



Technische
Universität
Braunschweig



Institut für Fabrikbetriebslehre
und Unternehmensforschung

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First Certified European Master Program of AIM

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Agenda

First Certified European Master Program of AIM

History of AIM European Master in Industrial Engineering and Management


Current status

Next steps / decisions

History of Master AIM (2010 – 2011)

Grenoble (France) 2010

- Motivation for a Master in Industrial Engineering and Management by lack of engineers, demographic change
- Draft of a possible international degree program for “Master of Advanced Industrial Management” as well as a curriculum

Master of Advanced Industrial Management 

	Semester 1	Semester 2	Semester 3	Semester 4	CP
Optional Subjects (Field 1)	Core Processes of the Enterprise 16 CP				15
Optional Subjects (Field 2)	Management Systems and Enterprise Organization 16 CP				15
Optional Subjects (Field 3)	Design of Production Systems 36 CP				30
Optional Subjects (Field 4)	Accounting Controlling 16 CP				10
Optional Subjects (Field 5)	Mechanics and Industrial Installation 16 CP				10
Optional Subjects (Field 6)	Other Fundamental Skills 16 CP				10
Master Thesis				Master Thesis 36 CP	30
CP	30	30	30	30	120

Skopje (Republic of Macedonia) 2011

- Two surveys among the AIM fellows
- Several surveys of leading industrial enterprises and organizations
- Proposal for definitions of the terms “Industrial Management” and “Advanced Industrial Management”

Survey of leading enterprises and organizations

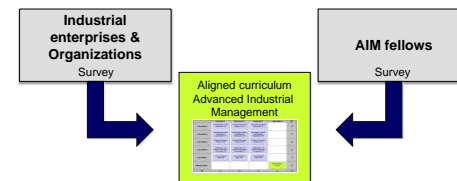
-MTM
-Labor unions (e.g. IG Metall)



Findings of the survey

Requirements of the participants are:

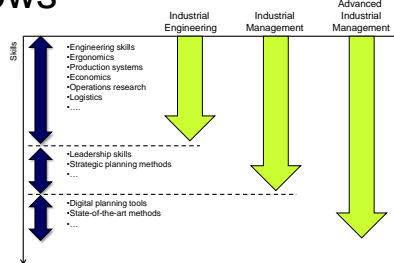
- Possibility to study at different universities across Europe with the same quality level
- Need for separate modules (e.g. Certified Process Manager) to qualify the employees in special core fields
- Flexible way of studying for the employees (e.g. extra-occupational study)



History of Master AIM (2012 – 2013)

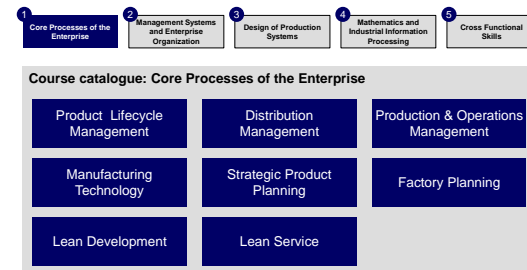
Budapest (Hungary) 2012

- Idea of an EU funded Education Project with focus on methodical expertise and leadership skills needed by industry
- Fulfilment of Bologna Process-objectives (mobility, international competitiveness, European education)
- Integration of AIM into European Higher Education Area and recruitment of new AIM-fellows



Split (Croatia) 2013

- Definition of suitable lectures for each core field
- Examination of lecture content concordance
- Installation of a working group for the implementation of the Master AIM (J. Lundquist, A. Portioli, K. Santarek, H. Van Landeghem, U. Dombrowski)

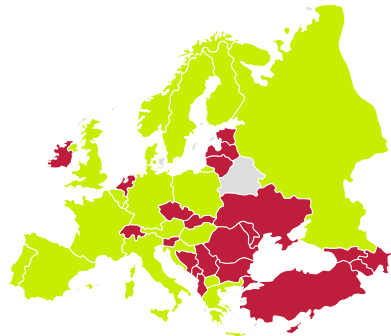


Way from AIM over EU to EHEA – Fulfilment of Bologna Process requirements

Our goal is to complement the European Academy on Industrial Management with Fellows of each country of the complete European Higher Education Area.

Currently, there are AIM-fellows from 15 EU-states and 2 neighboring countries.

