

NDFS MS and PhD program annual report Fall 2020 to Summer 2021

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Program Year in Review

Enrollment Fall 2020-Summer 2021		
MS	PhD48	PhD70
9	2	5

Graduation Fall 2020-Summer 2021		
MS	PhD48	PhD70
5	-	4

The graduate faculty met 4 times over the Fall 2020- Summer 2021 year. During these meetings we used assessment data to inform several program changes. These changes included: 1. Creating a graduate handbook, 2. Making changes to orientation, 3. Adopting a rubric provided by the college to standardize assessment of PhD student performance at their dissertation defenses, 4. Making the GRE optional for admittance to our program, 5. Conducting an exit survey of Summer 2020-Spring 2021 graduates, and 6. Formed a sub-committee and started developing a rubric for our comprehensive exams. (See Faculty Response to Assessment Data section for full details.)

We also formed a sub-committee to work on program assessment. We have revised our student learning outcomes, revised our annual review form to provide more helpful data for assessment (and be a more helpful tool for students, advisors, and committees), and drafted a new assessment plan based on the *Assessment Handbook for Academic Programs* from the Office of Analysis, Assessment, & Accreditation (AAA office). This new plan, revised outcomes, and revised annual review form will be presented to the full graduate faculty for discussion, revision (if needed), and adoption in January 2022.

Our program went through a Regents Review or R411 program review in Spring of 2021. External evaluators reviewed all of our graduate programs and provided feedback to help our program improve. Much of the feedback lined up nicely with our internal feedback from students, faculty/staff, and the AAA office. Their suggestions, which we have already addressed or started to address are: 1. Creating a graduate handbook, 2. Reducing heterogeneity in exam procedures (we are in the process of creating a rubric to evaluate comprehensive exam performance), 3. improvements to program assessment planning, data collection, and data use. The report also included other recommendations that we plan to address in future years.

Program Assessment Activity

Exit survey

In May 2021 a program exit survey was collected for the first time. The purpose of this survey is to collect feedback from our graduates to help guide efforts to improve the program and to begin to collect data to support student outcome achievement, through an indirect measure. The 10 questions focused on overall program satisfaction, perception of career preparation, and perceptions of achievement of the learning objectives. The anonymous survey was distributed via email to all MS and PhD graduates from Summer 2020-Spring 2021, and students were incentivized to complete it with an aggie ice-cream voucher.

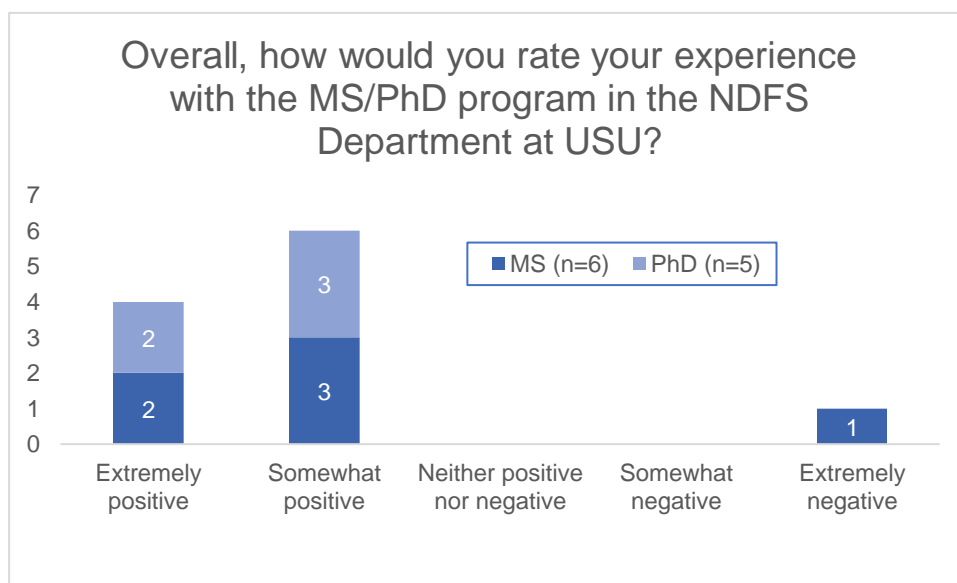
Response rate

We achieved a 100% response rate in PhD graduates (5/5) and 75% in MS graduates (6/8) and 85% overall (11/13). Some questions had lower response rates, including the open-response questions, and the last few questions of the survey. This is not uncommon in survey research.

