



Welcome to Design Challenge Spring 2024!

designchallenge@tsgc.utexas.edu

Dr. Tim Urban – urban@tsgc.utexas.edu

Talia Jurgens – talia@tsgc.utexas.edu

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

Team Notebook link: <https://ig.utexas.edu/wp-content/uploads/2024/01/TDC-S24-Notebook.pdf>

Welcome Teams!

Institution	Team	Topic
Baylor	Space Bears	80 NASA SUITS (Spacesuit User Interface Technologies for Students) Challenge
Houston Community College	Team Eagle III	92 Solubility and Diffusivity of Air in n-Pentadecane
Lamar University	CP3.1	87 Luminaire Intelligent Tracking (LIT)
Lamar University	LUEE	91 Lunar Personal Electric Vehicle (PEV)
Prairie View A&M University	Guardians of the Gears	94 IV Fluid Generation (IVGEN) Mini Ph Correction
Prairie View A&M University	The Panthieers	96 Bone Conduction Headset with Hearing Protection Design
Rice University	Space Owls	87 Luminaire Intelligent Tracking (LIT)
San Jacinto College	Apollo 24	40 NASA Micro-g NExT Challenge: Hand Carrier for Lunar EVA Tools
San Jacinto College North Campus	Titan	86 Integrated Camera & Lighting System Optical Optimization Project
Tarleton State University	The RELLIS Rovers	91 Lunar Personal Electric Vehicle (PEV)
Texas A&M University	Hermes	94 IV Fluid Generation (IVGEN) Mini Ph Correction
Texas State University	Phonons & Photons	32 Dual-use Wideband Microphone Array
Texas State University	Schrodinger's Bobcats	86 Integrated Camera & Lighting System Optical Optimization Project
Texas Woman's University	Team Atlas	00 Mitigation of Muscle Atrophy During Long-duration Space Flight
University of Houston Clear-Lake	Team Orion	86 Integrated Camera & Lighting System Optimal Optimization for Lunar Surface Rover
University of Houston Clear-Lake	Team Vulcan	40 NASA Micro-g NExT Challenge: Collapsible Lunar Flag Assembly
University of Texas at Austin	Battery	95 Battery Barrier Blast Plate Incident Impulse Measurement System
University of Texas at Tyler	Dream Team	89 Wearable Ultrasound for Vascular Imaging



Notebook

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Deliverables & Deadlines

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Team Expectations

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Deliverable guidelines



Timeline

	Level 1	Level 2	Level 3	Level 4	Level 5
Applications accepted through	Profile, Photos, and Patch	Midterm report	Video and Poster	Showcase	Final report
Monday, January 29, 2024	Friday, February 16, 2024	Friday, March 23, 2024	Monday April 15, 2024	Wed-Thu, April 24-25, 2024	Monday, May 6, 2024
	Submit weekly Tuesday Tag-Up reports from Level 1 through Level 5				

Email level materials to designchallenge@tsgc.utexas.edu



Level 1: Profile, Photos, and Patch

<Media Release via NASA Gateway Profile>

Deadline: Friday, February 16, 2024

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 which our team leader remembered seeing in his elementary school classroom that 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 include 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 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 sanitati working for an organization that helps with the cause. **Reynaldo Gonzalez's** inter electromagnetism and renewable energy. After he graduates he plans on earning work for a company that researches in his interests.

TSGC will create this for Showcase:





Level 1: Profile, Photos, and Patch

<Media Release via NASA Gateway Profile>

Deadline: Friday, February 16, 2024

1. Team Profile

- Approximately 400 words (plain text only)
 - Include project design goals; team members' goals, hobbies, plans, 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



