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Navigating Grad School: A Professional Development Workbook for Incoming Marine Science Graduate Students

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Preface

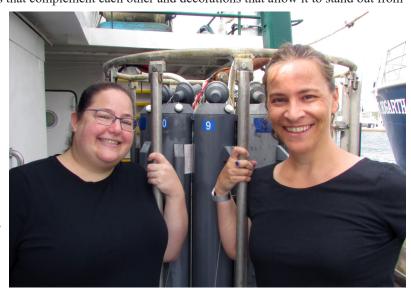
Graduate school is a formative time in the life of a budding scientist – getting a chance to deeply explore and master a scientific field while creating new knowledge – it doesn't get much better than that! Yet, the transition to graduate school can be difficult to navigate for even the most successful undergraduate students. During undergraduate studies, students learn by following a highly structured curriculum with clear expectations and goals, often measured through exams and grades. Thus, learners are dependent on a teacher for guidance, acquisition of content, and evaluation. In contrast, graduate students must embrace self-motivated learning as they take the initiative to independently investigate, critically assess, and create new knowledge. Graduate education, therefore, is centered in the principles of andragogy, whereby graduate student learning is self-driven. Graduate students learn by building upon their ever-increasing reservoir of experience to explore new topics, solve problems, master content, and direct and evaluate their own progress.

Graduate students must navigate what is often referred to as a "hidden curriculum" (i.e., unwritten rules, expectations, and behavioral norms) in their degree programs and along their career path. To even the playing field and provide a solid foundation for every incoming marine science graduate student, we have developed a Professional Development course at the University of South Florida College of Marine Science. Full-semester courses for first-year graduate students promote success and inclusion by building strong peer cohorts, helping students understand the hidden curriculum, facilitating important conversations between students and their advisors, jump-starting student research, and providing additional mentorship and perspectives. In our course, we also guide students in the preparation of application materials for external fellowships to financially support their graduate studies.

After over a decade of experience teaching this course, we created this workbook to better engage our graduate students in developing their educational path. There are many available textbooks on the market about how to succeed in graduate school, but we intend for this workbook to serve as a unique active learning tool for students to reflect upon course discussions and to build a tangible resource that they can refer to throughout their careers. We are making this resource freely available online to broadly support the success of marine science graduate students. We encourage its use in diverse cohorts, where students can benefit from the experiences of their peers and build communities; however, it can also be helpful to individuals as they navigate graduate school.

The workbook begins with an analogy that we have found especially powerful. Think of your graduate degree as if you were designing a cake. Your thesis or dissertation research is the cake itself, with each chapter or publication comprising a cake layer. Everything else that you accomplish or engage with during your graduate experience is the icing and decorations — these activities can range from field experiences to learning new programming languages to outreach. A delicious cake has a good balance between cake and icing, with flavors that complement each other and decorations that allow it to stand out from

all the other cakes. Your research will ultimately serve as the foundation for future work- by this analogy, at a minimum, a good cake must have sturdy layers made from quality ingredients. The icing is your chance to personalize the cake and make it your own. Just as it would be risky to make a cake without a recipe, you will want to adhere to the scientific standards in your field and follow the guidance of your advisor and committee (i.e., experienced bakers). Making an outstanding cake is much easier when you build on prior experience and employ proper tools and cake supports. Our course and this workbook are intended to initiate the conversations, networking, and professional development that will facilitate your endeavor to make your best cake and ultimately become a master baker yourself. We can't wait to see what you create!



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Krist N Buck

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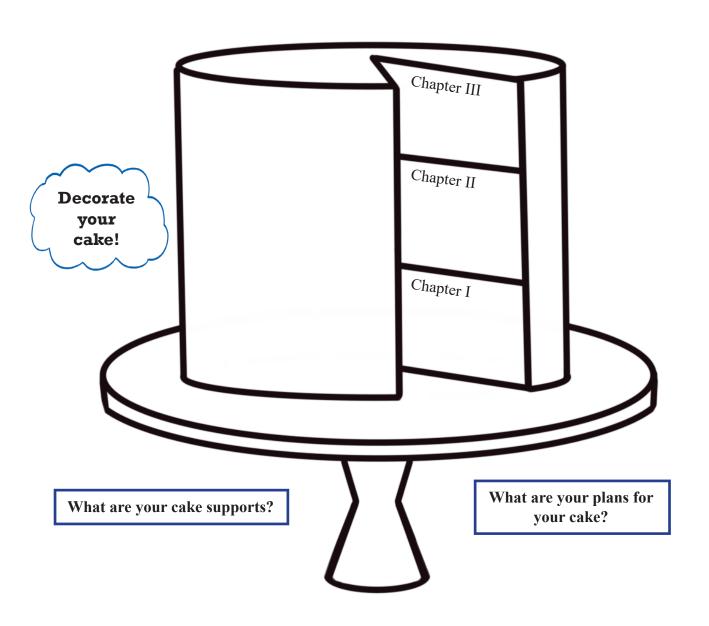
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Chapter 1: Cake vs. Icing Analogy

