



MICRO-G NEXT

Neutral Buoyancy Experiment Design Teams

****NEW for 2021 Proposals** Concept Video Pitch**

The following guidelines outline the type of content your concept video pitch should include. Note: a working prototype is not required for this video. The video must be submitted in addition to a proposal for full selection consideration.

1. Content requirements:

The video can be as simple as an explanation on a dry erase board or the demonstration of a mock-up. Every video must however, include/explain the following:

- a. Your school name
- b. Your team name
- c. What is your idea?
- d. How does it meet the requirements? (Please answer with a brief sentence that is an overall summary)
- e. How does your idea advance space exploration?

2. Video format requirements

- a. Shall be 1 minute or less in duration.
- b. Must upload to YouTube with the Unlisted setting so only those with the URL may view the video.
 - i. Video title format: School Name_Team Name_2021 Micro-g NEXT Video Submission
- c. Only one video is required for each proposal submission

Title of Design

Design Challenge Addressed

Team Name

Optional Team Logo

Academic Institution Name

Address

Team Contact

Student name

Current email address

Current phone number

Team Members

(Please list ALL team members. No more than 2 former Micro-g NExT team members per team. Identify former Micro-g NExT team members with an asterisk.)*

Team Member name – Role

Email address – Academic year/Academic major

Team Member name – Role

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Team Member name – Role

Email address – Academic year/Academic major

Team Member name – Role

Email address – Academic year/Academic major

Faculty Advisor

Faculty name

Current email address

Current phone number

Faculty Advisor Signature

Table of Contents

(Note: A limit of 12 pages is enforced for the Technical Section. Include enough pictures within this 12 pages to describe your tool. If you want to submit large numbers of pictures, they can be added in an Appendix and will not count against your 12 pages.)

I. Technical Section

- A. Abstract
- B. Design Description
- C. Operations Plan
- D. Safety
- E. Technical References

II. Outreach Section

III. Administrative Section

- A. Test Week Preference
- B. Mentor Request
- C. Institutional Letter of Endorsement
- D. Statement of Supervising Faculty
- E. Statement of Rights of Use
- F. Funding and Budget Statement
- G. Parental Consent Forms

I. Technical Section

The technical section should include information on the design the team is proposing. Review points awarded to this section are **worth 70% of the overall total score**. Therefore, this section should include any information that a technical reviewer might find informative or instructive in understanding the aims and goals of the design. Evaluators ranking the proposal for its scientific merit will read only this section, so teams should be sure to address all relevant factors as listed below.

A. Abstract

The abstract should be a brief (up to 300 words) summary that touches upon the elements of the prototype design being proposed.

B. Design Description

This section should include a description of the design being proposed. Describe how the proposed design meets each of the challenge requirements by including a requirement compliance matrix. Describe the manufacturing plan to create the proposed design. The manufacturing plan should include details about material selections and where the parts will be manufactured. Be sure to include at least one of the following for your design: a sketch, drawing, or photo. A CAD file(s) should also be submitted in .stp or .iges format.

C. Operations Plan

This section should include a detailed description of the test plan for the device in the NBL. List the steps of the test plan to highlight how you will conduct the operation. Include how the device should be configured before and during testing.

D. Safety

This section should describe any safety features and considerations. Include any unique hazards your device creates. Explain how you will mitigate those hazards, including testing and analysis that would be performed to prove it is safe to utilize in the NBL.

E. Technical References

Referenced works should be cited in text and in the “Bibliography”. Standard MLA format should be used. If possible, do not use websites; however, it is understood that some conference proceeding and journals are moving to an electronic-only format. Make sure that references are relevant and at least one half of the references should come from research journals.

II. Outreach Section

The outreach section of the proposal will include the team's plan for disseminating the results of its experiment/experience to the general public. Review points awarded to this section are **worth 30% of the overall score total**. Information contained in this section should focus on what outreach activities the team intends to do and what audience will be addressed. The outreach plans must be original to the team and the proposal should not be posted on any social media.

A plan is an organized way to achieve a specific objective. Random activities, even good random activities, do not constitute a plan. An outreach plan should have two major components:

The **PLAN** – a description of the team’s objectives and goals; what activities are planned for the upcoming year; where and when the activities will take place; what audience will be targeted, etc.

The **ACTIVITIES** – what will the team do when they get there? What materials will they refer to? What are the main points that they will make?

For maximum point value, the plan should include the following:

- the team’s objectives in each outreach activity
- a description of the outreach audience (K-12 class or school groups, undergraduate research symposiums, university outreach to local schools, informal groups such as Boy/Girl Scouts, after school clubs, church groups)
- specific plans for activities (Strengthened by incorporating alignment of an activity to state or national standards that will help a K-12 teacher, use of the 5E Model, or use of age/grade appropriate language during the activity)
- letters or agreements from institutions who have accepted your invitation to address their group
- a press and/or social media plan
- a connection between curriculum/activity and Micro-g NExT, the NBL, or the team’s tool

Please view the following outreach videos from previous teams:

[Boise State University 2015 Microgravity Outreach](#)

[University of South Florida Micro-g NExT Outreach](#)

[High Point University Panther CLAWS NASA Micro-g NExT Outreach Plan](#)

III. Administrative Section

The administrative section of the proposal contains a letter of support from the team's institution, statement of involvement from faculty advisor, evidence of a plan to acquire funding, etc. Although this section is not awarded a point value per se, exclusion of these materials will affect the team's overall ranking when compared to more complete submissions. Additional information will be required if selected.

