Webinar will start at 12:00 CT

Welcome to the Spring 2025 TSGC Design Challenge

Website: https://ig.utexas.edu/tsgc/design-challenge/

Welcome to the Spring 2025 TSGC Design Challenge

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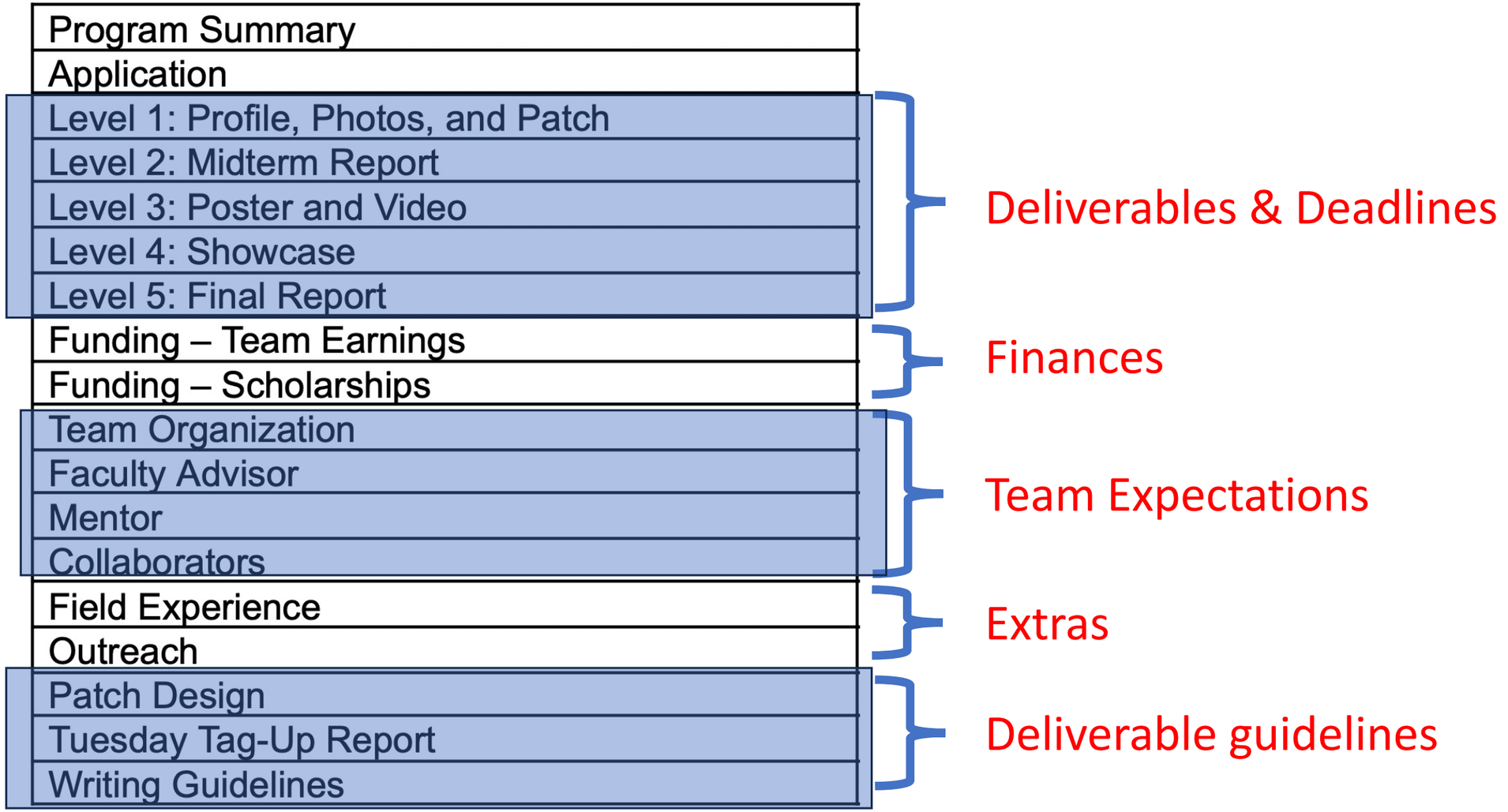
Welcome Teams!