What types of icing do you have in mind?

What tools do you need to make your cake?



Chapter 1: Cake vs. Icing Analogy

Classify each of these activities as Cake (C) or Icing (I)

Fieldwork to collect data for your first thesis chapter	
Reading literature in your primary field of study	
Volunteering to judge a local science fair	
Earning your SCUBA diving certification	
Learning a new software program for data analysis	
Presenting your research at a conference	
Writing a manuscript for publication	
Writing an op-ed piece for the local newspaper	
Helping collect samples for your friend's research	
Taking a short course to learn a new research method	
Applying for an external fellowship	
Organizing your lab's booth for a local science festival	
Attending seminars in your field	
Attending unrelated seminars to broaden your knowledge _	
Serving as student representative on a college committee	
Going to sea as an extra set of hands	
Developing a new collaboration	
Participating in networking opportunities	
Fill in a few of your own:	

Chapter 2: Careers

	What is your dream job? Unsure? Consider your passions and strengths. What other jobs are you interested in?
Why	is the degree that you are pursuing essential for this job?
	Where would you look for this sort of job?
F	ind a job advertisement, what are the requirements?
Identify concrete actions	that you can take during your grad program to prepare yourself for this career:
	meone with your dream job and find their CV or online profile What experience/training is relevant to their success?

Chapter 2: Careers

Career Panelist Contact Information:

Name:

Job title:

Contact info:

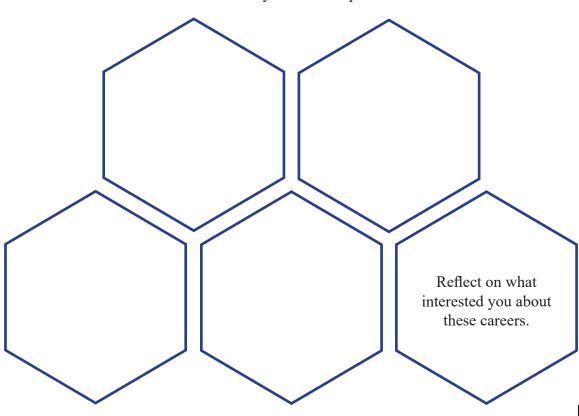
List three questions for the career panel:

1) _____

2)

3)

Main takeaways from each panelist:



Chapter 3: External Funding Opportunities

Identify funding opportunity:	Deadline:
Funding amount and term:	Reference letter deadline:
Application components:	
	_□ □
Evaluation criteria:	
How will you address these criteria?	
Reference letter writers:	Why did you choose them?
Name:	
Institution:	
Email:	
Name:	
Institution:	
Email:	
Name:	
Institution:	
Email:	
Information to send to reference letter writers:	
☐ Link to instructions ☐ Deadline	e 🗆 Updated CV
☐ Topics, interactions to highlight ☐	-

Chapter 3: External Funding Opportunities

Read at least two successful application examp	bles (review with respect to evaluation criteria):
Example 1:	
Strengths:	
Weaknesses:	
Example 2:	
Strengths:	
Weaknesses:	
If you could only fund one of these examples,	which would it be? Why?
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
<b>\</b>	
ζ	
Tips:	
<ul><li>Confirm eligibility.</li><li>Submit in advance of deadlines.</li></ul>	
• Stay in touch with your mentors.	
Tips:	
• Start early, leave time for	
<ul><li>multiple rounds of feedback.</li><li>Read and follow all instructions.</li></ul>	
Let your letter writers know	
the outcome.	
	Doodle -

# **Chapter 4: Curriculum Vitae (CV)**

What are the sections in your current CV?
What are the sections in the CV of one of the career panelists?
What are the sections in the CV of someone with your ideal job?
Items on your CV you are not sure where to put?
What are components that you want to have on your CV by the time you finish grad school?
List 3 people you will have review your CV:  Tips:  Don't inflate your experience. Have your advisor review your CV. In prep = Nonexistent!  Tips:  Keep a living CV.  Keep a living CV.

