Energy, MS/Cert.

Program Description

The Master of Science in Energy and Certificate in Energy programs aim to develop a new generation of energy-educated students and professionals, who will be broadly educated on all components of energy through quantitative analytical methods and multi-scale systems-based approaches. Designed to introduce students and professionals to a wide spectrum of current and future interdisciplinary energy challenges, these programs provide an overview of energy technologies (fossil-based, renewable, and non-fossil based), present multi-scale energy systems engineering methods, detail the various materials used for energy production and transmission, and link these aspects to economics and finance, business, entrepreneurship, law, and their interactions. Students and professionals are exposed to important energy challenges and opportunities, as well as advances in theory, methods, technologies, and applications delivered by energy leaders from academia, industry, and government, through a module-based structure and a distinguished seminar series.

Outcome 1 – Research Methods and Analysis (MS-ENGY)

Master of Science in Energy students following the thesis track will be able to conduct supervised research through the development of clear research plans, employment of appropriate data gathering methods and tools, as well as data analysis techniques in the pursuit of valid (data-supported), theoretically consistent, and institutionally appropriate research consistent with the focus of their program.

Measure 1.1 – Master's Thesis Final Examination: Research Methods and Analysis

Data Collection: The student's Advisory Committee will assess the student's performance based on a custom *Thesis Rubric* designed to focus on research methods and analysis techniques. Following the completion of the Advisory Committee's assessment of the Master's Thesis Final Examination, the *Thesis Rubric* will be provided electronically by the Advisory Committee to the Chair of the Interdisciplinary Curricular Program in Energy for further analysis. These will be stored in a secure repository until the program review is initiated.

Methodology or data analysis strategy: The student's Advisory Committee (including Chair, Co-Chairs, and Members, as relevant) will guide and supervise the Thesis students from the beginning of the Master's Thesis on the development of clear research plans and the use of research and analysis techniques, explaining and modeling consistent and institutionally appropriate steps and actions. After completion of the research and substantial completion of the written thesis, a Master's Thesis Final Examination (thesis defense) will be administered by the Advisory Committee, which will provide an opportunity for the student to present a synthesis, critique, and application of theories and data gathering and analysis techniques, as well as an exposition of research methods. The Master's Thesis Final Examination will afford the student's Advisory Committee the opportunity to witness the student's presentation of various theories, concepts, principles and practice in action in a specialized area consistent with the focus of their program. Based on the Thesis Rubric, the student's Advisory Committee will assess the student's performance on research methods and analysis techniques.

[See MS Thesis Final Exam Rubric under *Supporting Documentation*.]

Target 1.1

For students who attempt the Master's Thesis Final Examination, the target will be for 80% or more of those students to score a letter grade of 'B' or higher on the Thesis Rubric.

Finding 1.1: **Met**

As with PLO 2, the rubric was revised, and the scale was changed from letter grades to a numerical evaluation independent of the grades on assignments or in courses. This was implemented in the 23-24 Academic Program Assessment. The target remains otherwise unchanged. The measurement is now for students who attempt the Master's Thesis Final Examination, that 80% or more will achieve average composite scores of **3 or higher on a scale of 1 to 4 (1=Unsatisfactory, 2=Emerging, 3=Acceptable, 4 = High Performing)** on the *Research Methods* and *Analysis Techniques* Section of the *Master's Thesis Final Examination Rubric*.

The average composite scores are derived from the assessments provided by each faculty graduate advisory committee member of each student on each question of the rubric. The 80% goal was selected to ensure that a majority of students are meeting the high standards of the Program, College, and University and will achieve the learning outcomes expected of master's students.

Findings: The number of Thesis MS students in the program for 2022-23 was small, N=3, however 100% scored >3.00 on the rubric with an average composite score of 3.64 on the *Research Methods* and *Analysis Techniques* section of the rubric. The In-Person students (N=2) had an average composite score of 3.75, while the Distance student (N=1) scored 3.42 in the same section. This Target was met.

This is the initial measurement for this PLO and target. The program is pleased with the findings and will strive to ensure continued success in future cycles.

Outcome 2 – Demonstrate Subject Matter Mastery (MS-ENGY, GCT-ENGY)

Master of Science in Energy and Certificate in Energy students will demonstrate mastery of degree program requirements, including theories, concepts, principles and practice, and demonstrate a coherent understanding of the subject matter.

