



ALDEN CO-OP PROGRAM DESCRIPTION

Alden is currently seeking undergraduate engineering students with an interest in fluid mechanics and dynamics for a semester-long co-op starting in January 2021 at our Holden, MA facility. Both the Fluid Systems Performance and Hydraulic Modeling groups are seeking candidates. Engineering and technical tasks will be assigned to each student and are based on the current departmental workload. Cross functional assignments (across departments at Alden) are also possible. The goal of the Alden co-op program is to provide an enriching, practical engineering experience that ties classroom knowledge to real world engineering projects.

Specifically, there are two potential projects for co-ops to assist the Fluid Systems Performance group with. First, we are continuing to work closely with nuclear power plants to demonstrate the safety of their filtration systems experimentally. In these projects, students will get in depth exposure to pressure and temperature measurements as well as a variety of industrial equipment such as large pumps, heat exchangers and prototypically sized nuclear strainer units. Second, we are expecting a project that will validate the ability of a safety valve designated for nuclear power plant use to close under primary system pressures (~2700 psig). The project will provide the required test environment (pressure, temperature, flow) and measure the generated forces within the valve and compare these to the actuator capabilities. .

The Hydraulic modeling group is currently conducting CFD and physical model studies related to sediment transport, pump stations hydraulics, water supply and treatment facilities, spillways and other civil hydraulic structures. Of these, one potential assignment for co-ops will be to assist with a study evaluating the effectiveness of a planned sediment diversion on the Mississippi River. Assignment to this study will expose students to a variety of tests using a large scale physical model. Instrumentation will be used to collect data in the physical model including flow velocities, turbidity, suspended sediment concentration, deposition and scour. Specific tasks will include engineering calculations, model component design, operation and testing of the model, and data acquisition and analysis.

In addition to working and assisting with Alden's current project based work, co-ops will be assigned a research project that they will complete during their time at Alden. The project will be specific and targeted and give the student something to work on independently with guidance from Alden engineers. Students will have input in the selection of their project. Past examples of research projects include: development of instrumentation such as turbidity and velocity meters, revamping smoke generators used for flow visualization, literature searches related to CFD modeling efforts, development of implementation guides for open source computational fluid dynamics codes, development of a hot-film velocity measurement calibration loop, improvement of templating techniques in topographical models, development of compact pressure sensor arrays, and research on new nuclear strainer filtration test techniques. 2020 opportunities revolved around the development of instrumentation used to measure axial and tangential velocities and optical measurement methods to measure wave amplitudes and the development of a research wave flume where techniques for active spectral wave control can be evaluated and refined.

HOW TO APPLY

To apply, contact Alden's Human Resources Department by sending an email to hr@aldenlab.com with a current resume and a letter of interest for the co-op program. Applications are currently being reviewed for summer 2021 and fall 2021 semester long co-ops. Start dates and duration are flexible based on student availability.