Quantitative Results

Overall, 91% of students indicated that their experience with the NDFS MS/PhD program was positive (10/11) and 82% felt that the degree program prepared them well for their future career (8/11).

One student did indicate that his experience was 'extremely negative' and that the program did not prepare them at all for their career. In their other comments they mentioned being treated disrespectfully by their advisor, that work hours and expectations were unreasonable, and that they weren't able to take advantage of industry opportunities because their degree took too long to complete.



This student's feedback was discussed in detail at our May Graduate Faculty Meeting. We were very disappointed to hear about this student's experience. This is not the climate and learning experience we want to have for our students. Avoiding outcomes like these in the future is extremely important to us and will be part of ongoing program improvement efforts. As a first step, we plan to improve communication of several things to graduate students and faculty: 1. The student grievance policy as outlined by the graduate school, 2. Program expectations include coursework, dissertation/thesis research, and assistantship work, 3. The importance of advisors and students setting clear expectations through discussion and documenting them in email or "contract" form. We thought it was important to note that that the student was able to list positive aspects of their experience including increased skills in language, writing, experimental design, and knowledge of their field.

When asked about their perception of how well they did on the program learning outcomes, the vast majority felt that they had achieved the stated learning outcomes. A few students did not respond to these questions, which is perhaps not surprising because they were the last questions on the survey. All of the students who answered the question (9/11) felt that they had achieved mastery of the subject material that was comparable to or above that of peers from other institutions. When asked about their ability to conduct scholarly activities in an ethical manner, again 100% of those who answered the question (9/11) answered in the affirmative. Finally, when asked how well they agreed with the statement that they had conducted, presented, and defended a body of knowledge (for MS) or significant contribution to knowledge (PhD) during their program, all six students who answered the question agreed.

Faculty discussed these results, and were pleased with the positive responses. We noted the necessity of identifying and collecting direct measures of student outcomes in future years. For full results, see appendix.

Qualitative Results

When asked to list 3 things that had a positive impact on their experience in our program, the top responses were about the quality of faculty and staff including their major professor, the quality of the graduate coursework, the academic and professional opportunities, and the research experience. When asked to list 3 things that the program could improve for future students, the most common responses were about improving student and faculty awareness of resources and guidelines. A couple of students mentioned continuing or improving general research training and 2 students left comments related to faculty/student expectations. There were quite a few suggestions for various improvements to program content, like more statistical resources, increased emphasis on review and analysis of published literature, increased emphasis on food safety, etc. (See appendix for full list of student responses.)

Annual review meeting

Several years ago, the NDFS Graduate Program mandated a yearly meeting with the student's committee and an accompanying form. The purpose of this meeting is to track students' progress and to increase student contact with committee members. Since making this change, compliance with this rule has been low. For the current year, we have received 6 annual review forms.

Annual Review Form Submission	
2018	30%
2019	23%
2020	17%
2021	29%

Graduate faculty met in Summer 2021 to discuss the problem of low compliance with the annual review meeting and form. After much discussion, we decided to continue using positive reinforcement and education to try to increase compliance, and plan to re-evaluate in Spring 2022. Further changes discussed include changing the form to make it easier to use, more useful to the student and advisor, and result in more useful data for program assessment and developing and implementing a system of reminders that will be sent out by the Graduate Program Coordinator or Director.

Over the past year we have taken the following steps to increase compliance: 1. continued limiting graduate travel funds to students who have turned in their annual review form, 2. emphasized the importance of the yearly meeting to the student's success at the fall orientation and in the new graduate handbook, 3. emphasized the importance of yearly review form to faculty with graduate students through reminders at faculty meetings and an email from the Graduate Program Coordinator. These changes have resulted in a higher rate than last year, but we would like this meeting and documentation to be universal.

The data on the annual review form includes tracking student progress on important milestones (plan of study, research proposal, comprehensive exam, and defense). It also collects data on student's general progress, research progress, and problems achieving milestones. No problems achieving milestones or lack of progress was noted for any of the students. However, incomplete data may indicate a need to revise the form for easier use.

