

Project rubric

The same standards across different kinds of investigation

The project is 20% of the course grade: 10 project points for process, 70 for the report, and 20 for the presentation. Full credit does not require an optional extension or a novel discovery.

Process: 10 points

Proposal and scope (4). A focused question, usable model, preliminary result, feasible method, meaningful check, and concrete stopping rule.

Foundation checkpoint (3). Substantive baseline work, a check, and an honest diagnosis of obstacles.

Investigation checkpoint and response (3). Meaningful progress, validation evidence, and reasoned response to feedback or scope revision.

Early errors are repairable. Timely communication and a substantive recovery plan allow evidence of improved work to be considered. Process points reward research decisions and follow-through, not a diary of hours or polished progress prose.

Final report: 70 points

Criterion	Points	Evidence of excellent work
Technical foundation	20	Correct equations, variables, assumptions, units, and boundary or initial data; enough reasoning to use and verify the model.
Investigation and depth	20	A focused development beyond the supplied foundation; substantive choices, comparison or derivation; a result answering the approved question.
Evidence and validation	15	A check genuinely independent of the central calculation or a direct exact verification; numerical accuracy/conditioning addressed when relevant.
Interpretation and synthesis	10	Explains why the result occurs and what it means; distinguishes exact results from approximation and interpretation; identifies limitations.
Written communication	5	Clear organization, readable equations and figures, useful captions and references, adequate supporting material and disclosure.

Oral component: 20 points

Question and organization (4); explanation of the mechanics and central result (8); validation and limitations (4); and informed response to questions demonstrating ownership (4). See the [presentation guide](#) for the five-minute structure.

How to read the rubric

Completeness is not the same as volume

Performance descriptions

Excellent. The work is correct, complete within its approved scope, independently checked, and convincingly interpreted. The student can defend the central reasoning and recognizes limitations. This can earn full marks without a stretch goal.

Sound, with limited gaps. The central reasoning is valid and the investigation is substantive, but a check, explanation, or minor technical detail needs improvement. Identify the particular criterion affected rather than applying a vague penalty for ambition or style.

Developing. Some appropriate work is present, but an important derivation, comparison, or validation is incomplete. The reader cannot yet rely on one or more central claims. Partial credit follows the evidence actually supplied.

Insufficient evidence. The submission mainly reproduces background, reports unexamined output, or makes central claims without a usable model or supporting argument. A sophisticated topic name or polished prose does not substitute for evidence.

Equivalent standards, different evidence

Analytical projects may validate by substitution, an independent derivation, a limiting case, or a counterexample. A claim that something is exact needs an exact argument, not only agreement at a few sample points.

Computational projects should connect calculation to a prediction and an interpretation. Convergence, conserved quantities, independent solutions, and checks of parameter or initial-data choices should match the claim. More plotted curves are not automatically more evidence.

Foundational projects require accurate mechanics, a precise interpretive claim, and a serious competing interpretation or counterargument. Grade the accuracy and argument, not the metaphysical conclusion chosen. Unsupported general discussion does not replace the mechanical investigation.

Negative results and changed plans

A disproved conjecture can satisfy the investigation criterion when the student supplies a decisive counterexample, validates it, and explains the revised conclusion. A documented obstacle can justify narrowing the contract. Merely reporting that a calculation did not work, without diagnosis or a supported result, is not the same achievement.

A corrected final report is assessed on its final evidence. The presentation retains its own score; a single mistake should not be penalized repeatedly under unrelated report criteria. Tool use is evaluated through verification and understanding, not by how little assistance was used.

Before the proposal is approved: Make sure the agreed stopping rule can actually demonstrate the rubric's standards. A baseline-only project cannot become a full investigation simply by being written at greater length.

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