Not blurry or low resolution





Level 1: Profile, Photos, and Patch

2. Team Photos

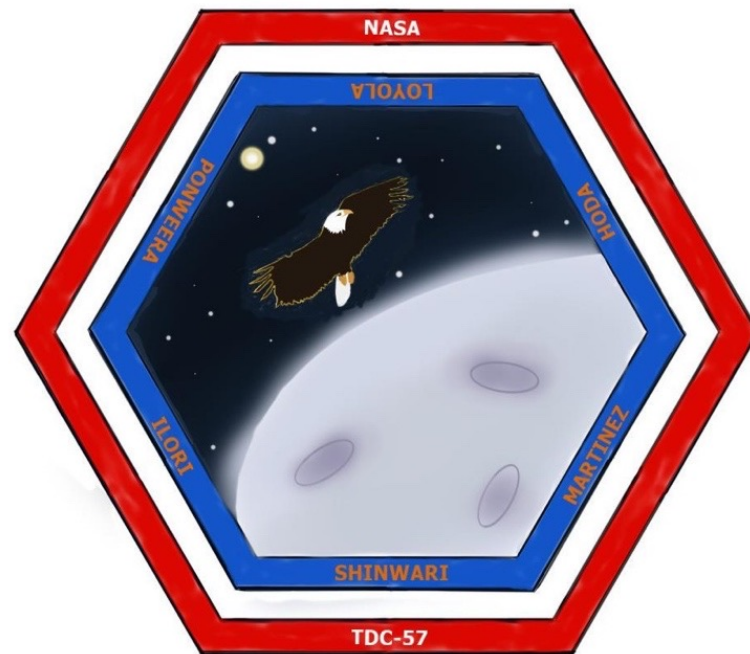
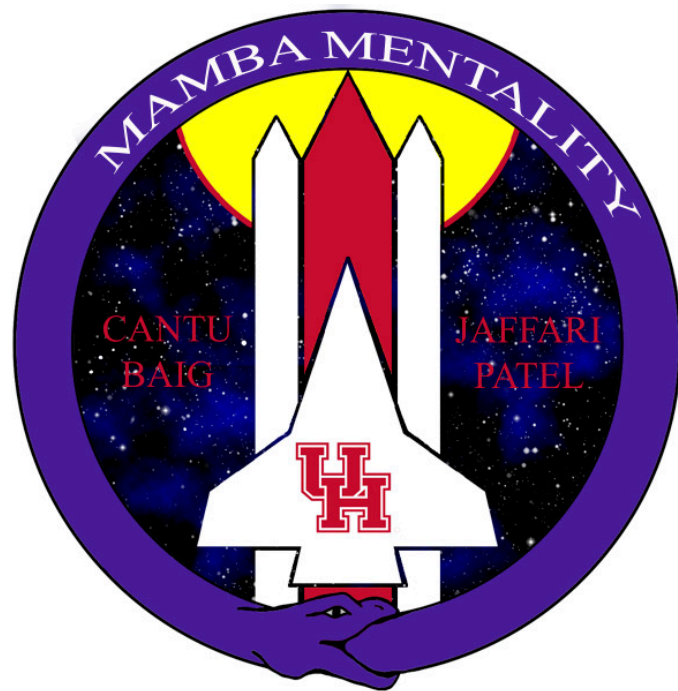
- Photo filename convention:
 - Team: ***TeamPhoto-institution-team.jpg***
- **NASA media release** via NASA Gateway
 - Instructions will be sent to Create a Student Gateway Profile
 - Enter your data and you will be complete for this step
 - Students with a Gateway account are complete



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 23, 2024

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

New teams:

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

Returning teams:

- 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 15, 2024

Upload poster and video using the online portal TBD.

Upload a virtual poster

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

Upload your team video presentation

- 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)

Online Review through Showcase

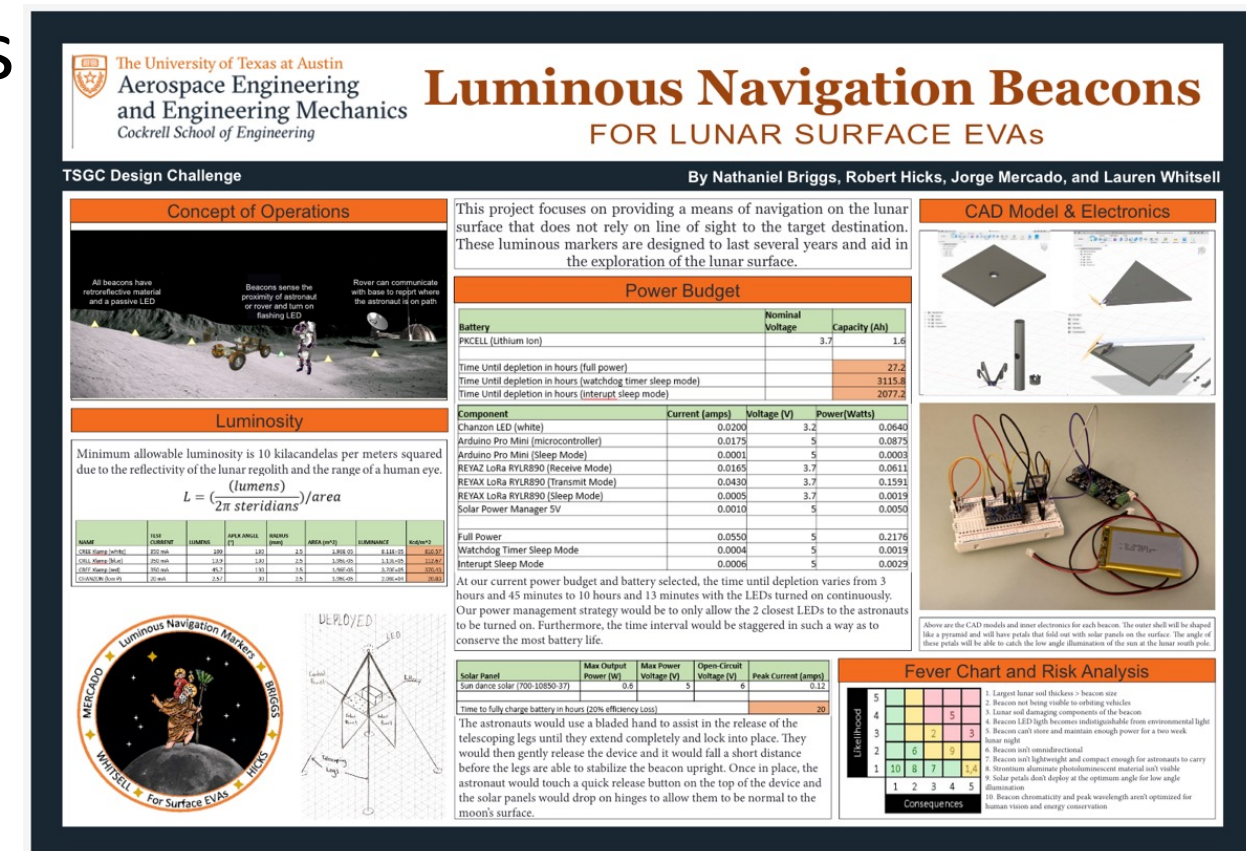
All Showcase participants have the opportunity to review team Posters and Videos.



