Student Learning Objectives/Course Objectives
By the end of the course students should:
***have acquired a foundational understanding of the principles of cosmogenic nuclide research.
***have developed an ability to make sound assessments of applications of the presented cosmogenic nuclide measurement modalities.
***have learned how to address increasingly complex analytical problems in cosmogenic nuclide research.
***have improved their critical reasoning skills and developed the ability to formulate scientific arguments in the area of cosmogenic nuclide research.
***Improved their research and writing skills

COURSE DESCRIPTION
Prerequisites: Graduate standing or the consent of the instructor.
This course will introduce participants into areas of earth and planetary science that make use of cosmic ray produced stable and radioactive nuclides (\(^{3}\)He-stable, \(^{10}\)Be-2.2Ma lifetime, \(^{14}\)C-0.82kyr, \(^{21}\)Ne-stable, \(^{26}\)Al-1.0Ma, \(^{36}\)Cl- 430kyr, and others). The course is suitable for students with an advanced background in geosciences, chemistry, physics, engineering, and computer science, and others who are willing to acquire the necessary background through co-enrollment in courses or self-study assignments required/approved by the instructor/s.

Topics to be covered by lectures and talks are:
- Cosmic rays and cosmic ray interactions
- Cosmogenic nuclide characteristics and methods of sampling and measurement
- Cosmogenic nuclide production rates
- Application of cosmogenic nuclides to meteoritics and planetary science
- Application of cosmogenic nuclides to Earth surface science

Additional selected topics will be covered by review and discussion of key pioneering and most recent publications.

The goals of this course are:
- Theoretical knowledge about cosmogenic nuclides to critically evaluate applications and their results.
- Quantitative assessment of published data of selected applications.
- Proposals for improvements of existing applications or for innovative applications.

The foundations provided through instruction will be reinforced and advanced through application and in depth evaluation and discussions of leading cosmogenic nuclide research. Students will be reading the most recent publications in the field and will be asked to critically evaluate research design, data acquisition, and data analysis and research outcomes through active participation in the classroom. Students may select a topic on applications of cosmogenic nuclides in Earth and Planetary Science in which they wish to acquire special knowledge and will be able
to obtain this knowledge through advice by and discussion with the instructor/s. Students may have the opportunity to analyze data of the most recent research as part of their in depth studies.

**Evaluation**
A grade will be assigned on the basis of class participation (10%), a research abstract (15%), a research paper presentation (15%), and a research paper (60%). The research abstract will be due about mid-semester, the research paper presentation will be given & the research paper will be due during finals week.

The general quality of the research paper should allow the content to be acceptable – individually or jointly with others – to be published as an abstract for a major conference; e.g. LPSC.

**TEXTS:**
At the beginning of the semester or a major instructional section participants will be receiving reading lists by the instructor of advanced/recent publications that will be used in classroom discussion.

The course will have 'textbooks'. Textbooks will be made available through arrangements with Hamilton Library.

Textbooks:

*Some key texts might be out of print or not available through bookstore and library services. Relevant reading materials will be made available.*

**Standard Policies**
Plagiarism includes but is not limited to submitting, in fulfillment of an academic requirement, any work that has been copied in whole or in part from another individual’s work without attributing that borrowed portion to the original author; neglecting to identify as a quotation another’s idea and particular phrasing that was not assimilated into the student’s language and style or paraphrasing a passage so that the reader is misled as to the source; submitting the same written or oral or artistic material in more than one course without obtaining authorization from the instructors involved. (The University of Hawai‘i Student Conduct Code)

Any student who plagiarizes in this course will receive a failing grade and will be referred to the Dean of Students.

If you feel you need reasonable accommodation because of the impact of a disability, please 1) contact the KOKUA Program housed in Room 013 of QLCSS, 956-7511 or 956-7612; 2) speak with the instructor privately to discuss your specific needs. I will be glad to work with you and the KOKUA Program to meet your access needs related to your disability.