How to Get into Graduate School

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What is Graduate School in the Natural Sciences?



What is Graduate School?

- Training to become an expert in a field or discipline
 - Contributing new information!
 - More apprenticeship than traditional "schooling"

• Independent Research Project (Thesis or Dissertation)

- Reading scientific literature
- Design a research project (question, methods, etc.)
- Proposals, Grant Writing
- Experimental studies, lab work, field work
- Data analysis/interpretation, coding
- Publications, thesis, dissertation
- Presenting
- Classes
- Teaching, Mentoring, Education & Outreach









What degrees can you get?

Masters

- 2-3 year research project

Note:: No research component for a professional masters

~8-10 graduate-level courses

- Write and defend a thesis
 - In Oceanography this is often equivalent to 1-2 peer-reviewed papers

5-7 year research project

PhD

- ~8-10 graduate-level courses
- Comprehensive Exam
- Write and defend a **dissertation**
 - In Oceanography this is often equivalent to 3 or more peer-reviewed papers with a common theme

Is Graduate School for Me?

- What's your ideal profession and what are the minimum qualifications required?
- What could grad school do for you?
 - Skills, connections, the degree, etc.?
- What excites you?
 - Passion for science, learning, exploring knowledge gaps?
- Are you ready to do an independent research project?
- Do you tolerate or like scientific reading and writing?
- Is a salary of \$20k \$35k doable for you? For how long?



How do I apply to graduate school?



The Application Process (in Earth, Biological and Environmental Sciences)

- Applying to work with a faculty member, not just applying to the school
- Your admission depends on fit with the lab **AND funding**
 - Grad school salary: ~\$20K \$35k
 - Assistantship
 - Research Assistantship work on a faculty grant
 - Teaching Assistantship work for academic department
 - Note:: For Oceanography, TAships for first years are rare
 - Student Fellowship (NSF GRFP, Nancy Foster, Ford, Fulbright, Hertz, etc.)

Come to our Graduate Fellowships Workshop on October 13th to find out more!





How Do I Find Funding?

- Funding is the main deciding factor in our discipline
- Options:
 - 1. Find an advisor with funding to support you
 - 2. Find your own funding source
 - Apply for scholarships and fellowships (e.g, NSF GRFP, Nancy Foster Scholarship Program, Ford Foundation, Fulbright US Student Program, Hertz Foundation)
 - b. Internal scholarships at your current or target university

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Where to begin?

- Generally, you need to have an idea of what you want to study for 2-3 or 5-7 years
- Some professors expect that you come in with research questions in mind
 Others just expect you to come in with a general research topic that you're interested in

• Either way, here's some tips on how to start thinking about your research topic



Picking a Research Topic





What broad research topics do you find interesting?

- What could you see yourself studying for 2 3 or 5 7 years?
- Think back to undergrad lectures that you found interesting
- Are there any unanswered questions from your undergrad research you'd like to continue?
- Have you done any readings you thought were interesting?







Think about what research methods you like



What research methods are you interested in?

• Field work vs. lab work vs. computer work?

Be honest with yourself - which do you enjoy, and which do you avoid?

- What methods do you have experience with already?
- What methods would you like to learn more about?





Explore what's been done



Look into the literature

- What are the big topics being discussed currently in this field?
- What has already been done? What hasn't?

Look to be inspired into new directions as you read!

- Write down questions as you go
 - Things you want clarification on
 - Ideas for future research questions to explore
- Talk to your current mentors and advisors
 - Discuss and ask for feedback on your ideas
 - Ask for more papers to read
- No current mentors? Ask your professors or us!



Start building a research network



Start building a research network

- Look into the people doing this work (currently!)
 - Authors of papers and their affiliations
 - Lab pages, staff profiles, CVs, ResearchGate, LinkedIn, Science Twitter, etc.
- Reach out to grad students and staff researchers
 - Ask if they're willing to chat about their research & going to graduate school
 - Save PIs for when your ideas are more developed

• Ask current advisors and mentors to introduce you to contacts in the field







Talk to scientists!

- Talk about one of their papers you read & questions you had
- Tell them you want to go to graduate school!
 - Talk about the research topics you find interestingg
 - Ask about their experience applying to grad school
 - Ask for any advice!
- Find out what the knowledge gaps in the field are
 - "If you had unlimited time and funding, what's the next research question you'd explore?"
- "Do you know any other scientists or faculty in the field that I can reach out to?"
 - Ask for an introduction!







