

MSc “Data Science and AI for competitive manufacturing” programme

- Study plans –

This document presents the general syllabi of all the MSc double degrees available within the EIT Manufacturing “Data Science and AI for competitive manufacturing” programme. Please note these are the basic versions of the study plans, in order to provide a better understanding of the programme and the differences among the several available combinations within the programme. Considering universities continuously develop their education offer, some of the courses could result to be updated, changed or replaced along the years. Once enrolled, the student will be supported by a local programme coordinator to define the final study plan accordingly to the general structure of the EIT Manufacturing Master programmes.

General structure of the EIT Manufacturing Master Programme

Type of modules	Total credits for EIT-M Master	Total credits 1 st year	Total credits 2 nd year
Technical courses (TC)	45	40-50	10-20
Specialization courses (SC)	15		
Innovation & entrepreneurship courses (I&E)	30	10-20	10-20
Master thesis (MT)	30	0	30
Tot	120	60	60

Please scroll down this document to find the different syllabi.

Programme Data Science and AI for competitive manufacturing

– Study plan –

ECN- Trento collaboration

General structure of the EIT-M Master Programme

Type of modules	Total credits for EIT-M Master	Total credits 1 st year	Total credits 2 nd year
Technical courses (TC)	40-48	40-50	10-20
Specialization courses (SC)	12-20		
Innovation & entrepreneurship courses (I&E)	30	10-20	10-20
Master thesis (MT)	30	0	30
Tot	120	60	60

Entry university ECN – exit University of Trento

1st year ECN

Draft plan:

Type of modules	ECN courses	ECTS	Semester	Total credits
TC	Modelling of Complex Systems (I)	4	1	30
	Introduction to Optimization Methods	4	1	
	Production Management	5	1	
	Discrete-event Simulation	5	1	
	Systems Engineering	4	2	
	Statistics and Data Analysis	4	2	
	Stochastic and Multi-Agent Simulation	4	2	
SC	Systems Engineering	4	2	10
	Management Systems and Socio-Organizational Aspects for Ind. Eng.	4	2	
	Conference	2	2	
I&E	Enterprise Modelling 1	5	2	15
	Financial and Economic Aspects for Ind. Engineering	5	1	
	Enterprise Management*	5	2	
Other	Mandatory language course	4	1	8
	Mandatory language course	4	2	
I&E	Centrally organized summer school	5	2	5

2nd year Trento

Type of modules	Trento courses	ECTS	Semester	Total credits
TC	145062 Machine Learning	6	1	12 (2 courses among 4)
	145453 Data Mining	6	1	
	145635 High-throughput Computing for Data Science	6	1	
	145937 Introduction to Computer and Network security	6	1	
SC	145874 Robot planning and its application	6	1	6 (1 course among 4)
	155020 Multisensory Interactive Systems	6	1	
	145072 Requirements Engineering	6	1	
	145810 Service Design and Engineering	6	1	
I&E	145623 Innovation and Entrepreneurship Studies in ICT (core)	6	1	12
	145322 Project Course	6	1	
MT	Thesis (Including Internship)(core)	30	2	30

Recap

Type of modules	ECTS in S1	ECTS in S2	ECTS in S3	ECTS in S4	Total credits
TC	18	12	12		48
SC	0	10	6		16
I&E	5	8+5	12		30
MT				30	30
Other	4	4			8

Programme Data Science and AI for competitive manufacturing

– Study plan –

SUPSI- Trento collaboration

General structure of the EIT-M Master Programme

Type of modules	Total credits for EIT-M Master	Total credits 1 st year	Total credits 2 nd year
Technical courses (TC)	40-48	40-50	10-20
Specialization courses (SC)	12-20		
Innovation & entrepreneurship courses (I&E)	30	10-20	10-20
Master thesis (MT)	30	0	30
Tot	120	60	60

Entry university SUPSI – exit University of Trento

1st year SUPSI

Draft plan:

Type of modules	SUPSI courses	ECTS	Semester	Total credits
TC	Advanced Algorithms and Data Structures (FTP_AdvAlgDS)	3	1	30
	Multi-Agent Systems (FTP_MultiASys, 2021-2022)	3	2	
	Applied Statistics and Data Analysis (FTP_AppStat, 2021-2022)	3	2	
	Data Analysis and Classification (TSM_DataAnaCla)	3	1	
	Advanced Data Management – non standard database systems (TSM_AdvDataMgmt)	3	1	
	Analysis of Sequential Data (TSM_AnSeqDa)	3	1	
	Virtual environments (MP_DCAPVE)	9	2	
	Quality and Risk Management (CM_QRM)	3	2	
SC	Deep Learning Lab	3	1	12
	Uncertain Reasoning and Data Mining (MC_URDM)	6	1	
	Machine Learning in Computer Vision (TSM_CompVis, 2021-2022)	3	1	
I&E	Project in data science applied to manufact.	7	1-2	18

	Innovation and Lean (CM_InnoLEAN)	3	1	
	Centrally organized summer school	5	2	
	Privacy and Law (CM_PrivLaw)	3	2	

2nd year Trento

Type of modules	Trento courses	ECTS	Semester	Total credits
TC	145683 Data Visualization Lab	6	1	12 (2 courses among 4)
	145689 Knowledge and Data Integration	6	1	
	145635 High-throughput Computing for Data Science	6	1	
SC	140472 Distributed Systems for measurement and automation	6	1	6 (1 course among 4)
	145810 Service Design and Engineering	6	1	
I&E	145623 Innovation and Entrepreneurship Studies in ICT (core)	6	1	12
	145322 Project Course	6	1	
MT				30
	Thesis, including internship (core)	30	2	

Recap

Type of modules	ECTS in S1	ECTS in S2	ECTS in S3	ECTS in S4	Total credits
TC	12	18	Max 18		48
SC	12	0	Max 8		16
I&E	6	12	12		30
MT	0	0	0	30	30
Other					
Total	30	30			

Data Science and AI for Competitive Manufacturing

- Study plan –

UCD - UNITN collaboration

General structure of the EITM Master Programme

Type of modules	Total credits for EIT-M Master	Total credits 1 st year	Total credits 2 nd year
Technical courses (TC)	42	40-50	10-20
Specialization courses (SC)	16		
Innovation & entrepreneurship courses (I&E)	32	10-20	10-20
Master thesis (MT)	30	0	30
Tot	120	60	60

Entry university UCD – exit university UNITN

1st year UCD

Draft plan:

Type of modules	UCD courses	ECTS	Semester	Total credits
TC	Computational Continuum Mechanics II	5	1	30 (15 sem 1 15 sem 2)
	Computational Continuum Mechanics I	5	1	
	Systems Analysis & Improvement (EITM)	5	1	
	Advanced Polymer Engineering	5	2	
	Advanced Metals Processing	5	2	
	Operations Management	5	2	
SC	Manufacturing Engineering II	5	1	10 (5 sem 1 5 sem 2)
	Engineering Decision Support Systems	5	2	
I&E	Centrally organized summer school	5	1	15 (10 sem 1 5 sem 2)
	MEEN40820 Technical Comms (Online)	5	1	
	Professional Eng. (Finance)	5	2	
	Professional Engineering (Management)	5	2	

2nd year UNITN

Type of modules	UNITN courses	ECTS	Semester	Total credits
TC	145062 Machine Learning	6	1	12
	145453 Data Mining	6	1	
SC	145072 Requirements Engineering	6	1	6
I&E	145623 Innovation and Entrepreneurship Studies in ICT (core)	6	1	12
	Project course	6	1	
MT	Master thesis (including internship)	30	2	30 (30 sem2)

Recap

Type of modules	ECTS in S1	ECTS in S2	ECTS in S3	ECTS in S4	Total credits
TC	15	15	12		42
SC	5	5	6		16
I&E	10	10	12		32
MT				30	30
Tot	30	30	30		120