## **Chapter 5: Advisor Relationships**

Talk to members of your lab: what are their tips for engaging your advisor? Show them a new paper you found and read Bring figures of your data Students Post-docs Service Grant Family Writing  $E_{mail}$ Health Tip: Respect your advisor's time. They are juggling a lot of balls. Tip: Tip: Be proactive: you are Your relationship with your responsible for your advisor is one of your most progress in the program. important professional relationships: nurture it.

# **Chapter 5: Advisor Relationships**

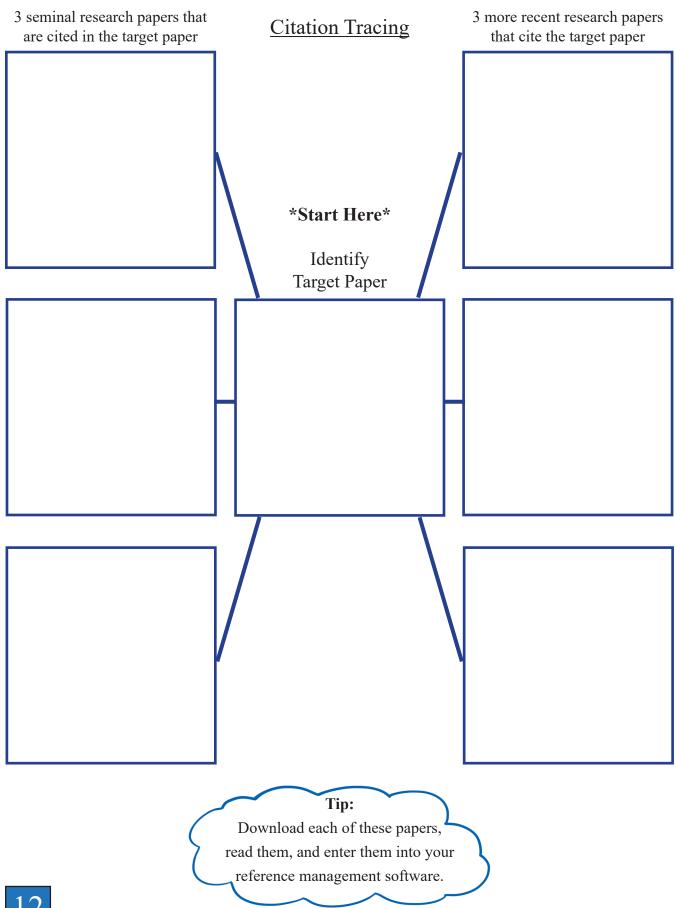
Brainstorm ways you can use your advisor and lab group's time wisely:

Have a peer review your paper before sending it to your advisor	Use spellcheck and grammar check	Allow plenty of time for feedback
Optimize face-to-face time	Come to meetings prepared	Ask for help when you need it and give help where you can
Your advisor should not be you	r only mentor: who can you ac	ad to your mentoring team?
	Tip: Your advisor is not clair make sure to update them goals and needs evo	n as your

# **Chapter 6: Keeping up with the Literature**

Identify resources for	keeping up with the literature:	
☐ Web of Science ☐ Google Scholar ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	Tip: Create accounts on these platforms to save searches and create alerts.	
What are the "must-re	ead" journals of your field?	Y \
•	•	
Talk to successful stud What are their reading h	ents and/or your advisor:	
How do they keep up w	ith the literature?	

## Chapter 6: Keeping up with the Literature



What are the top 5 journals your lab frequently publishes in?