Houston Community College	NYAE (Not Your Average Engineer)	TDC-00
Lone Star College System	Hyperion	TDC-100 NASA MITTIC
Prairie View A&M University	Astropanthers	TDC-102 Lunar Washer/Dryer
Prairie View A&M University	PantherTech	TDC-94 IV Fluid Generation (IVGen) Mini pH Correction
Rice University	Artemis Owls	TDC-105 Lunar Rescue Concept for Incapacitated EVA Crew
San Jacinto College	Space Rats	TDC-80 NASA SUITS
San Jacinto College North	13 Characters	TDC-105 Lunar Rescue Concept for Incapacitated EVA Crew
Tarleton State University	RELLIS Rovers	TDC-00 Lunar Personal Electric Vehicle Mechanical Design
Texas A&M Kingsville	Interstellar Corporation	TDC-140 NASA TechLeap - TBD
Texas A&M Kingsville	Cosmic Javelinas	TDC-120 NASA Human Exploration Rover Challenge (HERC)
Texas A&M University	Daedalus	TDC-102 Lunar Washer/Dryer
Texas A&M University	Team Hephaestus	TDC-86 Integrated Camera & Lighting System Optical Optimization Project
Texas State University	RadCat Sentinels	TDC-103 Radiation-Tolerant Crew Laptop
Texas State University	Lights, Camera, Bobcats!	TDC-86 Integrated Camera & Lighting System Optical Optimization Project
Texas State University	Effectively Grounded!	TDC-103 Radiation-Tolerant Crew Laptop
Texas Woman's University	Team Pleiades	TDC-00 Mitigation of Muscle Atrophy During Long-Duration Space Flight
University of Houston Clear Lake	NOVA	TDC-110 NASA Lunabotics Challenge
University Of Houston Clear Lake	Menteluminosa	TDC-40 NASA Micro-g NExT Challenge Topic 1 Lunar Operations: Contact Sampling Device
University of Houston Clear Lake	Team SpaceCowboys	TDC-40 NASA Micro-g NExT Challenge Topic 1 Lunar Operations: Contact Sampling Device
University of Houston Clear Lake	Astro Apollo	TDC-40 NASA Micro-g NExT Challenge Topic 2 Microgravity Operations: Softgoods Attachment Device
University of Houston-Clear Lake	The Backyardigans	TDC-40 NASA Micro-g NExT Challenge Topic 2 Microgravity Operations: Softgoods Attachment Device
University of Texas at Austin	Lunatics	TDC-104 Lunar Surface Nuclear Reactor Conceptual Designs & CONOPS
University of Texas at Austin	Lunar Longhorns	TDC-120 NASA Human Exploration Rover Challenge (HERC)
University of Texas at Austin	CRAMD	TDC-140 NASA TechLeap - 1336 Robotic Mobility for Robust, Repeatable Access to/through Extreme Terrain, Surface Topography & Harsh Environmental Conditions
University of Texas at Tyler	Robex	TDC-00 Rover for traversing the Psyche 16 terrain
University of Texas at Tyler	Crater	TDC-94 IV Fluid Generation (IVGen) Mini pH Correction

Team Notebook

https://ig.utexas.edu/team-notebook/



Timeline

	Level 1	Level 2	Level 3	Level 4	Level 5
Applications accepted through	Profile, Photos, and Patch	Midterm report	Poster and video	Showcase	Final report
Monday, Jan. 27, 2025	Friday, Feb. 14, 2025	Friday, Mar. 14, 2025	Monday, Apr. 14, 2025	April 17-18, 2025	Friday, May 9, 2025
Submit weekly Tuesday Tag-Up reports from Level 1 through Level 5					

Level 1: Profile, Photos, and Patch
<Media Release via NASA Gateway Profile>

Deadline: Friday, Feb. 14, 2025 via online portal TBD

Teams deliver these:

