

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)  
On Track - Undergraduate Space Education (3)

Author: Mr. Mohsyn Malik

Institute for Earth and Space Exploration, Western University, Canada

Mr. Syed Ahmed

Institute for Earth and Space Exploration, Western University, Canada

Mr. Tahir Dahrouj

Institute for Earth and Space Exploration, Western University, Canada

Dr. Adam Sirek

Institute for Earth and Space Exploration, Western University, Canada

TRANSLATING CLINICAL THINKING INTO SPACE-BOUND TECHNOLOGY: A  
MULTIDISCIPLINARY UNDERGRADUATE INTERNSHIP EXPERIENCE

**Abstract**

The Institute for Earth and Space Exploration (Western Space) at Western University in London, Ontario, Canada held its inaugural multidisciplinary internship program over the summer term of 2020. The aim of this internship was to allow learners access to valuable research experience in an interdisciplinary environment, develop technical and applied skills, and meet with professionals in academia, industry and government. Areas of study included lunar science, asteroid sciences, CubeSat development, and development of healthcare in remote environments. The program enrolled students from medicine, law, engineering, computer sciences, and earth sciences. Internships provide learners with the opportunity to gain practical experience and knowledge outside of typical classroom settings and can provide in-depth experiential learning. Western's program provided first-hand experience from established aerospace professionals and allowed learners to explore the career opportunities that exist practicing and supporting space research and operations. Aerospace research often requires the integration of knowledge from several fields to develop novel concepts or countermeasures; thus, the internship was envisioned to model multidisciplinary exposures. In this retrospective review, we reflect on the experiences and lessons learned during our summer internship at the Institute for Earth and Space Exploration. The authors began the internship as undergraduate medical learners, and were challenged to explore the disparities found within the application of technology to deliver medical education to remote sectors, namely long duration space missions in comparison to remote terrestrial environments (i.e. Canada's Northern communities). Using traditional clinical teaching methods and attempting to apply it to low-resource, low-expertise settings forced us to consider the realities of medicine in space including management of resources, effects of space flight on the astronaut, the role of autonomy and the translation of knowledge. Through weekly meetings and presentations, we received feedback from students and professors in other disciplines, providing a fresh perspective to solutions for our theoretical remote medical technology. This internship allowed for the collaboration of ideas between disciplines that was truly invaluable and ultimately essential for training of future space science researchers. Unfortunately, the COVID-19 pandemic created barriers to in-person collaboration and likely reduced the full collaborative potential initially conceived by the Institute. Despite the setbacks to in-person collaboration, the rapid pivot to virtualization and technology allowed the program to demonstrate the potential for an interdisciplinary approach to introductory aerospace research. The lessons learned here can serve as guidance for the development of future training programs to enhance interdisciplinary aerospace models for future collaboration.