PRACTICE-ORIENTED (DUAL TYPE) ENGINEERING EDUCATION IN HUNGARY

Károly Belina

Cooperation between higher education, research institutes and automotive industry section

Hungarian Academy of Science
Budapest, 31 January 2014

JÁRMŰIPARI KUTATÓKÖZPONT
RESEARCH CENTER OF VEHICLE INDUSTRY

inno mobilitas

Content

- General informations
- Realisation
  - Kecskemét College
  - University of Miskolc
  - Óbuda University
  - University of Pannonia
  - Széchenyi István University

JÁRMŰIPARI KUTATÓKÖZPONT
RESEARCH CENTER OF VEHICLE INDUSTRY

inno mobilitas

GENERAL

Expectations and tasks of the stake-holders

- Expectations of the industry
  - **Strong theoretical basis and its application in practice**
  - **Short education (3-4 years)**
  - **Theoretical foundation of the necessary skills and ability**
  - **Industrial experts in the education**
- Expectations of the society
  - **Cheaper education**
  - **More flexible education**
  - **Quality education**
- Expectations of the institutes (univ./college)
  - **No new accreditation**
  - **Fit to the present time frame**
  - **Thoroughfare between normal and dual type educations**

JÁRMŰIPARI KUTATÓKÖZPONT
RESEARCH CENTER OF VEHICLE INDUSTRY

inno mobilitas

Competencies of the regions

Győr
(engine, manufacturing)

Veszprém
(mechatronics, lubricants, fuels)

Budapest
(technology, electronics, mechatronics)

Kecskemét
(materials, manufacturing)

Miskolc
(drives, mechatronics)

Motivation of the manufacturers

Manufacturer

- Quality from the first part
- Strongly motivated workers
- High efficiency and flexibility
- Standardised operation

Needs

- **Qualified human resources (long term)**
- **Specialists in different fields**
- **Great attention to the needs of the industry**

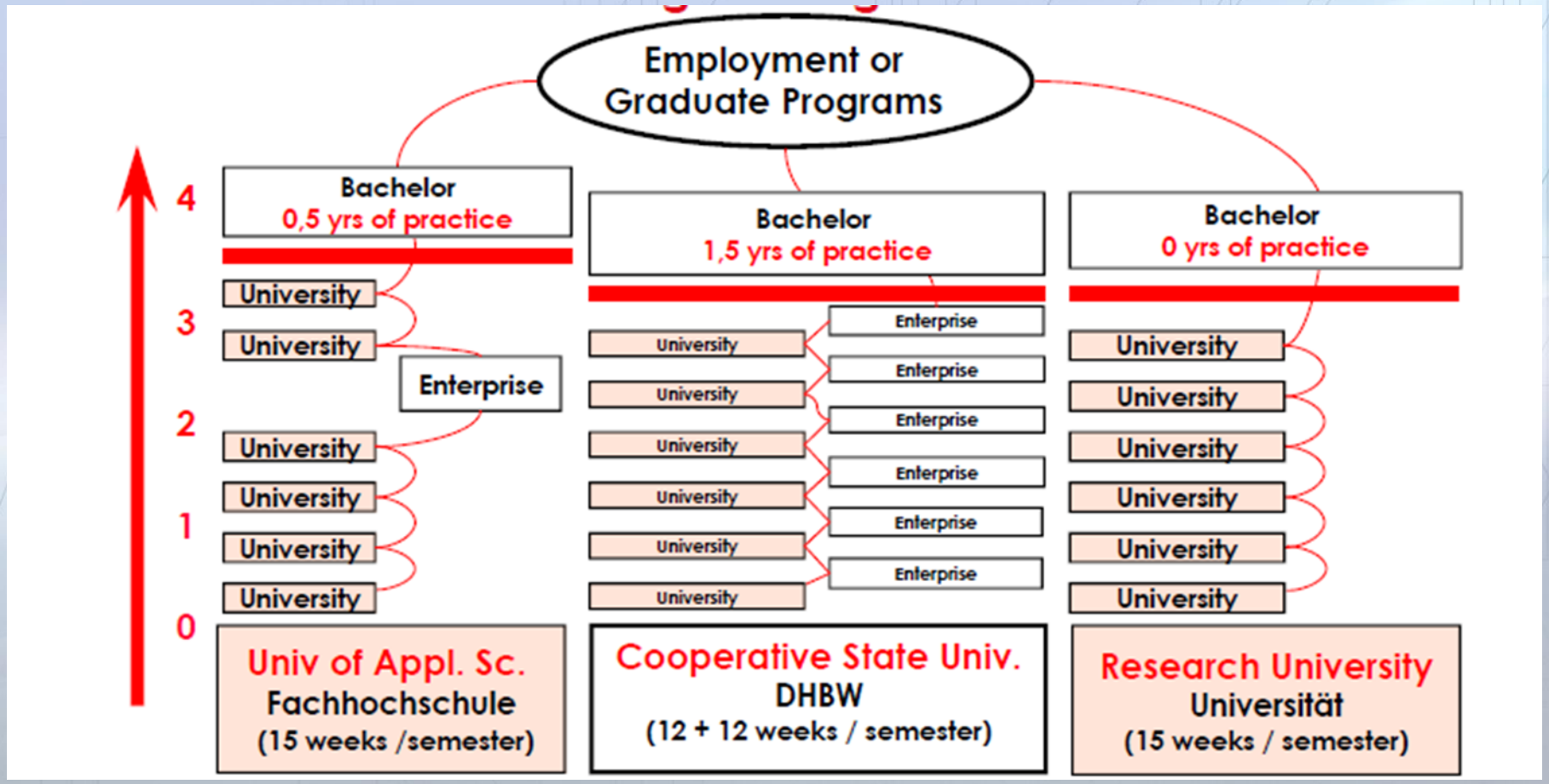
JÁRMŰIPARI KUTATÓKÖZPONT
RESEARCH CENTER OF VEHICLE INDUSTRY

