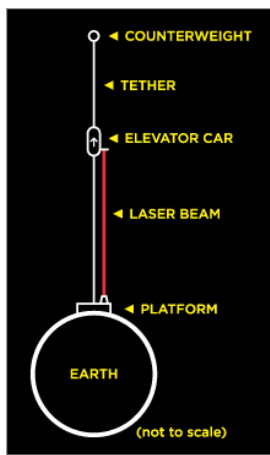


Introduction to Sky-Hook Sculpture Racing

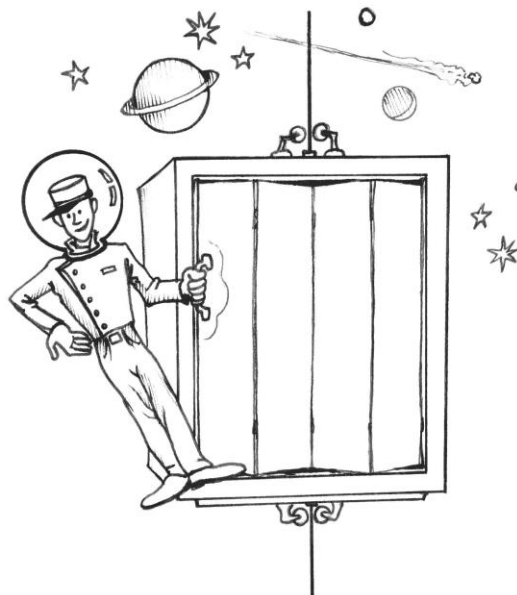
This design challenge requires creativity, ingenuity, clear thinking, the ability to turn ideas into reality, and a skill at maintaining a focus so that the result is ready on schedule. The task is to build a kinetic sculpture which will please the eye, tickle the fancy, and generally impress any reasonably human person as it goes about the process of accomplishing a specific task. In this case the task is to mimic the action of a sky-hook.



The idea of a sky-hook is to have a cable to outer space and an elevator that goes up and down the cable to deliver people and goods to a space station. That is why the sky-hook is also known as a space elevator. Since we don't have time in the ME-101 class to develop the cable materials, elevator, or power source for a complete space-going system, we are doing it on a smaller scale and with slightly different objectives.

Sky-Hook Sculpture Racing involves carrying a "passenger" up a cable in real style. The elevator is to be a working piece of art - something that any passenger would be excited to experience. It is to be capable of at least one trip up a cable that is 15 to 20 feet long and it must be self contained. That means no connecting wires to supply power or control signals.

An equally important part of this contest is to thoroughly entertain the audience during the competition, especially the judges. The unique value of a kinetic sculpture is that in addition to providing a specific functionality, it can be used to induce all types of emotion – thoughtfulness, fear, anxiety, love, wonder, surprise, anticipation, pleasure, and just plain fun. The challenge is to successfully evoke the desired emotion.



Rules for Sky-Hook Sculpture Racing*

(*These rules are subject to change at any time according to the whims of the organizers)

1.00: Power Up. Sculptures may be powered by any safe energy source. All sources of power must be included as a part of the sculpture. Nuclear sources must be properly shielded, explosions must be properly contained, and all pressure vessels must be built and certified according to ASME codes.

1.01: Into the 3rd Dimension. Each sculpture must measure no more than 25 cm long, 25 cm high, and 25 cm wide at the start and end of each race. Only during the race can it exceed these dimensions. Sculptures exceeding these dimensions while at rest may, at the discretion of the judges, be ruled ineligible for art and engineering awards.

1.02: It's the mass. A sculpture must have a mass of 680.4g or less. To exceed this amount is to incur the wrath of the technology judges and be penalized correspondingly.

1.03: Hooking the Sky.: The cable that the sculpture climbs is provided. It will be 1/8" braided nylon rope that is fastened at the top and bottom but that has some slack in it. There will be a wooden stop glued onto the cable at the top and bottom.

1.04: Names Ahoy. The name of your sculpture must be visible to the average human eye from 3 meters away. It may be on each side of your sculpture or on a sign or banner displayed next to the course during your race time.

1.05: Danger, Danger, No! Sculptures or teams must not carry or act like weapons. That means no sharp, flying, or burning parts on your sculpture or as part of your pageantry.

