MAJOR PROGRAM ASSESSMENT PLAN

Great Lakes Environmental Science M.S. (MS-AS GES)

Great Lakes Center

Student Learning Goals/Objectives	Course Resulting in Outcomes/Goals	Activities Resulting in Outcomes/Goals	Assessment Measures/Criteria/Rubrics	Timetable
1) Demonstrate analytical skills required to interpret and evaluate professional literature.	GLC 535, GIS course, BIO 670, PSM 601, PSM 602, GLC 688, plus electives	Written tests, assignments, projects (individual and group), papers, participation in class discussions, internship research project paper	Students demonstrate subject area mastery in GLC 688 Internship, which requires a research project paper that will be evaluated using a common rubric (see attached).	Spring
2) Demonstrate proficiency in professional writing.	GLC 535, GIS course, BIO 670, PSM 601, PSM 602, GLC 688, plus electives	Written tests, assignments, projects (individual and group), papers, participation in class discussions, internship research project paper	Students demonstrate subject area mastery in GLC 688 Internship, which requires a research project paper that will be evaluated using a common rubric (see attached).	Spring
3) Demonstrate comprehension of the broad aspects of project management and communication strategies.	PSM 601, PSM 602, GLC 688, plus electives	Written tests, team-based class work and projects, participation in class discussions, and internship experience	Students demonstrate subject area mastery in GLC 688 Internship, which requires the student to write a paper that demonstrates the application of professional science PLUS course fundamentals on their internship project. The paper will be evaluated using a common rubric (see attached).	Spring

4) Demonstrate ability to effectively organize oral presentation for either informal or formal settings.	GLC 535, PSM 601, PSM 602, GLC 688, plus electives	Written tests, oral and written presentations in classes, oral and written presentation of internship to PSM advisory board, participation in class discussions, internship evaluation	Students demonstrate subject area mastery in GLC 688 Internship and an oral presentation of their internship experience to the advisory board and/or peers in GLC 600 will be evaluated using a common rubric (see attached).	Spring

Process/procedures for making changes if suggested by assessment results:

GLES-affiliated faculty will meet as a group during the semester following assessment to discuss the summary of the student learning outcome assessment. Based on results of student performance with regard to each goal/objective, the faculty will identify strengths and weaknesses in the curriculum. Courses and/or curriculum will be revised if necessary; or, the goals/objectives might be modified.

PROGRAM SLOs and CURRICULUM MAP

GLES (MS-AS GES)

Outcomes	GLC 535	GEG 525, 528, or 529	BIO 670	PSM 601	PSM 602	GLC 688 Internship
Demonstrate analytical skills required to interpret and evaluate professional literature.	R	R	R	R	R	M
Demonstrate proficiency in professional writing.	R	R	R	R	R	M
Demonstrate comprehension of the broad aspects of project management and communication strategies.				R	R	M
Demonstrate ability to effectively organize oral presentation for either informal or formal settings.	R			R	R	M

R = Reinforced; M= Mastery Demonstrated

Course titles: GLC 535 Great Lakes Ecosystem Science; GEG 525 Fundamentals of GIS; GEG 528 Environmental Assessment & Planning Applications in GIS; GEG 529 Advanced Topics in GIS; BIO 670 Biological Data Analysis; PSM 601 Project Management for Math & Science Professionals; PSM 602 Communication Strategies for Math & Science Professionals; GLC 688 Internship

