

GGG 840 Professional Development & Ethics

Lecture Monday & Wednesday 10:15 to 11:30 am, Thomas Hall 3508

The main objective for this course is to help graduate students develop the tools and skills that they need to excel in graduate school and throughout their careers. The topics range from the practical to the philosophical in the context of the field of Genetics & Genomic Sciences. We will explore the ethical concerns facing professionals in the genetics and genomic fields in the 21st century, allowing the past to help inform the present and future. We will focus on scientific writing in a variety of forms culminating in writing a grant proposal and will work on effective science communication in Genetics & Genomics for the public and scientific community. This course will value peer collaboration and feedback, developing professional relationships that will be important in graduate school and in their future careers.

Catalog description: This course will help graduate students develop the tools and skills that they need to excel in graduate school and throughout their careers. The topics range from the practical to the philosophical in the context of the field of Genetics & Genomic Sciences. We will explore the ethical concerns facing professionals in the genetics and genomic fields in the 21st century, allowing the past to help inform the present and future. We will focus on scientific writing in a variety of forms culminating in writing a grant proposal and will work on effective science communication in Genetics & Genomics for the public and scientific community. This course will value peer collaboration and feedback, developing professional relationships that will be important in graduate school and in their future careers.

Course materials: there is no textbook associated with this course

Course requirements: graduate standing is required; there are no prerequisites or co-requisites

Instructor: Dr. Martha Burford Reiskind Thomas Hall 1510B

Email: mbreiski<at>ncsu.edu; Website: <http://burfordreiskind.com>

Phone: (919) 515-3495

Office hours: Wednesday 1 pm, ***office hours are also available by appointment. Do not hesitate to schedule time to meet with me individually or in a group***

Learning outcomes:

- **Identify** a philosophical & ethical perspective on science generally and in the broad field of genetics and genomics specifically
- **Identify & evaluate** critical features of excellent science writing and communication in the field of Genetics and Genomics
- **Develop** a competitive grant proposal
- **Design & Develop** an effective poster and poster pitch
- **Identify & Design** their own path through their individual graduate program

Native Land Acknowledgement

I want to acknowledge that we are on the traditional territory of the Catawba Lands. Federal recognition of the Catawba Indian Nation was reinstated in 1993.

Inclusion Statement

We strive to create a learning environment that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, etc.) To help accomplish this:

1. If you have a name and/or a set of pronouns that differ from what appears on official University records please let me know in person, via email, or on the personal information sheet on the last page of the syllabus
2. If you feel like your performance in the class is impacted by experiences outside of the class, please let me know in person, via email, or on the personal information sheet on the last page of the syllabus. I want to be a resource for you. You can also make an anonymous statement that I can share with the class.

I am still, like many people, learning about diverse perspectives and identities, if something was said in class that made you feel uncomfortable please let me know. Anonymous feedback is always welcome and emailed to the Department Head of Biological Sciences, Carolyn Mattingly (cimattin@ncsu.edu) or the graduate student coordinator Jenni Wilson (jenni_wilson@ncsu.edu).

Please also fill out the **Personal Information Sheet**, that is sent out to you before the start of class as a google survey. This gives me a chance to get to know you all individually.

Grading PD&E Point Allocations Total points 380:

I. Reflections on Moodle: (Total of 20 pts)

Four reflections worth 5 points each **20 pts**

II. Case Study, leaders and participants (Total of 50 pts)

For case studies each student, in a group will sign up to lead one of the case study days, typically this will also involve a guest speaker or mock case studies to work through and discussion. Each student will build two questions or reflections before the class day and participate in discussion during the class when they are not a leader.

Discussion leader **20 pts**

Discussion participant (10 pts/2 discussions) **20 pts**

III. Science Writing (Total of 10 pts)

Writing sample **10 pts**

IV. Poster (Total of 40 pts):

Poster **30 pts**

Poster Pitch **10 pts**

V. Peer Review: (Total of 30 pts)

Within class peer review **10 pts**

Proposal peer review **20 pts**

VI. Proposal: (Total of 190 pts)

Students will work on a grant proposal for their research, details follow

Introduction **20 pts**

Draft for review **20 pts**

Final write-up **100 pts**

Final presentation **50 pts**

VI. Participation: (Total of 50 pts)

This is beyond the discussion participation, and what we are looking for is highlighted in the course description and in the first day of class.