Team Photo

Patch design

Profile text

- **Team Name:** The team was inspired by the arcade game "Mars Invaders." Initially the first designed we made was also in spirit of the mars invaders icon until we found better Patch: The team patch was designed by the team member Jamie Perez. She designed it to represent the spirit of solving issues with habitation on Mars. The patch was inspired by a picture of the solar system that our team leader remembered seeing in his elementary school classroom which first got him interested in space. All of our team members are important to us, so we included their names around the border along with our school name to show our school pride. Overall, the patch shows our desire to traverse the univers consciousness of mankind.
- **Mars Invaders Uncovered:** The Team Leader is **Rohit Saxena**. His interests includ research, programming, and venture startups. He is an officer of Institute for Elec member of Collegiate Entrepreneurship Organization and is currently interning at on applying his knowledge and effort directly towards the start of his own compar **Adam Hartstein** is experienced in solidworks and is interested in the mechanical a aeronautical design. Once graduated, he desires to work with aeronautics or start aerospace. **Jamie Perez** is currently in training for a leadership position for Chi A She has interests in the betterment of thirdworld Countries through water sanitat working for an organization that helps with the cause. **Reynaldo Gonzalez's** inter electromagnetism and renewable energy. After he graduates he plans on earning for a company that researches in his interests.

TSGC will create this for Showcase:

UTSA

UT SAN ANTONIO
MARS INVADERS

MARS HABITAT & INITIAL SETTLEMENT VILLAGE

TEAM MEMBERS:
Rohit Saxena - Junior, Electrical Engineering
Jamie Perez - Junior, Mechanical Engineering
Julio Ruiz - Junior, Mechanical Engineering
Adam Hartstein - Senior Mechanical Engineering
Reynaldo Gonzalez - Junior, Electrical Engineering

FACULTY ADVISOR: Manuel Diaz, UT San Antonio
NASA MENTOR: Hum Mandell, University of Texas at Austin Center for Space Research
PROJECT DURATION: Spring 2014-Fall 2014 First Semester of a Two-Semester Project

DESIGN GOAL: Our design team, the Mars Invaders, aim to find the logistics and design of a Mars habitat capable of sustaining life and fostering exploration.

TEAM TRIVIA:

- **Team Name:** The team was inspired by the arcade game "Mars Invaders." Initially the first designed we made was also in spirit of the mars invaders icon until we found better Patch: The team patch was designed by the team member Jamie Perez. She designed it to represent the spirit of solving issues with habitation on Mars. The patch was inspired by a picture of the solar system that our team leader remembered seeing in his elementary school classroom which first got him interested in space. All of our team members are important to us, so we included their names around the border along with our school name to show our school pride. Overall, the patch shows our desire to traverse the universe as we effort to expand the consciousness of mankind.
- **Mars Invaders Uncovered:** The Team Leader is **Rohit Saxena**. His interests include robotics, artificial intelligence research, programming, and venture startups. He is an officer of Institute for Electrical and Electronics Engineers, member of Collegiate Entrepreneurship Organization and is currently interning at Intel. After he graduates he plans on applying his knowledge and effort directly towards the start of his own company or work in the space industry. **Adam Hartstein** is experienced in solidworks and is interested in the mechanical aspects of aerospace and aeronautical design. Once graduated, he desires to work with aeronautics or startup a company focused on aerospace. **Jamie Perez** is currently in training for a leadership position for Chi Alpha, a Christian organization. She has interests in the betterment of thirdworld Countries through water sanitation and after graduation, plans on working for an organization that helps with the cause. **Reynaldo Gonzalez's** interests are in the fields of electromagnetism and renewable energy. After he graduates he plans on earning his masters degree and either work for a company that researches in his interests.

Level 1: Profile, Photos, and Patch
<Media Release via NASA Gateway Profile>

Deadline: Friday, Feb. 14, 2025 via online portal TBD

1. Team Profile

- Approximately 400 words (plain text only)
  - Include project design goals; team members' plans, goals, hobbies, etc.; background on your team's name and patch design; and any other trivia you wish to share; team photo caption (name people left to right, front to back, clockwise).
- Filename: ***TeamProfile-Institution-TeamName.txt*** or *.docx*

(Example: TeamProfile-UT-Bevonauts.txt)

Level 1: Profile, Photos, and Patch

2. Team Photos

- Please make sure it is clear
- Good resolution
- Include caption with profile
  (names left to right, front to back)

