Innovative Teaching and Learning for Industrial Changes due to Industry 4.0

Course 3: Professional Development Training for TVET Teachers in Industry 4.0

TOPICAL AREA: TVET and Digitalization

Industry 4.0 is integrating a variety of different technologies into a complete system. The most important features of this system are the intelligence of the individual components and the way that these components network with smart factories. This will be main requirement for a teaching process and methods are needed for the best way to teach it.

- **Content, elements, format and duration can be customized to the respective needs**

LEARNING OUTCOMES

On completion of the training, participants

- identify the design structure of industry 4.0 factories: sensors/actuators, process modules, cells, networking, process and operation, MES
- create the flow of material: using RFID and NFC to identify products that need to be manufactured
- manage the "Manufacturing Execution Systems" (MES): creating, managing, controlling and visualizing orders on the value-adding process level
- are able to collect information using sensors
- carry through the operation of station control PLCs
- are capable to plan learning units in the context of Industry 4.0
- carry through practical exercises in a lab

CONTENTS

- Interface of 3.0 & 4.0 and the differences and why the need for 4.0
- Impact of Industry 4.0 in changes of work on the shop-floor level
- Wider usage of Internet in the production and business processes of industry production
- New level of technical and software-based communication between the cyber physical systems and the internet or internet of things,
- Process management (visualization/ monitoring/ coordination/ organization)
- Efficiency: usage monitoring, recording consumption, localizing and identifying energy losses, drawing design structure of Industry 4.0 factories: sensors/actuators, process modules, cells, networking, process and operation command level, MES
- "Manufacturing Execution Systems (MES) simulation": creating, managing, controlling, and visualizing orders on the value-adding process level

FORMATS

Virtual format implemented with following methods:

- Webinar
- E-Coaching
- Individual work/ Self-Learning
- Cooperative work

LANGUAGE

- English
- German
- Upon request: other languages with interpreters

TARGET GROUPS

- TVET teachers
- TVET experts
- In-company trainers
- TVET management staff
- Decision makers from relevant ministries, authorities and institutions

from all occupational fields

PARTICIPATION REQUIREMENTS

- Access to technology (manufacturing, electrical field, IT etc.)
- 1 year teaching experience

DURATION

- 80 h in 2 weeks (recommended)
- Additional 20 h preparation/follow-up

EQUIPMENT

- Notebook / PC
- Stable internet connection
- Integrated or external microphone
- Optional: webcam

CERTIFICATE

The participants will receive a certificate of participation after successful completion of the course.

YOUR CONTACT

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