



16th Annual First Nations Launch

April 25-27, 2025
Kenosha & Kansasville, WI



ARTEMIS
STUDENT
CHALLENGES

nasa.gov/stem/artemis.html



Partner

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Meet the Team

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■ First Nations Launch Administrative Team

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■ NASA

- Grace Johnson, Kennedy Space Center



What is “First Nations Launch”?

- A competition offered to Tribal Colleges and Universities (TCU), Native American-Serving Nontribal Institutions (NASNTI), as well as active American Indian Science and Engineering Society (AISES) collegiate chapters the opportunity to demonstrate engineering and design skills through direct application in high-power rocketry.
- The competition requires teams of undergraduate students to conceive, design, fabricate and compete with high power rockets.
- The restrictions on rocket motors and dimensions are limited so that knowledge, creativity and imagination of the students are challenged.
- The end result is a great aerospace learning experience unique to the Native American communities.





NASA Artemis Student Challenge: First Nations Launch





Competition Weekend

- April 25, 2025
 - Carthage College in Kenosha, WI
 - Welcome Breakfast
 - Rocket Fair
 - Motor Build Workshop
 - Breakout Sessions
 - Final Safety Inspections
 - Oral Presentations
- April 26, 2025
 - Launch Day at Richard Bong Recreational Area in Kansasville, WI
 - Closing Banquet at Carthage College in Kenosha, WI
- April 27, 2025
 - Rain Date





2025 First Nations Launch Teams

- 24 NASA Sponsored Teams
 - *International Teams
- A team size of 4-6 members is suggested

Moon & Mars Challenges

- NOI Due
 - October 24, 2024
- Proposal Due
 - October 24, 2024
- Award Announcement
 - October 28, 2024
- Kick-Off Meeting
 - October 29, 2024

Gateway Challenge

- Early Bird NOI Due
 - October 24, 2024
- NOI Due
 - December 9, 2024
- Award Announcement
 - December 16, 2024
- Kick-Off Meeting
 - January 7, 2024





Launch 2 Learn (L2L): Introductory Rocket Workshop

In-Person @ Carthage College (max 15 participants)

- Recommended for Gateway Challenge/New Teams
 - Up to three individuals maximum per school (one advisor, two students)
 - Travel, lodging, and most meals are provided
 - Workshop Materials provided:
 - Rocket kit, motor, and Tripoli Rocketry Association Level 1 Certification (pending successful certification launch)

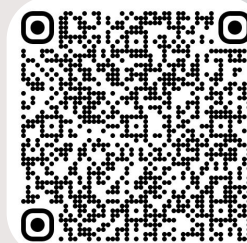
Virtually (max 30 participants)

- Up to three individuals maximum per school (one advisor, two students)
- Rocket kit and supplies provided by FNL
- Motor and Tripoli Rocketry Association Level 1 Certification supplies at TRA Certification Launch

Submit a Notice of Intent to Compete: <https://spacegrant.carthage.edu/about/login>

REGISTER for the L2L Workshop:

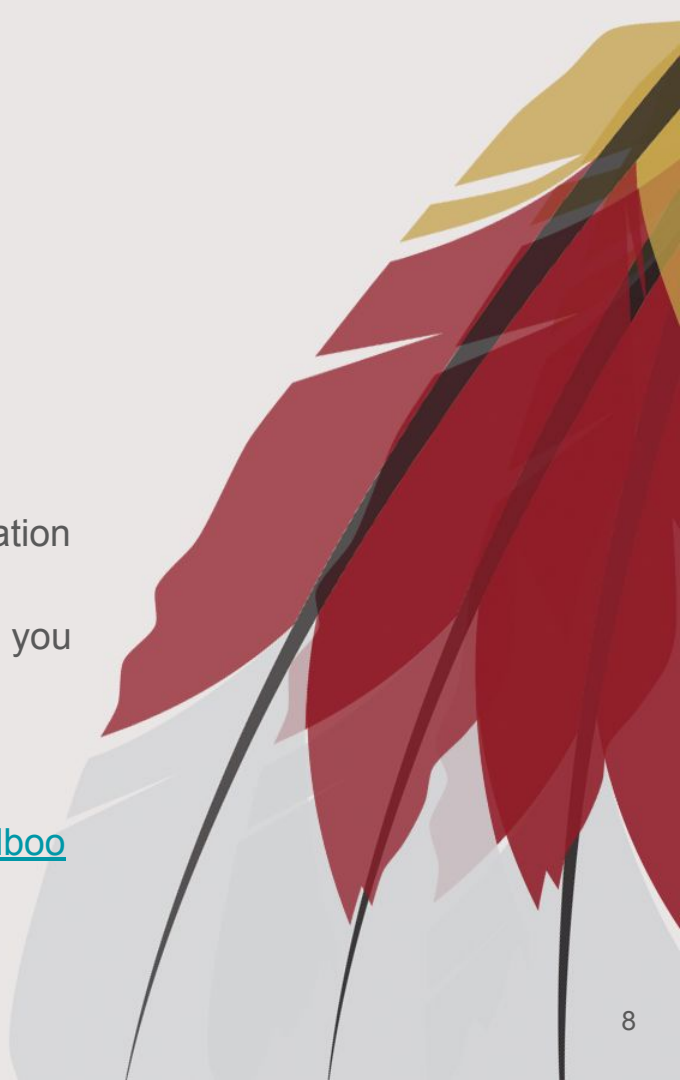
<https://spacegrant.carthage.edu/first-nations-launch/launch-2-learn-rocket-certification-workshop>





NASA STEM Gateway

- Requirement from NASA that all education program participants must register within the NASA STEM Gateway system
 - Requirement for competitors to create a profile
 - Requirement to accept the NASA STEM Gateway activity invitation when received, this is how you will be connected to FNL
 - The FNL application has a field that asks for the email address you used to create a profile in the system
 - A full walkthrough on creating a profile is available in the competition handbook:
 - <https://spacegrant.carthage.edu/live/files/6245-fnl24handbook92923pdf>
 - Link to the NASA STEM Gateway system:
 - <https://stemgateway.nasa.gov/public/s>