### Talk to your advisor (preferable) or look at their Google Scholar page:

4
4.         5.
For 1 or 2 of these journals, go to the journal website and look up the following:
Journal scope:
Types of articles:
Word limits:
Figure/Table limits:
Impact factor:
Open access options:
Publishing/Page costs:
Publisher:
Discount options:
Average time to publication:
University library access:

### **Authorship**

senior author belong?
You are preparing your first manuscript for submission and formulating your author list. Assume yo were involved in all steps of the research and writing. Below is a list of people who helped with you project and their contributions. For each person, designate whether they should be a co-author (C), acknowledgment (A), or not mentioned formally (N). Then write your final ordered author list.
Frankie Fish (you)
Barbara Blacktip (your advisor who conceived the study, got funding, and helped you)
Alejandro Anemone (went on the cruise and helped collect samples)
Olivia Oyster (undergraduate intern who helped analyze samples)
Jamar Jellyfish (postdoc who trained you in your method)
George Grouper (lab technician who ordered all of your supplies)
Wally Whale (helped you with statistical analysis of your data)
Nia Nautilus (chief scientist of cruise, didn't directly participate in your research)
Steven Squid (gave you some great ideas at a work gathering)
Mohammed Manatee (fellow graduate student who ran some analyses for you)
Terrance Turtle (professor who provided you with samples from his lab)
Catalina Clownfish (committee member who wasn't involved in the project)
Final Author List:
Tin:

Create a page in your lab notebook for "Contributions" and keep notes on who helps you and how so you don't forget at publication time.

Tip:

Pay attention to where the papers you're citing are published – this may help you identify an appropriate journal.

### **Writing Your Manuscript**

What are your advisor's expectations of you in terms of publications for the degree you're seeking: number of papers, status (submitted/accepted/published) in order to graduate?

If you finish all your data collection and have all your figures prepared on January 1st, color in the Gantt chart below with when you think you will accomplish the following:

- First complete manuscript draft sent to your advisor
- Manuscript sent to your co-authors for review
- First submission to a journal
- Assuming favorable reviews that require revisions, when you will submit the revised manuscript
- Approximate date of acceptance assuming one round of revisions
- Publication date

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
First draft												
To co-authors												
Submitted												
Revised												
Accepted												
Published												

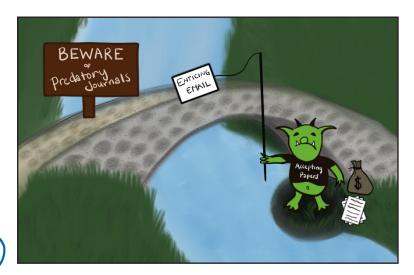
**Get a second opinion:** Ask your advisor or a senior graduate student/postdoc in your lab how your expected timeline fits with their actual experiences.

What helps	you	write?
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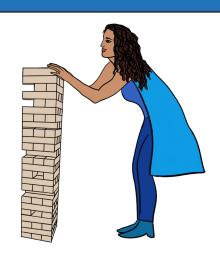
#### Tip:

Use author-date reference format when sending drafts to your advisor, regardless of what the journal requires.



#### Publishing is a great responsibility:

- Publications last forever, your reputation depends on them
- You should strive to make your science as solid and impactful as possible
- Cite seminal papers, consider your references carefully
- You are contributing a piece to the tower of scientific publishing building on the foundation laid by others and creating new knowledge, upon which future researchers will build



#### **Ground Rules:**

- Check spelling and grammar before sharing always
- Make sure all authors review and approve the manuscript prior to submission
- Acknowledge funding, including fellowships
- Properly credit all people who contributed to the work
- You can only submit a given paper to one journal at a time
- Respect your reviewers, carefully consider and address all feedback in your response
- If the paper is rejected, you can resubmit it elsewhere

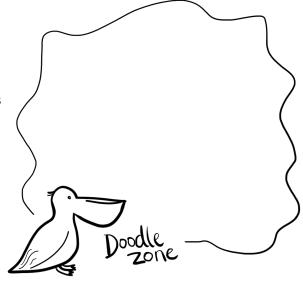
### **Manuscript Submission Checklist:**

- ☐ Create an account on the journal's website
- ☐ Names, affiliations, ORCID of each author
- ☐ Manuscript properly formatted, including references
- ☐ High-resolution, properly formatted figures
- ☐ Suggested reviewers and/or editors
- ☐ Author contribution statement
- ☐ Cover letter

After your paper is published:

#### Celebrate!

- Thank your team
- Spread the word
- Update your committee
- Present your work at an upcoming conference
- Remember this feeling and use the momentum for your next project!



#### Tip:

Make sure your manuscript includes page and line numbers.

#### Tip:

Use referencing software.

### **Publishing WordSearch**

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## **Chapter 8: Student Panel**

#### **Graduate Student Panel**

Before Class: Prepare five questions for the student panel. What are some takeaway lessons? Pitfalls to avoid? What makes these students successful? Common themes you heard from the panelists: How do YOU define student success?

