

Analysis of International Master Programmes

WP2. Preparation / Task 2.4. / v1

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DEVELOPMENT OF A MASTER PROGRAMME IN THE MANAGEMENT OF INDUSTRIAL
ENTREPRENEURSHIP FOR TRANSITION COUNTRIES

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Introduction

One of the aims of MIETC is to create the curriculum of a Master programme in Industrial Entrepreneurship taking into account the experience of the local Higher Education Institutions (HEIs) and firms and the knowledge of the European Union (EU) HEIs using a co-design strategy. In the preparation phase of the curriculum, its development will be based on a detailed market needs analysis, provided by Task 2.3. The conclusions of this analysis showed the existence of entrepreneurial skill shortages on the labour markets of the countries to which the Central Asian HEIs belong.

Task 2.4, presently reported in this document, aimed to survey the international supply of Master Programmes that currently provide these type of entrepreneurial skills all around the world. In order to structure this task, the following elements were taken as points of departure:

- The basic structure for the Programme presented in the MIETC proposal, consisting of twelve subjects distributed in four thematic blocks:
 - Block 1: Data Research.
 - Block 2: Management.
 - Block 3: Business & Entrepreneurship.
 - Block 4: Engineering.
- Two existing Master programmes, well known by the European members of the consortium, to be used as basic benchmarks:
 - The MSc in Management (Operations pathway) offered by the Birmingham Business School.
 - The MSc in Entrepreneurship and Innovation Management offered by the KTH Royal Institute of Technology.
- A selection of top American and European Master programmes focused on building entrepreneurial skills.



Benchmarks

MSc in Management (Operations pathway) - Birmingham Business School

The MSc in Management (Operations pathway) offered by the Birmingham Business School at the University of Birmingham in the United Kingdom (UK) is a programme showing strong links with local industry, combining rigorous undergraduate academic study with a practical focus. This programme claims to support a variety of careers, including consulting, research & policymaking, and management positions within both in SMEs and large multinationals. Its focus on Entrepreneurship & Innovation presents students with the opportunity to explore starting-up their own business.

The programme is structured into 10 core modules (+ one dissertation) and 2 optional modules, chosen from a total offer of 7 modules. It may serve as a benchmark for MIETC regarding the Management and Business & Entrepreneurship blocks, as 7 seven of the core subjects plus 2 of the elective ones correspond to the competences MIETC will focus on within the Management block, and 2 of the core subjects plus 5 of the elective ones correspond to the competences MIETC will focus on within the Business & Entrepreneurship block.

Table 1: List of modules in BBS's MSc in Management (Operations pathway)

Module	Character	Block
Contemporary Issues in Management	Core (mandatory)	Management
Environment of Business	Core (mandatory)	Business & Entrepreneurship
Principles of Responsive Business	Core (mandatory)	Business & Entrepreneurship
Research Methods	Core (mandatory)	Data Research
Strategic Management	Core (mandatory)	Management
Operations Management	Core (mandatory)	Management
Organisational Behaviour	Core (mandatory)	Management
Organisational Reliability and Resilience	Core (mandatory)	Management
Service Operations Management	Core (mandatory)	Management
Value Chains, Outsourcing & Procurement	Core (mandatory)	Management
Advanced Strategy	Optional	Management
Entrepreneurship: Business Start-Up	Optional	Business & Entrepreneurship
Innovation Management	Optional	Business & Entrepreneurship
Entrepreneurship: Advanced Topics	Optional	Business & Entrepreneurship
International Business Strategy	Optional	Business & Entrepreneurship
Leading and Managing Change and Crisis	Optional	Business & Entrepreneurship
Strategic Leadership	Optional	Management



MSc in Entrepreneurship and Innovation Management - KTH Royal Institute of Technology

The MSc in Entrepreneurship and Innovation Management offered by the KTH Royal Institute of Technology in Sweden is a programme focused on the nature of innovation and entrepreneurship and how to harness its inherent potential. It combines theoretical aspects of the field with a master's degree project that can be of academic nature or in collaboration with a Company and ties the programme together in its entirety. The programme claims to provide students with the necessary skills to start and manage projects, including business model innovation, leadership and communication.