Measure 2.1 – Capstone Course Final Report/Examination

Data Collection: Following the completion of each Capstone Course, student Subject Matter Mastery Rubrics will be provided electronically by the instructor(s) to the Chair of the Interdisciplinary Curricular Program in Energy for further analysis. These will be stored in a secure repository until the program review is initiated.

Methodology or data analysis strategy: In the programs' Capstone Course, a Final Report/Examination will be administered by the instructor(s), which will provide an opportunity for students to present a synthesis of knowledge gained through previously completed courses. This report will exhibit various theories, concepts, principles and practice in action through a case study or sample problem. The instructor(s) will assess the students based on a custom

Subject Matter Mastery Rubric that will aim to quantify each student's mastery of the subject matter.

[See Subject Matter Mastery Rubric under *Supporting Documentation*.]

Target 2.1

For students who attempt the Capstone Course Final Report/Examination, the target will be for 80% or more of those students to score a letter grade of 'B' or higher on the Subject Matter Mastery Rubric.

Finding 2.1: Met

Based on feedback and recommendations, we have revised the scale of the rubric from letter grades to numbers to avoid confusion between the letter grades of the rubric and the course grades. This was implemented in the 23-24 Academic Program Assessment. Apart from this change, the target remains unchanged: 80% or more of the students who attempt the Capstone Course Final Report/Examination, will score 3 or higher on a scale of 1 to 4 (1=Unsatisfactory, 2=Emerging, 3=Acceptable, 4 = High Performing) on the Subject Matter Mastery section of the Subject Matter Mastery Rubric & Oral Presentation Assessment Sub-Rubric.

The average composite scores are derived from the assessments provided for each student on each question of the Subject Matter Mastery section of the rubric. The 80% goal was selected to ensure that a majority of students are meeting the high standards of the program, college, and university and will achieve the learning outcomes expected of master's students by the time they complete the degree. It should also be noted that the capstone course is compulsory for Master of Science in Energy students, but optional for Certificate in Energy students.

Findings: Of the students who took the Capstone Course (N=19), 100% scored >3.00 with an average composite score of 3.77. Of the 19 students measured for this target in the 2022-23 cycle, all were MS-level students (no Certificate students took this course). The average composite score for the In-Person students was 3.73, while that of the Distance students was 3.78. This target was met.

This is the initial measurement for this PLO and target. The program is pleased with the findings and will strive to ensure that it is attained in future cycles.

Outcome 3 – Technology Use (MS-ENGY, GCT-ENGY)

Master of Science in Energy and Certificate in Energy students will be able to apply subject matter knowledge in a range of contexts to solve problems and make decisions.

Measure 3.1 – Software Utilization-Centric Problem-Solving Final Examinations

Data Collection: Following the completion of the Final Exams, the results will be provided electronically by the instructors to the Chair of the Interdisciplinary Curricular Program in Energy

for further analysis. These will be stored in a secure repository until the program review is initiated.

Methodology or data analysis strategy: Several courses in the Master of Science in Energy and Certificate in Energy programs rely on the development of skills in software utilization to solve problems. In these courses, which rely on software utilization-centric problem solving -- notably ICPE 602, ICPE 604, and ICPE 611 -- a Final Examination or Final Project will be administered to assess the student's utilization of technology tools to solve problems. Assessment will be completed by each instructor.

Target 3.1

For students who attempt the courses with software utilization-centric examinations (i.e., ICPE 602, ICPE 604, and ICPE 611), the target will be for 80% or more of those students to score a letter grade of 'B' or higher on the Final Exams.

Finding 3.1: Partially Met

Final exam or project scores were evaluated for the ICPE 602, 604, and 611 courses.

For ICPE 602 in Fall 2022, 100% of students (N=28) in the course scored 80% or higher on the final exam, with a mean score of 94.25. Five students in this course were In-Person MS students, 21 were Distance MS students, and two were Distance Certificate students. There were no In-Person Certificate students in this course. The target was met for this course.

For ICPE 604 (Fall 2022), 100% of students (N=27) scored 80% or higher on the final project with a mean score of 92.19. Of the students in this course, five were In-Person MS students, and 22 were Distance MS students. There were no Certificate students in this course, either in-person or distance learners. The target was met for this course.