GLES Thesis (MA) and Internship Paper (MS) Rubric

	Satisfactory with Distinction	Satisfactory	Unsatisfactory
Literature review	Important issues or ideas were raised. The gaps in current knowledge were clearly identified and significant directions and approaches that fill these gaps were identified. The literature review was clearly connected to the study's methodology and measures. Subheadings were used effectively and transitions were provided between subheadings. Literature review was comprehensive and extensive.	Related literature was credibly summarized. The gaps in current knowledge were identified and directions and approaches that fill these gaps were identified. The literature review was connected to the study's methodology and measures. Sub-headings were effectively used to categorize related research. Literature review was comprehensive in both depth and scope.	Related literature was summarized. The gaps in current knowledge and approaches that fill these gaps were not identified. The literature review was minimally connected to the study's methodology and measures. Related research was not synthesized or integrated. Sub-headings were not used or used incorrectly. Literature review was incomplete and failed to explore the depth and scope of the available literature.
Methodology	The research design and method of analysis reflected a sophisticated understanding of the research problem.	The research design and method of analysis were appropriate for the research problem.	The research design and method of analysis were not appropriate for the research problem.
Results	The study's results were thoroughly and logically explained. The results were directly related to the research question(s) or hypothesis(es) and were reported in logical segments. Data tables and figures were clearly labeled, accurate, and well designed for ease of understanding. The results section had maximum clarity.	The results were related to the research question(s) or hypothesis(es). The reporting of results followed a logical sequence. Data tables and figures were clearly labeled and accurately reported the findings.	The study's results section was only partially related to the research question(s) or hypothesis(es). There was no sequence to the reporting of the results and data tables and figures lack clarity.
Discussion	The discussion was supported by related literature, findings were compared and contrasted, and theoretical connections were made to the research results. Implications and future directions were identified.	The discussion was supported by related literature and findings were compared and contrasted to other studies included in the review section. Results were placed in context and implications for future research are identified.	The discussion was minimally supported by related literature. Findings were summarized, but not interpreted (writer simply repeats the findings in the results section). The discussion failed to place the findings in context or include implications for future studies.
Content knowledge	The thesis/project excelled in the organization and	The thesis/project was organized, carefully focused	Ideas presented closely follow conventional

	representation of ideas related to the question. Depth of understanding was apparent and clearly related to a topic(s) in environmental science. The response synthesized theoretical concepts and coherently applied them to the question's specific context. The research design aligned with the research question and provided more than one method of analyzes.	and clearly outlined the major points related to the question. Ideas were logically arranged to present a sound scholarly argument. Depth of understanding related to a topic(s) in environmental science was evident. Theory was accurately applied contextually to the question. Research design aligned with the research question.	concepts with little expansion and development of new directions. Ideas and concepts were generally and satisfactorily presented although lapses in logic are apparent. Theory was minimally applied to the context of the question. The research design did not align with the research question.
Mechanics	The thesis/project was essentially error free in terms of mechanics. Writing flowed smoothly from one idea to another and led the reviewer through an orderly discussion of the topic. Transitions effectively established a sound scholarly argument and aided the reviewer in following the writer's logic.	While there may have been minor errors, the thesis/project followed normal conventions of spelling and grammar throughout. Errors did not significantly interfere with topic comprehensibility. Transitions were effectively used which help the reviewer move from one point to another.	Grammatical conventions were generally used, but inconsistency and/or errors in their use resulted in weak, but still apparent, connections between topics in the formulation of the argument. There were poor uses of transitions.

Adapted from California State University, Fresno, Department of Biology and "Final Thesis Project Rubric" from Winthrop University, Rock Hill, South Carolina.

GLES (MS) Professional Science PLUS Fundamentals Rubric

	Exceeds Standard	Meets Standard	Approaching Standard	Does Not Meet Standard
Articulate internship company/agency mission and goals of internship	Provided a thorough introduction to the company/agency so that the contributions the intern's role provided during the internship was clearly evident.	Introduced sufficient information on the company/agency to understand where the intern's role fit into the company structure.	Information about the mission and operations of company/agency was provided and the role of the intern is identified, but with limited explanation of intern's contribution.	The paper did not provide sufficient information about the company/agency to understand the role that the intern played during the internship experience.
Application of fundamentals of project management[1], if applicable[2].	Clear articulation of the internship project operations and why the approach was important to both the immediate project and the overall mission of the company/agency. Intern was able to recognize how new approaches might improve opportunities to achieve project objectives.	Displayed a good understanding of the operations involved in the immediate project and intern related their role and project to the mission of the company/agency.	Demonstrated a basic understanding of the operations involved in the immediate project, but was less adept at relating project to the broader company/agency mission.	Failed to demonstrate an understanding of project operations and the mission of the company/agency. Performed duties in a rote fashion.
Application of methods of effective communication techniques in business and technical communications[3], if applicable[2].	Professional format style of document is obvious. All aspects of the tone and language usage indicate that the intern is aware of and committed to communicating with an appropriate, identifiable audience.	Document follows most of the traditional format guidelines, but may have minor errors that do not detract substantially from the overall document. Tone and language use suggests considerable thought in choice and sensitivity to audience.	Document follows most of the traditional format guidelines, but has errors that are distinct and noticeable, but not so severe as to impede understanding. Awareness of audience is less evident and choice of voice and vocabulary indicates a basic understanding of the intended audience.	Document not professionally formatted. The choice of voice and vocabulary is inappropriate and does not exhibit sufficient control over the clear, effective expression of ideas.