The programme is structured into 7 core modules (+ one project). It may serve as a benchmark for MIETC regarding the Business & Entrepreneurship and the Engineering blocks, as 3 of the core subjects correspond to the competences MIETC will focus on within the Business & Entrepreneurship block, and other 3 correspond to the competences MIETC will focus on within the Engineering block.

Table 2: List of modules in KTH's MSc in Entrepreneurship and Innovation Management

Module	Character	Block
Project Management	Core (mandatory)	Engineering
Management of Technology Innovation	Core (mandatory)	Engineering
Technological & Industrial Change	Core (mandatory)	Engineering
Industrial Marketing & Networks	Core (mandatory)	Management
Entrepreneurship	Core (mandatory)	Business & Entrepreneurship
Creating Your Own Company	Core (mandatory)	Business & Entrepreneurship
Business Model Innovation	Core (mandatory)	Business & Entrepreneurship

Selection of Top Programmes

The selection of top American and European Master programmes focused on building entrepreneurial skills started with a comprehensive review of the supply of Master programmes in Business-related topics offered by main universities in the United States of America (USA) and Europe.

The kind of programmes with an offer better adjusted to MIETC's aims were found to be MBA programmes with contents oriented towards industrial/innovation subjects in the USA and specialized MSc programmes on industrial/engineering or entrepreneurship/innovation topics in Europe. Regarding the structure of the programmes, most of them follow the common pattern of a mandatory core of subjects plus a more or less wide choice of elective subjects.

After this review, a number of top programmes were selected for further consideration of their characteristics. These are shown in the following table:

Table 3: List of top programmes selected

Name	Programme	Type	Region
Babson College - Graduate School	<i>Master of Science in Management in Entrepreneurial Leadership</i>	Entrepreneurship	USA
Université catholique de Louvain	<i>Formation interdisciplinaire en création d'entreprise</i>	Entrepreneurship	Europe
ESADE Business School	<i>MSc in Innovation and Entrepreneurship</i>	Entrepreneurship	Europe
MIT Sloan School of Management	<i>MBA Entrepreneurship & Innovation Track (E&I)</i>	Entrepreneurship	USA
Copenhagen Business School	<i>Msc Organizational Innovation and Entrepreneurship</i>	Entrepreneurship	Europe
Krannert School of Management	<i>Master of Science in Global Supply Chain Management</i>	Industrial	USA
Pratt School of Engineering	<i>Master of Engineering Management (MEM)</i>	Industrial	USA
Wharton School	<i>MBA/MSE with the School of Engineering and Applied Science</i>	Industrial	USA
University of Warwick	<i>MSc Engineering Business Management</i>	Industrial	Europe
MIP Politecnico di Milano Graduate School of Business	<i>Master in Gestione degli Asset Industriali (MeGMI)</i>	Industrial	Europe
University of Groningen	<i>MS Technology and Operations Management</i>	Industrial	Europe
SC Johnson College of Business	<i>MBA Entrepreneurship</i>	Entrepreneurship	USA

Most frequently offered subjects

Using the information gathered from these twelve programmes plus the two benchmark programmes, the following list of most frequently offered courses that could be classified under the thematic blocks of MIETC was compiled:

(Please note that variations in subject names were aggregated into generic definitions. The complete list of subjects offered can be found in the Appendix).

- Block 1 : Data Research
 - *Data Analysis*
 - *Machine Learning*
 - *Forecasting*
 - *Big Data*

- Block 2 : Management
 - *Strategic Management*
 - *Finance*
 - *Operations Management*
 - *Marketing Management*
 - *Organisations Management*
 - *Project Management*

- Block 3 : Business & Entrepreneurship
 - *Entrepreneurship*
 - *Innovation Management*
 - *Social and Sustainable Entrepreneurship*
 - *Business Models*
 - *Business Creation*
 - *Corporate Ventures*

- Block 4 : Engineering
 - *Manufacturing Technology*
 - *Information Technology*
 - *Web Development*
 - *Supply Chain*
 - *Optimization Modeling & Simulation*

