



SPRINTT Science: Student Research on Earth's Polar Regions and Climate Change

NSF Project SPRINTT [Student Polar Research with IPY National (and International) Teacher Training] brings cutting-edge polar science research with an Alaska Native perspective into K-12 classrooms, bridging the science and society divide while inspiring the next generation of polar explorers. Learn how to teach life, Earth and physical science content in a polar context using high-quality, standards-based curricular materials. A user-friendly interface simplifies data where students perform their own authentic polar systems research projects.

Course Objectives

Participants will be able to:

- ✓ Access and interpret polar data sets.
- ✓ Teach standards-based life, Earth, and physical science content in a polar context.
- ✓ Compare and contrast Indigenous and Western science knowledge on polar science and incorporate each into classroom instruction.
- ✓ Facilitate students' use of authentic polar data in conducting formal investigations and research projects.
- ✓ Adopt inquiry and technology-based teaching and learning strategies and successfully implement them in the classroom.

Course Requirements

Coursework is due May 1, 2011. Submission of one optional assignment is April 1, 2011.

You must complete the Mandatory Assignments, and may choose optional assignments to earn the necessary points for credit.

	Assignment	Maximum Points Value
<i>Mandatory 1</i>	<i>Preparation & Participation in live class sessions, including assignments and pre- and post- course surveys, reading assignments, etc.</i>	30
<i>Mandatory 2</i>	<i>Online Investigation and Sample Research Paper (due February 20th)</i>	25



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	Assignment	Maximum Points Value
Option 1	Full Electronic Portfolio Assignment	40
Option 2	Participation in SPRINTT Online Student Symposium	25
Option 3	SPRINTT Student Science Research Conference	25
Option 4	Truncated Electronic Portfolio Assignment	20
Option 5	Resource Review	10
Option 6	Climate Change Topic Paper	25
Option 7	Comprehensive Curriculum Plan	15

Mandatory 2: Online Investigation and Research Paper (25 points possible)

Create a SPRINTT student account and choose any of the available investigations. Go through the entire investigation, including writing the research paper. Then create a guest username and password to view the paper, and post this information on the Discussion Board, along with a short (a few sentences) reflection on the process.

The final step is to comment on at least the research paper of at least one of your classmates on the Discussion Board.

Option 1: Full Electronic Portfolio Assignment (40 points possible)

Create an electronic portfolio to demonstrate successful program implementation. As you implement the program(s), reflect critically on how the program is helping to improve student interest, understanding, or achievement.

Follow the following steps to complete your portfolio:

1. Review the course objectives for this course.
2. As you implement, the program, collect 'artifacts' that illustrate how you have met your course objectives, and passed them on to your students. Artifacts can be in many forms including, but not limited to:

-student work samples (such as scanned student writings, posters, or journal entries; video/audio recordings of presentations; photographs of work; etc.) at the high, medium, and low proficiency level

-digital photographs of students actively engaging in activities

-lesson plans showing how you are incorporating program into your instruction

-assessments you have created based on the programs

-results of assessments

-PowerPoint presentations created by you for use during class, or by your students

*-notes from parents indicating changes they have seen in their children
-letters from supervisors discussing the program implementation*

**NOTE: Your artifacts for at least one objective must include 3 or more student research papers.*

3. Select the 2 artifacts that most effectively illustrate that you have met each course objective; a total of 10 artifacts.
4. Write a short (one paragraph) reflection for each artifact that describes why you selected the artifact and what it shows.
5. Write a 2-4 page reflective essay that briefly describes how you implemented the program in your classroom, and how the portfolio illustrates successful implementation. Explain how the program affected your own planning and instruction, your content knowledge, and also your students' learning and success.

Option 2: Participation in SPRINTT Online Student Symposium (25 points possible)

SPRINTT students will be invited this spring to participate in an online student symposium to share their research. Dates and more information will be supplied. To earn credit, participate in the symposium webcast with your students and write a reflection of what students gained from the experience.

Option 3: SPRINTT Student Science Research Conference (25 points possible)

Conduct your own science research conference for your students! Organize an opportunity for students to share their research with one another. You may wish to invite parent, administrators, other faculty, and/or other students.

The format may vary, from 'poster sessions' where students stand next to laptops with their research paper, to formal presentations. To earn the credit, share at least 3 artifacts (i.e., pictures, videos, letters from parents/administrators, flyers announcing the event) and write a short reflection describing how you designed the experience for students and what they gained from it.

Option 4: Truncated Electronic Portfolio (20 points possible)

Follow instructions above but complete the portfolio for three course objectives, rather than all of them. You will have a total of 6 artifacts.

Option 5: Resource Review (10 points possible)

Identify at least three online resources (may be videos, podcasts, data sets, etc.) that could be used with SPRINTT. Write a brief (1/2 page) review of each of the resources, including how they might best fit with SPRINTT lessons and what you would expect your students to gain.

Option 6: Climate Change Topic Paper (25 points possible)

There are many scientific studies being conducted about climate change and its current and future impacts on the Earth System. You may choose a specific region of the world, a specific organism, a particular research initiative, etc. on which to focus. Choose something that interests you and will increase your content knowledge. Write a 3-6 page research paper. Cite all sources properly for full credit.

Option 7: Comprehensive Curriculum Plan (15 points possible)

Develop a detailed plan for your school year which includes implementation of SPRINTT lessons and resources. Identify the benchmarks/standards met by SPRINTT and the specific connections to curriculum you currently use. Describe places where SPRINTT will replace or enhance lessons or activities you already use with your students. Organize your curriculum plan in a clear format that will serve as a guide as you implement.

Final Course Grade	Points Range	Performance Indicators
A	90-100	Participant demonstrates an excellent understanding of the poles in the Earth system and the importance of scientific literacy. Participant is able to successfully implement inquiry and technology-based teaching and bring polar science content into the classroom and facilitate authentic student research.
B	80-89	Participant demonstrates a good understanding of the poles in the Earth system and the importance of scientific literacy. Participant is able to successfully implement inquiry and technology-based teaching and bring polar science content into the classroom and facilitating authentic student research.
C	70-79	Participant demonstrates a satisfactory understanding of the poles in the Earth system and the importance of scientific literacy. Participant shows some success in implementing inquiry and technology-based teaching and bringing polar science content into the classroom and facilitating authentic student research.
F	<70	Participant does not meet course objectives

Course Grading

Minimum for graduate credit = 80 points