Suggested Rubric for MS and PhD Hydrology Learning Outcomes to be completed at the student's defense (if MS thesis or PhD dissertation) or project oral presentation/exam (if MS non-thesis)

Student Name: _____ Date of Defense/Oral Exam: _____

Degree sought: (Check one) **MS non-thesis** **MS thesis** **PhD**

Title of report/thesis/dissertation presentation:

Committee members please print and sign your name:

	Print Name:	**Signatures:**
Chair:	_____	_____
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

Assessment question	**LO #**	**Below expectations**	**Meets expectations**	**Exceeds expectations**	**N/A**
How well did the student conduct basic hydrological measurement techniques?	2	☐	☐	☐	☐
How well did the student analyze hydrological data and formulate conclusions?	3	☐	☐	☐	☐
How effectively did the student orally communicate hydrologic concepts and research?	4	☐	☐	☐	☐
How well prepared is the paper/dissertation/thesis/report for publication or submission?	5	☐	☐	☐	☐

*If N/A is selected, the assessment for the LO will be obtained from the HWRS 513A/B course

Suggested Rubric for MS and PhD Hydrology Learning Outcomes to be completed at the student's defense (if MS thesis or PhD dissertation) or project oral presentation/exam (if MS non-thesis)

Learning Outcome #2: Conduct basic hydrological measurement techniques

Below expectations: Did not follow standard measurement protocols OR if measurement technique was developed by student, was not adequately tested and validated by comparison to standard methods if/when possible.

Meets expectations: Followed standard measurement protocols &/or if technique was developed by student, it was also adequately tested and validated by comparison to standard methods if/when possible.

Exceeds expectations: Followed standard measurement protocols &/or if technique was developed by student, it was also adequately tested and validated by comparison to standard methods if/when possible. In addition, sufficient data was collected (usually ≥30 measurements, and with 2-3 replicates when appropriate) to allow for statistically-relevant analyses.

Learning Outcome #3: Analyze hydrological data and formulate conclusions

Below expectations: Analysis &/or conclusions are not based on adequate data. Weak or no statistical analyses (if applicable), &/or student does not fully comprehend the experiment/model/research they themselves conducted.

Meets expectations: Analysis &/or conclusions are based on adequate data. Some basic statistical analyses applied as needed. Student clearly comprehends the experiment/model/research they themselves conducted.

Exceeds expectations: Analysis &/or conclusions are based on substantial data and clear evidence. Statistical analyses applied appropriately as needed. Student clearly comprehends and has ideas for improving the experiment/model/research they themselves conducted.

Learning Outcome #4: Effectively communicate (orally) hydrologic concepts and research

Below expectations: Hydriologic concepts conveyed incorrectly or in a confusing or unclear manner. Partly explains or attempts to explain the significance of the problem, method(s) used, and conclusions. Presentation is only somewhat practiced/prepared. Minimal incorporation of graphics on slides. Response to questions shows some understanding of the research and some background information. Graphics, pictures, figures are missing titles, axis titles &/or basic captions.

Meets expectations: Hydriologic concepts conveyed correctly and clearly. Clearly and concisely states problem in accessible language. Method(s) is clear and easy to follow. There is an acknowledgement of limitations and assumptions of the experimental design. Conclusion is clearly stated and intentionally linked to the analysis. Smooth, timely interaction with visuals and graphics. Incorporates graphics into the discussion, and notable feature(s) are identified. Easy to follow, fluid speech. Response to questions shows clear understanding of the research and background information. Appropriate font size is used, and

there is a balance between graphics and text. Graphics are clear and properly labeled. A statement of the relevance of research to society &/or the environment is attempted.

Exceeds expectations: Hydriologic concepts conveyed clearly and accessibly. All adequate criteria AND: The effectiveness of the method(s) is explained, the relevance of the research to society &/or the environment clearly conveyed, future work is articulated. Speaking habits and body language are refined and natural, promotes audience engagement, connects graphics to the overall significance of the research. Layout and design style is appropriate and promotes understanding and optimum readability for audience (e.g. thoughtful color design, emphasis on graphics over text, creative use of space…etc.)

Learning Outcome #5 (MS): Demonstrate skills required to prepare a paper/thesis/report for publication or submission

Below expectations: Student's paper/thesis/report has little to no organization &/or lacks basic components (Introduction, Literature Review, Methods, Site Description (if applicable), Data Presentation and Analysis, Conclusions, Future Research) &/or not been adequately iteratively edited i.e. feedback and suggestions have not been heeded. (Paper/thesis/report is rejected.)

Meets expectations: Student's paper/thesis/report exhibits standard organization and basic components (Introduction, Literature Review, Methods, Site Description (if applicable), Data Presentation and Analysis, Conclusions, Future Research), and has been adequately iteratively edited i.e. student has responded to feedback and suggestions. Paper/thesis/report is accepted with some revisions.

Exceeds expectations: Student's paper/thesis/report exhibits standard organization, exhibits basic components (Introduction, Literature Review, Methods, Site Description (if applicable), Data Presentation and Analysis, Conclusions, Future Research), flows clearly from one section to the next, and has been thoroughly iteratively edited i.e. student has addressed all feedback and suggestions. Paper/thesis/report is accepted with minor or no revisions.

Learning Outcome #5 (PhD): Demonstrate skills required to prepare papers/dissertation for publication or submission

Below expectations: Student's papers/dissertation has little to no organization &/or lacks basic components (Introduction, Literature Review, Methods, Site Description (if applicable), Data Presentation and Analysis, Conclusions, Future Research), &/or not been adequately iteratively edited i.e. feedback and suggestions have not been heeded. No new contribution to the discipline is conveyed. Papers/dissertation are/is rejected.

Meets expectations: Student's papers/dissertation exhibits standard organization and exhibits basic components (Introduction, Literature Review, Methods, Site Description (if applicable), Data Presentation and Analysis, Conclusions, Future Research), and has been adequately iteratively edited i.e. student has

responded to feedback and suggestions. A new contribution to the discipline is conveyed. Papers/dissertation are/is accepted with some revisions.

Exceeds expectations: Student's papers/dissertation exhibits standard organization, exhibits basic components (Introduction, Literature Review, Methods, Site Description (if applicable), Data Presentation and Analysis, Conclusions, Future Research), flows clearly from one section to the next, and has been thoroughly iteratively edited i.e. student has addressed all feedback and suggestions. A new contribution to the discipline is conveyed. At time of defense, dissertation is accepted with minor or no revisions, or papers are submitted for peer-review.

Additional comments (optional):