

Programming of Communication Applications using LabVIEW

Dozent/Lecturer:	Prof. Dr. Holger Stahl
Umfang/Amount:	4 SWS td (seminaristic teaching with lots of practical exercises)
Credit Points:	5 ECTS CPs
Prüfung/Examination:	Concluding Course Work Project & Oral Test (30 min, in English/German)
Offered in Semester:	WS
Language:	English
Target group:	Students of Ingenieurwissenschaften KPE
Number of participants:	Min. 10 - max. 15

1. Description

LabVIEW is a platform and development environment for a visual programming language from *National Instruments*. In contrast to a textually coded programming language, *LabVIEW* uses a data-flow language. Execution is determined by the structure of a graphical block diagram on which the programmer connects different function-nodes by drawing wires. *LabVIEW* is easy to learn and allows data acquisition, measurement automation, and signal processing.

This Seminar first gives an introduction into some basics and essentials of *LabVIEW* programming. The main focus of the seminar are applications in the field of communication systems. Only 30% of the seminar will be theory, the major part are practical programming examples and exercises. The seminar is addressed to electrical engineers of all specializations. Basic previous experience with any graphical programming language would be advantageous.

2. Contents

- ⇒ Getting Started with LabVIEW
- ⇒ Programming Fundamentals
- ⇒ Grouping Data using Arrays, Clusters, and Strings
- ⇒ Formula Nodes
- ⇒ Data Visualization
- ⇒ Measurement Automation Applications
- ⇒ Signal Processing Applications
- ⇒ Data Communication Applications

3. Objective

Knowledge of the LabVIEW programming fundamentals. Ability to design and program key applications for *Measurement Automation*, for *Digital Signal Acquisition and Processing*, and for *Data Communication*.