

Curriculum for a Master of Advanced Industrial Management

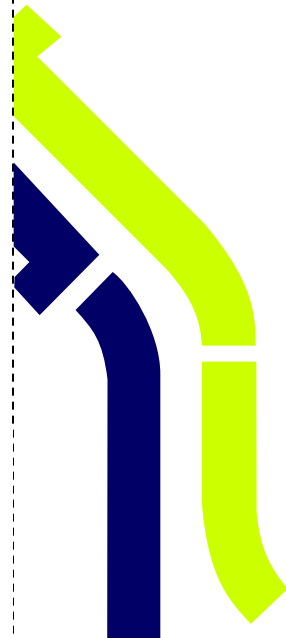
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Dipl.-Wirtsch.-Ing. Christian Engel

AIM 2010 Conference
Future of logistic issues
Grenoble, 30 September - 3 October 2010



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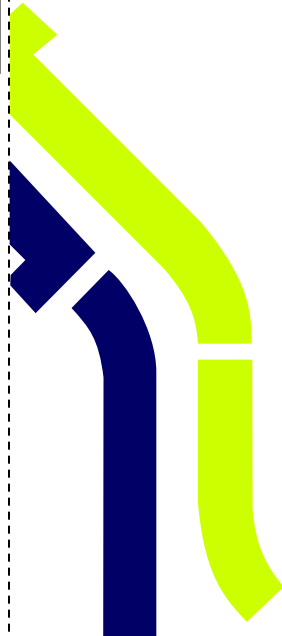
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Motivation for a Master of Advanced Industrial Management

Bachelor of Engineering and Business Administration at the TU Braunschweig

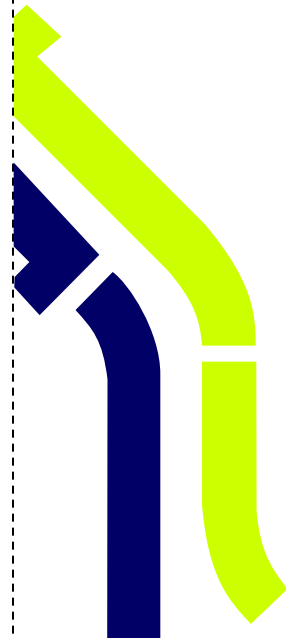
Possible Curriculum of a Master of Advanced Industrial Management



Motivation for a Master of Advanced Industrial Management (1)





Current Situation:

- The students have the choice to attend many different courses from different academic disciplines in their degree studies in engineering.
- Often the students do not know about the requirements of the industrial enterprises. Therefore the choice of their courses is not adequate to industry's needs.
- Industrial enterprises have new requirements that have to be fulfilled by the Universities.
- Often it is difficult for students to attend courses on Universities in other European countries because the content of the courses differs to the content of their home University.

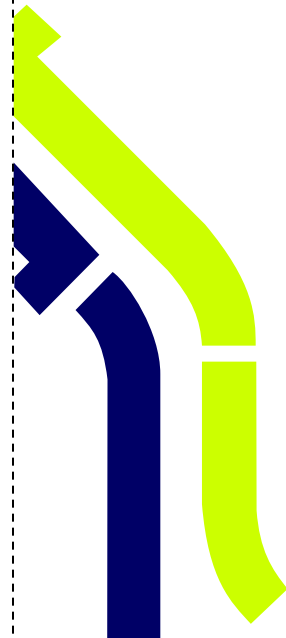


Motivation for a Master of Advanced Industrial Management (2)

Improvements by a Master of Advanced Industrial Management:

-  Creation of bundles of courses that fit to the needs of the industrial enterprises with a restricted choice of possible courses for the students.
-  Creation of new interdisciplinary courses in cooperation with the leading industrial enterprises to provide a degree study with higher practical relevance.
-  Consistent contents of the courses of Universities in Europe to provide a better possibility to study in different countries for the students.
-  Better combination of basic knowledge with new models and methods.

The goal is to create a master degree study in cooperation with the AIM Fellows with a large part of congruent courses on each University that provides the master degree study.