Annual Review Form Data						
Number of forms completed	Number from each degree program	Student's Progress is Satisfactory?	Research is showing satisfactory progress?	Research Proposal Inadequate?	Unable to pass comprehensive exam?	Corrective action is required?
6	PhD 70—3 PhD 48—1 MS—2	Yes—5 Missing—1	Yes—4 Missing—2	No-2 Missing—4	No—2 Missing—4	No—2 Missing—4

Dissertation rubric forms

In response to feedback from the AAA Office and the external reviewers from the R411 review, the faculty decided to adopt a rubric for committees to use when evaluating student performance at their dissertation defenses. Since then, we've had 3 defenses, 2 of the 3 students passed their oral defense, with 1 student preparing to re-defend in spring of 2022.

Spring 2021 Dissertation Documents: Percent of rubrics that rated students at Exceeded, Met, and Did not meet Expectations*					
		Does not meet expectations	Meets expectations	Exceeds expectations	Missing
Quality of the Scholarly Work	Mastery of fundamental knowledge in the field	15%	54%	15%	15%
	Ability to access and integrate information into a cohesive overview of current knowledge. Ability to critically evaluate the meaning, value and contribution of published literature in the field.	23%	54%	23%	
	Imagination and originality of thought	31%	54%	15%	
	Ability to design and implement an appropriate collection and analysis of data.	15%	62%	23%	
	Ability to draw reasoned conclusions from a body of knowledge	23%	62%	15%	
Contribution to Discipline	Impact of research on the field	31%	54%	15%	
	Publication potential	15%	62%	15%	
Quality of Writing	Skilled at scientific/technical writing	15%	54%	31%	
	Organization, sentence structure, grammar, mechanics and spelling	15%	54%	31%	
Overall assessment of Dissertation Document		15%	46%		38%

*This data comes from 13 rubrics collected from committee members at 3 student defenses.

Spring 2021 Defense Presentations: Number that Exceeded, Met, and Did not meet Expectations*					
		Does not meet expectations	Meets expectations	Exceeds expectations	Missing
Quality of Presentation	Presentation design		85%	15%	
	Content and organization	15%	69%	15%	
	Presenter skills		77%	23%	
Breadth and Depth of Knowledge	Defends, clarifies, and expands upon written dissertation with further evidence and argument	31%	46%	23%	
	Demonstrates knowledge of dissertation subject, primary sources, and background scholarship; demonstrates ability to synthesize dissertation topic with broader topics in the discipline	23%	54%	31%	
Quality of Responses to Questions	Directly and correctly answers the examiner's questions	23%	69%	8%	
	Shows evidence of critical thinking and an awareness of the limits of his or her knowledge	31%	46%	23%	
Overall assessment Oral Defense		31%	38%		31%

*This data comes from 13 rubrics collected from committee members at 3 student defenses.

Overall Assessment Data Summary Fall 2020-Summer 2021

PhD Program Assessment Summary 2020-2021		
	Direct Evidence	Indirect Evidence
Learning Objective: Demonstrate mastery of subject material.	<p>Defense rubric <i>Quality of Scholarly Work</i> section:</p> <ul style="list-style-type: none"> 69% met or exceeded expectations on “Mastery of fundamental knowledge in the field” 77% met or exceeded expectations on “Ability to access and integrate . . . critically evaluate . . . literature in the field.” <p>Defense Rubric <i>Breadth and Depth of Knowledge</i> section:</p> <ul style="list-style-type: none"> 79% met or exceeded expectations on “Defends, clarifies, and expands upon written dissertation with further evidence and argument” 85% met or exceeded expectations on “Demonstrates knowledge of dissertation subject, primary sources, and background scholarship . . .” 	<p>Spring 2021 Exit survey: 100% of students rated their mastery of subject material as average or above average as compared to peers from other institutions (n=4, far above average=1, somewhat above average=1, average=2)</p> <p>All students pass comprehensive exam, or complete conditions needed for pass</p> <p>All students design and complete their plan of study, approved by their committee, earning grades of C or better</p>
	<p>“Produce . . .significant contribution” from defense rubric <i>Contribution to Discipline</i>:</p> <ul style="list-style-type: none"> 69% met or exceeded expectations on “Impact of research on the field” 77% met or exceeded expectations on “Publication potential” 	<p>Exit survey: 100% of students agreed that they have done this as part of their degree program. (n=4, strongly agree=2, somewhat agree=2)</p>
	<p>“Present” from defense rubric <i>Quality of Presentation</i> section:</p> <ul style="list-style-type: none"> 100% met or exceeded expectations on “Presentation design” 84% met or exceeded expectations on “Content and organization” 100% met or exceeded expectations on “Presenter skills” 	<p>All students design, present, and defend their research proposal, evaluated by committee without a rubric</p>
Learning Objective: Produce, present and defend an original significant contribution to knowledge.	<p>“Defend” from defense rubric <i>Response to Questions</i> section:</p> <ul style="list-style-type: none"> 77% met or exceeded expectations on “Directly and correctly answers the examiner’s questions” 69% met or exceeded expectations on “Shows evidence of critical 	<p>All students conduct, present, and defend their dissertation, evaluated by committee without a rubric (prior to Spring 2021)</p>

