

NASA'S HUMAN LANDER CHALLENGE

2025 THEME: ADVANCED CRYOGENICS

In-space propulsion systems utilizing cryogenic liquids as propellants are necessary to achieve NASA's exploration missions to the Moon, and later to Mars. In current state of the art (SOA) human scale, in-space propulsion vehicles, cryogenic liquids can be stored for several hours. In order for the planned HLS mission architecture to close, cryogenic liquids must be stored on-orbit on the order of several months. **NASA's 2025 HuLC competition asks student teams to develop innovative, systems-level solutions to understand, mitigate potential problems, and mature advanced cryogenic fluid technologies that can be implemented within 3-5 years.**

Potential solutions that teams can propose include, *but are not limited to*, the following categories:

- On-Orbit Cryogenic Propellant Transfer
- Microgravity Mass Tracking of Cryogenics
- Large Surface Area Radiative Insulation
- Advanced Structural Supports for Heat Reduction
- Automated Cryo-Couplers for Propellant Transfer
- Low Leakage Cryogenic Components

FORUM, AWARDS, AND PRIZES

Up to 12 teams will be selected as finalists and receive a \$9,250 development stipend to facilitate full participation in the 2025 HuLC Forum in Huntsville, Alabama during June 24-26, 2025. The top three placing teams will share a total prize purse of \$18,000.

ELIGIBILITY

HuLC is open to full-time or part-time undergraduate and graduate students at an accredited U.S.-based community college, college, or university. Teams may include senior capstone students, clubs, and/or multi-university teams. Interdisciplinary teams and teams from Minority Serving Institutions are highly encouraged to apply!

See website for full program eligibility.

IMPORTANT DATES

Notice of Intent Submission Deadline
October 16, 2024

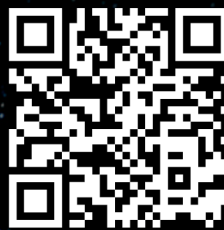
Virtual Q&A Session
November 4, 2024

Proposal Package Submission Deadline
March 3, 2025

Selection Notifications
April 3, 2025

Technical Paper Submission Deadline
May 28, 2025

HuLC Forum in Huntsville, AL
June 24-26, 2025



Scan the QR Code to view the full
Challenge Details and Guidelines!



HuLC
HUMAN LANDER CHALLENGE

WEBSITE: <https://HuLC.nianet.org> **CONTACT:** HuLC@nianet.org