For ICPE 611 (Spring 2024), 63.6% of the students (N=22) earned a score of 80% or higher on the final exam, and the mean score was 81.07. Of these students, three were In-Person MS students, 17 were Distance Learner MS students, and two were Distance Learner Certificate students. There were no In-Person Certificate students in this course. The target was not met for this course.

For ICPE 611, this target was only partially met. As a whole, the target has been met, as 89.6% of the total number of students scored 80% or higher.

This is the initial measurement for this PLO and target. The program will reconsider if this is the appropriate measurement for this PLO and investigate ways to improve the scores in the 611 course.

Outcome 4 – Research Communication (MS-ENGY)

Master of Science in Energy students following the thesis track will be able to effectively and orally communicate complex research topics about theories, arguments, methods, and concepts in language appropriate for relevant audiences, and by using appropriate technologies.

Measure 4.1 – Master's Thesis Final Examination: Communicate Complex Research Topics

Data Collection: Following the completion of the Advisory Committee's assessment of the Master's Thesis Final Examination, the Thesis Rubric will be provided electronically by the Advisory Committee to the Chair of the Interdisciplinary Curricular Program in Energy for further analysis. These will be stored in a secure repository until the program review is initiated.

Methodology or data analysis strategy: After completion of the research and substantial completion of the written thesis, a Master's Thesis Final Examination (thesis defense) will be administered by the Advisory Committee, which will provide an opportunity for the student to orally present the research conducted and results identified during the Master's Thesis. The student's Advisory Committee will assess the student's performance based on the Thesis Rubric specific section designed to focus on oral communication and general presentation skills.

[See MS Thesis Final Exam Rubric under *Supporting Documentation*.]

Target 4.1

For students who attempt the Master's Thesis Final Examination, the target will be for 80% or more of those students to score a letter grade of 'B' or higher on the relevant part of the *Thesis Rubric*.

Finding 4.1: Met

As with PLO 1 and PLO 2, the rubric was revised and the scale was changed from letter grades to a numeric evaluation independent of the grades on assignments or in courses. This was implemented in the 23-24 Academic Program Assessment. The target remains otherwise unchanged. The measurement is now for students who attempt the Master's Thesis Final Examination, 80% or more will achieve average composite scores of **3 or higher on a scale of 1 to 4 (1=Unsatisfactory, 2=Emerging, 3=Acceptable, 4 = High Performing)** on the *Oral Communication* and *Presentation Skills* Section of the *Master's Thesis Final Examination Rubric*.

The average composite scores are derived from the assessments provided by each faculty graduate advisory committee member of each student on each question of the rubric. The 80% goal was selected to ensure that a majority of students are meeting the high standards of the program, college, and university and will achieve the learning outcomes expected of master's students.

Findings: The number of Thesis MS students in the program for 2022-23 was small, N=3, however, 100% scored >3.00 on the rubric with an average composite score of 3.80 on the *Oral Communication* and *Presentation Skills* section of the *Master's Thesis Final Examination Rubric*. The In-Person students (N=2) had an average composite score of 3.85, while the Distance student (N=1) scored 3.70 in the same section. This Target was met.

This is the initial measurement for this PLO and target. The program is pleased with the findings and will strive to ensure continued success in future cycles.

Outcome 5 – Communicate Effectively (MS-ENGY, GCT-ENGY)

Master of Science in Energy and Certificate in Energy students will be able to communicate effectively, both in writing and orally, using persuasive techniques and logical argument presentation.

Measure 5.1 – Written Policy Report Final Examinations

Data Collection: Following the completion of the Final Exams, the results will be provided electronically by the instructor(s) to the Chair of the Interdisciplinary Curricular Program in Energy for further analysis. These will be stored in a secure repository until the program review is initiated.

Methodology or data analysis strategy: Several courses in the Master of Science in Energy and Certificate in Energy programs rely on the demonstration of student content mastery through a final written report. In one of these courses -- ICPE 608 -- students will prepare a written policy report that will serve as the Final Examination. The instructor(s) will assess the student's content mastery and written communication skills through a custom *Policy Report Rubric*. This document will assess the grammar and usage, the logical structure of the report, as well as students' persuasiveness and ability to construct and present their arguments and policy recommendations in a structured way.

[See Written Policy Report Rubric under *Supporting Documentation*.]