inno mobilitas

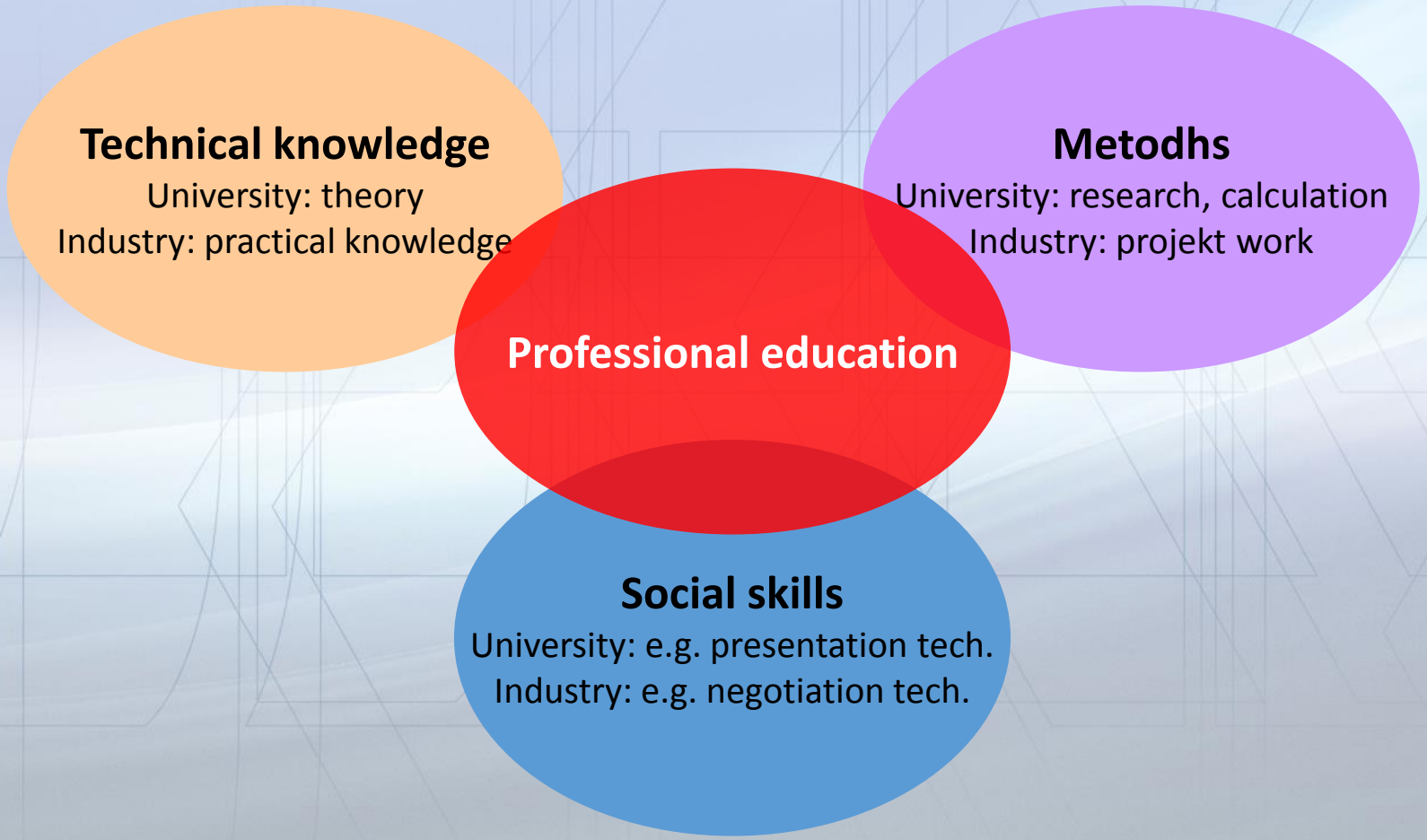
Analysis of the situation

- The Hungarian higher education traditionally more theory oriented, especially the universities.
- The former colleges (similiar to the German Fachhochschule) do not play the same role as before because of the Bologna system.
- The current education cycle time seems to be too long, the drop out rate is high.
- The Hungarian state (following the tendencies in Europe) reduces its financial participation in the higher education.
- The Hungarian industry (especially the automotive industry) requires more practice oriented engineers for operating the high-tech production technology.
- Most of the Hungarian automotive companies have good experinces with the co-operative education.

Practices in the higher education



Components of the professional education



JÁRMŰIPARI KUTATÓKÖZPONT
RESEARCH CENTER OF VEHICLE INDUSTRY

inno mobilitas

Missions

- Mass vs quality education
- Practical training
- Real problem-solving
- Work practice at graduation
- Building connections with the company

JÁRMŰIPARI KUTATÓKÖZPONT
RESEARCH CENTER OF VEHICLE INDUSTRY

inno mobilitas

Advantages

- Students
  - More knowledge
  - Employee
- Company
  - Professional recruitment
  - Training time reduction
- University
  - Connections