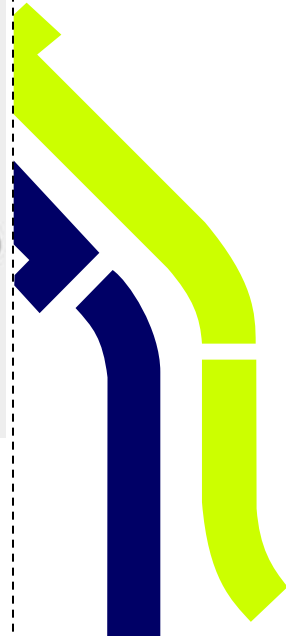


Requirements of the Industry for a Master in Advanced Industrial Management

- An Interview with a Person responsible for Engineering and Business Administration from a leading Original Equipment Manufacturer (OEM) of the Automotive Industry showed that there are new requirements for the graduates of the Universities.
- These requirements have to be integrated as new courses in the Master of Advanced Industrial Management in cooperation with leading enterprises.

Examples for new contents in the Master of AIM:

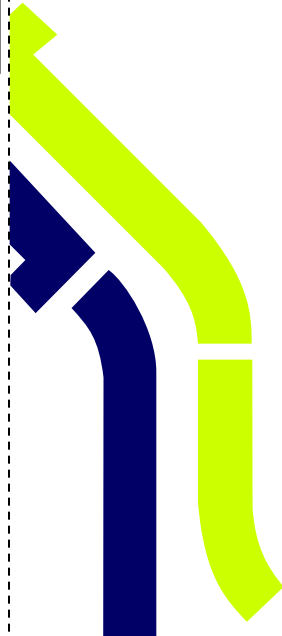
- Industry Medicine and Work Safety
- Digital Factory
- Process Control
- Knowledge Management
- Personal Management and Employee Development
- Demographic Change
- Supplier Management
- Leadership and Communication
- Lean Production Systems
- Problem Solving Process
- Overall Organisational Development



Motivation for a Master of Advanced Industrial Management

Bachelor of Engineering and Business Administration at the TU Braunschweig

Possible Curriculum of a Master of Advanced Industrial Management



Bachelor of Engineering and Business Administration (Field Mechanical Engineering) (1)

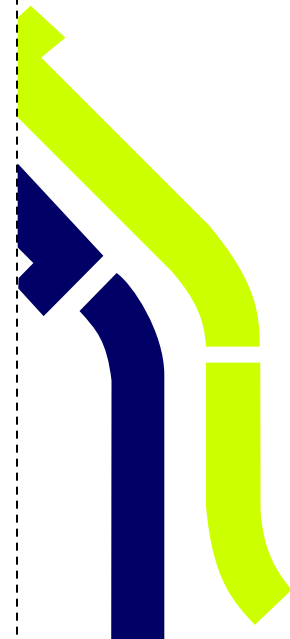


Semester 1		Semester 2		Semester 3	
Module	CP	Module	CP	Module	CP
Mathematics for Engineers 1	4	Mathematics for Engineers 3	4	Quantitative Methods of Economic Sciences	4
Mathematics for Engineers 2	4	Mathematics for Engineers 4	4	Accounting	5
Technical Mechanics 1	8	Technical Mechanics 2	8	Civil Law	4
Materials Engineering 1	2	Materials Engineering 1	4	Thermodynamics	6
Fundamentals of Business Economics	5	Fundamentals of Business Economics	5	Fundamentals of Business Informatics	4
Fundamentals of Economics	4	Fundamentals of Economics	4		
Electrical Engineering 1	4				
				Industrial Placement	8
	31		29		31

 = Advanced Industrial Management concerning courses

 = courses offered by the Institute for Production Management and Enterprise Research

 = Credit points



Bachelor of Engineering and Business Administration (Field Mechanical Engineering) (2)



