Goals for the Akamai Observatory Short Course
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1. Introduction:

The Akamai Observatory Short course (AOSC) is a component of the Big Island Akamai Observatory Internship Program. It is an education program sponsored by the Center for Adaptive Optics (CfAO) Education and Human Resource Department in collaboration with observatories and educational institutions on the Big Island.

The Akamai Observatory Short Course provides a 1-week course to prepare the students for their internship and support the goals mentioned hereafter. This document has been prepared by S. Anderson, M. Bell, C. Ishida, L. Hunter, D. Le Mignant and R. Matsuda to provide a clear vision of mission & goals for the Akamai Observatory Short Course.

2. Main goals for the AOSC:

The main goals for the internship program are aligned with the mission & goals for the CfAO[1], the Keck Observatory[2] and the Big Island Akamai Observatory Internship Program:

- To retain and advance Hawaii college students, especially students from underrepresented groups, into science and technology careers, by preparing for successful internships and enhancing their skills, knowledge, resources and confidence in observatory related fields.
- To develop pathways, partnerships, and a sense of community between Hawaii-based colleges, students and observatories by promoting a common enthusiasm for [astronomy-related] sciences and engineering while preserving a deep respect for Hawaii's diverse and rich cultural environment.

The summer internships are conducted in the areas of Astronomy, Instrumentation and Observatory Operations, namely:

- Astronomy & Physics
- Optical Systems Engineering
- Electrical Engineering
- Mechanical Engineering
- Software Engineering

3. Goals flow down and short course content:

The content goals for the short course are to expose the students to the environment of research and observatory operations in modern astronomy and its synergy with the culture, the individuals and the community in Hawaii. We aim at developing the student's knowledge, skills and attitude for a successful internship and professional life in Hawaii.

The content for the short course encompasses:

- Sharing excitement in modern astronomy, sciences and engineering, which includes understanding the driving aspects of astronomy:

[1] CfAO (http://cfao.ucolick.org/) Mission Statement: "To advance and disseminate the technology of adaptive optics in service to science, health care, industry, and education".
[2] W. M. Keck Observatory (http://keckobservatory.org/) Mission Statement: "To advance the frontiers of astronomy and share our discoveries to inspire the imagination of all"

    - The main challenges and scientific questions for modern astronomy: the origin of life and the formation of the universe.
    - The wide range of ground-based instrumentation: from the UV to the radio with ever increasing telescope apertures that allow observatories to address the modern scientific questions
    - How science drives technology, how technology enables the science: the positive feedback loop between science & technology.
- Students will gain scientific and engineering practice and experience
    - Gain an understanding of basic optics and properties of light through the inquiry process[3]
    - Learn about engineering processes from the design of astronomical instrumentation and observatory operations.
- Presenting and discussing the use and impact of astronomy in the development of societies.
    - Mankind and the sky, from the ice age to the warm modern days.
    - The unique cultural environment of Mauna Kea and Hawaii
    - Context of astronomy on Mauna Kea and worldwide.
- Workplace skills to prepare the students for their internships
    - Efficient and self-directed work methods
    - Gain an awareness of workplace conduct
- Community and Workforce Development
    - Participating in the Akamai students/mentors/alumni network
    - Gain a broader perspective on education and career opportunities.
    - Preserving, promoting fun & social activities
    - Being an active synapse of the astronomy network
- Communication Skills
    - Gain skills presenting technical information to a variety of audiences: observatory personnel, colleagues, peers and the general public
    - Learn successful abstract writing criteria and write an abstract.
    - Learn peer review process for writing.

We will introduce the detailed content of the short course as well as how it links to the above flow down in a subsequent document. The detailed for the short course content will be made available from the CfAO & Keck Observatory web sites.

[3] See separate document, Inquiry Goals, for specific Inquiry content goals