Not blurry or low resolution

Level 1: Profile, Photos, and Patch

2. Team Photos

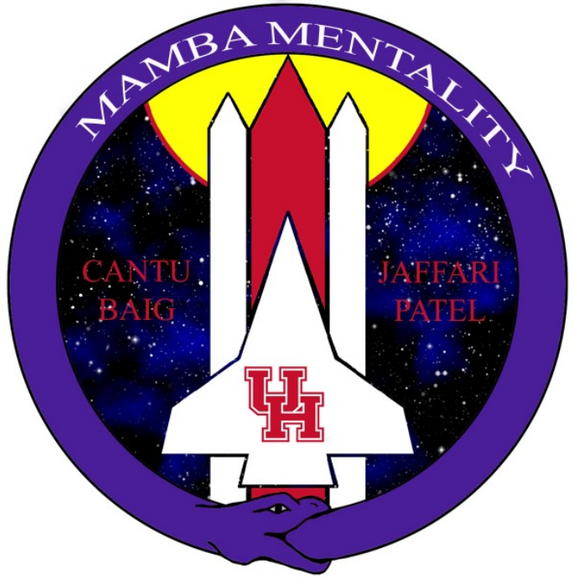
- Photo filename convention:
  - Team: ***TeamPhoto-institution-team.jpg***

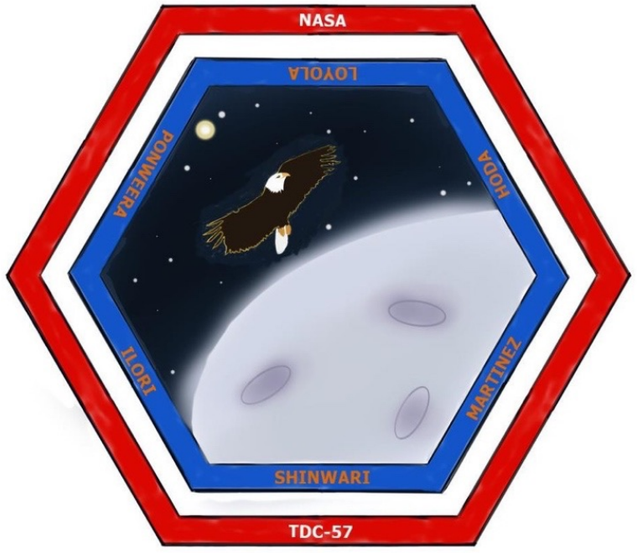
- **NASA media release** via NASA Gateway
  - Instructions online to Create a Student Gateway Profile
  - Enter your data and you will be complete for this step
  - Students with a NASA Gateway account are complete

Level 1: Profile, Photos, and Patch

3. Team Patch

- See details and more examples in the Team Notebook
- Filename convention:
  Patch-Institution-TeamName.eps (or *.jpg* or *.tiff* or *.pdf*)





Level 2: Midterm Report

Deadline: Friday, March 14, 2025

- Follow the Writing Guidelines
- Filename: ***Midterm-Institution-Team.pdf***

<u>New teams:</u>

- Design concepts take shape
- Customer (Mentor) needs are addressed
- Method of down-selection is implemented

<u>Returning teams:</u>

- Fine-tune designs
- Report on tests and costs
- Construct model or prototype

Note: If required by your instructor to submit a Midterm Report in a specific format, you may submit a copy of that report in lieu of the Design Challenge-style Report, as long as all necessary information is included or added. Contact TSGC with any questions.

Level 3: Poster and Video

Deadline: Monday, April 14, 2025

Upload poster and video using the online portal TBD.