	<p>thinking and an awareness of the limits of his or her knowledge”</p> <p>From defense Rubric <i>Breadth and Depth of Knowledge</i> section:</p> <ul style="list-style-type: none"> 79% met or exceeded expectations on “Defends . . . written dissertation with further evidence and argument” 	
Learning Objectiv		Exit survey: 100% of students agree that they are able to do this (n=4, definitely yes=3, probably yes=1)

MS Program Assessment Summary 2020-2021		
Learning Objectives	Direct Evidence	Indirect Evidence
Demonstrate mastery of subject material.		Spring 2021 Exit survey: 100% of students rated their mastery of subject material as average or above average as compared to peers from other institutions (n=5, far above average=2, somewhat above average=3)
		All students design and complete their plan of study, approved by their committee, earning grades of C or better
Conduct, present, and defend a body of research conducted during their program.		Exit survey: 100% of students agreed that they have done this as part of their degree program. (n=2, strongly agree=2)
		All students design, present, and defend their research proposal, evaluated by committee without a rubric
		All students conduct, present, and defend their thesis, evaluated by committee without a rubric
Be able to conduct scholarly activities in an ethical manner.		Exit survey: 100% of students agree that they are able to do this (n=5, definitely yes=4, probably yes=1)

Faculty Response to Assessment Data

One of our main goals over the past year was to respond to the data we had to improve the program, and lay the ground work to improve program assessment. This work was informed by feedback from faculty, student, R411 report, and the AAA office, and is summarized here.

Communication of Resources and Requirements

One of the main findings from the exit survey as well as the R411 review, was a need for better communication of program and university resources and requirements to graduate students and faculty members. To start to address this need we developed a program handbook and made changes to our fall graduate student orientation.

Handbook

The handbook was drafted by the director of the graduate program, Dr. Carrie Durward, with contributions from Dr. Marie Walsh. It was reviewed by faculty and used at the fall orientation. Further revisions were made based on feedback from students, and the revised version will be posted to our departmental website. The handbook contains details of program requirements, USU policies, academic and professional resources, a list of who to go to for answers about different issues, a list of potential courses for plan of studies, required forms, and optional forms.

Orientation

This year we required all currently enrolled graduate students to attend to make sure everyone clearly understood program requirements and resources available. We extended the orientation to a full day and included activities and prizes to increase audience engagement.

Assessment Plan

Historically our program assessment plan relied on the supervisory committee to evaluate student mastery of learning outcomes through evaluation of plans of study, research proposals, qualifying exams, and theses and dissertations. Based on feedback from the AAA office, we knew we needed to improve our program assessment, specifically collecting direct evidence of student learning and documenting how that data is used.

To address this feedback, we formed an Assessment Sub-committee, with membership from our various disciplines: Dr. Katie Brown, Dr. Carrie Durward, Dr. Sulaiman Matarnah, and Dr. Marie Walsh. The Sub-committee met 3 times during Fall 2021, and developed a new assessment plan following best practice as laid out in the *USU Assessment Handbook for Academic Programs*, prepared by the AAA office. This plan will be presented to the full graduate faculty for discussion, revision (if needed), and adoption in January 2022.

The committee has revised our previous program learning objectives to student learning outcomes to fit best practices from the Handbook and to make it easier to match evidence to outcomes. We have revised the Annual Committee Meeting form to gather evidence needed to support student mastery of learning outcomes. We believe these revisions will also make it more useful to students, committees, and advisors. Finally, we are recommending the adoption of the newly available MS version of the defense rubric from the

college, use of the defense rubrics at the proposal defense, and completion and adoption of the comprehensive exam rubric to provide additional direct evidence of student mastery of learning objectives.