How do I find the right lab/PI?

- Investigate recommendations from the scientists you talked to
- Explore university websites and faculty pages / lab pages
 - Talk to their previous grad students!
- Explore list of authors on relevant papers







Emailing Potential Advisors

Dear Dr. xxx,

I hope this email finds you well. My name is xxx and I am reaching out to you at this time to inquire if you are accepting incoming advisees at the master's level for next year.

As a senior Marine Science major and Statistics minor at xxx as well as a <u>Barry Goldwater Scholar</u> with extensive marine science undergraduate research experience, I am applying to graduate programs this fall with an interest in exploring anthropogenic impacts on deep-sea ecosystems, as well as the process of how to use research results to influence policy. I have been referred to your lab by Dr. xxx in the xxx da at xxx, where I have been performing research in for the past two years, and in doing so have become incredibly interested in your work determining baselines for Diel Vertical Migration and seeing how patterns may change as a result of deep-sea mining.

I'd like to work with you as an advisee throughout my <u>Master's</u> degree should I attend xxx and am currently in the process of applying for <u>NOAA's Nancy Foster Program</u> as a way to fund that degree. I have outlined an idea for a project below and would love to meet you sometime in the near future. Would you have 30 mins or so to meet with me sometime in the next couple of weeks?

- Project Goal: Establish a baseline of Diel Vertical Migration in the Papahanamuokuakea National Monument and one for a location in the CCZ to use as a comparison ---> these baselines will be established to find a possible <u>after effects</u> of deep-sea mining
 - When mining begins ---> use this baseline to see if mining within the CCZ is also affecting the national monument ig, is there a spillover effect, spatial transition of organisms away from mining areas, sediment plumes reaching monument?
- **Base Project Question:** What are the patterns of Diel Vertical Migration within the <u>Papahanamuokuakea</u>, National Monument and the CCZ, and do they differ?

In addition, I have attached my curriculum vitae for your review. Thank you for your time and consideration. I look forward to your response! Best,

XXX

Dear Dr. xxx,

I hope this email finds you well. My name is xxx and I am reaching out to you to inquire if you are accepting incoming advisees at the master's level for next year.

As a senior Marine Science major at xxx, I am applying to graduate programs this fall with an interest in the effects of anthropogenic impacts on marine ecosystems. I find your work incredibly interesting, and University of xxx Master's in Ocean and Earth Sciences is my top choice for graduate school.

I'd like to work with you as an advisee throughout my <u>Master's</u> degree. I plan to apply for the Fulbright and am hoping you would consider me as an advisee.

Thank you for your time and consideration. I look forward to your response.

Best, xxx

Tips for Emailing Potential Advisors

- 1. Introduce yourself and the "ask" (aka applying to grad school)
- Mention your research interests and (briefly) any experience you may have
 a. Relate that to their research interests highlight overlaps
- 3. Mention their specific publications that **YOU ACTUALLY READ**
- 4. List any funding opportunities you are applying for
- 5. Ask if they are taking students and if they have time to meet
- 6. Attach your CV to the email, thank them for their time

No more than 2.5 - 3 paragraphs total!

BE PERSISTENT - email 3x in early fall



Meeting with a Faculty Member for the First Time

- Expect an interview
- Prepare to be asked about yourself
 - Research interests
 - Research experiences
 - Work experience (if applicable)
 - Long term career goals
- Come prepared with questions about
 - Advising style & Lab Culture
 - Student expectations
 - The school / program
 - The location (cost of living, lifestyle, etc) shows you are serious!



Future Workshops



UH Mānoa Oceanography presents...

THE GRADUATE SCHOOL APPLICATION WORKSHOP SERIES!

Workshop Topics:

<u>October 4th</u> - How to Get into Graduate School <u>October 6th</u> - Graduate Student Q&A Panel <u>October 11th</u> - Applying to the UHM OCN Department** <u>October 13th</u> - Applying to Graduate Fellowships <u>October 18th</u> - Faculty Q&A Panel

> <u>Where:</u> <u>Live:</u> POST Building - Room 723 <u>Virtual:</u> See email for Zoom links