[1]topics in project management (e.g., management of project integration, scope, time, cost, human resources, communication, and risk), team management, and team dynamics

[2]student must take one PSM course prior to completing an internship; therefore, they are only expected to demonstrate knowledge of the course material that they have completed

[3]topics in business and technical communication: sending and interpreting verbal and nonverbal messages; recognizing cultural differences; communicating about data and projects via written progress reports, formal scientific written communications, operations and procedures manuals, and/or letters/memos

GLES (MA and MS) Oral Communication Rubric

	Exceeds Standard	Meets Standard	Approaching Standard	Does Not Meet Standard
Organization	Well organized presentation with clear integration of content.	An organized presentation with a clear delineation of research objective/question, methodology, and significance of results.	Presentation included a description of the research objective/question, methodology, and significance of results.	Failed to describe the research objective/question, methodology, or the significance of the results.
Content	Displayed real insight into the topic being investigated and has original suggestions for improvement of the project or further investigations. Explained and expanded on information in slides during the presentation. Spoke about content with confidence and authority.	Displayed a good understanding of the topic being investigated. Spoke about content with confidence.	Demonstrated a basic understanding of the topic being investigated.	Demonstrated a poor/absent understanding of the topic being investigated. Numerous errors in usage of terminology or errors of fact which reflect a lack of understanding of the research project and results.
Presentation style	Oriented audience to tables, figures and graphs and explicitly led them through the analysis. Spoke clearly. Established eye contact with audience throughout the presentation.	Oriented audience to tables, figures and graphs and led them through the analysis. Spoke clearly with a few references to notes. Established eye contact with audience throughout the presentation, although may have displayed some evidence of nervousness.	Visual aids included research objective/question, methods, data, and results significance, but presenter failed to actively refer to visual aids during much of the presentation. Spoke audibly, but read much of the presentation verbatim from notes or off slides and/or used distracting speech pattern ("like, you know, uh", etc.) numerous times Only occasionally made eye contact with audience.	Visual aids failed to summarize research objective/question, methods, or data. Spoke quietly or mumbled such that much of the presentation was inaudible and failed to make eye contact with audience.
Interaction	Answered questions clearly and directly.	Answered questions clearly.	Answered questions reasonably well, although knowledge of the topic beyond the immediate project was not demonstrated.	Answers to questions demonstrated insufficient knowledge of topic.

GLES (MA and MS) Oral Communication Presentation Evaluation Form

Presenter _____

Categories: Rank each category from Excellent (4) to Poor (1)

ORGANIZATION	4	3	2	1
Clearly states the goal or objective for the presentation				
Summarizes and distills main points at the end of the presentation				
Appears well prepared for the presentation				

CONTENT	4	3	2	1
Includes visual aids, including figures, graphs, and tables				
Integrates text material into presentations				
Presents background of ideas and concepts				
Explains difficult terms, concepts, or problems				
Covers the main parts of the thesis/project (objectives/goals, methods, results, discussion, conclusions)				
Speaks about content with confidence and authority				

PRESENTATION STYLE	4	3	2	1
Uses visual aids effectively by orienting audience to figures, graphs, and tables, etc.				
Speaks audibly and clearly				
Speech fillers, for example, "ok, um, ah" are not distracting				
Communicates a sense of enthusiasm and excitement toward the content				
Speech is neither too formal nor too casual				
Establishes and maintains eye contact with the audience, not the screen or windows				

INTERACTION	4	3	2	1
Answers questions clearly and directly				
Listens carefully to audience comments and questions				
Responds confidently to inquiries for additional information				
Is able to admit error and/or insufficient knowledge				
How would you rank the speaker's overall presentation effectiveness?				

* Blanks = unable to judge

Comments:

Evaluation form based on the standardized form developed by M. Weimer, J. Parrett, and M.M. Kerns, editors of How Am I Teaching, published by Magna Publications, Inc., Madison WI