General Participation **10 pts**

Online Tutorials discussion (5 pts each) **30 pts**

Panel discussion questions & participation (5 pts each) **10 pts**

The course uses Standard NCSU Letter Grading:

97 ≤ **A+** ≤ 100 73 ≤ **C** < 77

93 ≤ **A** < 97 70 ≤ **C-** < 73

90 ≤ **A-** < 93 67 ≤ **D+** < 70

87 ≤ **B+** < 90 63 ≤ **D** < 67

83 ≤ **B** < 87 60 ≤ **D-** < 63

80 ≤ **B-** < 83 0 ≤ **F** < 60

77 ≤ **C+** < 80

Expectations & Policies

At the beginning of class students and instructor will collaboratively develop the classroom climate

Attendance

- You are required to be in class and on time. You will lose participation points for frequent absences. We will not count the first unexcused absence, but will discount by 1 point every subsequent unexcused absence.
- If you have to be absent on the day of a presentation or in class activity you have to provide appropriate documentation for your absence.
- You will not be able to makeup participation activities we conduct during class. Only activities that become take-home assignments can be made up, if you have appropriate documentation for your absence.
- If you discontinue class attendance without following proper procedures for dropping or withdrawing, you will receive a grade of F in the course and your last date of attendance will be document in your final grade.

Please read the Attendance Regulations (REG 02.20.03) found at

<https://policies.ncsu.edu/regulation/reg-02-20-03>.

Assignments

- You are responsible for obtaining lecture material from the course web site on Moodle and for reading articles, online learning modules, and podcasts etc etc as listed on the schedule of topics in this syllabus.
- See details on course components and materials below.

Integrity

- All course work submitted for a grade in both lecture and field part must be your own. University standards of academic integrity forbid either giving or receiving unauthorized help on graded work. Violations of University standards will be prosecuted. You will need to sign the academic integrity statement on each written assignment. Please read the **Code of Student Conduct** (POL 11.35.01) found at <http://policies.ncsu.edu/policy/pol-11-35-01> and go to the **Office of Student Conduct** at: <http://studentconduct.ncsu.edu/>
- Be a team player, and be considerate of others in class by following simple rules of politeness.
- Turn off completely all electronic devices (iPods, cell phones, laptops) during class, unless you are using them to read lecture notes, or take notes.
- Remember that this course is for you—you will get as much out of it as you're willing to put in.

Email Etiquette

Make sure to include your full name in the body of all emails you send to me. In the subject heading, **please write: PD&E**. Please only write PD&E and nothing else. If you are attaching a document, **include your name in the document and use your name and course number for the file name**. Also include your full name in the attached document. If you're replying to an email, please include any previous exchanges in the email reply. All emails should begin with a salutation and close with your name. If you have not received a reply, make sure you have the correct heading, as the filter will only collect those with PD&E.

Statement on Disabilities

If you have a disability that will affect your performance in this course, reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with the Disability Resource

Office at Holmes Hall, Suite 304, 2751 Cates Avenue, Campus Box 7509, 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the [**Academic Accommodations for Students with Disabilities Regulation \(REG02.20.01\)**](#). Also, please be sure to discuss any issues with me.

Non-discrimination Policy

NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation (POL 04.25.05) may be accessed at <http://policies.ncsu.edu/policy/pol-04-25-05> and <http://oied.ncsu.edu/oied/policies.php>. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the **Office for Equal Opportunity** (OEO) at 919-515-9617.

Tentative Schedule Spring 2020, after the first week we will finalize which areas of science communication students want to focus on for March 29th, April 1st and April 7th. In addition, students will be given adequate notice of any changes to the writing, reading, or project due dates on the syllabus. Note that March 22nd is an asynchronous day, material for that day and the forum for discussion are open now. The work for this day must be completed any time from the beginning of the course to April 5th.