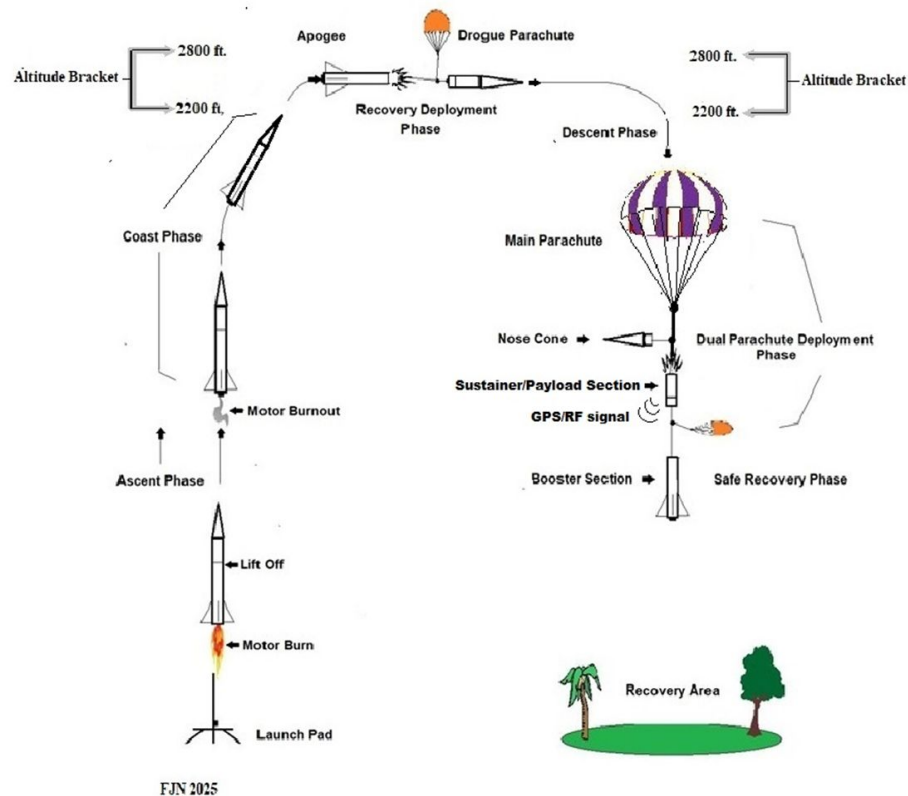
Gateway Challenge

- Teams shall design and construct a dual deploy high-power rocket from the following list of kits:
 - Loc Precision "FANTOM 438 EXL"
 - Loc Precision "Patriot"
 - Loc Precision "LOC IV X2"
- Teams may customize their kit with special add-ons provided by the manufacturer
- Pyro energetics via altimeter shall be used for main deployment recovery
 - Research altimeters to ensure it can support deployments, some altimeters are solely flight recorders (i.e., Jolly Logic)
- There is no payload/challenge associated with this challenge, with focus being on the safe and complete selection, simulation, procurement, assembly/fabrication, and flight of the kit rocket.
- The flight shall be stable and reach an apogee between 2200' - 2800' AGL.

FNL Gateway 2025

Flight Profile

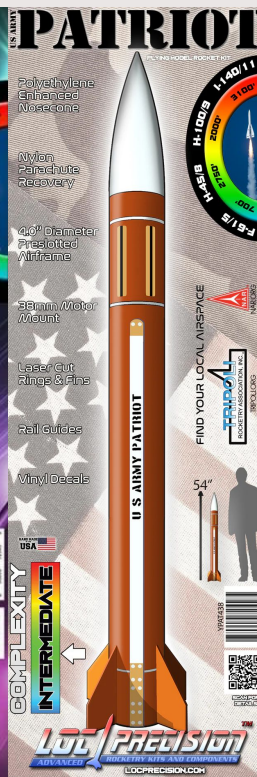
Altitude 2200' - 2800' AGL





Gateway Challenge

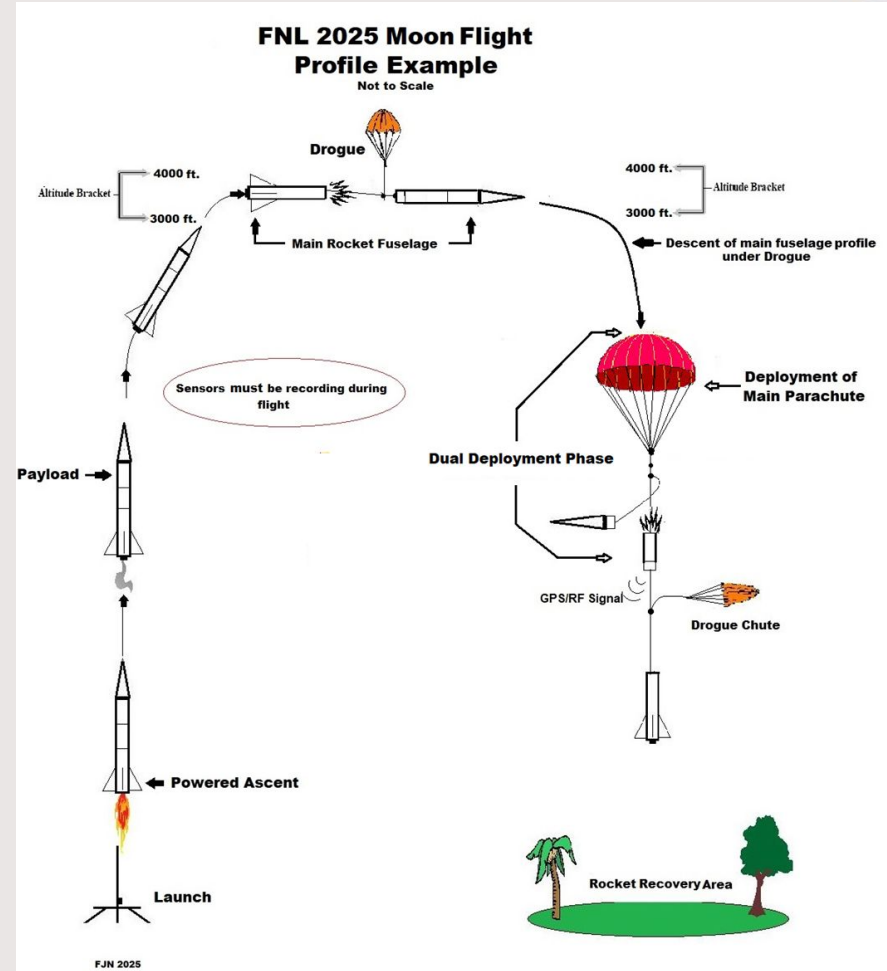
- When ordering your kit, make sure to include the following components:
 - E-bay module
 - 38mm motor adapter
- Teams will select between two preselected motors per kit





Moon Challenge

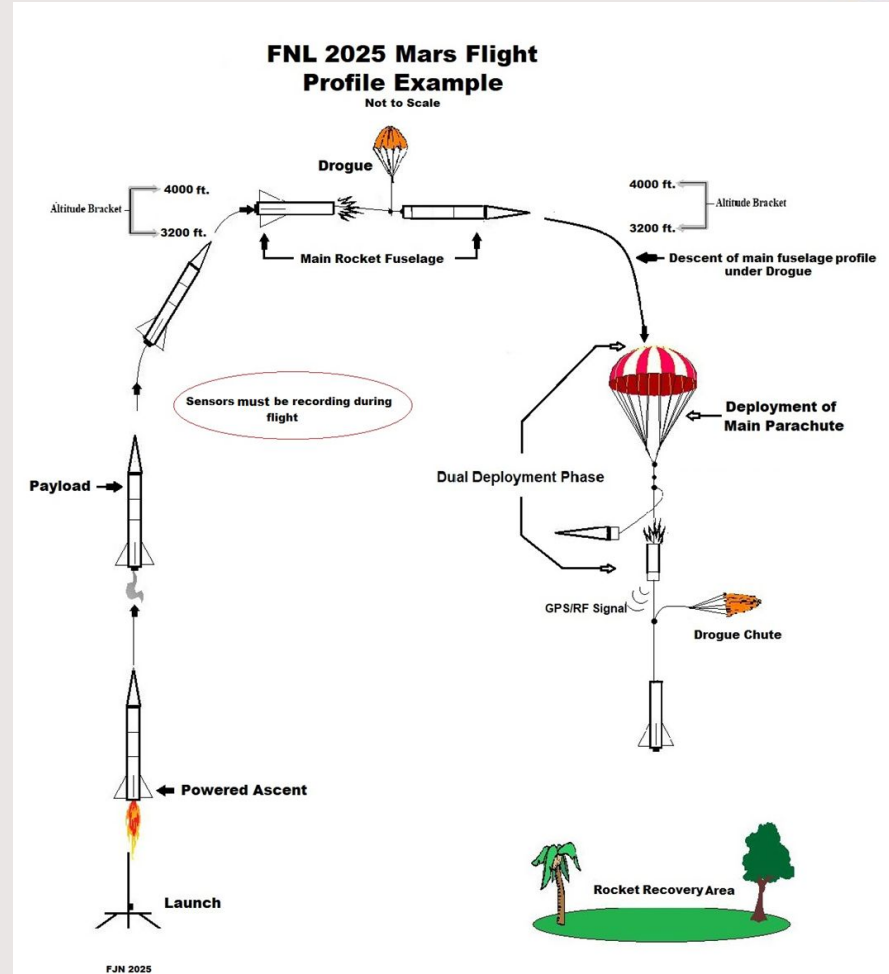
- Teams shall design, test, and fabricate a minimum 4-inch diameter rocket
- The challenge this year will be to integrate two sensors into the rocket
- The rocket flight shall be stable and reach an apogee between 3,000' - 4,000' AGL.





Mars Challenge

- Teams shall design, test, and fabricate a minimum 4-inch diameter rocket
- The challenge this year will be to integrate five sensors into the rocket
- The rocket flight shall be stable and reach an apogee between 3,200' - 4,000' AGL.





Competition Summary

- Moon/Mars projects are judged on:
 - Written design reports
 - Virtual presentations (including launch weekend presentation)
 - Launch day flight/challenge performance
- These coincide with project milestones:
 - Proposal, PDR, CDR, FRR and PLAR
- Bonus points may be earned through outreach efforts
- An example of one item (among dozens of items scored on launch weekend) include:
 - Electronic payload bays are judged on neatness and simplicity at launch weekend





Scoring Breakdown for Moon/Mars Teams

Competition Proposal	Written Report	5 pts	75 pts overall
Preliminary Design Review (PDR)	Written Report	15 pts	
PDR Presentation w/ judges	Virtual Presentation	5 pts	
Critical Design Review (CDR)	Written Report	15 pts	
CDR Presentation w/ judges	Virtual Presentation	5 pts	
Flight Readiness Review (FRR)	Written Report	15 pts	
FRR Virtual Safety Inspection	Virtual Presentation	5 pts	
Post-Launch Assessment Review Report (PLAR)	Written Report	10 pts	
Launch Weekend Oral Flight Readiness Presentation	Oral Presentation	5 pts	5 pts
Launch Weekend - Mission Performance		10 pts	20 pts overall
Launch Weekend - Challenge		10 pts	
TOTAL		100 pts	
Conduct an Education Outreach Project	BONUS	Up to 10 pts	
Submit Education/Public Outreach Form			
Submissions received after 11:59 pm Central on the due date will receive a deduction of 20% for each day they are late			



Design Reports Overview

- Purpose:
 - To communicate the engineering and design effort involved
 - To perform analysis of predicted performance
 - To compare actual to predicted performance
 - To SHOW the design and construction (pictures, diagrams, etc.)
- Reports are due when posted on website calendar:
 - <https://spacegrant.carthage.edu/first-nations-launch/calendar>
- Must use the Report / Presentation templates:
 - <https://spacegrant.carthage.edu/first-nations-launch/rubric/>
- There are 5 reports and 3 presentations throughout the competition year





Supplied by WSGC to Teams

- Marketing/Recruitment Materials
 - Posters and Postcards
- Rocketry Workshop (Up to 3 members per team)
 - Level 1 Rocketry Workshop during November (in-person at Carthage College) and January (Virtual)
- Project Travel Award of \$4000
 - Reimbursements issued through Carthage College
 - Additional travel funds are available upon request for teams traveling more than 1,000 miles to Carthage College
- Two (2) Rocketry Reference Books (New College/Universities)
 - Modern Rocket Design and Construction
 - Modern High Powered Rocketry 2
- Report Feedback
 - Teams will receive report feedback 1 week prior to next report
- Low-Powered Rocket for Demo Flight
 - Each team to fly low-powered demo flight
- Motors (1) and Casing at Competition
 - Competition motor and a motor build workshop during Competition Launch
- Ejection Charges at Competition
- Hotel Accommodations Launch Weekend
 - Maximum three (3) rooms for three (3) nights at select hotel
- Select Meals Launch Weekend
 - Friday: breakfast, lunch and dinner
 - Saturday: breakfast, lunch and dinner



Faculty/Staff Advisor Support

- New Faculty/Staff Advisor Mentorship
 - Can pair up new with veteran advisors
- Team Outreach Efforts
 - Can provide ideas and support for outreach activities
- Team NAR/TRA Rocketry Mentor (required)
 - Will assist in finding your local rocketry club/precinct
- Next Step Opportunities
 - NASA Student Launch
 - NASA RockOn!
 - Spaceport America Cup





Advisor/Mentor Requirements

- Faculty/Staff Advisors:
 - Submit NOI
 - Assist with securing workspace on campus
 - Assist teams with purchases
 - Assist teams with travel arrangements

- Rocketry Mentors:
 - Provide technical guidance to teams
 - Planning
 - Construction
 - Support local launch attempts
 - Including receiving motors if team doesn't include HPR certified member





Additional Resources

■ FNL Website

- <https://spacegrant.carthage.edu/fnl>
 - Tools and Tips
 - Calendar
 - FAQ
 - Application Process
 - Report Template and Scoring Rubrics
 - Patch Contest
 - Competition Prizes
 - Awards
 - History

■ Instructional Videos/Webinars

- <https://spacegrant.carthage.edu/first-nations-launch/rocket-instructional-videoswebinars/>





Webinars

- TRA/NAR Mentor: October 22, 2024
- Challenge Parameters: November 5, 2024
- Introduction to RockSim: November 12, 2024
- Project Management: November 19, 2024
- Structures: December 3, 2024
- Gateway Project Management: January 14, 2025
- Avionics/Altimeters: January 21, 2025
- Recovery: February 11, 2025
- Build & Assembly Techniques: March 4, 2025
- Launch Operations: April 8, 2025





2024-2025 FNL Calendar

<https://spacegrant.carthage.edu/first-nations-launch/calendar/>

September 2024

- 2 Announcement of Opportunity
- 17 Informational Meeting @ 4:00 pm CDT (Zoom)
- 23 Launch 2 Learn Registration w/Non-Binding Notice of Intent (NOI) to Compete Due
(Level 1 Rocket Certification Workshop @ Carthage College, Nov. 2-3, 2024)

October 2024

- 4 Visit FNL Booth #1437 at the AISES Conference
- 8 Proposal Webinar @ 4:00 pm CDT (Zoom)
- 15 Informational Meeting @ 4:00 pm CDT (Zoom)
- 22 TRA/NAR Mentor Webinar @ 4:00 pm CDT (Zoom)
- 24 Non-binding Notice of Intent to Compete Due* (Moon/Mars)
Proposal Due* (Moon/Mars)
Early Bird Registration* (Gateway)
- 28 Award Announcement (Moon/Mars/Gateway)
- 29 Kick-off Meeting @ 4:00 pm CDT (Zoom) (Moon/Mars)
- 30-1 Proposal Virtual Discussions (Zoom) (Moon/Mars)

November 2024

- 02-03 L2L Level I Rocket Certification Workshop @ Carthage College (registration required)
- 05 Challenge Parameters Webinar @ 4:00 pm CDT (Zoom)
- 11 Award Acceptance Material Due* (Moon/Mars)
Preliminary Budget Due* (Moon/Mars)
- 12 Introduction to RockSim Webinar @ 4:00 pm CST (Zoom)
- 19 Project Management Webinar @ 4:00 pm CST (Zoom)





2024-2025 FNL Calendar

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December 2024

- 02 **Preliminary Design Review Milestone (Moon/Mars)**
Report Due* (Moon/Mars)
Flysheets Due* (Moon/Mars)
RockSIM Due* (Moon/Mars)
- 03 Structures Webinar @ 4:00 pm CST (Zoom)
- 09 Notice of Intent to Compete Due* (Gateway)
Request for Virtual Rocketry Workshop Due*
- 09-13 PDR Virtual Presentations (Zoom) (Moon/Mars)
- 16 Award Announcement (Gateway)

January 2025

- 07 Kick-off Meeting @ 4:00 pm CST (Zoom) (Gateway)
- 08 Launch 2 Learn Kit Reveal @ 4:00 pm CST (Zoom)
- 13 Award Acceptance Material Due* (Gateway)
- 14 Gateway Project Management Webinar @ 4:00 pm CST (Zoom)
- 17-18 Launch 2 Learn Rocket Certification Virtual Workshop (Registration Required)
- 21 Avionics/Altimeters Webinar @ 4:00 pm CST (Zoom)
- 27 **Critical Design Review (CDR) Milestone**
CDR Report Due* (Moon/Mars)
Flysheets Due*(Gateway/Moon/Mars)
RockSim Due* (Gateway/Moon/Mars)
Flight Demo Due* - Upload rocket demo flight video on Facebook and/or X and add link to Team Application



2024-2025 FNL Calendar

<https://spacegrant.carthage.edu/first-nations-launch/calendar/>

February 2025

- 03 Final Requests to Change to Different Competition Challenge Due *
- 03-07 CDR Virtual Presentations Continued (Zoom) (Gateway/Moon/Mars)
- 11 Recovery Webinar @ 4:00 pm CST (Zoom)
- 17 Patch Design Entries Due*
 - Final Motor Selection Due* (Gateway/Moon/Mars)
 - Official Team Roster & Lodging List Due* (Gateway/Moon/Mars)
 - Team Bio Due* (Gateway/Moon/Mars)
 - Team Photo Due* (Gateway/Moon/Mars)
 - All Team Member Registration on WSGC Website & FNL Application Due* (Gateway/Moon/Mars)
- 18 Advisor/Mentor Meeting @ 4:00 pm CST (Zoom)
- 26-28 Gateway Interim Review (Zoom)

March 2025

- 03 Reimbursements Due* (First payout) (Gateway/Moon/Mars)
- 04 Build & Assembly Techniques Webinar @ 4:00 pm CST (Zoom)
- 17 **Flight Readiness Review (FRR) Milestone**
 - FRR Report Due* (Moon/Mars)
 - Flysheet, RockSim, Educational Outreach Forms Due* (Gateway/Moon/Mars)
- 24-28 Final Virtual Safety Inspection with Tripoli Rocketry Association (Zoom) (Gateway/Moon/Mars)



2024-2025 FNL Calendar

<https://spacegrant.carthage.edu/first-nations-launch/calendar/>

April 2025

- 08 Launch Operations Webinar @ 4:00 pm CDT (Zoom)
- 09-11 Final Virtual Safety Inspections with Tripoli Rocketry Association (Zoom) (Gateway/Moon/Mars)
- 15 Advisor/Mentor Meeting @ 4:00 pm CDT (Zoom)
- 21 Oral Presentations PPT Due* (Gateway/Moon/Mars)
- 24 Teams Arrive in Kenosha, Wisconsin
- 25 Welcome Breakfast/Competition Kick-off @ 8:00 am CDT - Carthage College, Kenosha, WI
Team Workday, Motor Build Workshop, Breakout Sessions, Final Safety Inspections of Rocket, Oral Presentations
- 26 Launch Day @ 7:30 am – 3:00 pm CDT – Richard Bong Recreational Park, Kansasville, WI
Closing Banquet @ 6:30 pm CDT – Carthage College
- 27 Launch Rain Date
- 30-04 Student Launch Initiative (Next Step Award 2024)

May 2025

- 12 Final Reimbursements Due*
Post Launch Assessment Review (PLAR) Report Due* (Gateway/Moon/Mars)
2-3 Team Project Photos Due*

June 2025

- 02 Notification of Winners

Summer 2025

- TBD Grand Prize Trip to a NASA Center (Moon/Mars Grand Prize Winners)



Any Questions?

