Filling Skills Gaps in Blue Industry by Radical Competence Boost in Engineering VET

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RADICALLY BETTER ENGINEERS FOR COMPANIES’ NEEDS

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Co-funded by the Erasmus+ Programme of the European Union
ENGINE-MODEL

Education model based on innovation pedagogy

- Students may study almost half of their study time at the company
- Theory and practice are alternating continuously
- Companies engage the students immediately from the beginning of the studies
- Development assignments are done for real development needs of the companies
ENGINE-MODEL

- Consist of following parts:
  - Application process to Engine studies
  - Matching the student and company
  - Agreement structure
  - Scheduling the studies
  - Evaluation
  - Mentoring
Application process to Engine studies

• Students will be admitted with normal application process and criteria, at least in autumn 2019

• It is also possible for companies to send their employees to study a degree within the ENGINE model.
  • the first study year with the open TUAS study system, and after that, the student can apply to become a degree program student through a separate application process. The open studies cost approximately 400€/academic year.

• During the first study semester, 20 students (from approximately 80) can compete to the ENGINE model through sending an application showing their motivation and suitability for this kind of learning.
Matching the student and company

- Companies will have to sign up for the ENGINE model by August and co-operation agreement will be done by September 2019.
- Students will apply to the model in October. They may list three most interesting companies for them in the motivation letter.
- TUAS will receive the letters and moderate the appropriate candidates for each company.
- Companies will choose the students to be interviewed in December and they will choose their student early 2020.
- Companies will nominate a mentor.
Agreement structure

• Co-operation agreement between TUAS and company

• Three-party learning agreement mentioning the planned studies

• Work contract between company and student
Agreement structure, continued

Learning agreement
- agreement about the 4-years commitment and applicable study courses with credit points
- Appendix will be updated in the beg of semester
  - TUAS will provide the learning objectives and proposal for work content
  - company will prepare a work plan which will be mutually agreed and signed by all parties
Agreement structure, continued

Employment contract:
- Fixed term contract, each contract most probably for one semester (+ summer period), i.e. 6 – 12 months
- Salary will be paid according to the agreement between student and company, but discussed with TUAS
  • according to working hours, eg. 16 hours/wk during the study period
- student will be paid for the productive value adding work
Scheduling the studies

• Student will get the academical basis from TUAS
• ENGINE model student will study how the topic in question has been organized at the company and prepare a development project for the company about this subject.
• During the study semester, the student will study 2-3 days per week at the UAS work rest of the week at the company
• Due to a modular based timetable system at TUAS, it will be possible:
  • Production mgmt: Monday at TUAS => Thursday at company
  • Product development: Tuesday at TUAS => Friday at company
  • Working days must be naturally agreed with the company
• Summer period practical training
Evaluation

- According to agreement appendix, against the set learning objectives including eg.
  - Exam or
  - Learning diary or
  - Report with requested content or
  - Demonstration of Competence
    - eg. verbal interview

- Grade mark will be always given by the teacher, after discussing with company contact person

- Supported by the innopeda competence framework, both the
  - knowledge of the process, methods, tools and
  - knowledge of the theories will be evaluated.
Mentoring

• Mentor will follow the students development whole four year. They will meet during agreed intervals, min twice per semester.

• TUAS will organize peer meeting with all Engine students together with company mentors and TUAS staff eg. mid semester
  • knowledge sharing
  • building knowledge
  • networking
TUAS Industrial mgmt and eng.
Studies suitable for Engine model

1st year
• Operations management and logistics

2nd year
• Quality systems
• Leadership and communication
• Business law and IPR
• Supply Chain Management
• Product Data Management

3rd and 4th year
• Production management and LEAN
• Product development management
• Technical procurement management
• Innovation project
• Optional studies
Study model

1st year
• Applying to engine model

2nd year
• 15 ECTS Engine studies

3rd year
• Exchange 25 ECTS
• or IB 15 ECTS Engine studies

4th year
• 15 ECTS Engine studies
• 15 ECTS Thesis (Engine studies)

Autumn semester
Spring semester
• Matching, mentor introduction
• 1st study course at company

Practical training 1
10 ECTS
Practical training 2
10 ECTS
Practical training 3
10 ECTS

85+30 = 115 (/240) ECTS Engine studies
Pilot results – spring term 2019

• huge amount of learning, students and companies satisfied
• not only the substance, but also
  • systems (ERP, power pivot Excel)
  • company processes
  • organizational understanding
  • material and information flow
  • analyzing real data, documenting and presenting
  • work place induction, safety training
Pilot results – spring term 2019

• Attention to be paid
  • formulating the task for the student
    • difficulty level
    • allocating the instructing resources
  • assurance that also the academic knowledge is gained, model is not only about learning at the workplace
  • combining the workplace learning to theory => success