Week	Dates	In Class Subject	What we will cover & location of material by week	What to do the evening of this date	What's due this date
1	Wed: 20Jan	Course overview / how to be a successful graduate student discussion	Readings 1 & 2	Assignment: Online tutorial 1 on publication (Link) & discussion on Moodle / Reading: 3	Post 3 character traits before class
2	Mon: 25Jan	Publications & Authorship / Discussion of paper and tutorial	Reading 3 and Tutorial from 20Jan	Questions for graduate student panel	Post one Tutorial 1 question and response on Moodle before class
	Wed: 27Jan	Discussion panel with graduate students, tips on getting through graduate school		Readings: 4, 5, 6	Post questions for panel on Moodle before class
3	Mon: 1Feb	Scientific writing interactive workshop; organizing time for writing	Readings 4 & 5 from 27Jan	Assignment: Prepare a writing sample (or revise previous one) should be approximately 600 to 800 words	Reflection 1 on Moodle
	Wed: 3Feb	Working in pairs to go over writing samples, peer review forms , group reflections	Writing samples brought to class	Readings 7 & 8 / Online Tutorial 2: Conflict of Interest or Commitment (Link) /	Turn in writing sample before class / turn in peer review from class at end of day
4	Mon: 8Feb	Gene Drive Governance &	Readings 7 & * from 3 Feb / online tutorial	Readings 9 & 10 – see also an additional	Post one Tutorial 2 questions and

		Public Perception -Jason Delborne		reading that is optional	response on Moodle before class
	Wed: 10Feb	Genetic Biocontrol of Invasive Rodents – GBIRD – Dr. Katie Barnhill-Dilling	Readings 9 & 10 from 8 Feb	Readings: Readings 11, 12, & 13 Online tutorial 3: Peer review (Link Yale Uni and Columbia Uni links) & discussion on Moodle	
5	Mon: 15Feb	Peer review interactive workshop; how to process reviews	Tutorial & Readings 11, 12, & 13 from 10 Feb	Reading: 14 – pitches / Prepare at most 1 minute elevator pitch of your research interest	Post one Tutorial 3 questions and response on Moodle before class
	Wed: 17Feb	Presentation workshop / 1 minute presentations and group critiques	Reading 14 & elevator pitches	Readings: 15 visualizing science Sci Comm Workshop 1: Visualizing Science gg_scholars website (Link) Project initiation: design a poster on research topic for proposal	Reflection 2 on Moodle
6	Mon: 22Feb	Visual Science Workshops	Reading 15 & online info	Sci Comm Workshop 2: Posters gg_scholars website (Link) / Work on poster	
	Wed: 24Feb	Visual Science Workshops	Online info	Work on poster	
7	Mon: 1Mar	Poster Group Review; Poster pitches workshop		Readings: 16, 17 & 18 / Prof Dev Workshop 1 Grant proposals: gg_scholars website (Link)	Reflection 3 on Moodle

	Wed: 3Mar	Poster pitches workshop / How to get a grant proposal interactive workshop using Message Box ; Review the good the bad the ugly	Reading 18 COMPASS message box / Readings 16 & 17 summarized online	Online Tutorial 4: Collaborative science (Link) Case Study 1: Research misconduct	Poster presentation on Monday Mar 8 before seminar
8	Mon: 8Mar	Student Led Discussion Day Case Study 1 Pre-seminar poster session	Case study 1 (online tutorial component)	Readings: Reading 19; Example of success graduate student grants Assignment: Choose a target proposal competition	Two Discussion questions and one response for Case Study 1 (include 1 additional question for Tutorial 4)
	Wed: 10Mar	Grant proposals / Panel on grant proposal success and tips (graduate students)	Reading 19	Assignment: Write introduction to proposal (1 to 2 paragraphs)	Submit questions for the panel on Moodle
9	Mon: 15Mar	Language matters, energizing your writing / Proposal peer reviews in class, group reflections		Online Tutorial 5: Ethics of Research on Humans (Link) Case study 2: Research on humans & ethics / Post questions	Bring intro to class
	Wed: 17Mar	Student Led Discussion Case Study 2	Tutorial and Case study from 15 Mar		Two Discussions questions and 1 response related to Case Study 2 due before class (include 1 additional question for Online Tutorial 5) / Reflection 4 on Moodle
10	Mon: 22Mar	Asynchronous – complete the tutorial and		Online tutorial 6: Social Responsibility	Discussion questions related to Case