# **Chapter 9: Communication**

## **Elevator Speech**

Write out your 30-second elevator speech:	
Tips:  Always introduce yourself by your full name.  Consider your audience and how you will connect with them.  Practice, practice, practice.  Use the "ABT" method.	Practice your elevator speech for several audiences adjusting accordingly. List the audiences here and check them off once you've practiced.  Professional Development Class

# **Chapter 9: Communication**

## **Elevator Speech Feedback**

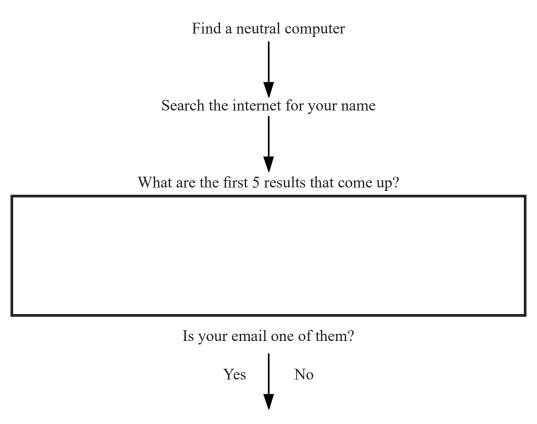
What did you like about your elevator speech?
What could you improve on?
Insights you got from listening to the other elevator speeches:
If you had to give an even shorter speech, what are the most important things to retain?

# **Chapter 10: Networking**

What is your go-to topic for small talk?	
What is your comfort level with these approaches in your field? Identify one face for each approach:	
• Email O	Tip: Be friendly! Team up with other people who
• Call on the phone	are on their own.
• Private engagement on social media	Tip: Take advantage of
• Public engagement on social media	student-focused opportunities.
• Approach at a poster session	
• Introduce yourself at a mixer	Follow social media hashtags.
• Initiate small talk at a chance encounter	
• Invite to coffee/meal	Avoid assumptions about politics and religion.
• Invite to give a seminar	
Given your reactions to each of the above option prominent members of your field	ns, identify opportunities to engage with
Within your comfort zone:	Pushing your comfort zone:

## **Chapter 10: Networking**

### **Curate Your Online Presence**



Are you happy with what you found?

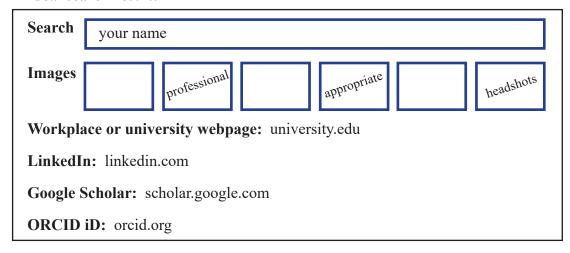


Keep it up - continue curating over time!

Be proactive:

(1) Review privacy settings on existing accounts
(2) Create professional content (news highlights, blogs, new accounts, upload professional headshot)
(3) Carefully consider what you post on social media

