MITOCW | mitres16-9960-applying_to_fellowships_captions

[Morse Code Beeps]

[Whoosh] [Helicopter Rotor]

Hello.

Welcome to the Applying to Fellowships workshop.

My name is Evan Kramer.

I'm an AeroAstro Communications Lab Fellow, and I'll be your instructor today.

To get started, please take a look at the Graduate Fellowships example worksheet.

It includes the list of popular graduate fellowships that are relevant to aerospace and aerospace adjacent fields of study.

Please pause this video and take five minutes to mark the fellowships that you're considering applying to, or make note of fellowships you'd like to learn more about.

[Alien spaceship beeps]

Now that we're thinking about fellowship applications, let's introduce our lesson goals.

At the end of this workshop, you'll be able to read fellowship prompts and extract important information from solicitations.

You'll be able to construct a well-organized personal statement and research proposal that address all solicitation prompt requests, and you'll be able to create a timeline for accomplishing fellowship milestones in a timely manner.

To help orient yourself in terms of the major requirements for some of the most popular fellowships.

let's take a look at the following table.

This table was created referencing the most recent solicitation available for the fellowships listed either from 2024 or 2025.

Note that all of these fellowships accept submissions from students studying aerospace and aerospace adjacent fields.

Most deadlines are in the fall or late winter.

All fellowships require submission of a research proposal and resume, and almost all require submission of a personal statement and recommendation letters.

This is certainly not an exhaustive list of requirements, but we can definitely see a lot of overlap in required application materials across fellowships.

While this workshop provides generally applicable guidance on applying to any graduate school fellowship, it's appropriate to take a moment to acknowledge that, changes in some of the fellowships, like the very popular National Science Foundation GRFP, can take place, over time with changing government administrations, and so it's very important that if you're applying to this fellowship, download the most recent solicitation and use that as your reference.

Speaking of fellowship solicitations, our attention turns to parsing prompts.

First and foremost, please closely read the entire solicitation.

And yes, we mean the entire solicitation.

We know these can be extremely and usually unnecessarily long, but it is essential that you read it in its entirety.

As you read, take note of materials you must submit, such as the items listed in the table presented two slides ago.

Additionally, take note of prompts for what you should include inside the materials that you submit.

For example, specific questions you should address in your personal statement.

Creating a new document, with a checklist of materials and accompanying prompts can serve as a quick reference for you moving forward.

Most solicitations have a section describing the criteria used to judge applications and ultimately select awardees.

Pay close attention to the funding organization's values and priorities.

What are the organization's values and priorities?

This might involve you looking beyond the solicitation to figure out how the organization described themselves and how they present the goals of this fellowship program.

Make sure that you connect their funding priorities to you.

Which of your experiences, accomplishments goals, and skills address these specific questions in their criteria.

We'll, now take some time to practice parsing solicitations, specifically focusing on the evaluation criteria section.

Please take a look at the Evaluation Criteria worksheet which contains a section from the 2025 NSF GRFP solicitation.

First, identify each intellectual merit and broader impacts prompt in the solicitation.

Then write down ideas for how you could demonstrate these criteria in your application.

Please return to the workshop after 5 to 10 minutes.

[Alien spaceship beeping]

Okay, now that we have practiced parsing solicitations, let's turn our attention to the primary writing materials in your application.

Generally speaking, an application reviewer is typically looking for three things in a personal statement.

The first is demonstration of academic merit.

This is where you talk about previous research and work experience, including concrete deliverables.

like publications and awards, in addition to your ability to work as part of a team and communicate technical content.

Wherever possible, please make sure these examples are specific and quantifiable.

The overarching goal of what you write here should demonstrate your expertise, preparedness to perform research, and future potential as a scientist or engineer.

The second part is a discussion of your professional goals.

You'll want to address your personal motivations for wanting to do grad school and the specific research that you propose in your application.

You want to touch upon how the fellowship you're applying for would enable you to achieve your professional goals.

The tone throughout your writing here should demonstrate your passion, commitment, and focus on achieving your stated goals.

The third part addresses the alignment of your application with the funding organization's values and priorities.

Look beyond the solicitation for the overall organization's mission statement, and connect how your proposed work and professional development align with these priorities.

Additionally, if you feel comfortable doing so, make sure to mention if you are from an underrepresented group, or have overcome hardships, if the solicitation seeks that kind of information.

With the personal statement criteria in mind, it is important that your personal statement doesn't end up being just a copy of your resume, which the reviewers will likely have to begin with.

The personal statement is your opportunity to discuss a few meaningful experiences on your resume with depth.

Furthermore, try to tailor.

your language to emphasize quantifiable accomplishments.

Specific anecdotes that clearly identify a problem, action you took, outcome and learning experience you had, communicate more about yourself than vague project summaries.