<u>Upload a virtual poster</u>

- Filename: ***Poster-Institution-Team.pdf***

<u>Upload your team video presentation</u>

- Video 60-90 second “elevator pitch”
- Have each team member speak
- End video with “We are NASA Space Grant!”
- Filename: ***Video-Institution-Team.MOV*** or *.MPG* or *.MPEG4 (*10 GB limit*)*

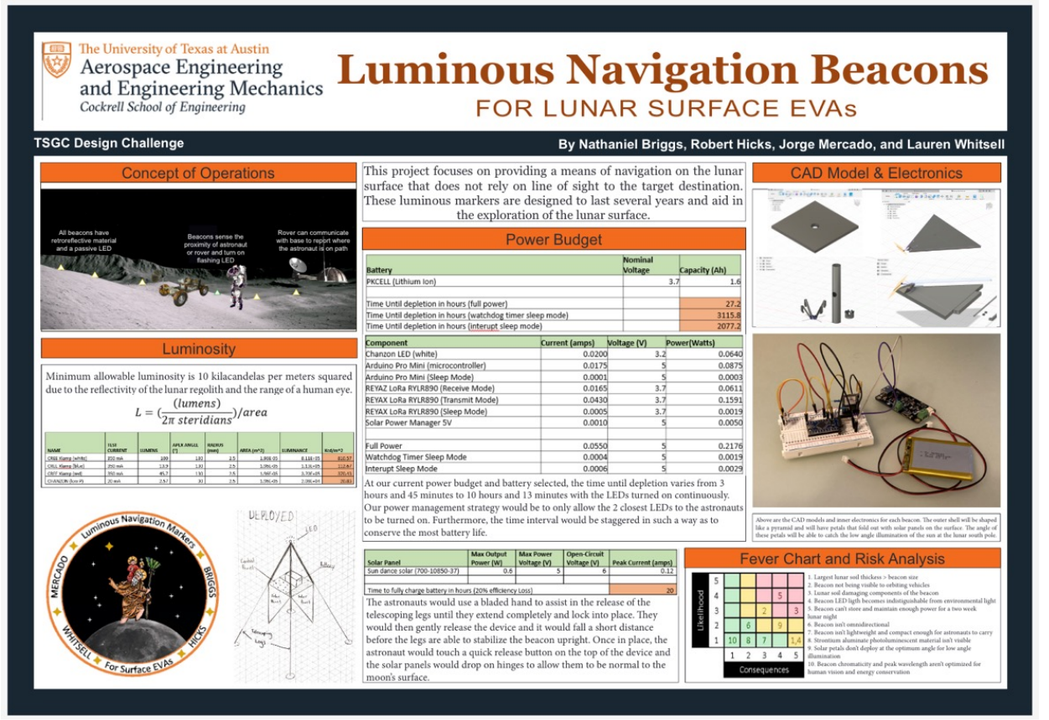
<u>Online Review through Showcase</u>

All Showcase participants have the opportunity to review team Posters and Videos.

Level 3: Poster and Video

1. Poster

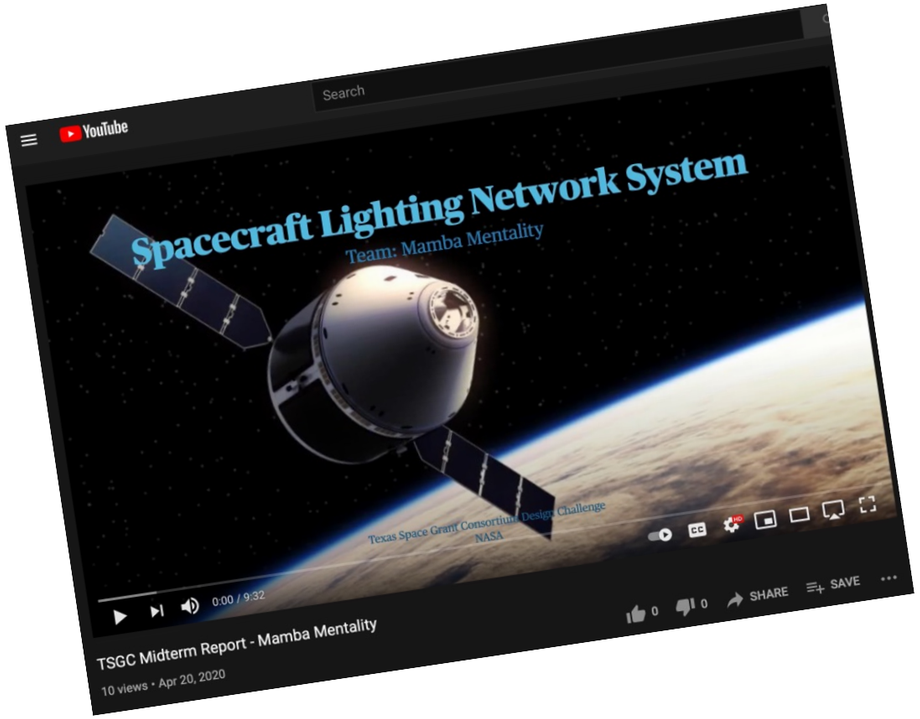
- Profile the design project with textual and visual information.
- Easy-to-follow summary of the project for those unfamiliar with the topic.
- Include title, institution, team members, advisor, mentor
- Include at least one student team member's email for any questions.
- Photos of any models, prototypes, schematics, etc. are strongly encouraged.
- Available for online viewing
- Print, mount, and bring to the Showcase
  - May be an updated version if necessary