Current situation



Striven situation



Country not member of European Higher Education Area

Country with current AIM-Fellow

Country without AIM-Fellow

European Higher Education Area :

- 48 states (28 EU-states, 20 neighboring countries)
- More than 10.000 universities
- More than 2,2 Mio. professors
- More than 32 Mio. students

Need for new course of studies:

- Offering the possibility to study in each country of the European Higher Education Area
- Homogeneous objectives and contents of the course of studies
- Fulfillment of Bologna Process-requirements

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Proposal of the AIM European Master in Industrial Engineering and Management-Curriculum

	Semester 1	Semester 2	Semester 3	Semester 4	CP
Core field 1	Core Processes of the Enterprise 5 CP	Core Processes of the Enterprise 5 CP	Core Processes of the Enterprise 5 CP		15
Core field 2	Management Systems and Enterprise Organisation 5 CP	Management Systems and Enterprise Organisation 5 CP	Management Systems and Enterprise Organisation 5 CP		15
Core field 3	Design of Production Systems 10 CP	Design of Production Systems 10 CP	Design of Production Systems 10 CP		30
Core field 4	Mathematics and Industrial Information Processing 5 CP	Mathematics and Industrial Information Processing 5 CP	Mathematics and Industrial Information Processing 5 CP		15
Core field 5	Cross Functional Skills 5 CP	Cross Functional Skills 5 CP	Cross Functional Skills 5 CP		15
Master thesis				Master Thesis 30 CP	30
CP	30	30	30	30	120

Current content

- Curriculum consisting of 39 lectures in 5 core fields
- Comparison of lecture contents and learning objectives for each lecture already carried out
- Description of core fields still needed
- Definition of compulsory lectures and identification of suitable, additional study contents (e.g. laboratories) still needed

Current status of the Master AIM-working group

Developed curriculum

	Semester 1	Semester 2	Semester 3	Semester 4	CP
Core field 1	Core Processes of the Enterprise 5 CP	Core Processes of the Enterprise 5 CP	Core Processes of the Enterprise 5 CP		15
Core field 2	Management Systems and Enterprise Organisation 5 CP	Management Systems and Enterprise Organisation 5 CP	Management Systems and Enterprise Organisation 5 CP		15
Core field 3	Design of Production Systems 10 CP	Design of Production Systems 10 CP	Design of Production Systems 10 CP		30
Core field 4	Mathematics and Industrial Information Processing 5 CP	Mathematics and Industrial Information Processing 5 CP	Mathematics and Industrial Information Processing 5 CP		15
Core field 5	Cross Functional Skills 5 CP	Cross Functional Skills 5 CP	Cross Functional Skills 5 CP		15
Master thesis				Master Thesis 30 CP	30
CP	30	30	30	30	120

Collection of already offered lectures

Current state of the working group

- Outstanding information on offered lectures
- Need for contact person for direct communication

Current status of accreditation process

Request of two accreditation agencies for degree programs



- Invitation to tender of ASIIN (Dr. Wasser) / ENAAEE (Prof. Dr. Remaud)
- Accreditation costs of ~20.000,- € for each university
- (Financing of accreditation by industrial partners possible)
- Support by vice president Research and Education of TU Braunschweig, Dean of faculty of mechanical engineering as well as department professors

Problems linked to the implementation of Master AIM

Example
TU Braunschweig



Implementation difficulties

- Implementation of an independent “AIM European Master in Industrial Engineering and Management” requires new capacity calculation at each university
- Internal coordination with other course of studies with regard to teaching staff



Interim solution

- iTUBS – on-the-job-training as pilot project in Braunschweig
- No additional capacities needed
- Advantage: additional source of income

Introduction to Erasmus-plus-program

Budget

- Overall indicative financial envelope of 14.774 billion EUR (2014-2020)

Eligible countries

- “Member States of the European Union” (28 states)
- “Non EU Programme Countries” (7 states)
- “Partner Countries Neighboring the EU” (22 states)





Objectives

- Sustainable development of Partner Countries in the field of higher education
- Knowledge Alliances between higher education institutions and enterprises which aim to foster innovation, entrepreneurship, creativity, employability, knowledge exchange and/or multidisciplinary teaching and learning

Restrictions

- Organizations participating in Erasmus+ projects must be established in a Program Country
- Program is open to any organization active in the fields of education, training, youth or sport

Selection of Erasmus-plus-program „Knowledge alliances“

	Strategic partnerships	Selected Knowledge alliances
Funding period	2-3 years	2-3 years
Maximum grant	150.000 € / year or 300.000 €	700.000 € for 2 years or 1.000.000 € for 3 years
Supported activities (examples)	<ul style="list-style-type: none"> • Blended mobility combining short-term physical mobility (less than 2 months) • Short-term exchanges of groups of pupils (5 days to 2 months); • Intensive Study Programmes (5 days to 2 months) • Long-term study mobility of pupils (2 to 12 months) • Long-term teaching or training assignments (2 to 12 months) • Long-term mobility of youth workers (2 to 12 months) 	<ul style="list-style-type: none"> • jointly developing and implementing new learning and teaching methods (like new multidisciplinary curricula, learner-centred and real problem-based teaching and learning) • organising continuing educational programmes and activities with and within companies • creating schemes of transversal skills learning and application throughout higher education • programmes developed in cooperation with enterprises aiming at strengthening employability, creativity and new professional paths
Deadline	01.10.2014	03.04.2015
	 <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">Only support of logistics</div>	 <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">Support of developing and implementing of new course of studies</div>

Aims of “Knowledge alliances”:

- “develop new, innovative and multidisciplinary approaches to teaching and learning”
- “stimulate entrepreneurship and entrepreneurial skills of higher education teaching staff and enterprise staff”
- “facilitate the exchange, flow and co-creation of knowledge”

