

2018 Assessment Results of NRRE Majors

Department of Animal and Range Sciences

Dr. Bok Sowell, Dr. Bret Olson and Dr. Clayton Marlow

In the spring of 2018, the Faculty of the Natural Resources and Rangeland Ecology (NRRE) major met to formulate a plan to assess the program. This document is a report of our findings.

Methods:

As a result of our curriculum mapping exercise, we decided to assess learning outcome #3 Effective Written and Oral Communication Skills in WILD 420 Range and Wildlife Policy and Planning, and learning outcome #4, Problem Solving, in NRSM 353, Grazing Ecology and Management in Spring Semester 2018. Since Dr. Sowell is the instructor of NRSM 353, Dr. Bret Olson and Dr. Clayton Marlow evaluated the students in this course. We randomly selected 9 NRRE student presentations/oral reports from WILD 420 to evaluate, and 9 papers to evaluate. Individual students were assigned scores by two evaluators. The assessment criteria forms for Written and Oral Communication Skills, with scores of 1-5, are attached (Appendixes A&B). Any average score from both evaluators that was below a 3 was considered to be below expectations, and any average score of 3 or above was considered to meet minimum standards. For NRSM 353, we selected all NRRE student exams. The assessment criteria forms from FIU for subject content knowledge and critical thinking were modified using a scale from 1-5 (Appendix C). Any average score from both evaluators that was below a 3 was considered to be below expectations.

Results:

Oral Communication:

The results of our assessment are listed in Table One. One hundred percent of the students in WILD 420 were above our minimum expectations (80% of students 3/5 or higher) for oral communication skills.

We identified some positive results related to our student's skills:

1. Student appearance was professional.
2. Students were well prepared in advance.
3. Students were clear and precise in their delivery.

We also identified some common mistakes related to their oral communication skills:

1. Students often did not justify their position.
2. Students did not address the questions directly and fell back on a previously stated position.

We identified some possible solutions:

1. Instructors should provide more opportunities for oral presentations in their courses. Oral presentations are used in NRSM 353 and NRSM 455.
2. We do not provide training where students practice giving oral presentations, are critiqued, then get to present again to learn from their mistakes.

Written Communication:

The results of our assessment are listed in Table One. Eighty nine percent of the students in WILD 420 passed our expectations for written communication skills. We expected that 80% of our students would meet our standards, so we surpassed these expectations.

We identified some positive results related to our student's skills:

1. Most papers were well organized and followed instructions.

We identified some common mistakes related to their written communication skills:

1. Students did not provide the biological principles that were needed to understand the issue.
2. Students who answered opposition questions were evasive and referred to unrelated points.
3. The students need to improve their understanding of scientific format of papers, especially the literature cited section.

We identified some possible solutions:

1. Instructors should give students further instruction and example papers.

Problem Solving Skills:

The results of our assessment are listed in Table Two. Eighty one percent of our students passed the minimum requirements which met our goal of 80%. The instructor for the class estimated 60% of the students met our expectations for problem solving.

We identified some positive results related to our student's skills:

1. Students could identify most of the important information needed to solve the problem.

We identified some common mistakes related to our student's skills:

1. Some students did not address the question or focus on specific question.
2. Many students did not identify the problem.
3. Many students did not incorporate/integrate relevant information, provided by instructor or material from this course or related courses.
4. Many students did not understand the need to know the ecological potential for a given site.

We also identified some possible solutions:

1. Many students take NRSM 353 Grazing Ecology and Management spring semester of their junior year, most likely with very little previous problem-solving experience in our curricula or other course work, so the low scores are not unexpected.
2. Many students take this course con-current with or a year before NRSM 351 Wildland Biomes. Thus, it's difficult to understand or apply a grazing system to a particular biome if they do not have the background on biomes. We recommend students take NRSM 351 junior year, and NRSM 353 (Grazing Ecology and Management) senior year. Maybe we should change the course number of Grazing Ecology and Management from NRSM 353 to NRSM 4XX so students would expect to take it senior year.
3. We need to stress, especially in upper division courses, that they are not "stand-alone". They are part of a curriculum package. Students should be expected to draw on information from other classes.