Appendix

Complete list of subjects in selected programmes

Institution	Subject	Type
Babson	Data Analysis	Mandatory
UCL	Data Analysis	-
ESADE	Data Analysis	Elective
MIT	Data Analysis	-
CBS	Data Analysis	Mandatory
Purdue	Data Analysis	Elective
Duke	Data Analysis	Elective
Wharton	Data Analysis	Mandatory
Warwick	Data Analysis	-
MIP	Data Analysis	-
Groningen	Data Analysis	Mandatory
Cornell	Data Analysis	-
BBS	Data Analysis	Mandatory
KTH	Data Analysis	-
Babson	Entrepreneurship	Mandatory
UCL	Entrepreneurship	Mandatory
ESADE	Entrepreneurship	Mandatory
MIT	Entrepreneurship	Mandatory
CBS	Entrepreneurship	Mandatory
Purdue	Entrepreneurship	-
Duke	Entrepreneurship	Elective
Wharton	Entrepreneurship	-

Warwick	Entrepreneurship	-
MIP	Entrepreneurship	-
Groningen	Entrepreneurship	-
Cornell	Entrepreneurship	Mandatory
BBS	Entrepreneurship	Elective
KTH	Entrepreneurship	Mandatory
Babson	Finance	Mandatory
UCL	Finance	Elective
ESADE	Finance	Mandatory
MIT	Finance	Elective
CBS	Finance	-
Purdue	Finance	Elective
Duke	Finance	Mandatory
Wharton	Finance	-
Warwick	Finance	Mandatory
MIP	Finance	-
Groningen	Finance	-
Cornell	Finance	-
BBS	Finance	-
KTH	Finance	-
Babson	Information Technology/Programming	Mandatory
UCL	Information Technology/Programming	-
ESADE	Information Technology/Programming	Elective
MIT	Information Technology/Programming	Elective
CBS	Information Technology/Programming	-

Purdue	Information Technology/Programming	Elective
Duke	Information Technology/Programming	-
Wharton	Information Technology/Programming	-
Warwick	Information Technology/Programming	Mandatory
MIP	Information Technology/Programming	-
Groningen	Information Technology/Programming	-
Cornell	Information Technology/Programming	Mandatory
BBS	Information Technology/Programming	-
KTH	Information Technology/Programming	Mandatory
Babson	Law	Mandatory
UCL	Law	-
ESADE	Law	-
MIT	Law	Elective
CBS	Law	-
Purdue	Law	-
Duke	Law	Mandatory
Wharton	Law	-
Warwick	Law	-
MIP	Law	-
Groningen	Law	-
Cornell	Law	-
BBS	Law	-
KTH	Law	-
Babson	Marketing	Mandatory
UCL	Marketing	-

ESADE	Marketing	Mandatory
MIT	Marketing	Elective
CBS	Marketing	-
Purdue	Marketing	Elective
Duke	Marketing	Mandatory
Wharton	Marketing	Mandatory
Warwick	Marketing	-
MIP	Marketing	-
Groningen	Marketing	-
Cornell	Marketing	-
BBS	Marketing	-
KTH	Marketing	Mandatory
Babson	Operations Management/Logistics	Mandatory
UCL	Operations Management/Logistics	-
ESADE	Operations Management/Logistics	-
MIT	Operations Management/Logistics	-
CBS	Operations Management/Logistics	-
Purdue	Operations Management/Logistics	Mandatory
Duke	Operations Management/Logistics	Elective
Wharton	Operations Management/Logistics	-
Warwick	Operations Management/Logistics	Mandatory
MIP	Operations Management/Logistics	-
Groningen	Operations Management/Logistics	Mandatory
Cornell	Operations Management/Logistics	-
BBS	Operations Management/Logistics	Mandatory

KTH	Operations Management/Logistics	-
Babson	Strategic Management	Mandatory
UCL	Strategic Management	Elective
ESADE	Strategic Management	Mandatory
MIT	Strategic Management	Mandatory
CBS	Strategic Management	Mandatory
Purdue	Strategic Management	Elective
Duke	Strategic Management	Elective
Wharton	Strategic Management	-
Warwick	Strategic Management	Mandatory
MIP	Strategic Management	-
Groningen	Strategic Management	-
Cornell	Strategic Management	Elective
BBS	Strategic Management	Mandatory
KTH	Strategic Management	-
Babson	Business Creation	-
UCL	Business Creation	Mandatory
ESADE	Business Creation	-
MIT	Business Creation	Mandatory
CBS	Business Creation	-
Purdue	Business Creation	-
Duke	Business Creation	Elective
Wharton	Business Creation	-
Warwick	Business Creation	-
MIP	Business Creation	-