Level 3: Poster and Video

2. Video

- 60-90-second “elevator pitch”
- Short project and team introduction
- Promoted online by TSGC for the Showcase
- Have all team members speak
- End video with “We are NASA Space Grant!”



Presentation tips

- Use plenty of visuals
- Video creating/testing/performing where possible
- Include photos, graphs, drawings
- Avoid slides with too much information

Level 4: Showcase

Thu-Fri, April 17-18, 2025

South Shore Harbour Conference Center in League City, TX

- Day 1: Afternoon
  - Set up and present table display
  - Guest Speaker, visit with other teams, students, NASA and industry
- Day 2: All day – Oral presentations with breaks for viewing the table displays
- Audience of 100-150 people
  - All student teams, Faculty Advisors, Mentors
  - NASA JSC community, academic and industry partners, TSGC representatives, educators and other guests

Level 4: Showcase

- Teams present slides live (TBD <10 minutes max) then Q&A
- Each person should have a chance to speak
- Practice, practice, practice!
- Talks will be live-streamed, and you may record yours too.

- Team student and faculty registration will open a couple weeks before Showcase
- Additional team guests may register for the whole Showcase for a fee

Level 4: Showcase

Team Recognition and Awards

- Team recognition and awards (***Scholarships***) are presented at the conclusion of the Showcase.
- Several **professionals** act as judges for the poster and oral presentations.
- **Teams** also score each other.
- Judges' scores are normalized, high and low scores for each team are dropped, and the average team score is used to determine team rankings for each award **category** (oral, poster, model, peers).
- **Top Teams** are determined from an aggregate of all category scores and earn scholarships. Only US citizens are eligible for scholarship awards.

TSGC will send eligible team members directions for filling out Scholarship acceptance forms.

Level 4: Showcase

Sample scorecard

POSTER / VIDEO / PRESENTATION	Low	–	Avg	–	High
• **Visual**: Legible text & images, acknowledgements & references, organization, grammar and creativity	1	2	3	4	5
• **Background**: Project background and research goals clearly explained	1	2	3	4	5
• **Trades**: Design trades support goals and decisions are clearly described and logical	1	2	3	4	5
• **Technical**: Team technical understanding demonstrated, work technically sound	1	2	3	4	5
• **Results**: Significant and convincing conclusion, Design Challenge met	1	2	3	4	5
• **Future**: Future work or direction described	1	2	3	4	5
• **Q&A**: Good Q&A responses (presentation)	1	2	3	4	5

Level 5: Final report

Deadline: Friday, May 9, 2025

- Follow the **Writing Guidelines**
- **Filename**: *FinalReport-Institution-Team.pdf*

- This report should **build** upon the Midterm Report and should cover all materials generated.
- **Feedback** from the Showcase experience should be incorporated.
- Final-semester teams: **this is your legacy!**

Note: If required by your instructor to submit a Final Report in a specific format, you may submit a copy of that report in lieu of the Design Challenge-style Report, as long as all necessary information is included or added. Contact TSGC with any questions.