Table 1. Department of Animal & Range Sciences Assessment of Natural Resource and Rangeland Ecology
Spring 2018

Oral Communication (WILD 420)			
Scale: 1-5; 1 = Lowest, 5 = highest; 1-2 = not adequate, 3-5 = passing			
Presentation Number	Reviewer 1	Reviewer 2	Average Score
1	4	4	4
2	4	4	4
3	4	4	4
4	4	4	4
5	3	3	3
6	4	4	4
7	3	4	3.5
8	3	4	3.5
9	3	4	3.5
Total Mean:			3.7/5

Written Communication (WILD 420)			
Scale: 1-5; 1 = Lowest, 5 = highest; 1-2 = not adequate, 3-5 = passing			
Paper Number	Reviewer 1	Reviewer 2	Average Score
1	4	4	4
2	2	3	2.5
3	3	4	3.5
4	4	4	4
5	3	3	3
6	4	5	4.5
7	3	5	4
8	4	5	4.5
9	4	4	4
Total Mean:			3.8/5

Any average score below a 3 is not a passing score

Learning Outcome: Oral Communication

100% of papers met minimum standards (pass)
 0% of papers did not meet minimum standards (fail)

Learning Outcome: Written Communication

89% of papers met minimum standards (pass)
 11% of papers did not meet minimum standards (fail)

Table 2. Department of Animal & Range Sciences Assessment of Natural Resource and Rangeland Ecology
Spring 2018

Problem Solving (NRSM 353)			
Scale: 1-5; 1 = Lowest, 5 = highest; 1-2 = not adequate, 3-5 = passing			
Paper Number	Reviewer 1	Reviewer 2	Average Score
1	4	5	4.5
2	4	4	4
3	2	2	2
4	4	5	4.5
5	3	3	3
6	4	4	4
7	4	5	4.5
8	4	5	4.5
9	3	2	2.5
10	2	4	3
11	3	4	3.5
12	4	4	4
13	2	3	2.5
14	4	5	4.5
15	3	4	3.5
16	4	5	4.5
Mean:			3.7/5

Learning Outcome: Problem Solving

81% of papers met minimum standards (pass) 19% of papers did not meet minimum standards (fail)

Appendix A
 Montana State University - Department of Animal and Range Sciences
 NRRE Assessment 2018
 Oral Communication Skills Rubric

Student _____ Course _____ Date _____

Oral communication is a prepared, purposeful presentation designed to increase knowledge, to foster understanding, or to promote change in the listener's attitudes, values, beliefs or behavior.

Performance Area	Passing			Not Adequate		Score
	Rating = 5	Rating = 4	Rating = 3	Rating = 2	Rating = 1	
Organization	Organizational pattern (introduction, sequenced material within body, conclusion, transitions) is clearly and consistently observable and skillful. Content is cohesive	Organizational pattern is clearly and consistently observable	Organizational pattern intermittently observable	Organizational pattern is not observable.	Presentation lacks organization, majority of content is not cohesive or related to purpose.	
Language	Language is imaginative, memorable and compelling, enhances effectiveness of presentation. Appropriate to audience	Language is thoughtful, generally supports presentation. Appropriate to audience	Language is mundane, commonplace, and partially supports presentation. Some language in appropriate	Language very casual, minimally supports presentation, some language not appropriate	Poor and confusing language. Does not support content and is not appropriate for setting or audience	
Delivery (Posture, gesture, eye contact and vocal expressiveness)	Posture, gesture, eye contact and vocal expressiveness make presentation compelling. Speaker appears polished, confident and professional.	make presentation interesting. Speaker appears comfortable and professional.	make presentation understandable. Speaker appears tentative but professional.	distract audience from understanding presentation. Speaker is difficult to hear - appears uncomfortable.	make presentation very difficult to understand. Speaker appears scared and unprofessional	
Supporting Material (explanations, examples, illustrations, statistics, analogies, relevant quotations)	Variety of supporting materials make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility on topic.	Supporting materials make appropriate reference to information or analysis that generally supports presentation or presenter's credibility.	Supporting materials make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility.	Supporting materials not related to information or analysis or does not support presentation or presenter's credibility	Insufficient supporting materials. Most do not support presentation or presenter's credibility	
Central Message	Central message compelling – precisely stated, appropriately repeated, memorable, strongly supported	Central message clear and consistent with the supporting material	Central message is basically understandable, but not often repeated, not memorable	Central message stated only once and is unclear	Central message unclear, and not specifically stated	
Total						
Overall Score = Total/5						

Appendix B
 Montana State University
 Department of Animal and Range Sciences
 NRRE Assessment 2018
 Written Communication Skills Rubric

Student _____ Course _____ Date _____

Written communication is the development and expression of ideas in writing. Written communication involves learning to work in many genres and styles (academic, scientific). Written communication abilities develop through interactive experiences across the curriculum.