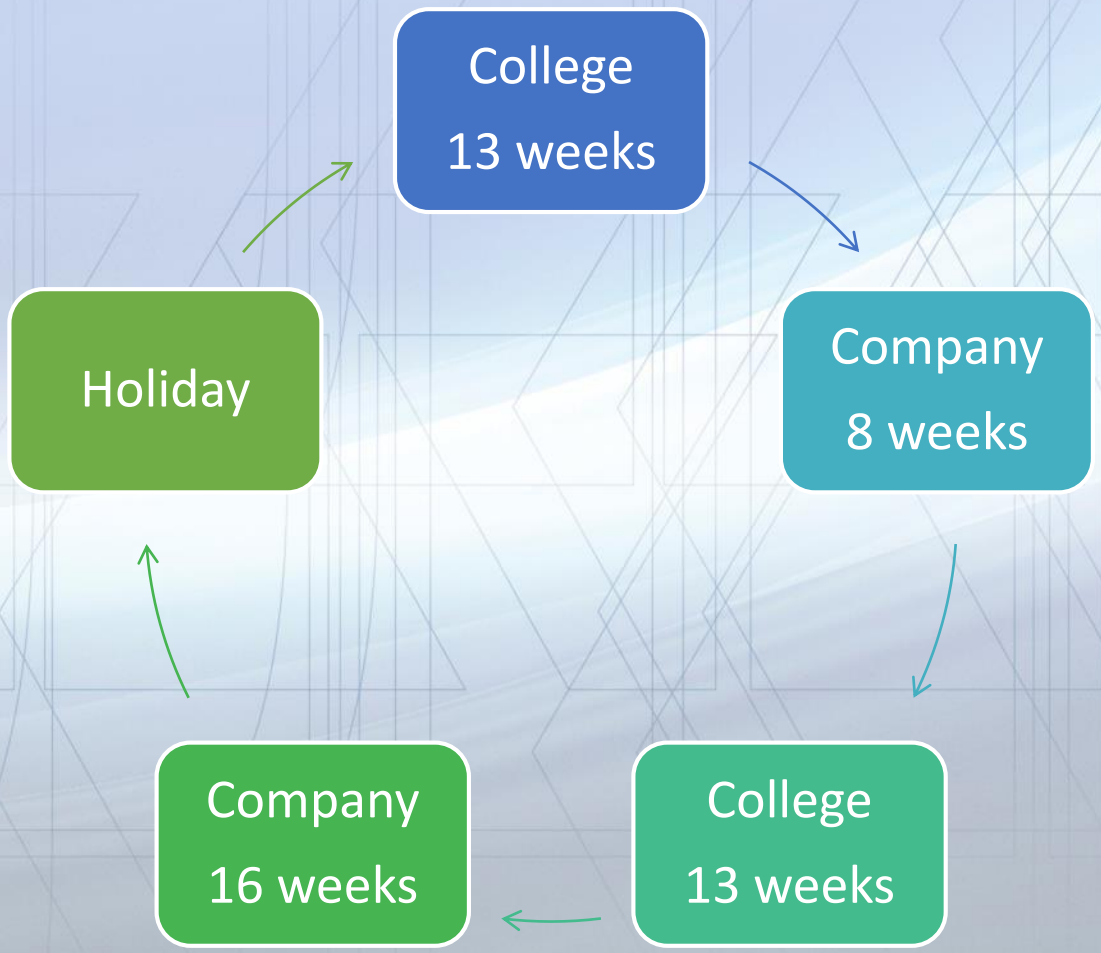
JÁRMŰIPARI KUTATÓKÖZPONT
RESEARCH CENTER OF VEHICLE INDUSTRY

inno mobilitas

REALISATION

Kecskemét College

Structure of the education



JÁRMŰIPARI KUTATÓKÖZPONT
RESEARCH CENTER OF VEHICLE INDUSTRY

inno mobilitas

Steps

- Apply for the admission at the company
- Interview at the company
- Apply for the admission to the college
- Contract between the college and the company
- Registration
- Contract between the student and the company
- Contract between the student and the college
- Starting the term
- Exams during the practical


JÁRMŰTECHNOLÓGIA TANSZÉK
J

JÁRMŰIPARI KUTATÓKÖZPONT
RESEARCH CENTER OF VEHICLE INDUSTRY

inno mobilitas

REALISATION

University of Miskolc

Béla Fodor

Miskolc University

Increasing knowledge !

Requirements:

I. Knowledge
II. Need
III. Motivation

Students

Industry

University

- Advanced knowledge and high potential
- International Relations
- Undergraduate, graduate and postgraduate-level
- Advanced training tools

Region

- Unemployment
- Demand of skilled labor
- Practice-oriented training places
- Active industry
- Increasing international investment.

Participation in the dual education system

- The dual type education has not been introduced, yet.
- It is under development.
- Dual-type education will be introduced in 2015.

Connected projects:

- TÁMOP-4.1.1.C-12/1/KONV-2012-0001
- TÁMOP-4.1.1.C-12/1/KONV-2012-0002
- TÁMOP 4.1.1F-13/2013-0010
- TÁMOP 4.2.2.A-11/1/KONV-2012-0029 (AUTOTECH)

Possible partners

Formax Kft.	Shinwa Magyarország Kft.
Hajdu Autotechnika Ipari Zrt.	Taurus Carbonpack Kft.
Hübner-H Gumi- és Műanyagipari Kft.	Technoplast Gruop Kft.
Johnson Electric Kft.	Tisza Automative Kft.
MadEng Kft.	Toolstyle Kft.
Mitsuba Automative Systems of Europe Kft.	Trigon Kft.
Modine Hungária Kft.	ZF Hungária Kft.
NOHAC	Borsodchem Zrt
Prec Cast Öntödei Kft.	Tiszai Vegyi Kombinát Nyrt.
Remy Automotive Hungary Kft.	Robert Bosch PT / RBHM Miskolc