		readings for the case study on Henrietta Lacks – discussion questions should be posted to the discussion forum		and Research (Link) / post questions on forum Case study 3: Henrietta Lacks	Study 3 due by 7 April
	Wed: 24Mar	Wellness day		Readings depending on choice / continue to work on your proposals	
11	Mon: 29Mar	Effective Webpages &/OR CVs &/OR Blogs	Posted Readings from 24 Mar	Readings depending on choice / continue to work on your proposals	
	Wed: 1Apr	Effective Webpages &/OR CVs &/OR Blogs	Posted Readings & online material from 29Mar	Readings depending on choice / Continue to work on your proposals	Reflection 4 on Moodle
12	Mon: 5Apr	Student Led Discussion Day Case Study 3	Tutorial and Case study from 22Mar	Readings depending on choice / Continue to work on your proposals	Two Discussions questions and 1 response related to Case Study 3 due before class (include 1 additional question for Online Tutorial 6)
	Wed: 7Apr	Effective Webpages &/OR CVs &/OR Blogs	Posted Readings & online material from 1Apr		Turn in your proposal ready for peer review to me
13	Mon: 12Apr	The art of the peer review revisited		Work on your peer review	
	Wed: 14Apr	How to give effective presentations		Continue to work on your proposals	Submit your peer review

14	Mon: 19Apr	Proposal Review Panel			
	Wed: 21Apr	Proposal Review Panel			
15	Mon: 26Apr	Proposal presentation			
	Wed: 28Apr	Proposal presentation			

Turn in Revised & Final proposal end of day May 7that 11:59 pm

COURSE COMPONENTS

Participation

Objective:

This course has a participation component beyond the part built into the case study discussions. The goal is for all students to be actively engaged in learning during the class period. If students are absent from lecture they will not be able to participate. If they are present, but otherwise engaged with their phone, laptop, or other mobile device, this will also affect their participation points. I will talk in detail, including specific examples, of what goes into this part of their grade on the first day of class so that they know what the expectation is. I will also discuss how to be a good team member before we start the group activity so that they know what that expectation is. Part of the participation also includes the two panels (graduate student panel and successful grant writing panel), students are expected to post a potential question to the panel forum by class.

Logistics:

This part of the course is worth 20 points. The points will be assigned in the following manner:

10 points: *Regularly contributes to class discussions by raising thoughtful questions, providing examples from the readings or text, building on others' ideas, expanding the class' perspective, and appropriately challenging others' assumptions and perspectives*

5 points: *Sometimes contributes to class discussions in the aforementioned ways*

0 points: *Never contributes to class discussions in the aforementioned ways*

Reflections on Moodle

Objective:

The Reflections will synthesize the topics within the course as students progress through the semester. In the case of professional development and ethics, students will reflect about what it is to be a scientist, a researcher, an educator in this time and place, and pick out the components that resonate with them or they find challenging. Reflections let me know what parts are important to the students in the course, what they value as they launch their careers as scientists, and what they feel about the field in general. In addition, the self-reflection will allow students to evaluate areas they need work on and areas they do not. These will be thoughtful, but unstructured reflections. Much like one might write in a personal journal. I will not share the reflections with the class, which allows a safe space to reflect. One of the critical skills in a scientific career is the ability to integrate across topics and find over-arching themes. Reflections are one way we can develop this skill. In addition, reflections help students take a proactive (not reactive) approach and ownership towards their own scientific careers.

Logistics:

Students will provide a no more than 200 word reflection to an online forum on Moodle. It should be completed before the start of the next class. We will talk about examples of reflections in the course. There is a reflection scheduled every two weeks during the course. Students can reflect on topics related to the previous two weeks, or can integrate across the course. There are a total of 4 reflection days.

Case Studies Group Discussions:

Objective:

The goal is to expose students to a variety of case studies related to questions of ethics in science with particular attention to the questions of genetics and genomic research. The case studies readings are related to the some of the learning modules on ethics that are part of their class prep (more information on the specific learning modules is below). In this place and time

understanding the ethical considerations are critical for any student interested in using or applying genetic or genomic approaches. The goal here is to explore this material with topical case studies. Students will also get the opportunity to lead and participate in discussions on these case studies as well, helping them delve deeper into the topics. Their questions will stimulate the in class discussion. In some cases, a visiting researcher who works on this particular subject will provide a short background and help facilitate the discussion.

Logistics:

Students will be given readings or other media related to case study and they will craft two (three on days the online tutorial also occurs), well thought out questions related to each case study, and one response to one of their peer's questions. We will talk about examples of questions in class. Students will be evaluated on the quality of their questions and their participation in the discussion during class. Their **questions** will be posted at least **two days** before the discussion and **responses** will be posted at least **one day** before. Groups of 3 to 4 students will sign up to lead the case study discussion on one of the days throughout the course. There are three discussion days for case studies.

