

# Theoretical and Practical Course Design and Development Aspects in Hydrographic Surveying

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## SUMMARY

This paper introduces the reader to two hydrographic surveying related courses in a geomatics engineering program at a North American university. The aim of the paper is to share some of the design and development experiences of the course instructor with other geomatics engineering instructors and/or hydrography enthusiasts. The design and development of these courses is performed with the theoretical framework of Bloom's taxonomy in mind. That is, all learning outcomes are written using action verbs with a well-rounded distribution between the different cognitive levels, i.e., remembering, comprehending, applying, analyzing, evaluating, and creating. Since the degree program is accredited by both an engineering and a surveying boards, some of the major accreditation requirements for the courses are explained. These, for example, include measuring graduate attributes and aligning course content with a list of prescribed topics. A modern teaching practice, i.e., team-based learning, is discussed, and an example of in-class exercises following the team-based learning scheme are illustrated. In addition, the authors would like to also provoke a discussion on the practical aspects of running a rigorous plate check calibration as part of a hydrographic surveying exercise in a typical geomatics engineering field school. The mapping portion of a body of water of interest is performed using a remotely controlled mini catamaran or a HyDrone with a single beam echo sounder. Some of the issues in preserving the rigour, achieving a desired accuracy and maintaining the safety of the students during the calibration are expressed. For example, the type of calibration platform, the way the HyDrone is docked at the platform, the options for suspension mechanism, and the number of contact points with the calibration plate are discussed. At the end of the paper recommendations are provided on how to develop such an exercise given the most current experiences of the course instructor and his team in designing and testing the equipment at hand.