The Ultimate Mini Golf Challenge
Engineering Your Dream Mini Golf Experience

The Challenge

How can we, as STEM engineers, design an innovative mini golf experience that combines physics, engineering, and technology to create an engaging and challenging course for our school's STEM fair?

Your Mission

Your team has been hired by "Future Fun Labs" to design and build the next generation of mini golf holes! They're looking for creative designs that combine classic mini golf fun with modern technology. Your challenge is to create a unique mini golf hole that's both challenging and entertaining.

What You'll Create

- A fully functional mini golf hole
- A launcher mechanism for your golf ball (marble)
- Creative obstacles and challenges
- *(Optional)* Interactive features using technology
- Complete documentation of your design process

Project Timeline

Day 1: Design Phase

- Meet your team
- Brainstorm ideas
- Create initial designs
- Plan your materials

Day 2: Prototyping

- Build basic structure
- Test basic concepts
- Start planning tech features (if using)

Days 3-4: Building Phase

- Construct your hole
- Add obstacles
- Include tech features (if chosen)
- Test and improve

Day 5: Testing & Refinement

- Test your design
- Get feedback
- Make improvements
- Complete documentation

Day 6: Tournament Day

- Final setup
- Class tournament
- Presentations
- Reflection

Materials You Can Use

Basic Materials:

- Cardboard
- Craft sticks
- Pool noodles
- Plastic cups
- Tape
- Marbles
- Other classroom supplies

Tech Options (Optional):

- MakeyMakey boards
- Hummingbird kits
- Scratch programming
- Basic electronics

Success Criteria

Your project will be evaluated on:

Design (25 points)

- How creative is your design?
- How well-built is your hole?
- How appealing is it visually?

Engineering (25 points)

- Does it work reliably?
- How well does the launcher work?
- Are the obstacles challenging but fair?

Technical Features (25 points)

- How well do the tech features work? *(if used)*
- OR Extra physical features *(if not using tech)*

Documentation (25 points)

- Design process records
- Testing results
- Daily progress photos
- Final reflection

Safety Rules

- Marbles must stay in testing zones
- Use tools only as instructed
- Keep workspace clean
- Report any broken materials
- Follow all classroom safety rules

Daily Progress Checks

Each day, your team will:

- Set daily goals
- Check out materials
- Document progress
- Test improvements
- Clean up workspace
- Complete daily log

Student Engineering Notebook

Each team will maintain an engineering notebook to document their process, including:

1. Daily Entries

- Date
- Goals for the day
- Materials used
- Progress made
- Challenges faced and how they were addressed

2. Design Sketches

- Initial brainstorming sketches
- Finalized design plans
- Modifications and improvements

3. Testing Data

- Observations from prototype testing
- Adjustments made based on results
- Data on success rates of launcher and obstacles

4. Reflection Questions

- What did we learn today?
- How did we apply simple machines in our design?
- What challenges did we overcome?
- What improvements would we make if we had more time?

Student Team Contract

Team Name: _____

Team Members & Roles:

Each team member must take on a primary role, but collaboration is encouraged!

Role	Responsibilities
Project Manager	Keeps the team on task, manages timeline, ensures all parts are completed.
Lead Designer	Oversees the design and layout of the mini golf hole and obstacles.
Builder	Leads the construction process, ensuring structural stability.
Programmer (Optional)	Integrates MakeyMakey, Hummingbird, or Scratch programming if used.
Tester & Troubleshooter	Conducts testing, collects data, and suggests improvements.

Team Agreements:

- We will respect each other's ideas and contributions.
- We will share responsibilities and help each other when needed.
- We will manage our time efficiently to meet deadlines.
- We will communicate and resolve conflicts respectfully.
- We will actively participate and put forth our best effort.

Signatures:

Each team member must sign below to acknowledge their role and commitment:

Project Manager: _____
Lead Designer: _____
Builder: _____
Programmer (Optional): _____
Tester & Troubleshooter: _____

Remember: *Great designs come from lots of testing and improvement. Don't be afraid to try new ideas!* 🚀