Comprehensive exam rubric

In response to faculty desire to standardize comprehensive exam evaluation, the feedback from the R411 report, as well as the need to gather direct evidence of student learning for program assessment, we decided to develop a rubric for our comprehensive exam. A comprehensive exam rubric committee was formed including faculty from both food science and nutrition: Dr. Carrie Durward, Dr. Heidi Wengreen, Dr. Taylor Oberg, and Dr. Prateek Sharma. This committee has met once in Fall 2021, and created an initial draft of a rubric. The committee plans to continue meeting in Spring 2022 to finalize a draft for presentation to the full faculty, revision (if needed) and adoption.

Defense Rubrics

In response to the feedback from the R411 report, as well as the need to gather direct evidence of student learning for program assessment the faculty voted to adopt rubric for PhD dissertation defenses, developed by Dr. Abby Benninghoff. (We also plan to adopt MS rubric when it is finalized.)

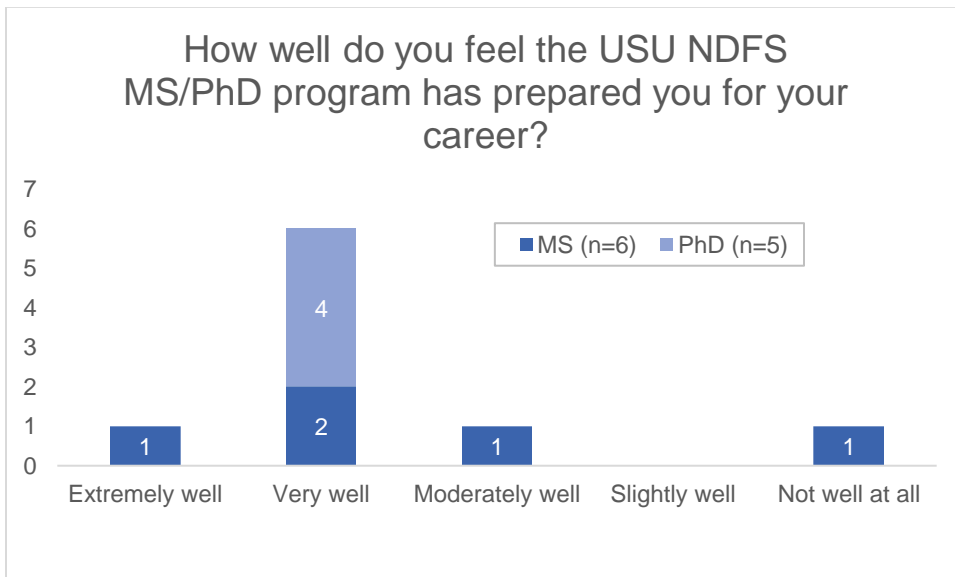
After using the rubric for the first three defenses, we realized we needed a standardized procedure for how to implement the rubric. A committee was formed to develop these procedures, consisting of Dr. Carrie Durward, Dr. Chuck Carpenter, and Dr. Heidi Wengreen. Procedures were drafted, revised based on feedback, and adopted by the faculty.

Admissions Requirements

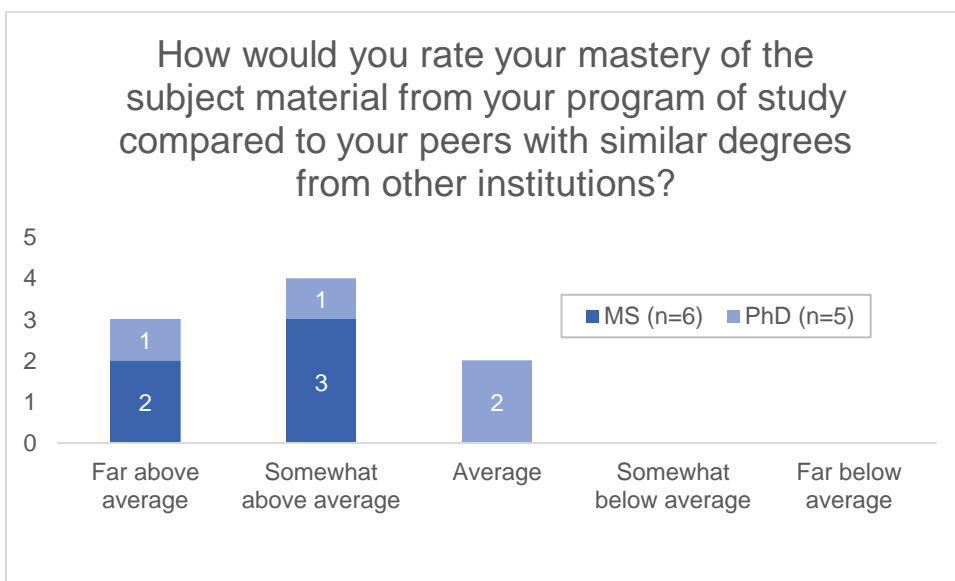
The faculty initially decided to waive the GRE due to difficulties in taking the test during the start of the Covid-19 pandemic. After further discussion, we have decided to make it optional going forward, at the discretion of the student's potential advisor.