Objectives of Erasmus-plus-proposal

Objectives

Conception of AIM European Master in Industrial Engineering and Management

- Accreditation, implementation, conceptual work (e.g. description of core fields)
- Development of new lectures
- Examination regulations / required courses
- Adjustment of lecture contents of other AIM-universities



Framework of Erasmus-plus-proposal

- Member of pilot group: TU Braunschweig, Universiteit Gent, Politecnico di Milano, Politechnika Warszawska, Linköping University
- Proposal submission by Prof. Dombrowski supported by working group

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Open item – master awarding



Curriculum Master AIM

	Semester 1	Semester 2	Semester 3	Semester 4	CP
Core field 1	Core Processes of the Enterprise I CP	Core Processes of the Enterprise I CP	Core Processes of the Enterprise I CP		15
Core field 2	Management Systems and Enterprise Organization I CP	Management Systems and Enterprise Organization I CP	Management Systems and Enterprise Organization I CP		15
Core field 3	Design of Production Systems I CP	Design of Production Systems I CP	Design of Production Systems I CP		30
Core field 4	Mathematics and Industrial Information Processing I CP	Mathematics and Industrial Information Processing I CP	Mathematics and Industrial Information Processing I CP		15
Core field 5	Cross Functional Skills I CP	Cross Functional Skills I CP	Cross Functional Skills I CP		15
Master thesis				Master Thesis 30 CP	30
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Possible rules for AIM master graduation

1. Study at least at two foreign universities (definition of minimum number of credit points needed)
2. 30 credit points + master thesis at one foreign university

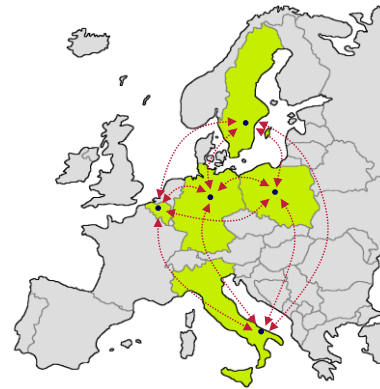
Master certificate awarding

1. Master thesis-supervising university
2. University that awarded most credit points
3. Awarding by all educating universities
4. Joint certificate by pilot universities
5. ...



Open item – vice versa acceptance of lecture contents

Renewal of the commitment (Skopje 2011)



Vice versa acceptance of lectures attended in a different pilot university

- J. Lundquist (Sweden – Linköping University)
- A. Portioli (Italia – Politecnico di Milano)
- K. Santarek (Poland – Politechnika Warszawska)
- H. Van Landeghem (Belgium – Universiteit Gent)
- U. Dombrowski (Germany – TU Braunschweig)

Open item – extension of working group

Candidates for working group extension



- Support of communication between students and technological institutes in EU
- Member: 60.000 students in 29 European countries
- Representations in Braunschweig, Milan, Linköping, Warsaw
- Support as associated partner possible and advisable (but no funding)



- IIE contents and objectives similar to AIM (leadership, on-the-job-training, Six-Sigma-courses)
- Only two European chapters in Ireland, Portugal
- Support not expedient



- Inclusion of Russian university (e.g. St. Petersburg State University – Prof. Smirnov)
- Participation in Erasmus-plus-proposal is possible as EU-neighboring country
- Extension of working group advisable

Decision – AIM






1. Master certificate awarding
2. Vice versa acceptance of lecture contents
3. Objectives of Erasmus+-proposal
4. Contact person of each working group university
5. Extension of working group

➤ Decisions and agreements are needed for the preparation of the Erasmus-plus-proposal

Reminder – New fellows

New AIM-fellows

European Union – 28 States		Neighbouring Countries – 20 States	
Austria	✓	Italy	✓
Belgium	✓	Latvia	○
Bulgaria	○	Lithuania	○
Croatia	✓	Luxembourg	○
Cyprus	■	Malta	○
Czech Republic	○	Netherlands	○
Denmark	✓	Poland	✓
Estonia	○	Portugal	✓
Finland	✓	Romania	○
France	✓	Slovakia	○
Germany	✓	Slovenia	○
Greece	✓	Spain	✓
Hungary	✓	Sweden	✓
Ireland	○	United Kingdom	✓
		Albania	○
		Moldova	○
		Andorra	○
		Montenegro	○
		Armenia	○
		Norway	✓
		Azerbaijan	○
		Russia	✓
		Bosnia and Herzegovina	○
		Serbia	○
		Georgia	○
		Switzerland	○
		Iceland	○
		Turkey	○
		Kazakhstan	○
		Ukraine	○
		Liechtenstein	■
		Vatican City	■
		Macedonia	✓

 = Country with current AIM-Fellow
 = Country with potential AIM-Fellow
 = Country without potential AIM-Fellow

Continuous proposals of new, possible candidates needed!

Objective: One AIM-fellow per European Higher Education Area-country



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Thank you for your attention!

Open item – vice versa acceptance

Vice versa acceptance of lectures attended in a different pilot university



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