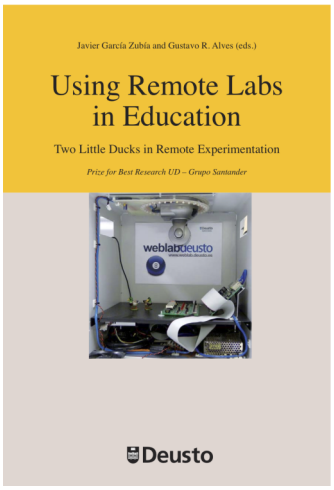

"**Using Remote Labs in Education**" is a textbook that provides state-of-the-art evidence on how remote labs can be used by both teachers and students to support the acquisition of lab competencies at the university level.
As prefaced by Susan M. Zvacek, from the University of Kansas (US): "*It's probably a safe bet that few, if any, engineering programs implement remote labs for pedagogical reasons, so the resulting learning benefits may come as a pleasant surprise.*" This book includes contributions that help the reader understanding how those "*learning benefits"* may result from an informed and planed integration of remote labs into engineering courses, while sustained by evidence provided by the educational actors involved.

Edited by Javier Garcia-Zubía, from the University of Deusto (Spain), and Gustavo R. Alves, from the Polytechnic of Porto (Portugal), the book is a result of a prize awarded to WebLab-DEUSTO. As the editors explain in the Introduction: "*Usually, such a book is a compilation of some papers of the "*winners*", but in this case we preferred to write one with our "*remote friends*". The main objective of the book is to show what can be done with a remote lab in teaching science and engineering, as well as putting together some of the most important remote labs in the world in one single reference:* iLAB (MIT, USA), Labshare (UTS, Australia), VISIR (BTH, Sweden), LiLA (Europe), *etc. Our goal is to offer you 22 chapters - "*two little ducks in the lake of remote experimentation*" - divided into five sections: Pioneers; iLabs around the Globe; Experiments on Electrical & Control Engineering; Experiments on Physics, Chemistry & Materials; and Remote Lab Architectures & Architects."*

Section 1 starts with an original chapter contribution from Molly Shor, from the Oregon State University (US), Burçin Aktan, from Intel Corporation (US), and Carisa Bohus, from the Oregon Agricultural Statistical Service (US), who pioneered this area, having introduced the expression "Second Best to Being There". Jim Henry and Murat Ozkaya, from the University of Tennessee at Chattanooga (US) then describe a series of remote experiments that have been available, uninterruptedly, since 1995.

Section 2 includes a number of contributions built around the iLab Shared Architecture, a result of the Massachusetts Institute of Technology (MIT) work on remotely accessible online laboratories, which started in 1998. Kimberly DeLong et al., from MIT (US), describe a number of online spectrometer experiments, which aim to "*provide educational opportunities to students ... that do not have the benefit of an on-site nuclear reactor or other neutron source*." Lawrence Kehinde et al., from the Obafemi Awolowo University (Nigeria), and Sandy Tickodri-Togboa et al., from the Makarere University (Uganda), then describe how iLabs have been positively impacting the access to lab resources, in Africa. Finally, Doru Ursutiu et al., from the Transylvania University of Brasov (Romania), further describe three more laboratories remotely accessible through the iLab architecture, to then present a number of student surveys sustaining the idea that remote and hands-on labs, if offered in equal terms, do offer better support for learning.

Section 3 contains the largest group of contributions, describing remote experiments in the area of electrical engineering, from simple circuits to more complex control systems. Ingvar Gustavsson, from the Blekinge Institute of Technology (Sweden), presents the VISIR Open Lab Platform and its use under three scenarios from practical learning.

Andrew Nafalski, Jan Machotka, and Zorica Nedic, from the University of South Australia (Australia), then describe NetLab, a remote laboratory for experiments with electrical and electronic circuits, which presents a graphical user interface similar to the one used in VISIR. Sylvain Saïghi et al., from the University of Bordeaux (France), present the Virtual Measurements Environment (VME) project, which delivers a number of experiments in basic electronics, under a pedagogical framework supported by a Learning Management System (LMS). The same type of remote experiments in basic electronics, are also described by Federico Lerro et al., from the National University of Rosario (Argentina), and by Olaf Graven and Dag Samuelsen, from the Buskerud University College (Norway). Finally, remote experiments with more complex systems are described in the contributions from Sebastián Dormido et al., from the Spanish Open University (Spain), and Reinhard Langmann, from the Dusseldorf University of Applied Sciences (Germany).

Section 4 groups a number of contributions that address remote experiments in Physics, Chemistry and material characterization. Hugo Kofman and Sonia Concari, from the Universidad Nacional del Litoral (Argentina), present three remote experiments on Physics that have been shared with other Argentinean universities. Martin Connors, Christy Bredeson, and Farook Al-Shamali, from the Athabasca University (Canada), describe an online ball drop experiment, developed with homemade materials and equipment, in an attempt to support distance courses on Physics. Christian Pleul et al. from the Technical University of Dortmund (Germany), offer a major contribution that covers didactical aspects of how to integrate remote experiments into an e-learning environment. Roderval Marcelino et al., from a number of Brazilian and Portuguese institutions of higher education, then describe how a remote experiment on the Young (tensile) modulus has been integrated into a 3D virtual world, developed on OpenSim, and further interconnected to an LMS (Moodle) using a technology known as Sloodle. Closing this section, Anders Selmer et al., from the University of Cambridge (UK), describe how a chemical reactor has been made remotely accessible in two distinct configurations for supporting practical lab assignments on chemical reaction engineering and process control, since 2006.

Section 5 includes an initial chapter from Mohamed Tawfik et al., from the Spanish Open University (Spain), which addresses the discussion of middleware architectures for integrating online laboratories and LMS. David Lowe, Tania Machet, and Thorsten Kostulski, from the University of Technology, Sydney (Australia), then present the remote labs hosted by their institution, the Sahara architecture and a nationwide initiative to characterize the offer and utilization of remote labs in Australia, i.e. the LabShare project. Dennis Gillet and Christophe Salzmann, from the Federal Polytechnic School of Lausanne (Switzerland), anticipate new scenarios where remote experiments are just a part of a student's Personal Learning Environment. Finally, Teresa Restivo, from the University of Porto (Portugal), describes her activity on the promotion, dissemination, and use of remote labs, not only at her institution, but also in cooperation with other Portuguese and Brazilian institutions of higher education.

The book can be ordered (hard copy) or freely downloaded (PDF version) through the following link - http://www.deusto-publicaciones.es/index.php/main/libro/913