Appendices

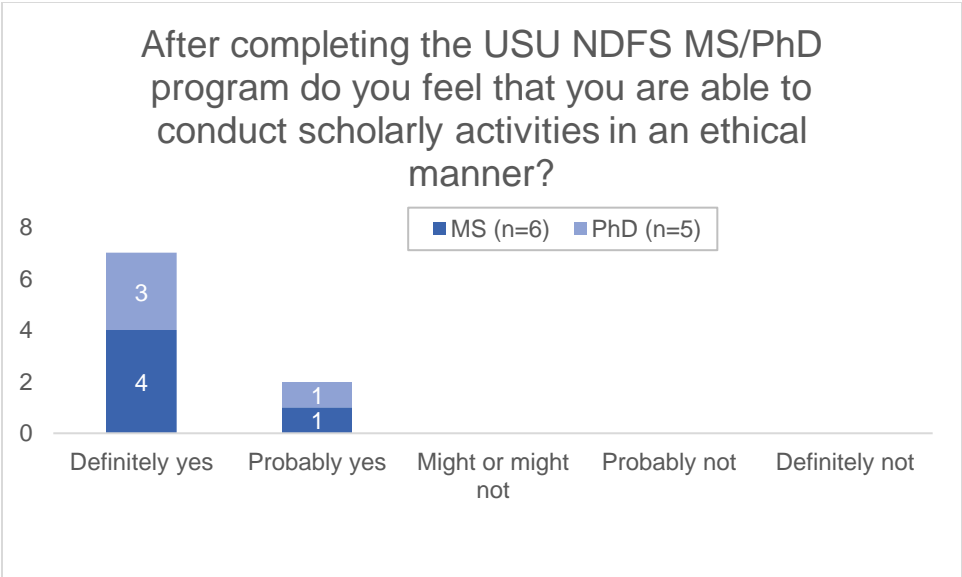
Spring 2021 Exit Survey Data



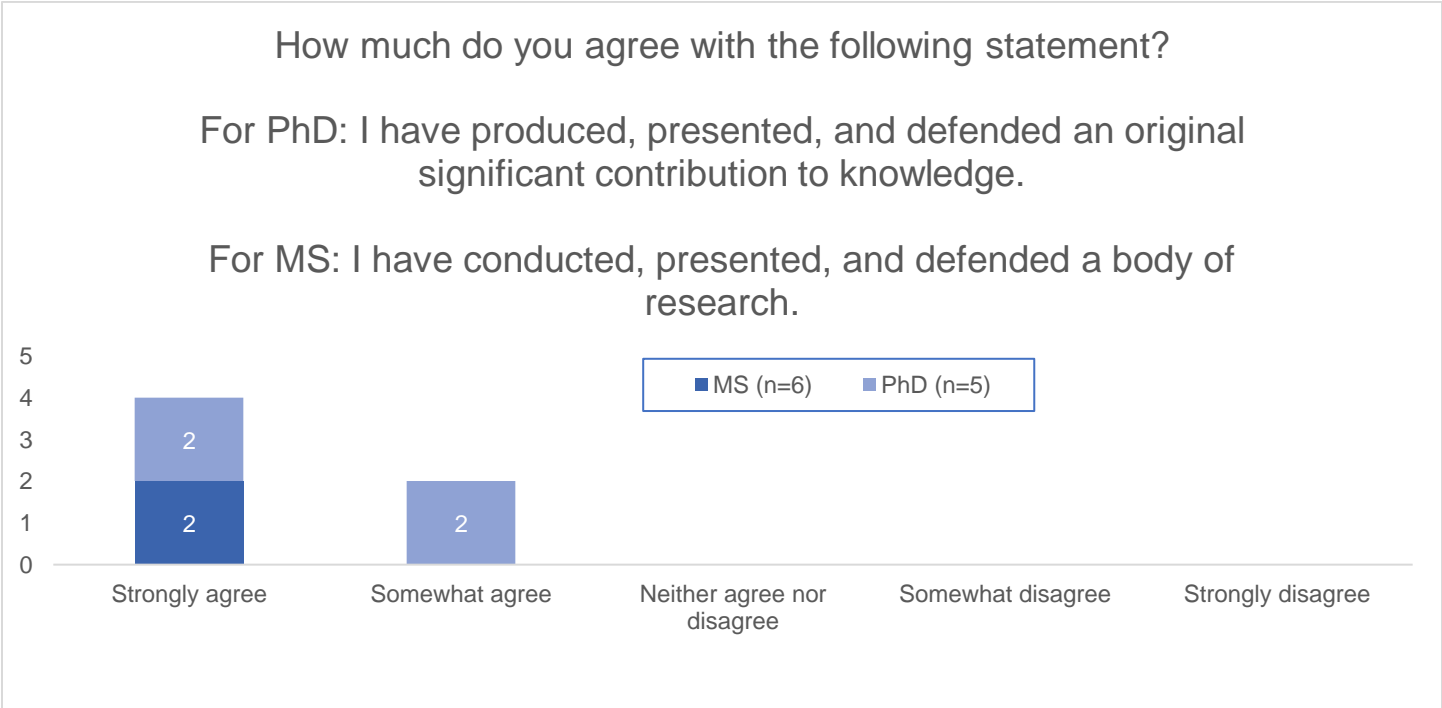
*Answers do not add up to total sample of 11 because of item non-response.