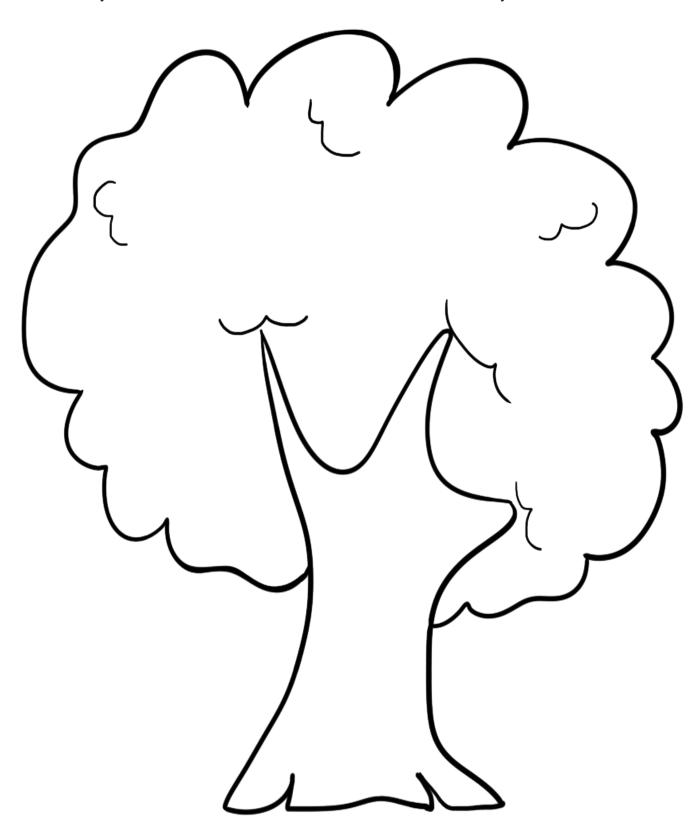
#### **Ideal search result:**



# **Chapter 10: Networking**

### Fill in your academic family tree:

-Identify active scientists who have worked with the same mentors as you.



Identify conferences you hope to present at:

Conference Name	Date	Location	Abstract Deadline	# Attendees
			+	
			1	
What are your advisor's prer	equisites for co	nference attendance	e or presentation?	
Are they different for local v	ersus national r	neetings?		
			•	
When the	hinking about	presenting your w	ork at a conference	
What are you most excited a	bout?	What are	you most anxious abo	ut?
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Conference preparation:				
☐ Identify conference and §	guidelines/dead	lines		
☐ Write abstract with your a				
☐ Send to co-authors for rev				
☐ Finalize abstract and subr	nit following co	onference guideline	S	
☐ Apply for any applicable	_	_		
☐ Register by the Early Bird				
☐ Prepare your talk or poste				
☐ Practice, practice, practice				
Practice opportunities	s: 1)		_ 2)	
		3)		

Practice makes perfect:

- Practice your presentation out loud
- Don't rely on Presentation View
 - know your slides
- Bring backups of your presentation
- Use the microphone
- Memorize transitions and first 1-2 slides
- Stay on time, leave time for questions
- Upload early and double check every slide and figure in the Speaker Ready Room
- If the chairs introduce you, don't repeat the introduction, you just gained a few seconds!



Conference To Do List:

Before:			

During:			
During.			

After/Debrief:

Tip:

Whenever possible, go with the flow at a conference... but honor your personal needs (energy, sleep, food, safety).

Good Presentation BINGO

Fill in the remaining squares with good characteristics you observe during seminars.

В	I	N	G	0
Informative titles on each slide				
	Good font size			
				Clear take-away messages
		Photo attribution for all graphics		

Presentation Feedback

What did the class like about your presentation? What did you feel especially good about?
What do you need to change before your next presentation? Did you identify any bad habits from the recording?
Think of your favorite presenter Why were they your favorite? How could you incorporate aspects of their style into your own presentation?

OUTREACH QUIZ

Identifying your target audience

1) Do you enjoy being at large events and talking with big groups of people?

- Yes! The bigger the better. I love concerts, farmers markets, and theme parks.
- Sometimes, but smaller groups are better. I'm thinking club meetings and trivia nights.
- Not at all! Groups overwhelm me. I prefer to watch movies at home or read books alone.

2) Do you feel comfortable working with kids?

- a Not so much. I have no idea how to work with kids.
- **b** Sometimes. I can bring out my inner kid when I need to.
- Yes! Kids are so fun and creative. They ask the best questions.

3) How comfortable are you presenting in front of a crowd?

- **a** Easy peasy lemon squeezy. Anytime. Anywhere.
- **b** I can do it with some mental preparation.
- c Petrified! I have bad stage fright.

4) Which outreach activity appeals to you the most?

- a Teaching a group of kids about my research.
- **b** Creating a blog post about my research.
- Presenting my research in front of a group of adults interested in science.

5) When are you most available for outreach?

- a My schedule is unpredictable, hard for me to say.
- **b** Nights/weekends.
- c Daytime/weekdays.

7-10 Points

Kid-friendly

You find working with young people fun and entertaining. Try teaching a class at a school, running a booth at a science festival, or volunteering at a summer camp. Inspire young minds to pursue STEM fields.

4-6 Points

Better with age...

You relate better to adults than to kids. Try presenting at a science café, community group, or senior citizen center. You could also run a science communication workshop for undergraduate students or work with policy makers in your local community.

0-3 Points

Behind the scenes guru!

You're happiest when you're not in the spotlight. Try writing a blog or op-ed, preparing a lesson plan for local classrooms, creating a piece of research-focused artwork, or being a pen-pal.

