

Research Project Instructions and Rubric

ISYE 348 Fall 2024 Lab 9

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Submission: Please submit your report as a PDF file on Canvas. Make sure to include your name and your partner's name at the beginning of the report. Include any code, plots, or tables as needed to support your answers. Make sure to answer all questions thoroughly and provide detailed explanations where necessary. Cite any external sources used. Submit one single pdf file with all the answers.

Collaboration with your classmates is encouraged, and you will work in pairs for this lab to complete the report. Please list your partner's name at the beginning of the report. Only one submission per group is required. Must include data from both partners in the report.

Late submissions will be penalized by a 1 point deduction every hour past the deadline.

$$\text{score} = \max(\text{max_score} - \lfloor \text{hours_late} \rfloor, 0)$$

Please read the course policy on academic integrity and collaboration on the course syllabus. If you have any questions about what is permissible, please ask before submitting your work.

Abstract (3 points)

[submitted previously]

Introduction (7 points)

[submitted previously]

Hypothesis (200-300 words)

Due Date: 2024-11-12

Includes:

- Clear statement of predicted relationships between variables
- Justification based on previous research and theoretical framework
- Explanation of how the hypothesis addresses the research question
- Operational definitions of key variables
- Multiple sub-hypotheses if necessary (each clearly labeled and explained)
- Citations required (~2-4)

Grading Rubric for Hypothesis (8 points total)

Criterion	0 points	1 point	2 points
Clarity of hypothesis statement	Missing or incomprehensible	Present but unclear or poorly worded	Clear, specific, and testable
Theoretical justification	No justification provided	Basic justification without theoretical support	Well-supported with relevant theory and research
Variable operationalization	Variables not defined	Variables partially defined or unclear	Clear and complete operational definitions
Alignment with research question	No clear connection to research question	Partial connection to research question	Strong alignment with research question

Methods (1000-1500 words)

Due Date: 2024-12-02

Includes:

- Research design and rationale
- Participant information (sample size, recruitment, characteristics)
- Materials and equipment
- Procedures
- Data collection methods
- Variables (independent and dependent)

- Control measures
- Ethical considerations

Grading Rubric for Methods (42 points total)

Criterion	0 points	2 points	4 points
Research design	Missing or inappropriate	Basic design with minimal rationale	Appropriate design with clear rationale
Participant characteristics, and size	Not described	Basic demographics provided	Comprehensive inclusion/exclusion criteria
Materials and equipment	Missing or inadequate	Basic description provided	Detailed specifications and justification
Procedures	Missing or unclear	Basic procedures outlined	Detailed, replicable procedures
Variable measurement	Not described	Basic measures described	Comprehensive measurement plan
Data collection methods	Missing or inappropriate	Basic methods described	Detailed and appropriate methods
Control measures	Not addressed	Basic controls mentioned	Comprehensive control strategy
Data analysis plan	Missing or inappropriate	Basic plan outlined	Comprehensive analysis strategy

[6 points] **Methods Figure:** Create a flowchart or diagram illustrating the steps involved in your research methods.

[4 points] **Formating, punctuation, writing style:** Follows IEEE template, clear and concise writing, correct grammar and punctuation.

Expected Results (400-500 words)

Due Date: 2024-12-02

Includes:

- Anticipated findings based on hypothesis
- Potential patterns or trends
- Preliminary data analysis plan
- Possible alternative outcomes
- Potential limitations and their impact
- No actual results required (as this is a proposal)
- Citations not required

Grading Rubric for Expected Results (10 points total)

Criterion	0 points	1 point	2 points
Expected findings	Not addressed	Basic predictions made	Detailed and insightful predictions
Limitations discussion	Not addressed	Basic limitations listed	Thorough analysis of limitations
Practical implications	Not addressed	Basic implications mentioned	Clear and significant implications

[4 points] **Expected Results Plot:** at least one plot or figure that illustrates the expected results based on your hypothesis.

Final Presentation (30 points)

In-class presentation: 2024-12-02

General Guidelines:

- All sections should follow IEEE template provided
- Write in clear, academic language
- Maintain logical flow between sections
- Use appropriate headings and subheadings
- Include in-text citations where required
- Avoid speculation beyond what is supported by literature
- Consider practical constraints of the study