A. Test Week Preference

If multiple weeks are offered include the team's top preferences for test dates.

B. Mentor Request

The Micro-g NExT staff pairs teams with a Johnson Space Center (JSC) engineer or scientist. Mentors augment the guidance provided by faculty members and the Micro-g NExT staff. If your team is currently collaborating on your project with a technical point of contact at NASA, please list the name in this section. However, this does not guarantee that this individual will be offered an official role in the program.

C. Institutional Letter of Endorsement

This letter must be on the endorsing institution's letterhead and must come from the institution president, dean of college, or department chair. It indicates that the team's institution has knowledge of the team's interest in participating in this activity and endorses the team's involvement. Teams will not be considered if their institution does not approve of their involvement.

D. Statement of Supervising Faculty

A statement of support from a supervising faculty member indicates a willingness to supervise and work with the team during all stages of the activity. Teams working without a faculty advisor will not be considered. The faculty advisor must also sign off on the cover of the proposal as evidence that he/she has seen the proposal and approves of the submission. The following statement should appear on institution letterhead and be signed:

As the faculty advisor for an experiment entitled " _____ " proposed by a team of undergraduate students from _____ university/college, I concur with the concepts and methods by which this project will be conducted. I will ensure that all reports and deadlines are completed by the student team members in a timely manner. I understand that any default by this team concerning any Program requirements (including submission of final report materials) could adversely affect selection opportunities of future teams from _____ university/college.

E. Statement of Rights of Use

These two statements grant NASA, acting on behalf of the U.S. Government, rights to use the team's technical data and design concept, in part or in entirety, for government purposes. This statement is not required. However, teams with a Statement of Rights of Use will receive greater consideration in the proposal selection. If choosing to include these statements, **ALL** team members and faculty advisors must sign. The statements read as follows:

As a team member for a proposal entitled “_____” proposed by a team of undergraduate students from _____ university/college, I will and hereby do grant the U.S. Government a royalty-free, nonexclusive and irrevocable license to use, reproduce, distribute (including distribution by transmission) to the public, perform publicly, prepare derivative works, and display publicly, any data contained in this proposal in whole or in part and in any manner for Federal purposes and to have or permit others to do so for Federal purposes only.

As a team member for a proposal entitled “_____” proposed by a team of undergraduate students from _____ university/college, I will and hereby do grant the U.S. Government a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States an invention described or made part of this proposal throughout the world.

F. Funding and Budget Statement

This section should include a simple columnar layout showing expected expenditures associated with the proposed design (materials, machining, operating, testing, shipping), transportation to/from Houston, accommodations/food/transportation during test week in Houston, etc. It is imperative that teams anticipate all costs involved and actively work to seek funding. Potential sources for funding should be listed and can include institutional grants, state Space Grant funds, corporate sponsors, etc.

Teams should also identify a financial representative from their institution (college or department level). Be sure to include the representative’s name, title, and email address. In the event a development stipend is awarded to the team by Micro-g NExT, the program will coordinate directly with the identified financial representative.

<u>Items</u>	<u>Costs</u>
Materials and Supplies	
3D Filament	\$85.00
Aluminum	\$75.00
Ball bearings	\$3.00
Steel rods	\$5.00
Manufacturing Costs	
Machine shop	\$250.00
Travel	
Flights	\$4500.00
Hotel	\$3500.00
Ground Transportation	\$500.00
Food	\$800.00
Miscellaneous	\$400.00
Other Expenses	
Total	\$10128.00

G. Parental Consent Forms

The parental consent forms provide consent for general participation and must be submitted for any team member under the age of 18 that will be accompanying the team to Houston.

Technical Scoring Rubric

Criteria	Points	Comments
Abstract		
Please rate the overall quality of the abstract. (0 to 5 scale)		
Design Description		
Was the design explained well? (0 to 5 scale)		
Is each requirement met? One point for each requirement addressed. (up to 14 or 15 points, depending on challenge).		
Please rate the quality of the manufacturing plan. (0 to 5 scale; 0 if not included)		
Please rate the effectiveness of the sketches/drawings in explaining the design. (0 to 5 scale; 0 if not included)		
What is the likelihood this design will succeed if selected? (0 to 5 scale)		
Please rate the overall fidelity of the design. (0 to 5 scale; higher points for more thorough designs)		
Operations Plan		
Please rate the quality of the test plan provided. (0 to 5 scale)		
Safety		
Are safety concerns fully addressed? (0 to 5 scale)		
Was the testing and analysis plan explained well? (0 to 5 scale)		
Please describe any safety concerns.	NA	(open ended question)
Technical References		
Are technical references provided and complete? (0 to 5 scale)		
General		
Please rate this proposal as a technical document.(in terms of format, professionalism, ease of reading, etc) (0 to 5 scale)		
Any other feedback for the students:	NA	(open ended question)

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