

Impromptu Design Contest

Time permitting the SPDC Host is encouraged to conduct a "For Fun"
Impromptu Design Contest

RESPONSIBILITIES OF HOST

√	When	Description
	Fall preceding SPDC	Gather ideas for competition.
	NLT January	Write and test rules
	NLT February	Modify and test rules
	NLT February	Send copy of rules to ASME headquarters For Review (Note: This information will be kept confidential)
	ASAP	Gather Prizes (Optional)
	ASAP	Assembly team supply packages
	At SPDC	Sign up teams and distribute packages
	At SPDC	Conduct the contest
	At Awards Banquet	Announce Winners and Present Awards
	At Awards Banquet	Give list of winners to Burton Dicht or Judy Cobb for inclusion in final SPDC report

RESPONSIBILITY OF ASME Headquarters

	When Received	Review rules for safety factors, advise host of any concerns.
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Impromptu Design Contest Ideas List follows.

All these rules are available on the internet at <http://www.asme.org/students/contestideas>

STUDENT DESIGN CONTEST IDEAS

YOU CAN MODIFY OR USE AS IS. SOME ARE IMPROMPTU. SOME ARE PREPARED AHEAD

Thank you! To all the Student Sections and ASME Members who have made contributions to this website.

To add your contest to this list, please e-mail Judy Cobb at cobbj@asme.org

<u>Title</u>	<u>Description</u>
<u>Model Glider/Paper Airplane</u>	Paper planes made on the spot
<u>Egg Drop/Throwing Contest</u>	Construct an egg-tossing device
<u>Egg Throwing Contest</u>	Design and build a container for an egg which will keep the egg from breaking.
<u>Egg Carrier</u>	Designing a vehicle to carry an egg safely down an inclined surface into a wall
<u>Egg On The Pedestal</u>	Design a device that will transport a large fresh egg across the top of a table and deliver it safely on the floor in front of the table.
<u>It's Pinewood Derby Time</u>	Construct and race a Pinewood Derby kit.
<u>Nut-Bolt Dexterity Contest</u>	Put the pieces together
<u>Intramural Basketball</u>	Rules for conducting
<u>Intramural Volleyball</u>	Rules for conducting
<u>Propel A Projectile Horizontally</u>	Design a mechanical system to propel a projectile for maximum horizontal distance
<u>Rubber Band Powered All-Terrain Vehicle</u>	Design and construct and race a rubber band powered all-terrain vehicle
<u>Rubber Band Powered Vehicle</u>	Design a vehicle which will travel down an incline, launch itself from a ramp, clear a wall and land in the target zone.
<u>Play-Doh Carrier</u>	Design a vehicle to carry a piece of Play-Doh down a wire incline.
<u>Flywheel Powered Trolley Vehicle</u>	Design, fabricate, and enter into competition a trolley vehicle powered by one or more rotating flywheels.
<u>Catapult</u>	Construct a mechanism that will catapult the provided projectile a

	maximum distance in the prescribed direction.
<u>Party Design Contest</u>	Vehicle to be dropped from a height of 10 feet using supplies provided
<u>Mousetrap Drag Race</u>	Design some type of vehicle powered by one standard mousetrap to travel a distance of 30 feet in as short a time as possible.
<u>Birthday Candle Powered Vehicle</u>	Design, build and operate a vehicle powered by birthday candles.
<u>Maximum Time Aloft</u>	Engineer a flying craft which will glide (without power) for the maximum time after having been launched from a human launcher.
<u>Freon Powered Vehicle</u>	Design a Model Sized Freon powered car whose sole function is to display how heat energy can be first converted into internal thermal energy, which when released, will become the kinetic energy needed to run it.
<u>Homecoming Bed Race</u>	Race that Bed
<u>Hamster Powered Racer</u>	Vehicles must be powered solely by a hamster.
<u>Rocket Contest</u>	The contest will involve the prediction of the flight characteristics of a solid propellant rocket. The competing school that comes closest to the actual flight characteristics of the rocket will win.
<u>Aluminum Can Airplane Contest</u>	Design and build a hand-launched glider aircraft.
<u>Vayu Revisited</u>	Design and build a mechanism capable of safely loading six eggs at random "pick-up" points and unload them without breaking at a depot at the end of a specified track.
<u>Paper Tower</u>	Build the tallest tower from paper and tape (supplies provided)
<u>Water Delivery</u>	Deliver .5 gallons of water to a target at 40 ft.
<u>Airborne Vehicle</u>	75 feet to the bulls eye
<u>More Than A Mile High Climb</u>	Create a vehicle that will climb up a pipe faster than anyone else can.
<u>Tank Contest</u>	L Shaped Corridor with borders
<u>Tank Launcher</u>	Design & construct a vehicle which will travel 30 ft., stop within firing zone, launch projectile at target
<u>Downhill Tank Contest</u>	Design & construct a vehicle that will travel down an inclined plane in a minimum amount of time, stop within a specified area, and fire a projectile to a target.