Chapter 12: Outreach

Advice for Outreach

Know your audience

• Before starting a presentation, blog, or building an activity, consider the audience you would like to reach. Make sure you use words they will understand and relate to.

Avoid jargon

• If you use a science word specific to your field, make sure to explain it in layman's terms. People will tune out if you start to sound like a textbook.

Make a connection

 Always try to connect with your audience through a local place, daily activity, or shared interests and values.

Use metaphors

• Relate your work to familiar activities. For example: Picking fish eggs out of a plankton sample is like Easter egg hunting.

Encourage curiosity

• Give time for your audience to ask questions and relate your work to their own experiences.

Engage the senses

• Let your audience feel what it is like to be a scientist. Bring examples of your work for them to touch and hold or show photos and videos. When telling a story, incorporate the senses (how you felt, what you saw or smelled).

Practice makes perfect

• Whether it is an in-person event, writing, or drawing, practice makes perfect. Show people your work or have them try out your activity. Feedback will polish your final product.

Document

• executed by someone else. Immediately after the outreach, write notes about what worked well and what could be improved for next time.

Assess

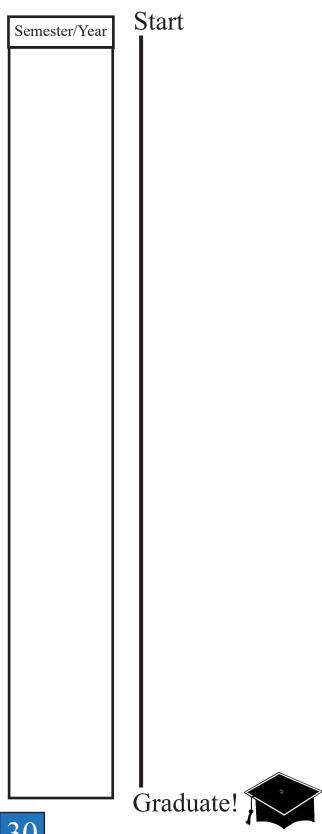
• Identify your outreach goals and determine how you will know if you were successful. Consider how you can quantify your success (e.g., number of participants, pre- and post-surveys, website analytics).

Don't reinvent the wheel

• Find out which ongoing activities you can contribute to.

Chapter 13: Timeline

Using the graduate student checklist as a guide, place the following milestones on your timeline: core courses, form committee, proposal defense, PhD exam(s), committee meetings, fieldwork/ cruises, important conferences, manuscript submission(s), submit thesis to committee, sufficiency meeting, defense, final submission to ETD.

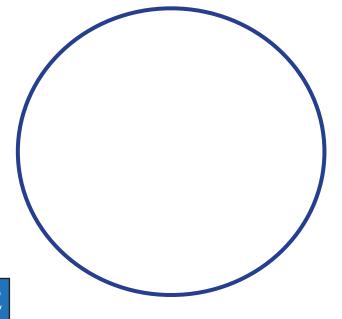


What are your commitments?				

Fill in your typical weekly schedule (change time range if needed):

Monday	Tuesday	Wednesday	Thursday
7 AM	7 AM	7 AM	7 AM
8 AM	8 AM	8 AM	8 AM
9 AM	9 AM	9 AM	9 AM
10 AM	10 AM	10 AM	10 AM
11 AM	11 AM	11 AM	11 AM
12 PM	12 PM	12 PM	12 PM
1 PM	1 PM	1 PM	1 PM
2 PM	2 PM	2 PM	2 PM
3 PM	3 PM	3 PM	3 PM
4 PM	4 PM	4 PM	4 PM
5 PM	5 PM	5 PM	5 PM
6 PM	6 PM	6 PM	6 PM
7 PM	7 PM	7 PM	7 PM
8 PM	8 PM	8 PM	8 PM
9 PM	9 PM	9 PM	9 PM
10 PM	10 PM	10 PM	10 PM
11 PM	11 PM	11 PM	11 PM

Friday	Saturday	Sunday	Notes
7 AM	7 AM	7 AM	
8 AM	8 AM	8 AM	
9 AM	9 AM	9 AM	
10 AM	10 AM	10 AM	
11 AM	11 AM	11 AM	
12 PM	12 PM	12 PM	
1 PM	1 PM	1 PM	
2 PM	2 PM	2 PM	
3 PM	3 PM	3 PM	
4 PM	4 PM	4 PM	
5 PM	5 PM	5 PM	
6 PM	6 PM	6 PM	
7 PM	7 PM	7 PM	
8 PM	8 PM	8 PM	
9 PM	9 PM	9 PM	
10 PM	10 PM	10 PM	
11 PM	11 PM	11 PM	



Fill in the pie chart with your planned schedule breakdown.