Team Earnings

NEW PROCESS THIS YEAR

1) Get your funds at the start of the semester
   - Each **Institution** will be sent a "**Sponsored Activity Agreement**"
   - Once your institution & UT's sponsored projects office complete all agreement paperwork, your **faculty advisor will invoice for funding**.
   - TSGC authorizes **$1200** payment to the team's department.
   - The team may get **reimbursed through their department** for travel and project expenses.
   - **TSGC does not reimburse team members directly.**
   - The invoicing process is slightly different for teams from UT Austin.

2) Outreach is no longer optional
   - All teams are expected to perform outreach during the semester
   - See later slides for Outreach details

Team Earnings

Important Notes:

- All funds received from TSGC must be used for the direct purpose of **addressing the Design Challenge topic**.
- NASA is a federal agency; therefore, some **restrictions** exist on how team money may be spent or distributed.
- Budget carefully. **TSGC is not responsible for covering team over-expenditure**.
- **Funds remaining** at the completion of the team's participation will remain with the Faculty Advisor and may be spent at their discretion.
- Any federal or university budget delay or government shutdown will impact TSGC funding and could impact timeliness, availability and amount of team earnings, scholarships, and NASA support. **Federal funding is not guaranteed.**

Outreach

- Present, demonstrate, or display any **STEM-related activity with an audience**.
- Incorporate outreach at **any time** during the semester (or between semesters for two-semester teams)
- Submit the "Outreach Completion Form" (TBD) to document outreach

Outreach

Outreach documentation you will need

- At least **1 photo** of the team conducting the activity
- **500-word description** the activity presented, what the team learned though this outreach, what questions or feedback the team received, and what impact the team believes they made.

Event information for NASA reporting:

- **Name** of the event or site/**Name** of class or group visited
- **Date**(s) and **duration** of the event (e.g., 2 hours or 2 days)
- **Location** (city & zip code)
- **Audience type and number** of people for each type (estimated)
  - Choose all that apply: ***students, educators, public***
  - Include specific student level(s): ***elementary, middle school, high school, undergraduates, graduate students***

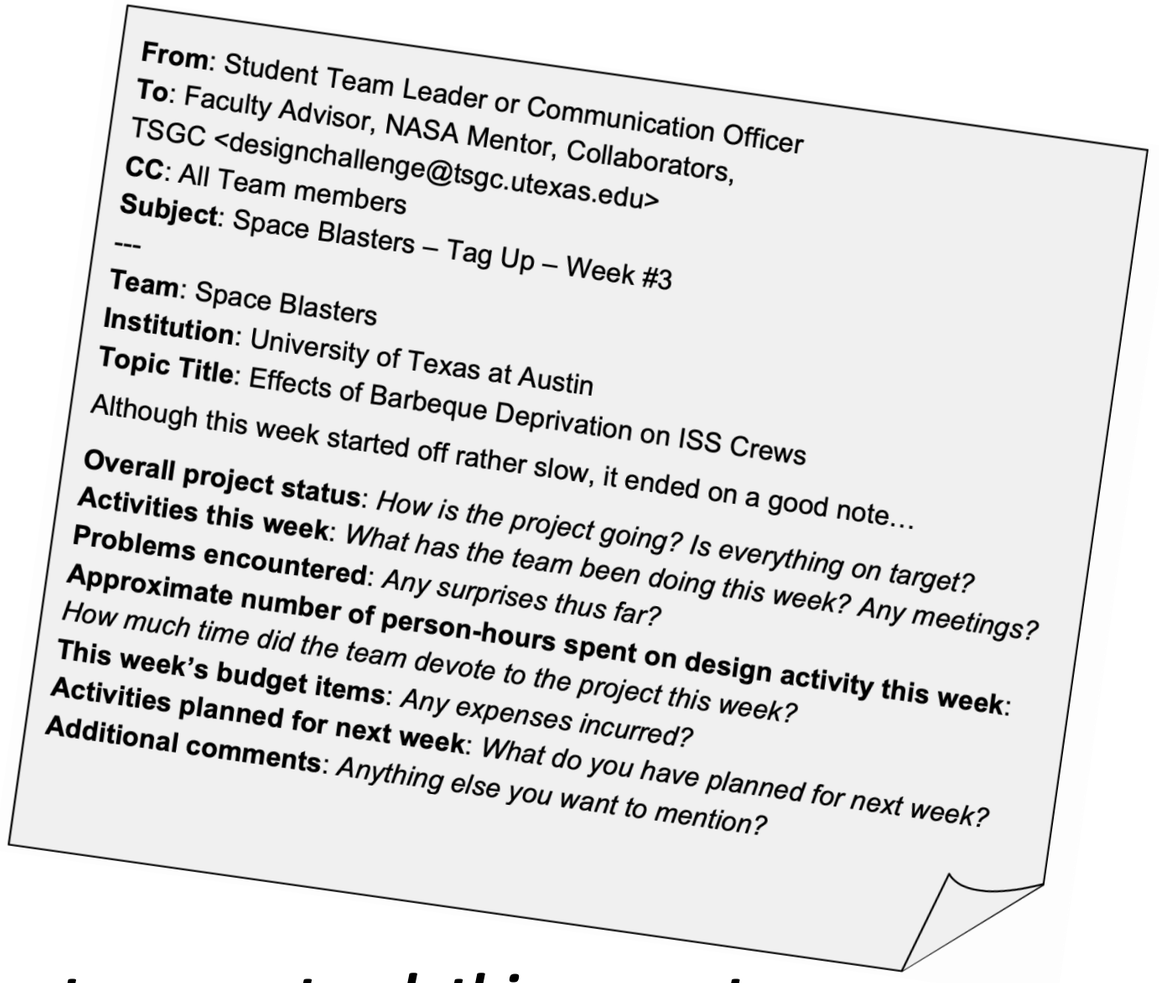
Picture 7: Students are Waiting for the Ball to Hit the Foam Cup