Target 5.1

For students who attempt the targeted course with written policy report final examinations (i.e., ICPE 608), the target will be for 80% or more of those students to score a letter grade of 'B' or higher on the *Policy Report Rubric*.

Finding 5.1: Not Met

The rubric was revised and the scale of the rubric pivoted from letter grades to numbers based on advice that the rubric's evaluation scores be separate from course grades. This was implemented in the 23-24 Academic Program Assessment. The target remains unchanged: 80% of the same students achieve average composite scores of **3 or higher on a scale of 1 to 4 (1=Unsatisfactory, 2=Emerging, 3=Acceptable, 4 = High Performing)** on the *Written Policy Report Rubric*.

The average composite scores are derived from the assessments provided for each student on each question of the Subject Matter Mastery section of the rubric. The 80% goal was selected to ensure that a majority of students are meeting the high standards of the program, college, and university and will achieve the learning outcomes expected of master's students by the time they complete the degree.

Findings: Of the students who took the Policy Course, ICPE 608 - Beyond Science and Technology: The Role of Policy in the Future of Energy in the U.S., in the 2022-23 cycle (N=23), 60.9% scored >3.00 on the *Written Policy Report Rubric* with an average composite score of 3.18. Of the 23 students measured for this target, 22 were MS-level students, and one was certificate-level. The average composite score for the In-Person students was 3.27, while that of the Distance students was 3.17. Although the average composite scores were within desired range, the percentage of students achieving that score was below the desired level, therefore this target was not met.

This is the initial measurement for this PLO and target.

In the process of using this rubric to evaluate the assignments, we discovered that some of the evaluation criteria were not well-suited to this particular writing assignment. The rubric was designed for the assessment of formal reports, however this assignment consisted of time-limited essays for a final exam. The program plans to amend the rubric so it can be used for either formal or informal writing assignments, perhaps by grouping questions for a formal report into a subsection.

Measure 5.2 – Presentation of Case Study Synthesis

Data Collection: Following the completion of each Capstone Course, the student *Oral Presentation Assessment Sub-rubric* (*part of the Subject Matter Mastery* Rubric) will be provided electronically by the instructor(s) to the Chair of the Interdisciplinary Curricular Program in Energy for further analysis. These will be stored in a secure repository until the program review is initiated.

Methodology or data analysis strategy: In the programs' Capstone Course, a Final Report/Examination will be administered by the instructor(s), which will provide an opportunity for students to orally present a synthesis of knowledge gained through previously completed courses. The student's presentation, presence, inflection, audience engagement, as well as the context, substance, and persuasion of the presentation will be assessed by the instructor(s) based on the *Oral Presentation Assessment Sub-rubric* that will aim to quantify each student's presentation skills.

[See Oral Presentation Sub-Rubric under *Supporting Documentation*.]

Target 5.2

For students who attempt the Capstone Course Final Report/Examination, the target will be for 80% or more of those students to score a letter grade of 'B' or higher on the relevant part of the *Oral Presentation Assessment Sub-rubric*.

Finding 5.2: Met

The rubric was revised and the scale of the rubric pivoted from letter grades to numbers based on advice that the rubric's evaluation scores be separate from course grades. This was implemented in the 23-24 Academic Program Assessment. The target remains unchanged: 80% of the same students achieve average composite scores of **3 or higher on a scale of 1 to 4 (1=Unsatisfactory, 2=Emerging, 3=Acceptable, 4 = High Performing)** on the *Oral Presentation Assessment Sub-Rubric* (part of the *Subject Matter Mastery Rubric & Oral Presentation Assessment Sub-Rubric* form).

The average composite scores are derived from the assessments provided for each student on each question of the Subject Matter Mastery section of the rubric. The 80% goal was selected to ensure that a majority of students are meeting the high standards of the program, college, and university and will achieve the learning outcomes expected of master's students by the time they complete the degree. It should also be noted that the capstone course is compulsory for Master of Science in Energy students, but optional for Certificate in Energy students.

Findings: Of the students who took the Capstone Course in the 2022-23 cycle (N=19), 100% scored >3.00 on the Oral Presentation Assessment Sub-Rubric with an average composite score of 3.53. Of the 19 students measured for this target, all were MS-level students (no Certificate students took the course). The average composite score for the In-Person students was 3.54, while that of the Distance students was 3.53. This Target was met.