JÁRMŰIPARI KUTATÓKÖZPONT
RESEARCH CENTER OF VEHICLE INDUSTRY

inno mobilitas

REALISATION

Óbuda University

Bánki Donát Faculty of Mechanical and Safety Engineering

Pál Rácz

JÁRMŰIPARI KUTATÓKÖZPONT
RESEARCH CENTER OF VEHICLE INDUSTRY

inno mobilitas

Branches

- Mechanical Engineering
- Mechatronics
- Safety engineer

Current training exercises

Internship

- Compulsory 6 weeks outside the institution

Cooperative education

- Voluntary, additional practical module – 1 or 2 terms, connected to the BSc study

Dual type education

- Combination of internship and cooperative education
  - Internship (6 weeks) after the second or fourth term
  - 1 term dual practice, (fifth, sixth or seventh term) at the same company.
- Students get the necessary industrial practice needed for their dissertation.

Partners

- Magyar Suzuki ZRt.: 8-10 students/term
- Opel Szentgotthárd Kft.: from 2014 autumn (new)
- Bekomold Szerszámgyártó Kft. (Budapest): 2-3 students/term
- Euroform Szerszámgyártó Kft. (Budapest): 1-2 students/term
- Infineon Technologies Kft. (Cegléd): 2-3 students/term
- Possible partners BPW Hungária, LUK Savaria, FerZol Kft., DENSO Gyártó Magyarország Kft.

JÁRMŰIPARI KUTATÓKÖZPONT
RESEARCH CENTER OF VEHICLE INDUSTRY

inno mobilitas

REALISATION

University of Pannonia

Faculty of Engineering

Dénes Fodor

Intentions of Continental

- Closer cooperation
- Information transfer of automotive development techniques
- Strengthening the graduates know-how and the reputation of the university
- Market ready students

Cooperation options:

- Providing technical information for lectures
- Support for diploma thesis
- Additional tutoring classes for students
- Holidays courses for students
- Internship for students (practical work)
- Establish contact to other universities of the Continental University framework)
- Support of Formula Student Team

JÁRMŰIPARI KUTATÓKÖZPONT
RESEARCH CENTER OF VEHICLE INDUSTRY

inno mobilitas

Contribution from University of Pannonia

- Well educated students which bring along the required know-how (market ready students)
- Further education of CAS employees
- Definition of diploma theses in collaboration with CAS
- Organization of tutoring classes for students
- Organization of holiday courses for students
- Good opportunity to evaluate new field of research
- Research and development support

Nr. Of Continental diploma thesis completed and running till the beginning of Conti course	OTDK (National Students Scientific Conference) thesis related to Continental Subjects	Running Students Projects
20	2	6

Strengthening cooperation
Uni commitment beside Continental
Compensation of the involved colleagues
Lectures, Projects, diploma support
Research cooperation
Accentuated presence of Conti inside the university walls

