In the College of Engineering at the University of Hawaii at Manoa, the Civil and Environmental Engineering (CEE) department offers six main subdisciplines of civil engineering: Construction Management, Environmental Engineering, Geotechnical Engineering, Hydraulics/Hydrology, Transportation Engineering, and, of particular interest to SEAOH, Structural Engineering. Accredited by ABET, the US accrediting board for engineering programs, UH’s CEE program has garnished over 10,000 baccalaureate and graduate degrees. Structural engineer Dr. Ian Robertson, former SEAOH President, is Arthur N.L. Chiu Distinguished Professor at UH.

According to Arthur N.L. Chiu Distinguished Professor, Dr. Ian Robertson, “UH Manoa is the only University in Hawaii offering Bachelor, Master and Ph.D. programs in Civil Engineering. As such, it is the only local source for structural engineering graduates. The CEE department offers a senior level track in structural engineering, and both MS and Ph.D. programs in structural engineering.”

Manoa campus graduates, specifically from the College of Engineering, are found in nearly every public and private engineering company and agency through all Counties in Hawaii, many graduates of whom are in leadership positions.

With Hawaii’s constant demand for civil engineering professionals, UH Manoa is constantly exploring ways to improve its programs.

The university is introducing two new programs in the CEE department. The first is a Bachelors-and-Masters (BAM) program, which allows undergraduate students to take graduate courses in their senior year, two of which can count for credit in the MS program, thus reducing the number of course required for the MS degree.

Students are able to finish both BS and MS in 5 years (4 + 1). In addition, a Construction Engineering program (CNST) was recently introduced at the undergraduate level. Students are now able to obtain a double major in CEE and CNST with only one or two more semesters.

As the only accredited engineering college in Hawaii, one of the principal missions of UH CEE is to provide students with an engaging and fascinating educational undergraduate and graduate experience.

Advancements in technology has played a significant role in educational means. For college students, the slide rule had given way to a handheld calculator, and bulky computers had advanced to compact desktops and sleek laptops through the years. Even the way in which lessons are taught and delivered has evolved from decade-to-decade, especially recently with the advent of smart phones, apps, file sharing software, and a myriad of other advancements. Information through online searches or video tutorials are literally at the fingertips of every student.

“UH prepares our graduates as well as most other Civil Engineering programs in the country. (UH) structural engineering graduates from the structures track at the BS level are ready for an entry-level position at a structural engineering consulting company, and our MS structural engineering graduates are fully qualified to start productive structural engineering careers.”

-Ian N. Robertson, Ph.D., S.E.
University of Hawaii at Manoa

Photo: Courtesy of Engineering Alumni Association of the University of Hawaii
Dr. Robertson expounds, “One major change in instruction is the improvement in delivery methods and the tools students have to study and work on their assignments. When I started teaching at UH in 1992, we were using overhead projectors and handing out reams of notes to complement the textbooks. Very few students had laptops and there were no iPad or smart phones. Now all class material is available to students online, and virtually every student has a laptop or iPad, and smart phone to view and use that (class) material.”

Indeed, the means and methods of instruction has been streamlined.

Software for structural engineering analysis has also improved significantly in the engineering profession, and it is often commonplace in a design firm. However, understanding fundamental engineering principles is essential in preparing future engineers for real-world challenges. Teaching students how to use software, though important, is not as valuable as teaching students what transpires in the analysis within the software.

Dr. Robertson, the 27-year tenured teaching veteran, states steadfastly, “I am a firm believer in the need for students to understand the fundamentals of what they are doing, so at the undergraduate level I avoid the use of software that short-circuits the understanding process.” He explains, “Software is more suitable for graduate programs where students already understand the basics, and now need to understand correct use of the tools technology provides for them to be efficient in the design office.”

Bridging the gap between academia and the professional design office is vital to expeditiously recharge the structural engineering work pool in Hawaii.

The aforementioned former SEAOH President of 2008, and current Arthur N.L. Chiu Distinguished Professor, Dr. Ian Robertson is that bridge.

“I have tried throughout my career to remain involved in SEAOH so as to keep the link between academia and the design office alive.”

Indeed, Hawaii is fortunate.

Humbly speaking, “I think my main contribution has been the numerous graduate students (over 95 to-date) that I have mentored during my 27 years at UH. Many of these students are still in practice in Hawaii, so now make up a sizeable portion of the local structural engineering community. Some of them have excelled in their practice, even to the point of forming and successfully running their own consulting offices,” says Professor Robertson.

Many proud alumni of UH College of Engineering continue to support the program through in-kind contributions or donations through UH events.

Hosted by the Engineering Alumni Association of the University of Hawaii and the College of Engineering, Holmescoming is an annual event that not only allows UH alumni to enjoy great food and exceptional entertainment, but moreover this fundraising endeavor allows engineers to stay connected while donating to the only local engineer-producing school.

The University of Hawaii prides itself on providing state of the art education for our future engineers- the designers, inventors, innovators and researchers of tomorrow. As such, the University continues to solicit funds from the community to maintain and grow its equipment and facilities.

Recently, SEAOH supported UH College of Engineering by contributing funds to the Structures Laboratory Equipment Upgrade project specifically for Department of Civil and Environmental Engineering at UH Manoa.