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*Answers do not add up to total sample of 11 because of item non-response.

Spring 2021 Graduate Student Exit Survey

Responses to question: Please tell us about 3 things that had a positive impact on your experience in the MS/PhD program at USU.

Themes	Quality of faculty and staff	Graduate coursework	Research experience	Academic/Professional opportunities	Major Professor	Language/writing	Other
Student responses	Good faculty and staff	Course material interesting	Research experience	Departmental support/funding for meetings, trips, product development competitions, etc	Having a great Advisor	Improved my writing skills	The many resources on campus
	Great professors all working to help me succeed	High quality classes	Improved my experimental design skills	Exposure to conferences	My major professor	Language	My classmates
	Availability of faculty to meet with students	Graduate level courses	Science	Encouragement to publish	My advisor		
	The helpfulness of faculty	Improved my knowledge of the theories and current research on my field		All of the club opportunities			
				Being given opportunities to work in product development competitions			

Spring 2021 Graduate Student Exit Survey

Responses to question: Please tell us about 3 things that you think we should try to improve for future students.

	Various Program Content Suggestions		Graduate research training	Communication/awareness	Faculty/Student Expectations	Other
	Food science specific	General				
Student Responses	More focus on internships	More statistics resources for students	Continue to provide training on the aspects of graduate research	Show future students the resources they have available	Have boundaries between faculty and students. Stents should be able to take a weekend for personal and not be criticized about it.*	I can't think of anything right now
	More focus on food safety	Courses	Seminars (maybe with the grad school) on basic grad school 101 (how to publish, lit reviews, professional development, faculty panels?)	Increase awareness of conferences and seminars	Have your faculty members and students read Dare to Lead by Brene Brown., Many of them lack leadership skills and use great to lead those they manage which results in a very poor growth environment.	
	More courses for food science program (graduate level).	Incorporating more review and analysis of published literature in course curriculum		Clearer communication and guidance for graduate school/departmental guidelines provided at the beginning of program (credits, different deadlines, when to submit certain paperwork, etc)	Study time	
	More focus on industry techniques	Class		Let faculty know what USU policies actually are. Many of them have a misconception and often just use the excuse "this is how it was when I was in grad school" for our poor behavior. Also they need to better understand OSHA policies. I have spent way too many 24-36 h days in the lab and this is not unique**		

*The faculty as a whole agree that this should be the expectation for our programs. However, students need to clearly discuss expectations with advisor before signing offer letter and agreeing to come.

**The faculty as a whole have mixed opinions about this. Some feel that research sometimes requires a 24-36 hour day. Again, students should clearly discuss expectations with their advisor before signing offer letter and agreeing to come.