ECOLOGY PROJECT
INTERNATIONAL

Baja Educator Workshop
2022 Itinerary & Syllabus

Course Description:

Ecology Project International's *Baja Educator Workshop* provides teachers with opportunities to participate in authentic research and conservation projects, while they develop ecological knowledge and hone science and engineering practices. Participants will learn strategies and tools to inspire their students to observe, question, make claims, and conduct independent scientific research using the NGSS framework and the 5E Model of Instruction. Participants participate in research, experiential learning and collaboration with peers as you explore best practices, new ideas, and opportunities to enhance science education in the classroom.

Expected Student Learning Outcomes:

Upon completion of the workshop, participants will have gained experience in:

- Implementing NGSS aligned lessons using the 5E Learning Cycle
- understanding and correctly implementing a variety of field research and conservation methods
- using research supported teaching methods, tools, and strategies for supporting students in growing their science and engineering practices

Participants will receive 20 PD/contact hours or 2 CEU for participating in this course.

Principle areas of focus/ theme / storyline for the workshop:

Health and biodiversity of the Bay of La Paz, Gulf of California.
During this workshop we'll engage in a variety of research / conservation activities, model student curriculum, and exploration centered on the spectacular Bay of La Paz.

Whale Sharks: Participants will engage with biologists researching and supporting the conservation of Rincodon Typus Whale Sharks in La Paz bay. In addition to learning about the ecology and conservation concerns of this enigmatic species, local management efforts provide a case study to explore stakeholder discussions exploring sustainability and eco-tourism themes.

Scientific partner: Darren Whitehead, founder of La Paz's **Whale Shark Research Project**, has been studying the impacts of ecotourism in La Paz as well as photographically identifying the sharks. Whale Shark Research Project is an organization established in Baja California Sur, Mexico, that offers a platform of opportunities for volunteers, students and the general public to help with the conservation and the scientific research of whale sharks in this region in collaboration with a PhD project.

Micro-plastics in the environment: Plastic waste is a present and growing conservation issue. Plastics are ubiquitous in our lives and endure for hundreds or thousands of years in the environment. Plastic bottles and bags are obvious as they litter beaches worldwide and affect a variety of marine and terrestrial organisms. As it breaks down, plastic doesn't go away and while it becomes smaller, its impact on the environment doesn't disappear either. Micro-plastics are less obvious but affect organisms in any environment. We'll explore the

present reality of Micro-plastics on La Paz beaches, learn about the various impacts on species large and small, and consider ways to address this global conservation challenge.

Marine biodiversity and ecosystems: The Gulf of California teems with diverse and curious life-forms. Through a Marine Life Census, we'll learn about who lives in the marine environment and what they can tell us about the health of the ecosystem. To extend the learning, we'll visit a Coral restoration station and learn about their efforts to conserve the reefs of the Bay of La Paz.

Optional Activity: The weather in Baja in the winter / spring is unpredictable. Weather conditions could make the Whale Shark viewing activity untenable. If the activity isn't available, participants will instead be introduced to and explore EPI's work on its Urban Oasis project with the watershed of La Paz, gaining insight into how community action within the city impacts the health of community members and the Bay of La Paz.

Core Course Activities and Lessons:

Specific research and conservation activities are dependent upon the EPI field-course location. However, each course will utilize these key components each full field day of the course.

- Authentic field research and conservation experiences: EPI partners with research and conservation organizations to engage participants in on-the-ground research or conservation. Teachers will become community researchers and contribute to research and conservation outcomes all the while building knowledge and understanding of field research and conservation techniques and the underlying ecological science principles.
- Model student activities: Teacher participants will step into the role of students to broaden their knowledge of the environments, organisms, and cultures that are their classroom for their course as well as build the skills they'll need to engage in the authentic research and conservation experiences.
- Pedagogy Workshop: Through a mix of reflection, direct instruction, self-guided exploration, discussions, and practice, teachers will refresh and expand their understanding and capacity to deliver high quality 3-dimentional science lessons to their students. Authentic research experiences and model student activities serve as an example and launching point for exploring pedagogy, science concepts, NGSS, the 5E learning model, and more.
    - From Phenomena to Inquiry Lesson (1 hr)
    - 3D Techniques: Questioning, Discussion, Claim-Evidence-Reasoning (45 min)
- Curriculum Writing Workshop: Experiential learning is fundamental to all EPI experiences. For teachers, we'll engage their creativity, knowledge, and skills as teachers in a guided curriculum building progression following the 5E learning cycle. Throughout the process, teachers will share what they know and learn from their peers. Teachers will share lesson / unit plans with their peers during the program sending each teacher home with new ideas and materials that they can apply in their classrooms. Following the course, teachers can use the online classroom to share finalized lesson plans, resources, photos, additional opportunities, and more.
- Fundamental group facilitation: EPI courses are dynamic events bringing together people from different backgrounds, skills, goals, and personalities. During the course, EPI will utilize a variety of techniques to foster group understanding, cooperation, teamwork, cohesion, and health. These activities occur throughout the day and typically involve ~ 1 hr of time each day.
- Have fun! Everything we do is fun, we'll make sure we take some time out from learning to enjoy the location, people, and experiences we're having.

Field Course Itinerary:

Day of Course	Course Activities and Lessons *Order and schedule of activities may vary due to specific course logistics, weather, location, availability of partners and other factors.
0 Travel Day	Workshop Participants travel on their own, lodging available at EPI campus or they can stay in a hotel in the city.

1- EPI Campus	• AM: Participants arrive to EPI campus by 8:30 am to start the program
	  o Breakfast available at 7:30.
	  o Course Intro, orientation, teambuilding, snorkel gear.
	• PM: Field activity: Micro Plastic or Marine Census
	• Pedagogy Workshop: From Phenomena to Inquiry Lesson (1 hr)
	• Evening: Pedagogy discussion, Whale Shark Prep / early to bed

2- EPI Campus	• Authentic field research and conservation experiences:
	  o Whale Shark experience
	  • Model Student Activity
	  o Whale Shark discussion / lesson with expert
	• Curriculum Writing Workshop: 5E Lesson Plan format and curriculum writing time (1.5 hr)
	• Pedagogy Workshop 3D Techniques: Questioning, Discussion, Claim-Evidence-Reasoning (45 min)
	• Late PM: Explore La Paz
	• Evening: Intro to EPI's classroom resources

3- EPI Campus	• Authentic field research and conservation experiences:
	  o Micro Plastic or Marine Census
	  o Coral Restoration Tour
	Curriculum Writing Workshop: Lesson concept expose
	• Evening: Closing Activity

4- Departure Day	• AM Departure: EPI arranged vans to airport.

You are welcome to keep a field journal as you work through each of the above activities in order to reflect on your learning experiences each day, for data collection during research activity, and for your own personal record of the workshop.

Required Course Materials:

- Field Journal
- Two mechanical pencils with eraser
- Items on EPI field site packing list

Optional College Credit:

Interested participants can receive **2 graduate credits** through Hamline University for participating in this workshop. Separate registration and tuition fees are required.