This is the initial measurement for this PLO and target. The program is pleased with the findings and will strive to ensure continued success in future cycles.

Use of Results

We have identified a need for intervention in students' writing skills. After reviewing the policy course writing assignments and seeing the individual reviewer comments on the use of grammar and other attributes, we have identified that there are resources provided within the university that our students have not utilized and may not be aware of. Although not measured in this assessment, we feel there are additional writing-related skills such as conducting literature reviews and formal documents such as MS theses which our thesis students may need. Our Academic Program Coordinator plans to engage with the University Writing Center in November to request resources that can be incorporated into our courses to improve general writing skills.

Writing skills measurements showed deficiency in the current assessment. We expect to be able to measure improvement in student performance on the ICPE 608 writing assignments. We will also consider incorporating additional writing measurements into our assessment plan.

The results of the data assessment were shared with the program director, a distinguished faculty member and instructor in the program. The director and staff leadership collectively developed this plan of action.

Status Update on a Previous Action

Measurements were not taken in previous cycles.

Supporting Documentation

Measures: Master's Thesis Final Examination: Research Methods and Analysis & Master's Thesis Final Examination: Communicate Complex Research Topics

MS Thesis Final Exam Rubric

A. Research Methods and Analysis Techniques	High Performing (4)	Acceptable (3)	Emerging (2)	Unsatisfactory (1)
Familiar with the body of literature	❑ Demonstrates understanding of literature	❑ Good working knowledge of the literature	❑ Some understanding of the literature	❑ Weak understanding of the literature
Explains problem or need for the research in introduction	❑ Clearly defines problem or need	❑ Defines problem or need	❑ Weakly defines problem or need	❑ Inadequate explanation of problem or need
Appropriately defines background, relevance and technical terms for target audience	❑ Clearly defines background, relevance and technical terms	❑ Average background and relevance, defines some technical terms	❑ Vague background and relevance; some technical terms not defined for target audience	❑ Inadequate or missing background, relevance and defined terms
Has clear understanding of the research	❑ Advanced level of understanding of the research	❑ Average level of understanding of the research	❑ Developing level of understanding of the research	❑ Beginning level of understanding of the research
Objectives are clearly stated and based on valid reasoning/data	❑ Clear, well-focused objectives supported by ample/convincing data or literature	❑ Objectives are clear, but more data or support info needed	❑ Objectives need to be refined; inconsistent data to support objectives	❑ Objectives are not clear, provides inadequate or no supporting data
Describes and understands methodology	❑ Thorough understanding and description of methodology	❑ Understands and describes methodology	❑ Weak understanding and description of experimental methodology	❑ Poor understanding and description of experimental methodology
Understands statistical and experimental design	❑ Comprehends and explains experimental design and statistical design/analysis	❑ Capable of designing and conducting independent research	❑ Some understanding of experimental design or statistical design/analysis	❑ Little understanding of experimental design or statistical design/analysis
Content is relevant to the overall message/purpose	❑ Highly relevant material that conveys message/purpose	❑ Sufficiently relevant, but needs stronger link to purpose	❑ Material has some relevance but needs further development	❑ Ideas unclear; material has minimal relevance to purpose
Demonstrates awareness of this work's impact within the scholarly community	❑ Thoroughly analyzes own and others' assumptions and carefully evaluates relevance of contexts when presenting a position	❑ Identifies own and others' assumptions and several relevant contexts when presenting a position	❑ Questions some assumptions and identifies relevant contexts when presenting a position; may be more aware of others' assumptions than one's own (or vice versa)	❑ Shows emerging awareness of assumptions; begins to identify some contexts when presenting a position
Specific perspective or hypothesis considers broad viewpoints	❑ Specific perspective or hypothesis is imaginative and considers complexities of an issue, limitations and other points of view within position (perspective, thesis/ hypothesis)	❑ Specific perspective or hypothesis considers complexities and other points of view are acknowledged within position	❑ Specific perspective or hypothesis acknowledges different sides of an issue	❑ Specific perspective or hypothesis is stated, but is simplistic and obvious
Summarizes potential weaknesses (if any) of findings	❑ Provides summary of potential weaknesses	❑ Acknowledges potential weaknesses, no summary	❑ Minimal recognition of weaknesses of findings, no summary	❑ Fails to recognize weaknesses of findings
Offers conclusion and related outcomes	❑ Strong conclusions and related outcomes are logical, evidence-based, and complete the story or provide future direction for project	❑ Conclusion is logical and includes opposing viewpoints, related outcomes are identified clearly; does not provide future direction for project	❑ Conclusion is logically tied to information (possibly because information is chosen to fit the desired conclusion), and some related outcomes are identified; story is only partially complete or there is a failure to provide future direction	❑ Conclusion is weak or inconsistently tied to some of the information discussed, and related outcomes are oversimplified; conclusion fails to complete the story or provide future research direction

