

The Physics of High Altitude in Action (SCI 295v: STEM Research Experience)
Short-term faculty-led travel study program to Nepal
University of Hawaii Maui College
Summer 2023

Overview: A Summary Report of the Program

In the summer of 2023, I led a special travel study program to Nepal, partnering with the prestigious Nepal Academy of Science and Technology (NAST) and other notable STEM organizations. Our mission was to explore the fascinating world of high-altitude physics and immerse ourselves in the rich cultural heritage of Nepal. Our adventure revealed the deep connections between theory and practice, all while fostering meaningful relationships with the local Sherpa community. In this context, our aim was to enhance the learning experiences of four UHMC students who were enrolled in the summer 2023 science course (SCI 295v: STEM Research Experience). This unique blend of scientific inquiry and cultural immersion has unforgettably shaped our perspectives, leaving an enduring impact on the students' learning journeys, my role as a system professor and researcher, and the University of Hawaii Maui College at large. Now, we are excited to share our experiences through publications, presentations or alternative forms of academic discourses, and future collaborations that promise to extend the frontiers of scientific understanding.

Part 1: A description of the activity and how it impacted student learning and success/ your job/ UHMC.

I had the privilege of leading a high-altitude physics travel class to Nepal, offering an extraordinary learning experience for both my students and myself. This travel-study program was a collaborative effort between the UHMC and the NAST, and we were fortunate to have the valuable support and guidance of Professor Lakpa Chhiring, a local Sherpa physicist from Tribhuvan University Nepal.

Throughout the program, we engaged ourselves in a diverse range of activities that blended scientific exploration, cultural immersion, and adventurous excursions ([see itinerary](#)). Our high-altitude journey commenced with interactions at NAST, where we learned about the STEM educational practices in Nepal. The opportunity to compare and contrast data between Nepal and Hawaii provided valuable insights into the varying scientific approaches and methodologies employed in different geographical contexts.

A significant highlight of our trip was spending a week in the enchanting region of Mustang, accompanied by Lakpa. In this high-altitude setting, we engaged in scientific

experiments and studies, such as applying thermodynamics to cook food effectively and exploring the captivating realm of high-altitude physics. This collaboration added a unique dimension to our learning as the local community members shared their expertise and in-depth knowledge of the Himalayan region, enriching our understanding of the local culture, traditions, and scientific endeavors.

The impact of this travel-study class on student learning and success has been profound. My students had the opportunity to witness the practical applications of high-altitude physics concepts, bridging theoretical knowledge with real-world scenarios. They conducted experiments and firsthand experiences to understand how altitude impacts their body's energy level. The immersive experience in Nepal expanded their horizons, fostering personal growth, resilience, and cross-cultural appreciation.

Moreover, the travel-study class has enhanced my role as a system professor and researcher at UHMC. The first hand exposure to unique scientific practices and cultural dynamics in Nepal has enriched my perspectives and research interests. I have gained valuable insights into the potential for cross-cultural collaborations and the significance of interdisciplinary studies.

Furthermore, this travel class has strengthened the academic partnership between UHMC and NAST, alongside other prominent STEM-related institutions, opening doors for future collaborations and exchanges that promote mutual learning and scientific advancement. The experience has also inspired me to explore additional opportunities for international educational programs that can enrich the learning experiences of our students and contribute to global scientific discourse.

In conclusion, the high-altitude physics travel class to Nepal has been a transformative journey, leaving a lasting impact on both my students and myself. The blend of scientific inquiry, cultural immersion, and collaboration with experts has broadened our perspectives and enriched our understanding of high-altitude physics and cross-cultural education. As we return to our roles at UHMC, we are eager to share our experiences, contribute to academic discourse through research publications, and continue to nurture the spirit of exploration and discovery in our educational endeavors.

Part 2: A description of how the knowledge and experience were shared.

The knowledge and experiences gained during our high-altitude physics travel class to Nepal have been actively shared through various media platforms and academic channels. Last week, The Maui News published two press release articles with titles "*UHMC Associate Professor of STEM and four students back from travel study trip to*

Nepal" ([link](#)) and "*UH-Maui students, professor study high altitude firsthand in Nepal.*" These articles provided an overview of our journey, highlighting the scientific and cultural aspects of our trip.

In addition to The Maui News, our travel-study class received coverage from UH News with an article titled "*Hawaiians in the Himalayas, UH Maui College students experience Mount Everest*" ([link](#)). This feature shed light on our firsthand experiences at high altitudes, showcasing our engagement with the local community and scientific exploration. Additionally, the UHMC Chancellor's Weekly Communique (7/24/2023) featured the same news, recounting the remarkable journey of "*Dr. Buddhi Rai's and his students' incredible travel study trip to Nepal.*"

We were also honored to participate in interviews with *Hawai'i Public Radio*. This week, three of my students and I shared our voices and reflections on the radio program with Maui Nui Reporter, Catherine Cluett Pactol. This platform provided us with a valuable opportunity to reach a broader audience and convey the significance of our journey in Nepal.

Furthermore, my students have diligently written their reflection papers, capturing their personal growth, academic insights, and cultural encounters during the trip. These papers serve as valuable records of their individual experiences and provide essential feedback on the effectiveness of the travel-study program.

The process of sharing our knowledge and experiences is far from over. In the coming months, I plan to analyze the students' reflections and the data collected during the trip. This analysis will form the foundation of a research article that we aim to publish in a professional journal. By disseminating our findings through academic publications, we aspire to contribute to the field of high-altitude physics and its implications.

Additionally, we are preparing to present our experiences and research at upcoming conferences within the University of Hawaii System and beyond. These presentations offer a platform to share our unique journey and scientific insights, stimulating academic discussions and fostering potential collaborations.

Moreover, I am currently working on producing a documentary that will chronicle our incredible journey, showcasing the interplay between scientific exploration, cultural immersion, and personal growth.

In conclusion, the knowledge and experiences of our travel-study class have been widely shared through media coverage, academic publications, radio interviews, and

personal reflections. Our ongoing efforts to disseminate our discoveries aim to inspire future generations of students and researchers to embrace cross-cultural learning opportunities and explore the wonders of the natural world.

In closing, I would like to reiterate the inspiring motto of the University of Hawaii at Manoa Study Abroad Center: *Dare to Discover, Dare to Learn, Dare to Understand.*

Thank you so much!

I want to extend my sincere appreciation to the UHMC FSDF team, the UH Foundation, and the Ka Hikina O Ka Lā program for their generous support towards my professional development journey. Thank you all so much!

With heartfelt gratitude,

Dr. Buddhi Rai

Associate Professor of Physics at the UHMC STEM Department