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

April 24-25, 2024

The Showcase will be an in-person event at the South Shore Harbour Conference Center in League City.

- Day 1: late afternoon
 - Set up and present table display
 - Start with Opening Guest Speaker
- 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 (10 minutes max) then Q&A
 - Each person should have a chance to speak
 - Practice, practice, practice!
 - Talks are not streamed or recorded, but you may record yours
-
- Team student and faculty registration will open a couple weeks before Showcase
 - Additional team guests may register for the whole Showcase for a \$60 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.
- Students from top teams earn scholarship awards; US citizens only.

TSGC will send eligible team members a "Scholarship Forms" instruction packet.



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: Monday, May 6, 2024

- 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

- Following submission of the Level 5 Final Report, TSGC will set up the system for paying your department the team earnings.

Team Earnings for each Level Milestone		
Level 1	\$0	Team photos, profile, and patch
Level 2	\$100	Midterm report
Level 3	\$200	Poster and video
Level 4	\$300	Showcase
Level 5	\$400	Final report
Semester Total	\$1000	-
Optional Outreach (additional)	\$200	Outreach report



Team Earnings



All teams

- Teams accumulate earnings **after completing Level milestones.**
- At the end of the semester, TSGC initiates a **Purchase Order (PO)** for the team earnings (\$1000, or \$1200 if Outreach was completed).
- The Faculty Advisor submits a **PO invoice** to TSGC.
- TSGC (UT Austin) authorizes payment to the team's department and funds are transferred.
- The team may get **reimbursed through their department** for travel and project expenses.
- **TSGC does not reimburse team members directly.**
- The process is slightly different for teams from the University Texas at Austin.



Team Earnings



Important Notes:

- All funds received from TSGC from milestone earnings 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)
- The funding bonus award of **\$200 is available once per semester.**
- **Document** the activity as an Appendix to your team's Final Report.





Outreach

Outreach Report

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

Must include this event information for NASA reporting:

- **Name** of the event/**Name** of class or site 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

From: Student Team Leader or Communication Officer
To: Faculty Advisor, NASA Mentor, Collaborators, TSGC <designchallenge@tsgc.utexas.edu>
CC: All Team members
Subject: Space Blasters – Tag Up – Week #3

Team: Space Blasters
Institution: University of Texas at Austin
Topic Title: Effects of Barbeque Deprivation on ISS Crews

Although this week started off rather slow, it ended on a good note...

Overall project status: How is the project going? Is everything on target?

Activities this week: What has the team been doing this week? Any meetings?

Problems encountered: Any surprises thus far?

Approximate number of person-hours spent on design activity this week: How much time did the team devote to the project this week?

This week's budget items: Any expenses incurred?

Activities planned for next week: What do you have planned for next week?

Additional comments: Anything else you want to mention?

***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 team names?

A: Yes, up until the Level 1 deadline.

Q: Can we add team members?

A: Yes, up to 6. At least half must be US citizens. Send an email to TSGC about anyone adding or dropping. 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 be incorporated in time for Showcase.

Q: Can we add another faculty advisor?

A: Yes, email TSGC their name, affiliation, and email.

Q: What do teams competing in NASA Artemis competitions do for mentor support? (SUITS, MITTIC, Micro-g, BIG Idea)

A: Reach out to your NASA competition coordinator for a NASA contact. TSGC can help facilitate.

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

A: No. Teams must participate in the Showcase and submit a satisfactory final report to continue. Teams applying to a NASA Artemis competition must also be chosen by NASA to continue.



Questions?

Design Challenge Spring 2024

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