And the last point on personal statements is to build a narrative.

What we mean by this is thinking from the reviewer's perspective about what each experience you write about communicates about you.

Your reviewer wants to get a feel for your personal characteristics learning habits, and future vision from the experiences you write about.

The most effective personal statements weave several experiences into a cohesive story that shares these insights.

Let's now turn our attention to the research proposal.

Generally speaking, the review committee judges your proposed research on its importance, uniqueness, and independence.

The solicitation itself, and stated values of the funding organization, typically identify what the reviewers would consider as important.

Maximize the overlap between your proposed work and these topics.

Uniqueness is established by performing a thorough literature review that contextualizes the proposed work and identifies gaps that it fills.

Bonus points if you're able to cite relevant works published by members of the funding agency and assert that you will build upon them.

Lastly, the scope of your proposed research should clearly be accomplishable without reliance on external resources like data sets facilities, and expensive hardware to establish its independence.

Research that is independent is robust to external changes, and is the best way to guarantee things out of your control don't get in the way of you accomplishing your goals.

As you write your research proposal it is important to know to what degree the funding organization expects you to carry out the proposed work.

Some expect you to carry out exactly what you propose, while others have no expectation whatsoever for you to carry out what is in your application.

Effective research proposal structure will demonstrate your fundamental understanding of the scientific method.

To ensure that you are directly addressing the aforementioned review criteria, your proposal structure can be organized Into three high level sections.

The first is introduction and background.

In this section, you motivate your work by first providing a literature review to frame the current relevant state of the art, followed by a gap analysis that demonstrates a need for new capabilities or knowledge.

The second is methodology.

In this section, you provide a detailed stepwise solution approach.

Typically, the more detailed the better.

However, be wary of striking the balance between over constraining yourself into particular methodologies.

This can be done by using language that suggests exploration of particular solution approaches rather than declaring that you will use a singular approach.

This demonstrates your understanding of the uncertainty associated with the scientific process and your open mindedness to being adaptable.

Additionally, reference specific tools wherever possible, such as open source software packages.

Indicating that you have some sort of starting point is effective since it strengthens the perceived practicality of your proposed work.

The third is impact discussion.

In this section, you highlight the Significance.

of your research, particularly in relation to funding organization priorities.

This ties back to some of the writing you did in the introduction and background section where you motivated your proposed work, except here it is a good idea to explicitly cite documentation of priorities from the funding organization.

While the listed funding priorities May be vague.

in the sense that they may just be a list of topic areas, this is the section where you make the case that your proposed work addresses one or more of these priorities in a meaningful way.

Bonus points if you are able to reference related projects that were previously awarded grants by the funding organization and cast your work as an extension of these.

The research proposal can often be the most intimidating aspect of the fellowship application.

To help you get started, we'll now practice writing a research statement.

Regardless of the stage you're in, your fellowship application can benefit from clear communication of your research statement.

In the Communicating Your Research Statement worksheet, you will write draft research statements in “To By While” format that communicate what you're going to do, how you'll do it, and which constraints or assumptions you'll be working under.

Please take ten minutes to complete this worksheet and return to the workshop.

[Alien spaceship beeps]

At this point, we've covered how to read solicitations and approach the primary writing materials.

The last facet of fellowship applications we'll cover focuses on logistics.

Milestone timelines are tools that help you stay organized and on track throughout the fellowship application process.

They visualize required items for each application so you don't lose track, distribute your efforts strategically, so you maximize the quality of important application materials, And they contextualize fellowship efforts, among other responsibilities, so that you feel balanced.

Based on collective first hand experience among AeroAstro Comm Lab Fellows, practical durations for fellowship application materials are as follows: Personal statements take approximately two weeks.

Research statements take 3 to 4 weeks.

Recommendation letters require a six week lead time, and other miscellaneous application materials can be completed in one week.

Generally speaking, effort put up front is effort well spent.

Please find the practical Milestone Timelines worksheet and take ten minutes to practice creating a milestone timeline for a fellowship that you plan on applying to so you can avoid feeling overwhelmed as external deadlines approach.

Putting an effort upfront to set yourself internal deadlines can help you avoid feeling overwhelmed.

An example milestone timeline for the NSF.

GRFP deadline of November 13th, 2025 is provided for your reference.

[Alien spaceship beeps]

That concludes this workshop on applying to graduate school fellowships.

You should now be able to read fellowship prompts and extract important information from solicitations, construct a well organized personal statement and research proposal that address all solicitation prompt requests, and create a timeline for accomplishing fellowship milestones in a timely manner.

On behalf of the AeroAstro Comm Lab, we hope you found the resources presented in this workshop useful, and we wish you the best of luck in your graduate school fellowship applications.

Thank you.

[Morse code beeps]