



## **Using forum-based competitions to improve sustainability and motivation in higher education GNSS learning – Chances and risks**

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The learning strategies of students seem often to be economically adapted to framework requirements in order to achieve best possible examination performances, especially. For this reason, teachers often detect surface level learning characteristics (e.g., accepting facts uncritically, isolated fact storage, fact memorisation) within the learning concepts of students. Therefore, knowledge sustainability is often suffering. This is detectable when trying to build on knowledge of earlier lectures or lecture courses.

In order to improve the sustainability of geodetic knowledge, case studies were carried out at the Geodetic Institute of the Karlsruhe Institute of Technology (Karlsruhe, Germany) within the lecture course “Introduction into GNSS positioning”. The lecture course “Introduction into GNSS positioning” is a compulsory part of the Bachelor study course “Geodesy and Geoinformatics” and also a supplementary module of the Bachelor study course “Geophysics”. The lecture course is aiming for transferring basic knowledge and basic principles of Global Navigation Satellite Systems (e.g., GPS).

During the winter semesters 2010/11 and 2011/12 ten resp. 15 students visited this compulsory attendance lecture course. In addition to classroom lectures and practical training (e.g., field exercises), a forum-based competition was included and tested using the forum feature of the learning management system ILIAS. According to the Bologna Declaration, a special focus of the innovative competition concept is on competence-related learning. The developed eLearning-related competition concept supports and motivates the students to learn more sustainable. In addition, the students have to be creative and have to deal with GNSS factual knowledge in order to win the competition.

Within the presentation, the didactical concept of the enriched blended learning lecture course and the competition-based case study are discussed. The rules of the competition are presented in detail. During the semesters, the motivation and the amount of effort (e.g., time requirement of learning and teaching) were examined regularly. These parameters are going to be discussed as well.

Based on the gained experiences, the forum-based sustainability competition has proofed to be an effective tool, which can contribute significantly to an increased sustainability of students’ learning. In addition, the developed forum-based competition concept can be easily transferred to other lecture courses, especially focusing on factual knowledge.