<u>Toy Mouse Carrier</u>	How to get a vehicle to carry a toy mouse up an inclined plane using rubber bands.
<u>Suspended Rubber Band Powered Vehicle</u>	Design and build a rubber band powered vehicle which will travel horizontally, while suspended from a steel wire
<u>NJIT-1</u>	Design a one degree of freedom system which has a natural frequency of 0.5 Hz (period 2 seconds)
<u>NJIT-2</u>	Design a vibration demonstrator
<u>Kerr Lid Classic</u>	Design a mechanical device that will travel over a flat surface a maximum distance from its initial position. Must use sanctioned materials.
<u>Structure To Support Water</u>	Design a structure of maximum height capable of supporting a cup of water with the materials provided and within the allowed time period.
<u>Formula Device</u>	Design a device that will receive the maximum number of points from the prescribed formula.
<u>Deflector Bridge</u>	Design an energy absorbent bridge that deflects with a dynamic load applied to its top center.
<u>Realizing Your Potential</u>	Develop a machine that utilizes the energy stored in ball bearings that are subjected to the earth's gravitational field and no other force.
<u>Freon Racers</u>	Design a Freon powered vehicle to negotiate specified course.
<u>Coffee Can Car</u>	Design a Coffee Can Car that will travel in its natural rolling direction along a track, across a ramp to a stopping point and then return to the starting line
<u>HPV</u>	Penn State HPV Program
<u>Bottle Rocket</u>	Design, build and test using a 2-liter plastic soda pop bottle a rocket that uses a combination of pressurized air and water for propulsion.
<u>1989 ASME SPDC Design Contest Escape</u>	Design a vehicle to travel accurately and quickly through an obstacle course composed of two parts; one part being a flat horizontal wooden surface and the other an upwardly inclined sand pit at an angle of 20 degrees.
<u>Galaxy of Zert</u>	Move a calamarian egg.
<u>Incline Vehicle</u>	Design, build and test a device that moves a chosen payload from rest, up a slight incline, to a specified destination.

<u>The Vehicle Incline Plane</u>	Design a vehicle that will travel down an incline, launch itself clear over a wall, and land the farthest from the wall without going out of the sandbox.
<u>Water Supply of Convenience</u>	Construct a pumping device needed to deliver water from the lagoon to the storage tank next to your hut.
<u>Gravity Powered Cart Races</u>	Design and build a small cart that can propel itself down a flat and level track in competition with another cart.
<u>"Feed The Rube"</u>	Design a mechanical device that accomplishes an easy task while demonstrating the use of several principles of mechanical engineering in a fun and inventive way to feed the Rube face.
<u>Perpetual Leakage: The Leaking Bottle Refiller</u>	Build a contraption powered by falling weights to continuously capture the water and pour it back in the top (actually the bottom) of the bottle (a two-liter plastic Coke bottle).
<u>Computer Card Structure</u>	Develop a structure to hold a brick 13 inches off the table using only the computer cards and staples.
<u>Vehicle Competition</u>	Design a vehicle that travels on a smooth, hard floor around the exterior of a 5-foot square track and stopping at its starting position.
<u>Student Mechanism Design</u>	Any project concerning the original synthesis of a mechanism of your choice.
<u>The Collapsing Bridge</u>	Paper, straws, paper clips, labels, and toothpicks.
<u>Escape</u>	Design a vehicle to travel accurately and quickly through an obstacle course to rescue your friend.
<u>Glider</u>	Design and construct an object or vehicle that will stay aloft as long as possible when released from a specified height.
<u>Bump Course For Off-Road Roadsters</u>	Design a wheeled, tracked, or walker vehicle to navigate a 17-ft long linear course.
<u>Catapult</u>	Catapult for water balloons. Judging on Distance, Accuracy and The Battle.
<u>Rope Eating Contest</u>	Design a spring powered rope climber.
<u>Clay Launcher</u>	Impromptu Launching Device Competition
<u>Amphibious Vehicle</u>	Design an amphibious vehicle powered by dry cell batteries.
<u>Cardboard Canoe Race</u>	Build a cardboard canoe (in one hour) and race (human powered).

