Positions](#)
- [List of ABET-Accredited Chemical Engineering Departments](#)
- [Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty](#)
- [Negotiating That First Offer](#)
- [Navigating the Faculty Job Search](#) (for astronomy students, but has useful advice for engineers)
- [Preparing Future Faculty in the Sciences and Mathematics: A Guide for Change](#) by Anne S. Pruitt-Logan, Jerry G. Gaff, and Joyce E. Jentoft
- Reddit's [Ask Academia](#)
- [Schools Offering Degree Programs in Chemical Engineering](#)
- [Science Careers](#)
- Stanford Career Development Center's [Academic Job Search](#)
- [Start-Up Costs in American Research Universities](#)
- [The Academic Job Search Process](#)
- [The Basics of Cover Letter Writing](#)
- [Tomorrow's Professor](#)
- UC Berkeley's [Academic Job Search](#)
- University of Illinois at Urbana-Champaign's Resources
 - [Applying for Faculty Jobs](#)
 - [Informative Videos](#)

- University of Miami's [Conducting an Academic Job Search](#)
- [Unsolicited Advice: How to Apply for a Faculty Job](#)

Job Postings

- ChE specific:
 - [AIChE's Chemical Engineering Progress \(CEP\)](#) – View the postings published in each issue of CEP online, but clicking the issue and then “Recruitment Classifieds” from the list on the right.
 - [Cachet](#) – Academic jobs for chemical engineers, maintained by Computer Aids for Chemical Engineering (CACHE)
- [Academic 360](#) – Any academic position, not only faculty postings
- [Academic Careers Online](#)
- [Academic Keys for Engineering](#)
- [American Society for Engineering Education \(ASEE\) Prism Classifieds](#)
- [Chronicle of Higher Education](#)
- [Engineering Education Job Postings](#)
- [Higher Ed Jobs](#)
- [Higher Education Recruitment Consortium \(HERC\)](#)
- [University Jobs](#)
- Check individual department websites for postings.

Personal Accounts & Advice

- [Anonymous](#)
- [Ed Lazowska](#) (chair of Computer Science and Engineering at University of Washington)
- [Ellen Spertus](#) (professor of Computer Science at Mills College)
- [Jeannette M. Wing](#) (professor of Computer Science at Carnegie Mellon University)
- [John Eadie](#) (professor in Department of Wildlife, Fish and Conservation Biology at UC Davis)
- John Regehr (associate professor in School of Computing at University of Utah)
 - [Job Search Advice](#)
 - [Of Course It's an Interview](#)
- [Jonathan A. Dantzig](#) (professor in Mechanical Science and Engineering at University of Illinois at Urbana-Champaign)
- Matt Welsh (currently a software engineer at Google, previously a computer science professor at Harvard)
 - [The Application](#)
 - [How to Get an Interview](#)
 - [The Interview](#)
- [Matthew Might](#) (assistant professor in School of Computing at University of Utah)
- [Michael Ernst](#) (professor in Computer Science and Engineering at University of Washington)
- Phillip Guo (assistant professor of Computer Science at University of Rochester)
 - [Reflections on my tenure-track assistant professor job search](#)
 - [Maximize Your Chances of Landing a Faculty Job](#)

- [Tao Xie](#) (associate professor in Computer Science at University of Illinois at Urbana-Champaign)
- [Zachary G. Ives](#) (associate professor in Computer and Information Science at University of Pennsylvania)