Picture 8: A Volunteer is Setting Up the Launchers for the Kids

Tuesday Tag-Up Reports

Weekly status report for the project

- Provides an update on accomplishments, changes, issues, concerns, plans
- Does not need to be lengthy
- Lets the *Faculty Advisor, Mentor, and TSGC* know how the team is working, and lets the team know that we are listening.
- If you have weekly class report requirements
  - May be the same report
  - May choose another day of the week



If one single requirement is going to keep the team on track this semester, it will be this weekly briefing.

More in the Notebook

- Team Organization
- Faculty Advisor
- Mentor
- Collaborators
- Field Experience

FAQ

Q: Can we change the name of our team?
A: Yes, up until the Level 1 deadline.

Q: Can we add team members?
A: Yes, up to 6 undergraduates may be on a team. Send an email to TSGC about adding or dropping students or faculty. New students please fill out this form: https://forms.gle/t9r8xaGjqcyXc3U69. Send new Level 1 materials as necessary. Changes made after the Level 2 deadline may not have time to be incorporated into materials for Showcase.

Q: Can we add a faculty advisor?
A: Yes, please email TSGC their name, affiliation, and email. Each team may have one or two advisors.

Q: What do teams competing in NASA Artemis competitions do for mentor support? (SUITS, Micro-g, etc.)
A: As described at the application phase, there is no mentor for NASA Artemis competition topics. Reach out to the NASA competition coordinator to ask if a NASA subject matter expert might be available to help your team. Be sure to check and comply with requirements of both programs (Design Challenge and the NASA Artemis challenge). If you need assistance, TSGC can help facilitate.

FAQ

Q: What are the citizenship rules?

A: - At least half of the students on the team must be US citizens (2 on a 3-4 member team; 3 on a 5-6 member team).
- The faculty advisor(s) & collaborators do not need to be a US citizens.
- Some topics may be ineligible for non-US citizen participation as described in the topic.
- Some site visits may be restricted to only US citizens.
- Students who are not US citizens are not eligible for Space Grant scholarships.

Q: Are two-semester teams automatically renewed for the next semester?

A: No. Teams must:

(1) participate in the Showcase and

(2) submit a satisfactory final report to continue.

(3) Additionally, teams applying to a NASA Artemis competition *must be chosen by NASA to automatically continue in the TSGC Design Challenge*.

Thank you for joining the Spring 2025 TSGC Design Challenge

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Team Notebook (reference manual): https://ig.utexas.edu/team-notebook/

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Admin: tsgc_admin@tsgc.utexas.edu