Groningen	Business Creation	-
Cornell	Business Creation	Mandatory
BBS	Business Creation	Elective
KTH	Business Creation	Mandatory
Babson	Business Plan	-
UCL	Business Plan	Mandatory
ESADE	Business Plan	-
MIT	Business Plan	-
CBS	Business Plan	-
Purdue	Business Plan	-
Duke	Business Plan	-
Wharton	Business Plan	-
Warwick	Business Plan	-
MIP	Business Plan	-
Groningen	Business Plan	-
Cornell	Business Plan	-
BBS	Business Plan	-
KTH	Business Plan	-
Babson	Innovation	-
UCL	Innovation	Elective
ESADE	Innovation	Mandatory
MIT	Innovation	Elective
CBS	Innovation	Mandatory
Purdue	Innovation	-
Duke	Innovation	Mandatory

Wharton	Innovation	-
Warwick	Innovation	-
MIP	Innovation	-
Groningen	Innovation	Mandatory
Cornell	Innovation	Mandatory
BBS	Innovation	Elective
KTH	Innovation	Mandatory
Babson	Social/Sustainable Entrepreneurship	-
UCL	Social/Sustainable Entrepreneurship	Elective
ESADE	Social/Sustainable Entrepreneurship	Mandatory
MIT	Social/Sustainable Entrepreneurship	Elective
CBS	Social/Sustainable Entrepreneurship	Mandatory
Purdue	Social/Sustainable Entrepreneurship	-
Duke	Social/Sustainable Entrepreneurship	-
Wharton	Social/Sustainable Entrepreneurship	-
Warwick	Social/Sustainable Entrepreneurship	-
MIP	Social/Sustainable Entrepreneurship	Elective
Groningen	Social/Sustainable Entrepreneurship	-
Cornell	Social/Sustainable Entrepreneurship	-
BBS	Social/Sustainable Entrepreneurship	Mandatory
KTH	Social/Sustainable Entrepreneurship	-
Babson	Creative Thinking	-
UCL	Creative Thinking	-
ESADE	Creative Thinking	Mandatory
MIT	Creative Thinking	-

CBS	Creative Thinking	-
Purdue	Creative Thinking	-
Duke	Creative Thinking	Elective
Wharton	Creative Thinking	-
Warwick	Creative Thinking	-
MIP	Creative Thinking	-
Groningen	Creative Thinking	-
Cornell	Creative Thinking	Elective
BBS	Creative Thinking	-
KTH	Creative Thinking	-
Babson	Product Management	-
UCL	Product Management	-
ESADE	Product Management	Mandatory
MIT	Product Management	Elective
CBS	Product Management	-
Purdue	Product Management	Elective
Duke	Product Management	-
Wharton	Product Management	-
Warwick	Product Management	Mandatory
MIP	Product Management	Mandatory
Groningen	Product Management	-
Cornell	Product Management	-
BBS	Product Management	-
KTH	Product Management	-
Babson	International Entrepreneurship	-

UCL	International Entrepreneurship	Elective
ESADE	International Entrepreneurship	-
MIT	International Entrepreneurship	Elective
CBS	International Entrepreneurship	-
Purdue	International Entrepreneurship	-
Duke	International Entrepreneurship	-
Wharton	International Entrepreneurship	-
Warwick	International Entrepreneurship	-
MIP	International Entrepreneurship	-
Groningen	International Entrepreneurship	-
Cornell	International Entrepreneurship	-
BBS	International Entrepreneurship	Elective
KTH	International Entrepreneurship	-
Babson	Sales Management	-
UCL	Sales Management	-
ESADE	Sales Management	Elective
MIT	Sales Management	Elective
CBS	Sales Management	-
Purdue	Sales Management	-
Duke	Sales Management	-
Wharton	Sales Management	-
Warwick	Sales Management	-
MIP	Sales Management	-
Groningen	Sales Management	-
Cornell	Sales Management	Mandatory

