



## COLLEGIATE ROCKET LAUNCH (CRL)

**Informational Telecon:** October 3, 2019  
**Notice of Intent to Compete Due:** October 15, 2019  
**Selection Announcement:** November 1, 2019  
**Kick-off Meeting Online:** November 7, 2019  
**Safety Review Meeting at EAA Museum:** March 21, 2020  
**Oral Presentation at Carthage College:** April 17, 2020 (TBC)  
**Launch Competition – “Boosted Dart” at Richard Bong Recreational Park:**  
April 18, 2020 (TBC)

*A calendar of events fully detailing program due dates is included in the competition handbook.*

**Awards\*:** Mission Grand Champion - \$3000\*\*; 2nd Place - \$2000; 3rd Place - \$1000

**Team Funding\*:** up to \$775 rocket supplies and equipment, flight competition motor and flight data recorder

**Travel Funding\*:** based upon round trip travel to and from competition (*see chart below*)

*\* Subject to availability of funds.*

*\*\*Awarded to highest scoring team that successfully completes the mission and all aspects of the competition.*

**Purpose:** The Wisconsin Space Grant Consortium’s (WSGC) Collegiate Rocket Competition is intended to supply teams of affiliated university students with the opportunity to demonstrate engineering and design skills through direct application. It allows the teams to conceive, design, fabricate and compete with high powered 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 experience for students that would not otherwise be available in the region.

*It is the purpose of this Announcement of Opportunity to support the innovative, visionary projects that are student-led and designed to fully realize WSGC’s goal of assisting in training the next generation of aerospace professionals.*

**About the Program:** The Wisconsin Space Grant Consortium (WSGC) announces the Annual Collegiate Rocket Launch Design Competition. This competition is an opportunity for students to design and construct rockets to be launched at a competition in the spring from Richard Bong State Recreational Area, Kansasville, WI.

Wisconsin Space Grant Consortium (WSGC) will sponsor up to twelve (12) teams - one team per academic institution. To qualify for the competition, interested teams of 4-6 students will be required to submit a Notice of

Intent to Compete, in which they name their team members and committed faculty mentor. Teams are allowed to seek advice from Industry, Tripoli, NAR, and others. Teams do not need to have prior rocket experience.

*Note: Teams selected to participate in the Collegiate Rocket Launch Competition may only receive funding for one WSGC sponsored rocket competition. Individuals selected to compete in the Collegiate Competition cannot compete on a Midwest High-Power Rocket Launch team but are encouraged to shadow a Midwest High-Power Rocket Launch team. Only six (6) students can register per collegiate team on the WSGC registration site.*

**Competition Engineering Parameters:**

Student teams will be required to design, construct and fly a high-power, “boosted dart” (essentially a 2-stage rocket with no motor in the upper stage which drag-separates after motor burn-out) that will be recovered safely and in flyable condition, predict its flight performance, collect down-looking on-board video from the dart and construct a non-commercial on-board data collection package that will characterize dart rotation in the X, Y, and Z axes over time. Additional rocket parameters include the use of a specific motor and dual-deploy, electronic recovery with motor-charge backup. The rocket is required to use motor deployment of the recovery parachute but in addition, teams may also use electronic deployment for more control of the flight. A downed rocket location aid must be included in both the dart and booster. All structural components and materials for the rocket must be obtained from reputable high-powered rocketry vendors or an engineering analysis demonstrating their suitability must be included with the design. The winner of the flight portion of the competition will be the team whose rocket completes a safe, successful flight with full separation of the dart before apogee and whose dart achieves the highest altitude.

The competition will include three written reports about the design, analysis, simulation, build, and test flight results of the rocket, an oral presentation, plus assessment of competition flight data results. A panel of professionals will score these from both academia and industry. Scoring of the pre-competition reports and the post-flight report will focus on the system design and its performance. More details about the competition motor, reports, deadlines, etc. are available in the competition handbook.

**Equipment/Reimbursable funds provided by WSGC:**

<p>Required Competition Rocket Motor</p>	<p>Aerotech Consumer Aerospace: I435bt 38mm Thrust curve data can be found at: <a href="http://www.thrustcurve.org/searchpage.jsp">http://www.thrustcurve.org/searchpage.jsp</a></p>
<p>Competition Flight Data Recorder</p>	<p>Raven III Featherweight Altimeters  <a href="https://web.archive.org/web/20160508182642/http://www.featherweightaltimeters.com/uploads/Raven_Users_Manual_13April24b.pdf">Raven III Manual</a> <a href="https://web.archive.org/web/20160508182642/http://www.featherweightaltimeters.com/uploads/Raven_Users_Manual_13April24b.pdf">https://web.archive.org/web/20160508182642/http://www.featherweightaltimeters.com/uploads/Raven_Users_Manual_13April24b.pdf</a>  <a href="https://web.archive.org/web/20160411182522/http://www.featherweightaltimeters.com/uploads/Raven_quick_start.pdf">Raven III Quick Start Guide</a> <a href="https://web.archive.org/web/20160411182522/http://www.featherweightaltimeters.com/uploads/Raven_quick_start.pdf">https://web.archive.org/web/20160411182522/http://www.featherweightaltimeters.com/uploads/Raven_quick_start.pdf</a>  1.80” long x 0.8” wide x 0.55” thick (~7 gm) Powered by a 9V battery (~45 gm) This recorder is separate from the team’s electronic deployment system and will be inserted at time of launch to record acceleration &amp; altitude vs. time.</p>

<p>Rocket Supplies and Equipment</p>	<p>Reimbursed up to \$775. Submit a <a href="#">Team Reimbursement Form</a> accompanied with original receipts to:</p> <p>Wisconsin Space Grant Consortium  2001 Alford Park Drive  Kenosha, WI 53140  ATTN: Lisa Crumble</p> <p><b>NOTE: Final reimbursement deadline is May 4, 2020.</b>  <a href="#">WSGC Team Expense Reimbursement Instructions</a></p>
<p>Travel Award</p>	<p>Teams are eligible for lodging reimbursements based upon one-way mileage from Richard Bong Recreational Area to the team's college/university. Travel budgets must be included with the preliminary budget submission.</p> <p>&lt;50 miles = no lodging  &gt;50 miles&lt;100miles = 1 night hotel (maximum 2 rooms)  &gt;100 miles = 2 night hotel (maximum 2 rooms)</p> <p>*NOTE: Only one travel reimbursement per team for competition weekend</p> <p>The reimbursable mileage rate is \$.58/mile. 4 member teams are eligible for up to 2 competition mileage reimbursements. 5-6 member teams are eligible for up to 3 competition mileage reimbursements. All teams are eligible for one EAA Safety Meeting mileage reimbursement.</p> <p>All travel reimbursement requests must be signed and submitted by the Faculty Advisor.</p>

### To Apply:

A faculty advisor must complete the following steps:

- Register as faculty on the WSGC website (<https://spacegrant.carthage.edu/about/login/>). Applicants will be prompted to update personal information annually.
- Submit the "Create Rocket Launch Team (NOI)" Grant Application Form (<https://spacegrant.carthage.edu/forms/application/rocket-launch-team/>).
- If applying for both the Collegiate and Midwest Rocket Competition, please indicate in the Rocket Launch Team NOI which competition is the school's preference.

Once the faculty advisor completes the Notice of Intent (NOI), identifies the team name, lists the known student participants, and chooses which competition the team will compete in, each student will need to:

- Register as an undergraduate student on the WSGC website (<https://spacegrant.carthage.edu/about/login/>). Applicants will be prompted to update personal information annually.
- Upload current resume to applicant profile (optional). Applicants must check box in order to allow WSGC to share the applicant resume with Wisconsin Aerospace Industry partners for co-op, internship, and employment opportunities.
- [Sign in](#) and submit the Collegiate Rocket Competition application (<https://spacegrant.carthage.edu/forms/application/collegiate-rocket-competition/>)

**Application Requirements:** Team/Individual applicants who meet the following requirements can apply for this grant by registering and applying online at [spacegrant.carthage.edu/about/login/](https://spacegrant.carthage.edu/about/login/):

- be US citizens
- attend any WSGC [Academic Affiliate Institution](#) full-time
- have a committed faculty mentor

- be comprised of 4-6 team members
- select a team leader

Individuals/teams may:

- seek advice/mentorship from Industry, Tripoli, NAR, and others
- compete without experience (*Teams will be given the basic training and information required*)  
Groups of students wishing to be paired up with like-minded students at other affiliate institutions should contact the WSGC Institutional Representative for their campus. Members of groups underrepresented in aerospace disciplines are particularly encouraged to participate.

\*Individual students cannot participate in more than four WI Collegiate Rocket Competitions.

[See a list of current and past award recipients](#)

**Award Acceptance Components:** As part of the award acceptance, 1<sup>st</sup>-3<sup>rd</sup> place awardees will be asked to attend and present at the Annual Wisconsin Space Conference as outlined in the award agreement and all participants will submit the following documents on the WSGC application website under Program Applications/Your Applications:

#### **All Advisors/Participants**

- Award Agreement Letter
- Media Release Form
- One-Paragraph Biography
- Professional Photo

#### **All Team Members**

- Attend the Online Kick-off Meeting
- Attend the Online Design Review Meetings
- Attend the Safety Review Meeting @ [EAA](#)
- Oral Design Presentation
- Launch Competition
- [Submit Student Stories](#)

#### **Team Lead**

- Preliminary Design Review Report
- [RockSim model file of Preliminary Design](#)
- Preliminary Budget
- Demo Flight
- Critical Design Review Report
- Final Team Roster
- Flight Readiness Review Report
- Education Outreach Form
- Post Flight Performance Report
- 2-3 Photos

#### **Winning Teams**

- [Present project at the 30<sup>th</sup> Annual Wisconsin Space Conference](#)
- [Submit a proceedings paper for the 30<sup>th</sup> Annual Wisconsin Space Conference online journal](#)
- [Individual W9](#)

**If you have question about the Student Satellite Initiatives Program, please contact:**

#### **Dr. William Farrow**

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Associate Director for Student Satellite Initiatives  
Milwaukee School of Engineering  
Phone: (414) 277-2241  
E-mail: [farroww@msoe.edu](mailto:farroww@msoe.edu)

#### **Wisconsin Space Grant Consortium**

Carthage College  
2001 Alford Park Drive, Kenosha WI 53140  
Phone: 262-551-6054  
E-mail: [spacegrant@carthage.edu](mailto:spacegrant@carthage.edu)

This funding opportunity is made available for the pursuit of space-related research and/or activities through the National Space Grant College and Fellowship Program: NASA Training Grant #NNX15AJ12H. Catalog of Federal Domestic Assistance (CFDA) number for this award is 43.008.

All awards are fully competitive awards of opportunity in which applications are reviewed by the WSGC Technical Advisory Panel and other experts as needed. Awards are made by the Assistant Director based on recommendations from the Associate Director.

**Please follow us on**     **for program updates**