JÁRMŰIPARI KUTATÓKÖZPONT
RESEARCH CENTER OF VEHICLE INDUSTRY

inno mobilitas

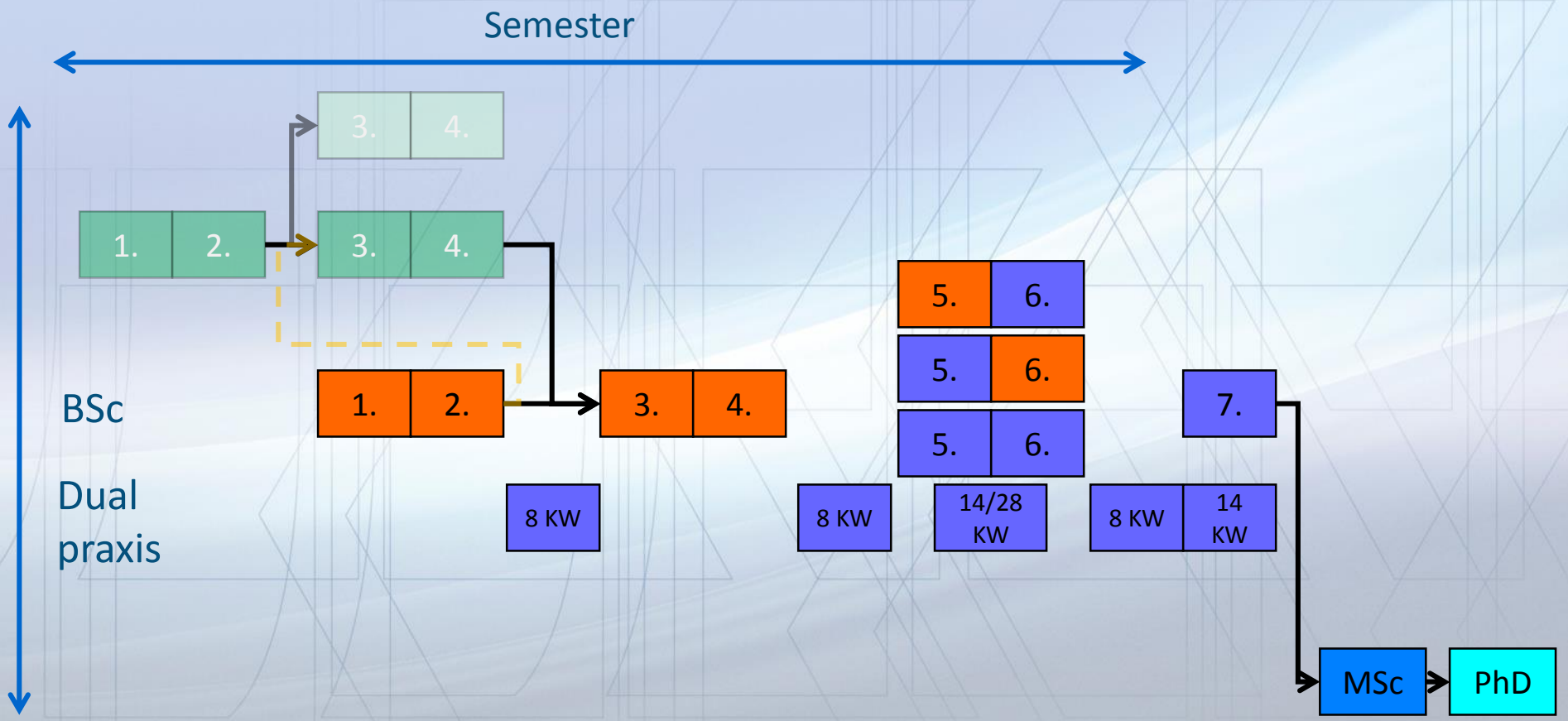
REALISATION

Széchenyi István University

Faculty of Engineering

János Jósvai

Structure of the education



Duration of praxis min. 54 weeks – in one block.

Structure of curriculum

- Interactive E-learning curriculum supporting Praxis block – Moodle Learning Management System
  - Tutor from University
  - Mentor from Company
  - E-learning frame structure of curriculum
  - Questions for self check in each lesson
  - Tests for each Module
  - Companies have access to Moodle to check student activities

Partners in Pilot Program

- Audi Hungaria Motor Kft.
- Borsodi Műhely Kft.
- BPW Hungaria Kft.
- Federal Mogul Kft.
- LuK Savaria Kft.
- Opel Szentgotthárd Kft.
- Rába Futómű Kft.

THANK YOU FOR YOUR ATTENTION.

Károly Belina

Kecskemét College

Contact

Email: belina.karoly@gamf.kefo.hu

Tel.: (+36)-76/516301

COOPERATION BETWEEN HIGHER EDUCATION, RESEARCH INSTITUTES AND AUTOMOTIVE INDUSTRY

TÁMOP-4.1.1.C-12/1/KONV-2012-0002

BASIC RESEARCH FOR THE DEVELOPMENT OF HYBRID AND ELECTRIC VEHICLES

TÁMOP-4.2.2.A-11/1/KONV-2012-0012

"SMARTER TRANSPORT" - IT FOR CO-OPERATIVE TRANSPORT SYSTEM

TÁMOP-4.2.2.C-11/1/KONV-2012-0012

Nemzeti Fejlesztési Ügynökség
www.ujszechenyiterv.gov.hu
06 40 638 638

HUNGARY'S RENEWAL

The projects are supported by the European Union and co-financed by the European Social Fund.

Hungarian Academy of Science
Budapest, 31 January 2014

inno mobilitas