Semester 4		Semester 5		Semester 6	
Module	CP	Module	CP	Module	CP
Informatics for Mechanical Engineering or Introduction in the Programming	4	Cross Functional Skills	4	Economic Sciences Emphasis 4	5
Quantitative Methods of Economic Sciences	4	Economic Sciences Emphasis 2	5	Core elective course Mechanical Engineering: Production and Systems Engineering	8
Economic Sciences Emphasis 1	5	Economic Sciences Emphasis 3	5	Bachelor Thesis	14
Civil Law	4	Ergonomics	4		
Control engineering for Industrial Engineers	4	Core elective course Mechanical Engineering: Production and Systems Engineering	8		
Fundamentals of Engineering	10				
		Industrial Placement	5		
	31		31		27

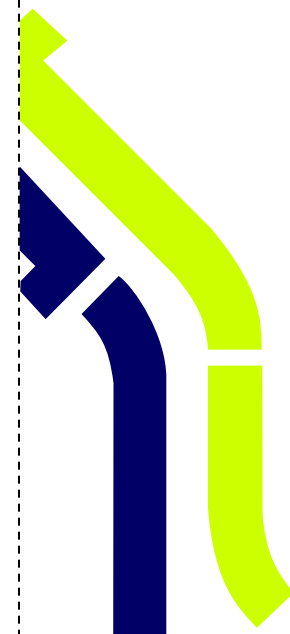
•Industrial Quality Management
•Enterprise Organisation

•Industrial Quality Management
•Enterprise Organisation

= Advanced Industrial Management concerning courses

= courses offered by the Institute for Production Management and Enterprise Research

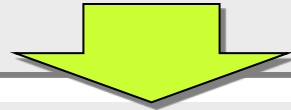
= Credit points



Master of Advanced Industrial Management as a consecutive degree study

Bachelor of Engineering and Business Administration

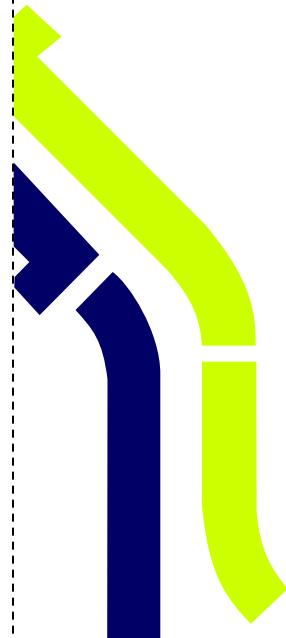
- Existing degree study with a duration of 6 semesters.
- 7 emphasizes for the field of Engineering.
- 8 emphasizes in the field of Economic Sciences.
- A specific emphasis for Advanced Industrial Management is missing.
- The students learn the fundamentals they need to work in the typical fields of engineering.



Master of Advanced Industrial Management

- Degree study with a duration of 4 semesters.
- A balanced Master degree study gives the students the ability to deepen the Knowledge in the field of Advanced Industrial Management.
- The graduates of this degree study have the ability to have a more efficient career entry.

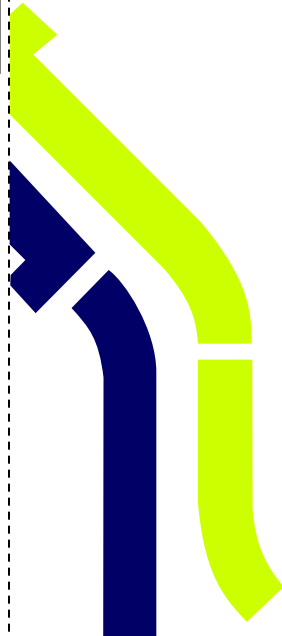
A consecutive Master in Advanced Industrial Management prepares the students through its well balanced contents to start their job more efficient.



Motivation for a Master of Advanced Industrial Management

Bachelor of Engineering and Business Administration at the TU Braunschweig

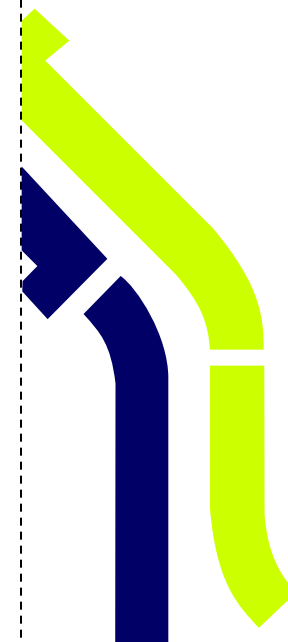
Possible Curriculum of a Master of Advanced Industrial Management