BBS	Sales Management	-
KTH	Sales Management	-
Babson	FinTech	-
UCL	FinTech	-
ESADE	FinTech	-
MIT	FinTech	Elective
CBS	FinTech	-
Purdue	FinTech	-
Duke	FinTech	-
Wharton	FinTech	-
Warwick	FinTech	-
MIP	FinTech	-
Groningen	FinTech	-
Cornell	FinTech	-
BBS	FinTech	-
KTH	FinTech	-
Babson	Business Models/Value Chain	-
UCL	Business Models/Value Chain	-
ESADE	Business Models/Value Chain	Mandatory
MIT	Business Models/Value Chain	-
CBS	Business Models/Value Chain	Mandatory
Purdue	Business Models/Value Chain	Mandatory
Duke	Business Models/Value Chain	Elective
Wharton	Business Models/Value Chain	-
Warwick	Business Models/Value Chain	-

MIP	Business Models/Value Chain	-
Groningen	Business Models/Value Chain	Elective
Cornell	Business Models/Value Chain	Mandatory
BBS	Business Models/Value Chain	Mandatory
KTH	Business Models/Value Chain	Mandatory
Babson	Organization Management	-
UCL	Organization Management	-
ESADE	Organization Management	-
MIT	Organization Management	-
CBS	Organization Management	Mandatory
Purdue	Organization Management	Elective
Duke	Organization Management	-
Wharton	Organization Management	-
Warwick	Organization Management	Mandatory
MIP	Organization Management	Mandatory
Groningen	Organization Management	-
Cornell	Organization Management	-
BBS	Organization Management	Mandatory
KTH	Organization Management	-
Babson	Optimization, Modeling & Simulation	-
UCL	Optimization, Modeling & Simulation	-
ESADE	Optimization, Modeling & Simulation	-
MIT	Optimization, Modeling & Simulation	-
CBS	Optimization, Modeling & Simulation	-
Purdue	Optimization, Modeling & Simulation	Elective

Duke	Optimization, Modeling & Simulation	-
Wharton	Optimization, Modeling & Simulation	-
Warwick	Optimization, Modeling & Simulation	-
MIP	Optimization, Modeling & Simulation	-
Groningen	Optimization, Modeling & Simulation	Mandatory
Cornell	Optimization, Modeling & Simulation	-
BBS	Optimization, Modeling & Simulation	-
KTH	Optimization, Modeling & Simulation	-
Babson	Project Management	-
UCL	Project Management	-
ESADE	Project Management	-
MIT	Project Management	-
CBS	Project Management	-
Purdue	Project Management	Elective
Duke	Project Management	Elective
Wharton	Project Management	-
Warwick	Project Management	Mandatory
MIP	Project Management	Elective
Groningen	Project Management	-
Cornell	Project Management	-
BBS	Project Management	-
KTH	Project Management	Mandatory
Babson	Manufacturing Planning & Control	Mandatory
UCL	Manufacturing Planning & Control	-
ESADE	Manufacturing Planning & Control	-

MIT	Manufacturing Planning & Control	-
CBS	Manufacturing Planning & Control	-
Purdue	Manufacturing Planning & Control	Elective
Duke	Manufacturing Planning & Control	-
Wharton	Manufacturing Planning & Control	-
Warwick	Manufacturing Planning & Control	Mandatory
MIP	Manufacturing Planning & Control	Mandatory
Groningen	Manufacturing Planning & Control	-
Cornell	Manufacturing Planning & Control	-
BBS	Manufacturing Planning & Control	-
KTH	Manufacturing Planning & Control	-
Babson	Microeconomics	-
UCL	Microeconomics	-
ESADE	Microeconomics	-
MIT	Microeconomics	-
CBS	Microeconomics	-
Purdue	Microeconomics	-
Duke	Microeconomics	-
Wharton	Microeconomics	Mandatory
Warwick	Microeconomics	-
MIP	Microeconomics	-
Groningen	Microeconomics	-
Cornell	Microeconomics	-
BBS	Microeconomics	-
KTH	Microeconomics	-



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