Engineering Project Planning Template for Teachers

Project Title:

Project Idea: Summary of the issue, challenge, scenario, or problem:

Driving Question(s):

Content and Skills/Standards:

Course Content *(will vary at the facilitator's discretion, but may include…)*	Engineering Skills/Processes	Other Content or Skills Addressed

Phase 1: Problem Definition	
Students will be able to d*efine the boundaries of a problem* by*:* -Identifying Criteria and Constraints -Refining Problem Statement	Tools: - Student handout: *Engineering Project Phase 1* - Pairwise Comparison Chart template & example
Planning Notes	**Sample Work / Anticipated student responses & questions**
Teacher Inputs: Student Outputs:	*General problem students address:* *Known criteria (students may identify others):* Design should / Design could also: *Anticipated constraints (project imposed and natural world imposed, "design must"):* *Stakeholders:* *Anticipated questions from students:* *Refined problem statement:* We as _(role)_____, seek to __(problem)_____ in order to __(major criteria)_____ for __(stakeholders/context)_____.

Phase 2: Design Exploration

Students will be able to *generate design alternatives* by:
- Brainstorming
- Modeling and experimenting to gather data to inform decisions
- Selecting a preliminary design

Tools:
- Decision Matrix template and example

Planning Notes	Sample Work / Anticipated student responses & questions
Teacher Inputs: Student Outputs:	*Possible variables to test:* *Sample Data:* *Example of Claim, Evidence, Reasoning statements about data:*

Phase 3: Design Optimization

Students will be able to *develop and optimize a selected design* by:
- Building, testing, verifying, refining prototype
- Evaluating trade-offs (use data to inform decisions)

Planning Notes	Sample Work / Anticipated student responses & questions
Teacher Inputs: Student Outputs:	*Samples of how students might compare design alternatives:* *Student Final Design examples:* *Possible questions for further research:*

Phase 4: Design Communication

Students will be able to *communicate their final design to an audience* by:

- Relating design details and rationale
- Justifying tradeoffs
- Reflecting on the process

Planning Notes	Sample Work / Anticipated student responses & questions
Teacher Inputs: Student Outputs:	*Examples of Student work:*

Assessments/Benchmarks:

Formative (check-in, design reviews, whiteboard sessions, quizzes, journal prompts, outlines, prototypes, etc) :	Summative (written product, presentation, and/or performance (with rubric)) :

Resources:

People	
Equipment	
Materials (per group)	
Online	

Calendar: Expand or contract as needed

Project Week 1

Project Week 2

Project Week 3

Project Week 4