Master of Advanced Industrial Management



	Semester 1	Semester 2	Semester 3	Semester 4	CP
Optional Subjects (field 1)	Core Processes of the Enterprise 15 CP				15
Optional Subjects (field 2)	Management Systems and Enterprise Organisation 15 CP				15
Optional Subjects (field 3)	Design of Production Systems 30 CP				30
Optional Subjects (field 4)	Accounting/ Controlling 10 CP				10
Optional Subjects (field 5)		Mathematics and Industrial Information Processing 10 CP			10
Optional Subjects (field 6)	Cross Functional Skills 10 CP				10
Master Thesis				Master Thesis 30 CP	30
CP	30	30	30	30	120



Advanced Industrial Management Core-Fields (1)

Core Processes of the Enterprise

1

- Product Development Process
- Customer Order Process

Management Systems and Enterprise Organisation

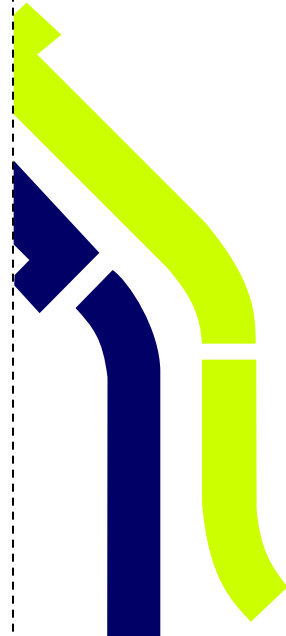
2

- Strategic Enterprise Organisation
- Organisational Development
- Change Management
- Design of Business Processes
- Ergonomics
- Industrial Psychology
- Labor Medicine
- Quality Management
- Knowledge Management
- Environmental Management

Design of Production Systems

3

- Factory Planning
- E-Commerce
- Industrial Law
- Codetermination
- Work Safety
- Logistics- / Transportation Systems
- Logistics Networks
- Supply Chain Management
- Technical Systems
- Production Planning and Control
- Lean Production Systems



Advanced Industrial Management Core-Fields (2)

Accounting/ Controlling

4

- Accounting
- Cost Planning
- Investment Appraisal
- Productivity Controlling
- Benchmarking

Mathematics and Industrial Information Processing

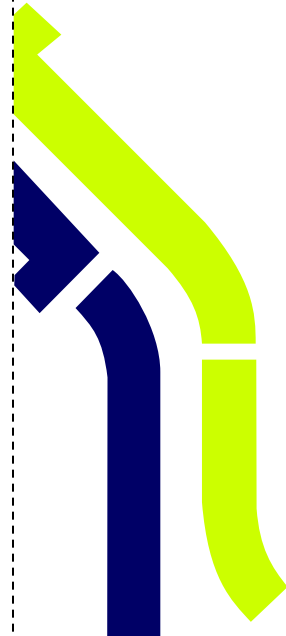
5

- Information Flow and Information Systems
- Product Data
- CAX
- CIM
- ERP
- APS
- Data Warehousing
- Systems of Optimisation
- Business Intelligence
- Calculus of Probabilities
- Theorie of Chaining
- Statistics
- Design of Experiments

Cross Functional Skills

6

- Project Management
- Process Management
- Rhetoric
- Moderation
- Presentation
- Teamwork
- Motivation
- Conflict Management
- Patent Law

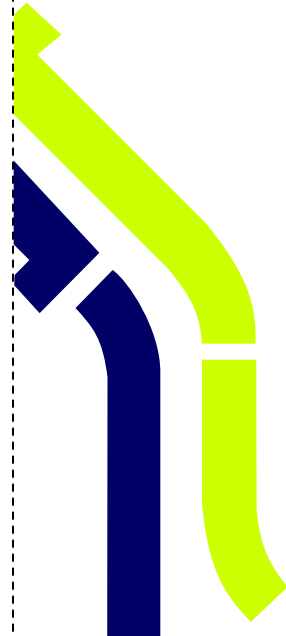


Existing courses for the field of Core Processes of the Enterprise

Core Processes of the Enterprise

1

Bachelor Engineering and Business Administration	Master AIM	
Enterprise Organisation	Product- und Life Cycle-Management	
Fundamentals of Engineering	International Financial Management	
Fundamentals of Business Economics	Business Game Laboratory	
Marketing	Distribution Management	
Manufacturing Technology	Strategic Product Planning	
Fundamentals of Product Development	New Methods for Product Development	