Online Ethics Tutorials:

Objective:

The goal is to expose students to core ethical questions in science with particular attention to the questions of genetics and genomic research. These online tutorials include case studies and scenarios and supporting material. The case studies in the Online Tutorials are often directly related to the larger case studies handled in the ethics modules. readings are related to the some of the learning modules on ethics that are part of their class . The goal here is to explore this material at their own pace and with topical case studies. Students will post questions in an online forum, but the discussion will be with the entire class, no leaders, which will include the questions they post and smaller group discussions and shares.

Logistics:

There are 6 Online Tutorials and each student will post at least 1 questions related to these tutorials and students are encouraged to respond to a peer's question, but it is not required. For those days when the Case Study Student Led discussions coincide with Online Tutorial, then students will post an additional question to ethe Case Study above in the same forum.

Science Writing:

Objective:

The goal here is to work with a short writing piece to being the process of evaluating your own and other's writing. Incorporating tips and tools given during the course will allow you to advance your writing capacity and being to demystify the process.

Logistics:

Students will provide a writing sample for in class peer review. This writing sample will be a single page writing either on a topic of interest or revised previous writing. Should be a total of 600 to 800 words.

Poster:

Objective:

Effective poster making and presentations are an art, and for this project we will explore different formats and hone the student's skills at effective science communication both through the visual poster and through their poster pitch. The goal is for the students to pick a topic that relates to their research proposal. However, some students may have another topic that

interests them. Students can use this activity to refine their proposed research. Working on posters helps students find the story, why we should care about their topic, and it helps students get the background they need for their proposal. Students will hone their skills by participating in a poster session of graduate students and faculty in the Genetics & Genomics Initiative.

Logistics:

After the poster in class workshop students will build a poster that will be reviewed during class by their peers. Afterwards they will make a final copy of their poster and present it in a poster session that we will invite GGI faculty and graduate students to. Students will be evaluated on the final poster and poster presentation (pitch).

Talks:

Objective:

The goal here is for students to experiment with a variety of talk formats and audiences. In addition, students will use visual aids (slides & poster design) that aid in presentations.

Logistics:

The above tentative schedule has suggested three talk formats. The proposed talk formats is an elevator pitch meant for a non-science audience, then a poster pitch meant for a general audience, and finally a proposal presentation meant for a scientific review panel. These are the proposed talks for the course. However, the first week of class the students will decide on combinations of talk formats. Other suggested topics are a video presentation, K-12 student talks, a 10-minute lecture for an undergraduate science course, etc etc.

Proposal:

Objective:

The goal of the proposal project is to provide an opportunity to explore and apply the material from the course to the development of a research proposal. Students will hand in their proposed research project for a review by a faculty member, the instructor for the course, and participate in a panel discussion as both a reviewer and as a reviewed proposal. This will provide feedback on their proposed research from experts in the field. In addition, students will practice communicating their proposed research project in both an oral presentation (see above). Finally, students will complete their final proposal that incorporates all the comments.

Logistics:

Students will identify the target for their proposal and use the RFP or the Proposal guideline to identify what is needed for the proposal and how to pitch it. While some students may already identify where they would like to submit proposals, we will go over the options for the proposal early in the course and closer to the time of the first due date of the introduction (due 2nd of March 2020). Next, students will turn in a draft of the proposal to me by 25th of March 2020 with a finalized version ready for review by April 1st, 2020. Students will participate in a panel discussion of other student's proposals and will receive the review from a panel that includes the faculty reviewer. The presentation and final proposal will serve as the final for the course. Students will hand in the final proposal on the first day of exams (due 27th of April 2020). Students will pick their subject early in the semester so that you can build the research proposal into their poster and throughout the course.

Peer Review:

Objectives:

There are two objectives for the peer review activities in this course. First, to give effective and constructive feedback, which requires practice but will enhance the way students read and review their own students assignments or writing, and critical review papers in their field. The second objective is for students to learn how to receive critiques and incorporate those into revision and modifications.

Logistics:

We will have several opportunities to review and be reviewed in this course. In some instances, this will be within the class, while in other instances this will be a more formalized process such as the proposal review panel.