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B. Oral Communication and Presentation Skills	High Performing (4)	Acceptable (3)	Emerging (2)	Unsatisfactory (1)
Presentation is adapted for the topic and audience	❑ Well adapted to topic and audience level	❑ Adequately adapted to topic and audience	❑ Adaptation to topic and audience needs improvement	❑ Poorly adapted to topic and audience
Good delivery, eye contact, and body language	❑ Engages audience with eye contact and gestures, seldom reads from slides; speaker appears polished and confident	❑ Few problems engaging audience, minor reading of slides; speaker appears comfortable	❑ Some problems engaging audience and more frequent reading slides; presentation is understandable but speaker appears tentative	❑ Significant problems engaging audience, mostly reading slides; speaker appears uncomfortable
Speaks clearly and at an understandable pace	❑ Speaks clearly and at a comfortable pace	❑ Slight problems with clarity or rushed pace	❑ Significant problems with clarity and pace is rushed	❑ Difficult to understand or races through talk
Well-rehearsed	❑ Well prepared and presentation flows smoothly	❑ Rehearsed presentation, mostly smooth delivery	❑ Somewhat rehearsed; room for improvement in delivery	❑ Poorly rehearsed; presentation choppy or rambling
Uses appropriate vocabulary and grammar	❑ Language choices enhance the presentation and are well adapted for the audience. Few vocabulary and grammatical errors (0-3)	❑ Language choices support the presentation and are appropriate/ adapted for the audience. Some vocabulary and grammatical errors (4-6)	❑ Language choices do not enhance the presentation and are only partially adapted to audience. Many vocabulary and grammatical errors (7-10)	❑ Language choices are unclear and not adapted to audience. Excessive vocabulary and grammatical errors (>10)
Main ideas are presented in an orderly and clear manner	❑ Main ideas clear and organized, supported by detailed information	❑ Main ideas clear, organization of material could be improved	❑ Presentation of main ideas is somewhat clear, not well organized	❑ Presentation of main ideas is unclear and poorly organized
Central message is clear	❑ Central message is precisely stated, appropriately repeated, memorable, and strongly supported by data	❑ Central message is clear and consistent with the supporting material	❑ Central message is basically understandable but is not often repeated and is not memorable	❑ Central message can be deduced, but is not explicitly stated in the presentation
Text/Graphs/Figures are clear and understandable	❑ Visually clear and understandable; graphics enhance text	❑ Minor changes could improve clarity of presentation	❑ Mostly clear and readable, some changes needed	❑ Many changes needed to improve clarity of presentation
Audio/visual components support main points/objectives	❑ AV components strongly support objectives and tell story	❑ Uses AV components throughout in support of objectives	❑ AV components are used; only weakly support objectives	❑ Few AV components, some connection to objectives
Able to address questions professionally	❑ Addresses questions with ease; incorporates info from literature	❑ Addresses questions well; knows most answers, does not cite literature	❑ Marginal handling of questions; needs better preparation	❑ Uncomfortable with questions; does not know most answers

Comments/Suggestions for Student:

Measure: Capstone Course Final Report/Examination

Subject Matter Mastery Rubric

A. Subject Matter Mastery	High Performing (4)	Acceptable (3)	Emerging (2)	Unsatisfactory (1)
Explains problem or need for the research in introduction	❑ Clearly defines problem or need	❑ Defines problem or need	❑ Weakly defines problem or need	❑ Inadequate explanation of problem or need
Main ideas are presented in an orderly and clear manner	❑ Main ideas clear and organized, supported by detailed information	❑ Main ideas clear, organization of material could be improved	❑ Presentation of main ideas is somewhat clear, not well organized	❑ Presentation of main ideas is unclear and poorly organized
Central message is clear	❑ Central message is precisely stated, appropriately repeated, memorable, and strongly supported by data	❑ Central message is clear and consistent with the supporting material	❑ Central message is basically understandable but is not often repeated and is not memorable	❑ Central message can be deduced, but is not explicitly stated in the presentation
Objectives are clearly stated and based on valid reasoning/data	❑ Clear, well-focused objectives supported by ample/convincing data or literature	❑ Objectives are clear, but more data or support info needed	❑ Objectives need to be refined; inconsistent data to support objectives	❑ Objectives are not clear, provides inadequate or no supporting data
Has clear understanding of the research	❑ Advanced level of understanding of the research	❑ Average level of understanding of the research	❑ Developing level of understanding of the research	❑ Beginning level of understanding of the research
Describes and understands methodology	❑ Thorough understanding and description of methodology	❑ Understands and describes methodology	❑ Weak understanding and description of experimental methodology	❑ Poor understanding and description of experimental methodology
Appropriately defines background, relevance and technical terms for target audience	❑ Clearly defines background, relevance and technical terms	❑ Average background and relevance, defines some technical terms	❑ Vague background and relevance; some technical terms not defined for target audience	❑ Inadequate or missing background, relevance and defined terms
Offers conclusion and related outcomes	❑ Strong conclusions; related outcomes are logical, evidence-based, and complete the story or provide future direction for project	❑ Conclusion is logical and includes opposing viewpoints, related outcomes are identified clearly; does not provide future direction for project	❑ Conclusion is logically tied to information (possibly because information is chosen to fit the desired conclusion), and some related outcomes are identified; story is only partially complete or there is a failure to provide future direction	❑ Conclusion is weak or inconsistently tied to some of the information discussed, and related outcomes are oversimplified; conclusion fails to complete the story or provide future research direction
Able to address questions professionally	❑ Addresses questions with ease; incorporates info from literature	❑ Addresses questions well; knows most answers, does not cite literature	❑ Marginal handling of questions; needs better preparation	❑ Uncomfortable with questions; does not know most answers
Material is adapted for the topic and audience	❑ Well adapted to topic and audience level	❑ Adequately adapted to topic and audience	❑ Adaptation to topic and audience needs improvement	❑ Poorly adapted to topic and audience

Measure: Written Policy Report Final Examinations

Written Policy Report Rubric

Evaluation Criteria	High Performing (4)	Acceptable (3)	Emerging (2)	Unsatisfactory (1)
Report clearly written	❑ Clearly written	❑ Little revision needed	❑ Moderate revision needed	❑ Much revision needed
Text/Graphs/Figures are clear and understandable	❑ Visually clear and understandable; graphics enhance text	❑ Minor changes could improve clarity of presentation	❑ Mostly clear and readable, some changes needed	❑ Many changes needed to improve clarity of presentation
Material is adapted for the topic and audience	❑ Well adapted to topic and audience level	❑ Adequately adapted to topic and audience	❑ Adaptation to topic and audience needs improvement	❑ Poorly adapted to topic and audience
Organization structure includes specific introduction and conclusion, sequenced material within the body, and appropriate transitions	❑ Organizational structure is clear, consistent and skillful; content of presentation is cohesive	❑ Organizational structure evident within presentation, but needs improvement	❑ Organizational structure intermittently developed	❑ Organizational structure is poorly developed
Central message is clear	❑ Central message is precisely stated, appropriately repeated, memorable, and strongly supported by data	❑ Central message is clear and consistent with the supporting material	❑ Central message is basically understandable but is not often repeated and is not memorable	❑ Central message can be deduced, but is not explicitly stated in the presentation
Main ideas are presented in an orderly and clear manner	❑ Main ideas clear and organized, supported by detailed information	❑ Main ideas clear, organization of material could be improved	❑ Presentation of main ideas is somewhat clear, not well organized	❑ Presentation of main ideas is unclear and poorly organized
Explains problem or need for the research in introduction	❑ Clearly defines problem or need	❑ Defines problem or need	❑ Weakly defines problem or need	❑ Inadequate explanation of problem or need
Content is relevant to the overall message/purpose	❑ Highly relevant material that conveys message/purpose	❑ Sufficiently relevant, but needs stronger link to purpose	❑ Material has some relevance but needs further development	❑ Ideas unclear; material has minimal relevance to purpose
Able to interpret and/or evaluate evidence from other sources and advisory committee	❑ Information is taken from source(s) with enough interpretation / evaluation to develop a comprehensive analysis or synthesis. Viewpoints of Advisory Committee are questioned thoroughly.	❑ Information is taken from source(s) with enough interpretation / evaluation to develop a coherent analysis or synthesis. Viewpoints of Advisory Committee are subject to questioning.	❑ Information is taken from source(s) with some interpretation / evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of Advisory Committee are subject to questioning.	❑ Information is taken from source(s) without any interpretation / evaluation. Viewpoints of Advisory Committee are subject to questioning.
Demonstrates awareness of this work's impact within the scholarly community	❑ Thoroughly analyzes own and others' assumptions and carefully evaluates relevance of contexts when presenting a position	❑ Identifies own and others' assumptions and several relevant contexts when presenting a position	❑ Questions some assumptions and identifies relevant contexts when presenting a position; may be more aware of others' assumptions than one's own (or vice versa)	❑ Shows emerging awareness of assumptions; begins to identify some contexts when presenting a position
Summarizes potential weaknesses (if any) of findings	❑ Provides summary of potential weaknesses	❑ Acknowledges potential weaknesses, no summary	❑ Minimal recognition of weaknesses of findings, no summary	❑ Fails to recognize weaknesses of findings
Uses appropriate vocabulary and grammar	❑ Language choices enhance the presentation and are well adapted for the audience. Few vocabulary and grammatical errors (0-3)	❑ Language choices support the presentation and are appropriate/ adapted for the audience. Some vocabulary and grammatical errors (4-6)	❑ Language choices do not enhance the presentation and are only partially adapted to audience. Many vocabulary and grammatical errors (7-10)	❑ Language choices are unclear and not adapted to audience. Excessive vocabulary and grammatical errors (>10)

