

# Antrag auf Verwendung von Qualitätsverbesserungsmitteln

Aus dem Qualitätsbericht 2013 der Fakultät Bio- und Chemieingenieurwesen:

„Aus den QVM ab 2014 werden antragsbasiert bis zu 25% für Personalmittel in speziellen, gemeinsam durch die Kommissionen für Lehre und Studium und Qualitätsverbesserung zu definierenden Projekten verwendet. Diese Projekte dienen der Verbesserung der Lehre und der Prüfung und Validierung neuer Lehrformen.“

## 1 Antragsteller/in

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## 2 Projektverantwortlicher (wenn unterschiedlich zu 1)

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## 3 Projekt

**Titel: “The painless way to LabView“**

*Introduction to LabView – Control and Safety of Experimental Setups*

## 4 Kurzbeschreibung des Projektes (In maximal 5 Sätzen)

Given the extraordinary success of the introductory course „The Painless Way to LabVIEW“ in the summer term of 2015 where student demand even exceeded the large number of places offered, this successor project aims to firmly establish the course as an elective lecture. In order to do so, the present project proposes to add 2 more lectures, create a library of commented examples, prepare lecture notes, train a successor and create a LabVIEW-Box for practical implementation of the concepts thought.

## 5 Details zum Projekt

### 5.1 Istzustand vor Beantragung:

LabVIEW is commercial software from National Instruments. It is a system-design platform and development environment in which programmes can be created using a graphical notation. LabVIEW uses a powerful programming language which, in addition, is extremely versatile and intuitive. Moreover, LabVIEW has established itself as the common choice for the control, automation and safety of laboratory plants due to the advantages it possesses in comparison to alternative software. It therefore seems expedient that the students of the BCI are able to attend an introductory course and acquire a degree of familiarity with LabVIEW.

During the summer term of 2015, an introductory course on LabVIEW focused on control and safety of experimental set-ups (The Painless Way to LabVIEW) was offered for the first time. The maximum number of participants permitted was 35, and 36 students actually register for the course, thus indicating the high degree of interest that a LabVIEW course has for BCI students.

The course “The Painless Way to LabVIEW” thus had a great first year. Nonetheless, in order to ensure that the course can become firmly established as an elective lecture, further work is required. Based on the experiences obtained in the summer semester 2015, the measures suggested are:

- 1 additional lecture (Refresher programming course + LabVIEW environment in detail)
- 1 additional lecture (Signal Processing + State Machines + Simulation)

- Preparation of a library of examples with explanations
- Lecture Notes (Summary)
- Training a successor lecturer
- Creation of a LabVIEW experimental module available to all chairs for training and practice with LabVIEW

### 5.2 Projektziel/Projektbeschreibung:

The objective of the project is to provide course documentation, a library of examples and additional material, thus enhancing the course "The Painless Way to LabVIEW" above and beyond its initial success in order to establish it as an elective course.

### 5.3 Einzelmaßnahmen, Schritte etc., darin Eigenanteil des Lehrstuhls:

The project consists of creating 2 further lectures (additionally to the existing 4), a library of examples and lecture notes. These tasks will be performed by a research associate from the CVT chair. Furthermore, since the present lecturer (a CVT research associate) will only be available up until the end of the summer term 2016, another CVT research associate will be trained to give the course in subsequent years. The creation of the experimental LabVIEW module will be carried out by the "Elektrotechniklabor".

The improved course will thus comprise 6 lectures (90 min each) covering the following topics:

- Refreshment of programming concepts
- LabVIEW environment in detail
- Graphical programming
- Creation of subroutines
- Data acquisition and processing
- Simulation and programming
- Data and execution structures
- Signal processing
- State machines
- Simulation
- Connecting LabVIEW with a "real" experimental set-up

Following the lectures 3 assignments with an increasing level of difficulty (easy, moderate, and challenging) will be given to the students. The grade obtained by the students depends on the number of assignments solved and on the quality of the solutions.

#### **5.4 Geplante Laufzeit: (Ab ca. 05/2015)**

The project will start if and when it is approved, so that the course material will be ready by the summer semester of 2016. The course will be given once per year and encompasses the following activities:

- 6 weeks: 1 lecture of 90 min per week
- 4 weeks: time provided to solve and submit the assignments
- 2 weeks: correction and grading of the assignments

#### **5.5 Kostenaufstellung, darin Eigenanteil des Lehrstuhls:**

Preparation of two additional lectures:	0.5 MaMo
Training of new lecturer:	0.5 MaMo
Preparation of library of commented examples:	0.25 MaMo
Preparation of lecture notes:	0.25 MaMo
Giving the lectures and modifying of assignments:	0.5 MaMo
Creation of an experimental LabVIEW module	0.5 MaMo
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Total:	2.5 MaMo

For subsequent years 0.5 MaMo may be required for giving the lectures and modifying the assignments.

#### **5.7 Indikatoren zur Evaluation des Projektes:**

The number of participants attending the lectures clearly shows the high level of interest the students have in the topic "Introduction to LabView".

The number of assignments submitted together with the quality of the solutions provides a good impression of how well the information is being understood and internalised by the students.

An annual survey of the students who have used LabView for their Bachelor/Master thesis will be conducted in order to learn their opinions on the usefulness of the LabView course and to check to see if it saved them time in their research projects.

#### **5.8 Nachhaltigkeit/Verstetigung\*:**

After 2016, a new research associate from CVT chair will be given the responsibility for holding the lectures and preparing and grading the assignments.

30/11/15 David W. Ayer

**Datum, Unterschrift des Antragstellers/der Antragstellerin**

Der Antrag ist als PDF an den Vorsitzenden der QV-Kommission Herrn Schembecker zu richten.