2.00: It Must Be There. All sculptures must carry a "passenger" on board at all times when moving up the sky-hook. This "passenger" may take the form of an on-sculpture mascot such as a comforting beanie baby, action figure, or other cherished inanimate object. It must be three dimensional.

2.01: Your Entry Fee. To be eligible for the contest, each team member must wear an easy-to-read name tag that makes it easy for others to call them by name.

2.02: Jump This Hoop First. At check-in, there will be a safety and compliance inspection to insure that all rules are followed. Teams who do not cheerfully comply will be deported to other engineering disciplines.

2.03: Jump This Hoop Second. The entire system, including the sculpture & passenger, must arrive in a 1ft x1ft x1ft box that can be easily stacked with others from your section. (Think cardboard and duct tape!)

2.04: Don't Blush, It's Fun. An awe-inspiring introduction to your creation must accompany your sculpture. You will have 1 minute in which to make this presentation and cause the judges, visitors, and colleagues in attendance to laugh, holler, and applaud your efforts.

3.00: Get Ready to Race. You may not race until it's your turn.

3.01: On the Stop Watch. Your time will begin when the starter says "GO".

3.02: We Haven't Lost Yet. If a sculpture fails to start moving for a full 5 seconds, a member of the team may move it to help it get started, provided that **Rule 3.03** is followed to the letter.

3.03: One Pinky to the Rescue. A team member invoking **Rule 3.02** can only use one pinky finger to help the sculpture.

3.04: Self-Contained Power, Yes! Sculptures must travel unassisted up (hopefully) and down and up (hopefully) and down and up (hopefully) and down and ...

3.1415926: Pi Rule. If pies are to be used to bribe judges, they must be individual, bite sized, and delicious. Further, they must be carefully handed to the recipient – Pi throwing is not allowed.

3.15-3.98: Blank Rule Estate. Reserved for future rule development.

3.99: Time Travel. Your sculpture will have 3 minutes to climb as high as it can or to make as many round trips (up and down) as it can.

4.00: My Pet Chimp Can't Help? Team members must be human. There must be fewer than 4.35 humans on a team.

4.01: No Help From Aliens or Other Outside Powers. No radio control, remote control, psychic control, extraterrestrial control, or other external means to control the sculpture will be allowed.

4.03: May the Force Be With You . No one can physically touch your vehicle between the start and finish of the contest. However, discrete use of THE FORCE is allowed .

5.00: It's Okay To Be Crafty. Artistry is rewarded. So plan your design, pick good colors, and think functionally. But don't make a boo-boo and violate **Rules 1.04 or 7.00**. That would be terrible!

5.01: Shoot for the Moon. Sculptures are judged on three things—artistry, engineering, and climbing. Teams can earn up to 500 points in each category.

6.00: It's a No-No. It's not nice to argue with the judges or timekeeper. Be polite or expect a 250 point penalty. Overly argumentative teams or team members risk getting sent to the Dean's Office.

6.01: Can You Believe Someone Would Do This? Team members, officials, and spectators who engage in name-calling, jeering, unfriendly physical contact, or any other offensive behavior will be convicted of poor sportsmanship and expelled from the race.

7.00: We Do Have Standards. Obscene or offensive sculptures or pageantry are not allowed. And it's the judges who decide.

8.00: We're Not Your Mother, But... A judge's word is final.

Scoring for the Sky-Hook Sculpture

- 1. Artistic Judging (0 to 500 points) :** Judges will grade the quality of the sculpture based on (a) the appearance of the device, (b) information presented in the poster explaining the underlying theme, (c) the enthusiasm of the team and (d) the response of the audience.
- 2. Climbing (0 -500 points) :** An entry will earn 20 points for climbing 20% of the height, 40 points for 40% , and so on, up to a maximum of 100 points for one successful climb. If the device can then automatically descend and climb again, it will earn 50 additional points for each additional climb that it completes up to a total of an additional 400 points. The maximum possible score of 500 points will be achieved by a device that makes a total of 9 (that's the first plus 8 additional) climbs without any outside assistance.

The total score will be the simple sum of the artistic and climbing scores.

Have Fun!!!