Performance Area	Passing			Not Adequate		Score
	Rating = 5	Rating = 4	Rating = 3	Rating = 2	Rating = 1	
Context of and Purpose for Writing (audience, purpose, assigned task)	Demonstrates a thorough understanding of context and purpose that is responsive to the assigned tasks, and focuses all elements of the work.	Demonstrates adequate consideration of context and purpose with a clear focus on assigned task.	Demonstrates awareness of context, purpose and the assigned task.	Demonstrates minimum awareness of context, purpose and assigned task.	Does not understand or address purpose, context or assigned task.	
Content Development	Uses appropriate, relevant and compelling content – shows mastery of subject – conveys writer’s understanding of subject.	Uses appropriate & relevant content to explore ideas within context of discipline.	Uses appropriate & relevant content to develop and explore ideas through most of work.	Uses appropriate content to develop simple ideas.	Content not related or does not develop ideas.	
Genre and Disciplinary Conventions (formal and informal rules/ expectations for particular forms or academic fields)	Demonstrated detailed attention to wide range of conventions for a specific discipline or writing task including organization, content, presentation, formatting, etc.	Demonstrated consisted use of important conventions for a specific discipline or writing task including organization, content, presentation, formatting, etc.	Follows expectations appropriate to for a specific discipline or writing task for basic organization, content and presentation.	Attempts to use some expectations for basic organization of a paper	Paper not organized, content not appropriate, poor presentation, missing most basic writing skills.	
Sources and Evidence	Skillful use of high quality, credible, relevant sources to develop ideas appropriate for the discipline	Consistent use of high quality, credible, relevant sources to support ideas within discipline	Attempts to use some credible, relevant sources to support ideas appropriate for the discipline	Attempts to support ideas with a source (source not credible, relevant or related)	No attempt to support ideas presented	
Control of Syntax and Mechanics	Uses graceful language that skillfully communicates meaning to readers with clarity and fluency, virtually error-free.	Uses straightforward language that generally conveys meaning to readers – has few errors	Uses language that generally conveys meaning to readers with clarity, but wiring may include some errors	Uses language that poorly conveys meaning, is not clear and has many errors.	Language does not convey meaning, is unclear and full of errors.	
Total						
Overall Score = Total/5						

Appendix C
 Montana State University
 Department of Animal and Range Sciences
 NRRE Assessment 2018
 Problem Solving Skills Rubric

Student _____ Course _____ Date _____

Intended Outcome: The student will use inquiry, quantitative, and analytical reasoning to solve problems.

Performance Area	Passing			Not Adequate		Score
	Rating = 5	Rating = 4	Rating = 3	Rating = 2	Rating = 1	
Defining the problem	Student states the problem clearly and identifies underlying issues.		Student adequately defines the problem.	Student fails to define the problem adequately.	Student does not identify the problem.	
Developing a plan to solve the problem	Student develops a clear and concise plan to solve the problem, with alternative strategies, and follows the plan to conclusion.		Student develops an adequate plan and follows it to conclusion.	Student develops a marginal plan, and does not follow it to conclusion.	Student does not develop a coherent plan to solve the problem.	
Collecting and analyzing information	Student collects information from multiple sources and analyzes the information in-depth.		Student collects adequate information and performs basic analyses.	Student collects inadequate information to perform meaningful analyses.	Student collects no viable information.	
Interpreting findings and solving the problem	Student provides a logical interpretation of the findings and clearly solves the problem, offering alternative solutions.		Student provides an adequate interpretation of the findings and solves the problem, but fails to provide alternatives.	Student provides an inadequate interpretation of the findings and does not derive a logical solution to the problem.	Student does not interpret the findings/reach a conclusion.	
Total						
Overall Score = Total/5						

Assessment Plan: Natural Resources and Rangeland Ecology (2 Options: Range Ecology and Management, Wildlife Habitat Ecology and Management)

Program Learning Outcomes

Our graduates will:

1. demonstrate the ability to develop sustainable management and habitat restoration plans by synthesizing and applying knowledge of rangeland and wildlife ecology, soils, and vegetation. [Knowledge]
2. critically review and evaluate information to make decisions regarding the management of renewable resources in order to achieve conservation and management goals. [Critical Thinking]
3. demonstrate effective written and oral communication skills and facilitate communication within collaborative environments. [communication and collaboration]
4. use scientific principles to formulate questions, explore solutions, and problem solve in their chosen profession. [problem solving]
5. practice ethical conduct appropriate to their professional community and advocate for the responsible management of natural resources for current and future generations. [ethics]

Curriculum Map

<add courses in curriculum, mark with **I** (introduce), **D** (develop), **M** (mastery) >

	Cr	Outcomes				
		1	2	3	4	5
AGSC 342 Forages		D	M	D	D	
ANSC 222 Livestock in Sustainable Systems		I	I		I	I
ANSC 232 Livestock Management Sheep		I	I		I	I
ANSC 234 Livestock Management Beef		I	I		I	I
ANSC 320 Animal Nutrition		D	D	I	I	I
ANSC 337 Diseases of Domestic Livestock		D	D	D	D	D
ANSC 410 Veterinary Entomology						
ANSC 432R Sheep Management		D	M	M	D	D
ANSC 434R Beef Cattle Management		M	D	D	D	I
NRSM 101 and 102 Natural Resource Conservation		I	I	I	I	I
NRSM 235 Range and Pasture Monitoring		D		D		D
NRSM 240 Natural Resource Ecology		I			D	
NRSM 330 Fire Ecology and Management		I	D	D	D	M
NRSM 350 Vegetation of Western Wildlands		M	D	D	D	M
NRSM 351 Biomes of Western Wildlands		M	D	D	D	M
NRSM 353 Grazing Ecology and Management		D	D	M	D	D
NRSM 453 Habitat Inventory and Analysis				M		D
NRSM 455 Riparian Ecology and Management		M	M	M	M	M

WILD 325 Wildlife-Livestock Nutrition		D	D	M	M	D
WILD 355 Wildlife-Livestock Habitat Restoration		D	M	D	M	M
WILD 420 Range and Wildlife Policy		D	D	M		D
WILD 426 Wildlife Habitat Management		D	M	D	D	M
WILD 429/ANRN529 Yellowstone Wildlife Habitat Ecology						
WILD 438 Wildlife Habitat Ecology		D	D	M	M	D

Student Performance: Data Sources

Assignments such as quizzes, papers, lab assignments, presentations that are embedded in the following courses will serve as the source of data to assess the six outcomes.

	Cr	Outcomes				
		1	2	3	4	5
AGSC 342 Forages		X	X	X	X	
NRSM 350 Vegetation of Western Wildlands (plant id test)		X				
NRSM 351 Biomes of Western Wildlands (exam, term paper)		X		X	X	
NRSM 353 Grazing Ecology and Management (papers)		X	X	X	X	
NRSM 453 Habitat Inventory and Analysis				X		
NRSM 455 Riparian Ecology and Management		X	X		X	X
WILD 325 Wildlife-Livestock Nutrition (problem sets, reports)		X	X	X	X	
WILD 420 Range and Wildlife Policy		X	X	X		X
WILD 426 Wildlife Habitat Management		X	X	X	X	X
WILD 438 Wildlife Habitat Ecology		X	X	X	X	X

Response Threshold

At least 80% of students will be rated as “meets expectations” or “acceptable” or higher on assessments for each individual learning outcome.

Schedules

Outcomes

Outcome	Year					
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
1	X			X		
2	X			X		
3		X			X	
4			X			X
5			X			X

Process for Assessing the Data

Annual Assessment Process

1. Data is collected from identified courses.
2. Random samples of collected assignments are scored by two faculty members using prepared scoring rubrics.
3. The assessment coordinator tabulates the scores. Areas where the acceptable performance threshold has not been met are highlighted.
4. The scores are presented to the faculty for assessment.
5. The faculty reviews the assessment results, and makes decisions on how to respond.
 - If an acceptable performance threshold has not been met, a faculty response is required. Possible responses:
 - Gather additional data next year to verify or refute the result.
 - Change something in the curriculum to try to fix the problem.
 - Change the acceptable performance threshold.
 - Choose a different assignment to assess the outcome.
 - Faculty can respond to assessment results even if the acceptable performance threshold has been met.
 - It is OK to determine that changes are not needed when students are demonstrating proficiency with each learning outcome.
6. A summary of the year's assessment activities and faculty decisions is reported to the Provost's Office in your Department's Annual Assessment Activities report.