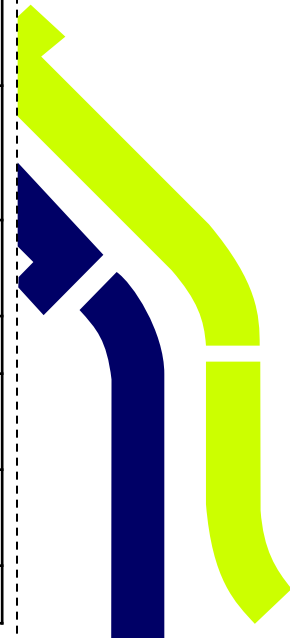


Existing courses for the field of Management Systems and Enterprise Organisation

Management Systems and Enterprise Organisation

2

Bachelor Engineering and Business Administration	Master AIM	
Industrial Quality Management	Project-, Risk- and Claim Management on Planning and Building of industrial Plants	Design of Business Processes
Strategic Corporate Governance	Knowledge Management	Industry Medicine
Human Resources Management	Risk Management	Simulation
Fundamentals of Corporate Governance	In-Plant Management in consideration of legal aspects	Process Management
	Project and Quality Management	Business Ideas and Entrepreneurship
	Leading in Enterprises	Organisation
	Health Management in Enterprises	Teams and Networks
	Environmental Management	Selective Topics of the Management
		Industrial Psychology

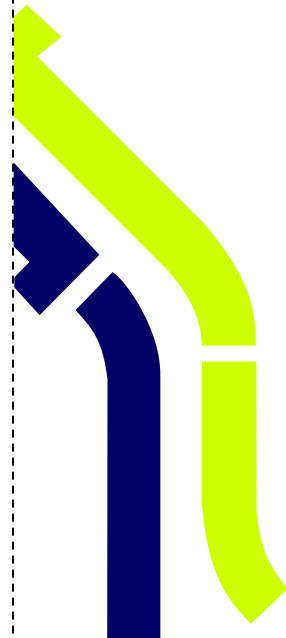


Existing courses for the field of Design of Production Systems (1)

Design of Production Systems

3

Bachelor Engineering and Business Administration	Master AIM	
Ergonomics	Organisation and Management Consultancy	REFA –Time-Recording
Logistics Management	Human-Machine Interaction	Lean Production and Lean Production Systems
Transactions for the E-Business	MTM-Laboratory	Plant Management
Plant Engineering	Work and Society	Machine Tools
Business Law	Demographic Risks in Enterprises	Supply Chain Management
E-Commerce	Engineering Psychology	Factory Planning
	Simulation and Optimisation in Production and Logistics	Factory Planning in Electronics Production
	Decision Models of the Logistics	Industrial Planning Processes




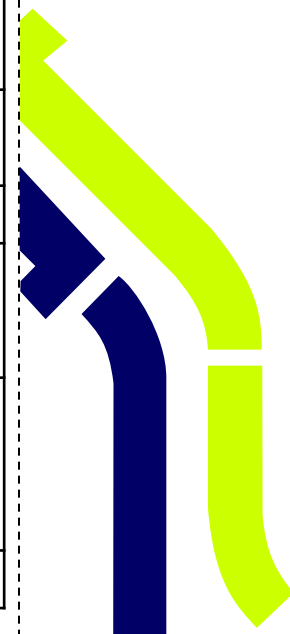
Existing courses for the field of Design of Production Systems (2)

Design of Production Systems

3

Bachelor Engineering and Business Administration	Master AIM	
Automated Assembly	Production Management – Plant Management	Production Management
Methods of the Automated Assembly	PPC in the Automotive Industry	Protection of Industrial Property
Introduction in Production and Logistics	Sustainability in Production and Logistics	Production Engineering for the Automotive Technology
Civil Law 1 - 2	Production Planning and Control	Sustainable Production
	Environmental Law	Tax Law
	Individual and Collective Industrial Law	Produkt- Life-Cycle-Management
	Start-up Management in the Electronic Production	Production Engineering for the Air and Spacecraft Technology
	Industrial Robots	

 = courses offered by the Institute for Production Management and Enterprise Research

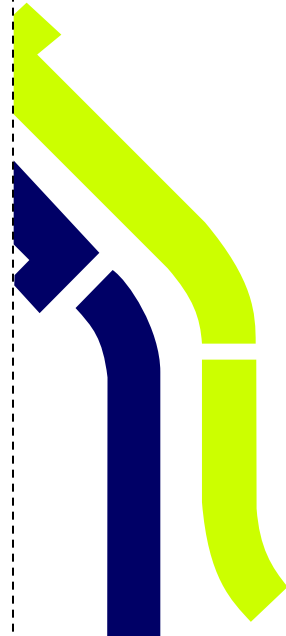


Existing courses for the field of Accounting/ Controlling

Accounting/ Controlling

4

Bachelor Engineering and Business Administration	Master AIM	
Accounting	Multi-Criteria Controlling	Accounting for Engineers
Strategic Cost Management	Controlling - Cost Accounting	
Controlling - Audit and Assurance	Decision-Oriented Controlling	

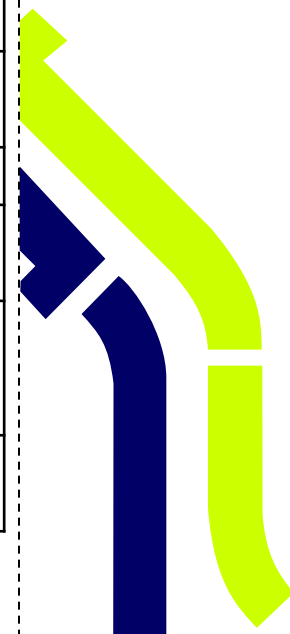


Existing courses for the field of Mathematics and Industrial Information Processing

Mathematics and Industrial Information Processing

5

Bachelor Engineering and Business Administration	Master AIM	
Methods of the Business Informatics	Industrial Information Processing	Customer Relationship Management
Business Intelligence	Computer-Assisted Production	Theorie of Chaining
Fundamentals of Business Informatics	Cooperations in E-Business	Information and Communication Management
Mathematics for Engineers I - IV	Decision Models in Logistics	E-Business-Project
Operations Research	Information Models	E-Services
	Statistical Procedure	Risk Modelling for Engineers
	Mathematical Approaches in Engineering	Introduction in the Optimisation
	Introduction in Matlab	Introduction in SAP 6.0

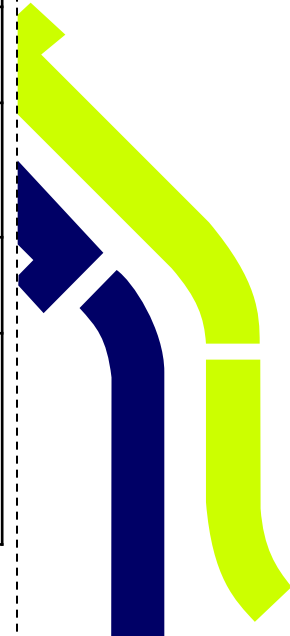


Existing courses for the field of Cross Functional Skills

Cross Functional Skills

6

Bachelor Engineering and Business Administration	Master AIM	
	Cross-Cultural Communication	Rhetoric
	Process oriented Work: Project Management in Enterprises	Risk Analysis of Technical Systems
	Methodical Work	Business English
	Business Game	Cooperation and Teamwork
	Cross-Cultural Training	Development and Project Management 1 + 2
	Conflict Management for Engineers	Team Diagnostics and Development
	Moderation Technique, Simultaneous Engineering, Leading Technique	



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