<u>Self Propelled Pin Pong Ball Launcher</u>	Design and build a self-propelled ping pong ball launcher. Travel 10 ft; fire Ping-Pong ball at 3-ft. diameter target.
<u>Destroy a Plane</u>	Plane must be rigged so that, at the release of a single trigger, the plane is torn into the greatest number of pieces possible.
<u>Monorail</u>	Design and construct a monorail device which can transport itself a fixed distance in the shortest time.
<u>Paper Airplanes</u>	Newspaper article on various types of paper airplanes and contests.
<u>Walking Machine Decathlon</u>	Design and construct Robot
<u>Balloon Toss</u>	Balloon Toss Booth
<u>Mini-Bomber</u>	System to take off from one table, drop a projectile on a target while achieving a certain altitude, and land on another table.
<u>High School Bottle Rocket Contest</u>	Two-liter soda pop bottle powered by compressed air & water. The SPRocket which lands the closest to a target placed between 100 & 200 feet from the launcher will be winner
<u>Feeding The Poor</u>	Machine used to transport gumballs or M&Ms across a 12 foot "ocean". The winner is the machine that succeeds in getting the most food to "Somalia"
<u>How Much Load Can The Structure Take?</u>	Mini-tower structure, 1 foot tall, built from spaghetti must be able to withstand a certain amount of weight. Winners will be judged on several points, including maximum load.
<u>Balloon Powered Vehicle</u>	BPV, designed and manufactured in 1 hour, must be able to trace circles around a stationary pole
<u>Bridge Building Contest</u>	Design and build a structure capable of spanning a foot long gap between two level horizontal surfaces
<u>Self-Propelled Cargo Boat</u>	Design and build a self-propelled cargo boat capable of carrying two golf balls for a maximum distance
<u>How Slow Can You Go?</u>	Design and construct a vehicle to maintain as much flight time as possible.
<u>Projectiles</u>	Construct a projectile using a straw, etc., and a means to launch it for maximum distance and accuracy
<u>Gravity Powered, Bottlecap Raiser</u>	Design and construct a device that uses only gravity to raise a bottlecap as high as possible

<u>Transport A Penny</u>	Design a device that will transport a penny in a continuous process the furthest distance
<u>The CSL Tower</u>	Design and construct a structure/tower built on a two axle wheelbase that will support an egg
<u>Egg Survival Competition</u>	Design and construct a device that will allow an egg to survive a 20 foot drop
<u>Here To There Using Popsicle Sticks</u>	Design and construct a system that will enable a ping pong ball to hit a target 8 feet away
<u>Suspended Nails</u>	Design and demonstrate a method for suspending as many nails as possible from a single nail
<u>Mousetrap Power-Ball Toss</u>	Design and build machine powered by 2 mousetraps that will cause two balls to end up in the target zone
<u>Mousetrap Power Ball Storage</u>	Build a device that will pick-up and store as many balls as possible with the energy of 2 mousetraps within a 5-minute time limit.
<u>Brainteasers</u>	Brainteasers consist of exercises designed to "stretch the imagination" and stimulate creative problem solving.
<u>Oil Well Derrick</u>	Design and build a model oil derrick from toothpicks that will sustain the greatest load for its mass.
<u>Clay Boats</u>	A team of two will design and build clay boats that will withstand the most amount of added weights before sinking.
<u>Paper Bridge</u>	Design and build a bridge with a limited amount of paper and glue to span a space 56 cm wide that will support a maximum load.
<u>Design Strength Project</u>	Given an equal amount of material and time, each participant is to make a link of chain.