Comments/Suggestions for Student:

Measure: Presentation of Case Study Synthesis

Oral Presentation Sub-Rubric

B. Oral Presentation Assessment Sub-Rubric	High Performing (4)	Acceptable (3)	Emerging (2)	Unsatisfactory (1)
Content is relevant to the overall message/purpose	❑ Highly relevant material that conveys message/purpose	❑ Sufficiently relevant, but needs stronger link to purpose	❑ Material has some relevance but needs further development	❑ Ideas unclear; material has minimal relevance to purpose
Depth of commentary/Presentation is appropriate for level of training	❑ Strong; advanced for level of training	❑ Good; appropriate for level of training	❑ Adequate/developing; appropriate for level of training	❑ Weak; needs improvement for level of training
Text/Graphs/Figures are clear and understandable	❑ Visually clear and understandable; graphics enhance text	❑ Minor changes could improve clarity of presentation	❑ Mostly clear and readable, some changes needed	❑ Many changes needed to improve clarity of presentation
Audio/visual components support main points/objectives	❑ AV components strongly support objectives and tell story	❑ Uses AV components throughout in support of objectives	❑ AV components are used; only weakly support objectives	❑ Few AV components, some connection to objectives
Good delivery, eye contact, and body language	❑ Engages audience with eye contact and gestures, seldom reads from slides; speaker appears polished and confident	❑ Few problems engaging audience, minor reading of slides; speaker appears comfortable	❑ Some problems engaging audience and more frequent reading slides; presentation is understandable but speaker appears tentative	❑ Significant problems engaging audience, mostly reading slides; speaker appears uncomfortable
Speaks clearly and at an understandable pace	❑ Speaks clearly and at a comfortable pace	❑ Slight problems with clarity or rushed pace	❑ Significant problems with clarity and pace is rushed	❑ Difficult to understand or races through talk
Uses appropriate vocabulary and grammar	❑ Language choices enhance the presentation and are well adapted for the audience. Few vocabulary and grammatical errors (0-3)	❑ Language choices support the presentation and are appropriate/ adapted for the audience. Some vocabulary and grammatical errors (4-6)	❑ Language choices do not enhance the presentation and are only partially adapted to audience. Many vocabulary and grammatical errors (7-10)	❑ Language choices are unclear and not adapted to audience. Excessive vocabulary and grammatical errors (>10)
Length of presentation within assigned time limit	❑ Paced and adapted to fit assigned time limit	❑ Adequate for time limit	❑ Does not fit time limit	❑ Violates time limit

Comments/Suggestions for Student: