



SIGMA PI

Sigma Pi Sigma Chapter Project Award Proposal

Project Proposal Title	Operation Phlogiston: Reigniting Physics Identity and Community at an HBCU
Name of School	North Carolina Agricultural and Technical State University
Sigma Pi Sigma Chapter Number	4819
Total Amount Requested	\$500.00

Abstract

North Carolina Agricultural and Technical State University's Sigma Pi Sigma chapter proposes Operation Phlogiston, a culturally grounded initiative to reignite physics identity, belonging, and visibility at an HBCU through heritage programming, inclusive community events, and outreach that empowers underrepresented students to see themselves within physics.

Proposal Statement

Overview of Proposed Project

Brief Description

Operation Phlogiston is a three-part initiative designed to rebuild, energize, and celebrate the physics community at North Carolina Agricultural and Technical State University (NCAT). Through a heritage-themed kickoff event (“From McNair to Now”), a collaborative STEM social (“STEM Crossroads”), and a visibility-building identity campaign, the project will reinforce physics as an inclusive and culturally resonant field for underrepresented students.

Goals of the Project

- Reignite student interest and pride in physics at an HBCU with a historic legacy.
- Strengthen community among physics and physics-adjacent students.
- Increase recruitment and retention of underrepresented students in physics.
- Highlight Black physicist heritage, particularly Ronald E. McNair and Joseph McNeil.
- Establish Sigma Pi Sigma’s renewed presence after prior years of inactivity.

Intended Audience

The project targets underrepresented physics majors, first-generation students, physics-adjacent STEM students (engineering, chemistry, computer science), undecided underclassmen exploring majors, and local K–12 partners. Expected impact: **125–175 undergraduate participants and 50–100 K–12 students** over the duration of the initiative.

Background and Motivation

Two years ago, NCAT’s SPS/Sigma Pi Sigma chapter was nearly inactive, despite the university’s rich physics heritage. As an HBCU that produced national figures such as astronaut Ronald McNair and civil rights leader Joseph McNeil, NCAT has both historical significance and unrealized potential for elevating underrepresented students in physics. Over the past two years, the chapter has worked to restore visibility through environmental service, elementary outreach, and interdisciplinary STEM collaboration. Operation Phlogiston continues this revival by symbolically “reigniting the spark” of physics culture and belonging on campus, emphasizing that excellence in physics is not only possible for underserved students, but deeply rooted in NCAT’s identity.

How Proposed Project Meets the Purpose of the Award

Operation Phlogiston directly supports the mission of the Sigma Pi Sigma Chapter Project Award by:

Raising Awareness of Sigma Pi Sigma

All three project components prominently feature Sigma Pi Sigma branding, chapter history, and explanation of the society’s purpose. Visibility through posters, speaking remarks, and tabling increases awareness among students who may not have been exposed to SPS/Sigma Pi Sigma previously.

Building Community among Alumni and New Members

The “From McNair to Now” kickoff invites alumni and faculty to share experiences and mentorship with current students. This strengthens the multi-generational physics network that is essential to long-term chapter vitality.

Increasing the Induction of New Members

By building a sense of belonging and showcasing the chapter’s renewed activity, the project helps convert interested students into engaged SPS participants and future Sigma Pi Sigma inductees.

Encouraging Inter-Chapter Activities

The “STEM Crossroads” collaborative social intentionally partners with student organizations such as NSBE, the Environmental Science Club, Squadratics, and Chemical Honors Society. These partnerships foster interdisciplinary collaboration, build community, and widen the pipeline of students who may pursue physics or allied fields.

Adding Distinction to Chapter Events

Reintroducing physics heritage and campus culture into programming elevates the chapter’s identity, giving future inductions, service days, and outreach events a stronger narrative centered around excellence, representation, and community impact.

Given NCAT’s unique role as the nation’s largest HBCU with a legacy of producing influential Black physicists, Operation Phlogiston is both timely and deeply aligned with Sigma Pi Sigma’s core purpose.

Plan for Carrying Out Proposed Project

Personnel

- **Project Lead:** SPS Vice President (coordinates planning, oversees logistics).
 - **Outreach Coordinator:** Organizes volunteers and manages K–12 connections.
 - **Treasurer:** Handles purchasing, budget tracking, and reimbursement.
 - **Marketing Leads:** Designs graphics, posters, and social media campaigns.
- Progress will be monitored in weekly SPS executive board meetings.

Marketing Strategy

- Flyer distribution in STEM buildings (Carver, Smith, McNair, Marteena).
 - Social media campaigns via Instagram, TikTok, and GroupMe.
 - Collaboration with NSBE, Tri-Beta, and Political Science Society to cross-promote events.
 - Classroom announcements during introductory physics and calculus courses.
- Marketing emphasizes inclusivity, heritage, and community.

Sigma Pi Sigma Member Participation

Sigma Pi Sigma members will:

- Facilitate event stations at STEM Crossroads.
- Lead discussions and mini-talks at the McNair kickoff.
- Assist with recruiting new members and guiding younger students.

We expect **10–15 Sigma Pi Sigma members** to participate, along with 20+ general SPS members.

Project Timeline

Phase 1 — Planning & Development (Weeks 1-3)

- Finalize event dates and reserve rooms (Week 1)
- Design Operation Phlogiston branding materials (Week 1-2)
- Confirm alumni/faculty for kickoff remarks (Week 2)
- Purchase printed materials and demo supplies (Week 2-3)

Phase 2 — Execution (Weeks 4-10)

1. **From McNair to Now Kickoff Event (Week 4)**
 - Heritage presentation + community mixer
2. **STEM Crossroads Collaboration Event (Week 7)**
 - Hands-on physics integration stations
3. **Operation Phlogiston Identity Campaign (Weeks 4-10)**
 - Posters, social media rollout, SPS visibility push

Phase 3 — Evaluation & Reporting (Week 11)

- Collect surveys, attendance records, and volunteer reflections
- Compile impact summary and archival materials for the chapter
- Prepare final report for Sigma Pi Sigma

Project Evaluation Plan

Success will be evaluated using both quantitative and qualitative measures to ensure Operation Phlogiston achieves its goals of community-building, visibility, and recruitment of underrepresented students.

1. Participation Metrics

- Attendance counts for each event
- Number of first-year and first-generation students participating
- Number of new SPS memberships generated during the semester

2. Survey Feedback

Short digital surveys will be distributed at each event to assess:

- Sense of belonging in physics
- Awareness of Sigma Pi Sigma
- Interest in continuing involvement in SPS

- Clarity and impact of heritage and identity messaging
- Suggestions for future programming

3. Member Reflections

Sigma Pi Sigma members will complete short reflection prompts to document:

- The perceived impact on underrepresented students
- Observed growth in chapter visibility
- Recommendations for sustaining momentum in future semesters

4. Social Media & Engagement Data

Engagement on Instagram (likes, comments, shares), QR-code link clicks, and event sign-ups provide an additional measure of community interest and reach.

5. Legacy Tracking

At the end of the semester, the chapter will compare SPS/Sigma Pi Sigma involvement levels to data from previous years to assess long-term improvement in recruitment and participation.

Collectively, these evaluation strategies will demonstrate whether Operation Phlogiston has successfully “reignited” the physics community at NCAT and advanced the mission of Sigma Pi Sigma.

Budget Justification

The requested **\$500** will be used strategically to maximize participation, visibility, and cultural impact across all three components of Operation Phlogiston. Because the goal is to rebuild student engagement and reach underserved populations, each cost directly enhances accessibility and community appeal.

Food & Refreshments (\$200)

Providing light refreshments at the kickoff mixer and the STEM Crossroads collaboration event increases attendance, reduces barriers for students with economic constraints, and helps create a welcoming community atmosphere.

Printing, Branding Materials & Identity Campaign (\$100)

Funds will cover professional printing of posters, banners, stickers, and heritage displays highlighting Black physicists. These materials increase campus visibility and reinforce the cultural identity central to the project’s purpose.

Demo & Activity Supplies (\$120)

These funds will support hands-on physics stations for the STEM Crossroads event, including optics kits, circuits, simple mechanics demos, and materials for engagement activities. Hands-on activities make physics approachable and accessible to students who may not yet see themselves in the field.

Cleanup & Miscellaneous Supplies (\$40)

Though not the project’s primary focus, basic supplies for maintaining clean and organized event spaces (trash bags, wipes, tape, markers) will ensure professional execution.

Transportation or Reimbursement (\$40)

Covers minor travel expenses or volunteer supplies for members assisting with setup, tabling, or outreach.

All requested items directly contribute to the visibility, accessibility, and cultural resonance of Operation Phlogiston. Additional support will come from SPS-owned demo equipment, classroom projectors, and volunteer labor from SPS and Sigma Pi Sigma members. Together, these resources will enable a polished, high-impact program aligned with the goals of the Sigma Pi Sigma Chapter Project Award.