Color	Activity

For one week, monitor how you actually spend your time:

Monday	Tuesday	Wednesday	Thursday
7 AM	7 AM	7 AM	7 AM
8 AM	8 AM	8 AM	8 AM
9 AM	9 AM	9 AM	9 AM
10 AM	10 AM	10 AM	10 AM
11 AM	11 AM	11 AM	11 AM
12 PM	12 PM	12 PM	12 PM
1 PM	1 PM	1 PM	1 PM
2 PM	2 PM	2 PM	2 PM
3 PM	3 PM	3 PM	3 PM
4 PM	4 PM	4 PM	4 PM
5 PM	5 PM	5 PM	5 PM
6 PM	6 PM	6 PM	6 PM
7 PM	7 PM	7 PM	7 PM
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9 PM	9 PM	9 PM	9 PM
10 PM	10 PM	10 PM	10 PM
11 PM	11 PM	11 PM	11 PM

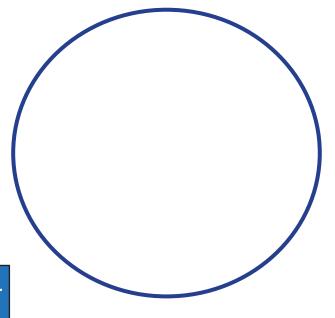
Tip:

Flexibility is a huge perk of academia. Make your schedule work for you!

Tip:

Revisit your cake supports. Add new ones as needed.

Friday	Saturday	Sunday	Notes
7 AM	7 AM	7 AM	
8 AM	8 AM	8 AM	
9 AM	9 AM	9 AM	
10 AM	10 AM	10 AM	
11 AM	11 AM	11 AM	
12 PM	12 PM	12 PM	
1 PM	1 PM	1 PM	
2 PM	2 PM	2 PM	
3 PM	3 PM	3 PM	
4 PM	4 PM	4 PM	
5 PM	5 PM	5 PM	
6 PM	6 PM	6 PM	
7 PM	7 PM	7 PM	
8 PM	8 PM	8 PM	
9 PM	9 PM	9 PM	
10 PM	10 PM	10 PM	
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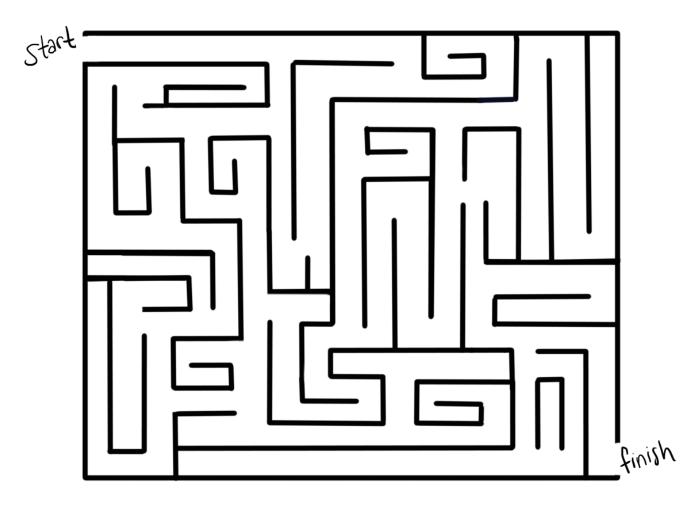
Fill in the pie chart with your real schedule breakdown.

Color	Activity

Plan vs. Reality!

How did your work this week contribute to the cake vs. icing analogy?
Did your plan match your reality? Why or why not?
What steps can you take to reconcile your Plan vs. Reality pie charts?
What energizes you? What depletes you?
Which activities make you lose track of time?
Tip: Grad school is hard! Don't shy away from the work. You can do this. Tip: Part of doing good work is making time to think deeply. Be sure to create time for this.

Grad School Maze



What kind of obstacles do you think you might encounter in grad school and how will you use the skills you learned in this course to navigate them?

Notes

Notes

Notes

