



# 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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# 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



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# ENGINE-MODEL

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



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# 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.



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# 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.



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# Agreement structure

- Co-operation agreement between TUAS and company
- Three-party learning agreement mentioning the planned studies
- Work contract between company and student



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# 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



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# 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 to 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



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# 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



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# 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.



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# 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



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# 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

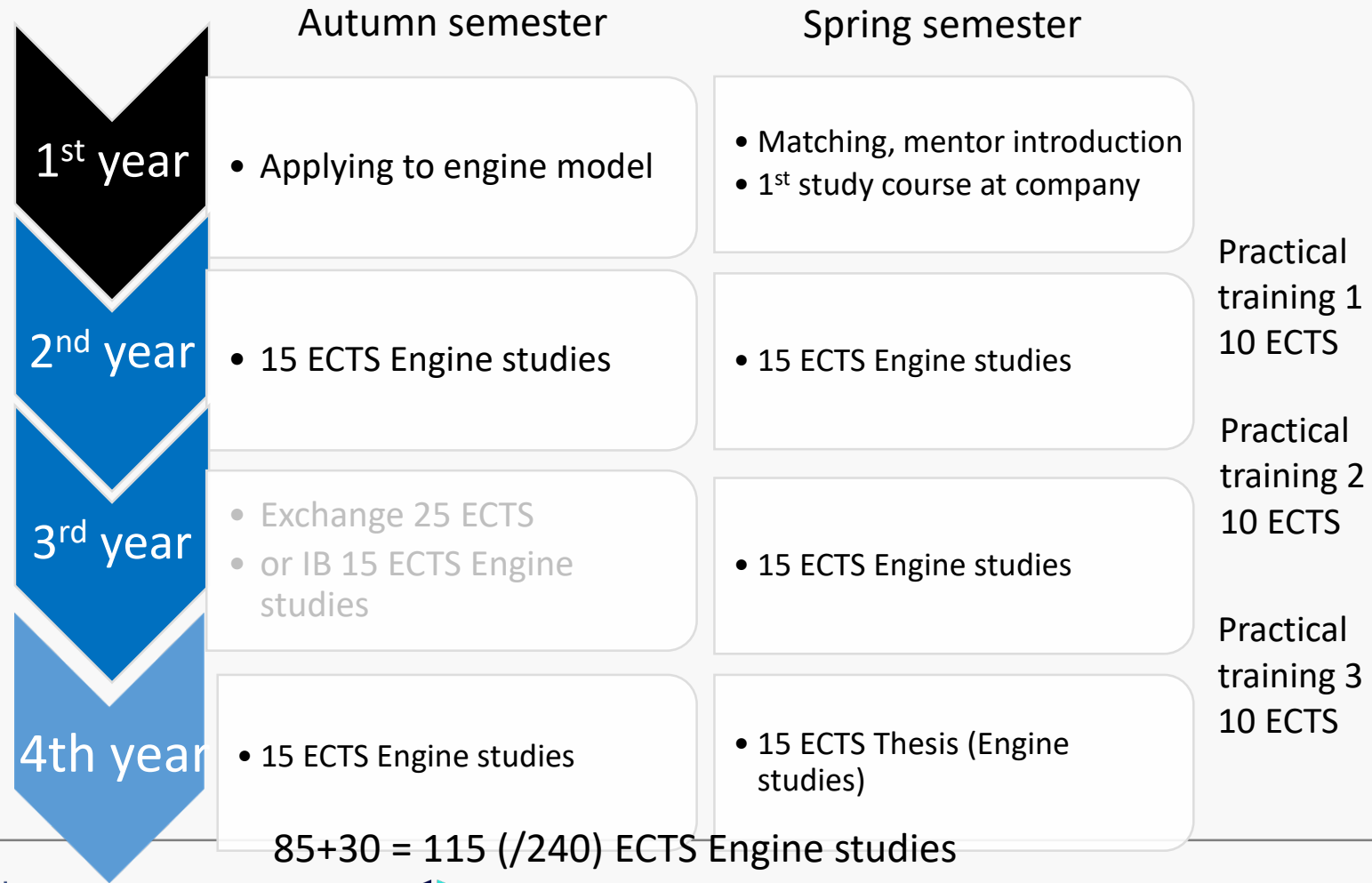


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# Study model



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# 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



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# 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



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